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(71) Demandeur/Applicant:  
HEALINX, US  
(72) Inventeurs/Inventors:  
MORAG, ASSAF, US;  
GANNOT, GARY, US;  
BAHARAV, OFIR, IL  
(74) Agent: SMITH, PAUL RAYMOND

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(54) Title: A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION

(57) **Abrégé/Abstract:**

One aspect of this invention embodies a method of messaging upon a network involving at least one physician, at least one patient and a workflow engine. Each physician operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. Each patient operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. The workflow engine accesses the network for receiving and sending messages upon the network at a workflow engine address on the network. The method comprises using a first medical message wizard by the patient on the patient operated computer, a medical profiler process performed by the workflow engine and a second medical message wizard by the first physician on the physician operated computer at the first corresponding physician address.

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(71) Applicant: HEALINX [US/US]; Suite 100, 950 Marina Village Parkway, Alameda, CA 94501 (US).

(72) Inventors: MORAG, Assaf; 1067 Amarillo Avenue, Palo Alto, CA 94303 (US). GANNOT, Gary; 504 Village Drive, El Cerrito, CA 94530 (US). BAHARAV, Ofir; 6 Hohit Street, Neve-Rom, Ramat-Sharon (IL).

(74) Agents: GLENN, Michael et al.; Glenn Patent Group, Suite L., 3475 Edison Way, Menlo Park, CA 94025 (US).

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(54) Title: A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION

(57) Abstract: One aspect of this invention embodies a method of messaging upon a network involving at least one physician, at least one patient and a workflow engine. Each physician operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. Each patient operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. The workflow engine accesses the network for receiving and sending messages upon the network at a workflow engine address on the network. The method comprises using a first medical message wizard by the patient on the patient operated computer, a medical profiler process performed by the workflow engine and a second medical message wizard by the first physician on the physician operated computer at the first corresponding physician address.



WO 01/24098 A2

# **A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION**

## **TECHNICAL FIELD**

This invention relates to a messaging communication method and program  
5 system supporting communication between patients and physicians, physician  
extenders including nurses, and the ordering of prescriptions, alternatively  
supporting communication between clients, service providers, service  
extenders including service assistants and the ordering of services.

## **DESCRIPTION OF THE PRIOR ART**

Figure 1 depicts prior art human-computer interfaces capable of supporting  
messaging upon communications networks. One exemplary prior art  
computer system includes a display screen 2 in an enclosure 4, audio  
speakers 6 and 8, a second enclosure 10 housing a removable media drive  
12. Keyboard 14 is interfaced via physical transport mechanism 16 to the  
15 computer. Selector device 18 is interfaced via physical transport mechanism  
20 to the computer. Audio microphone 22 is interfaced via physical transport  
mechanism 24 to the computer. The computer system interfaces via physical  
transport mechanism 30 to network 32.

20 Certain exemplary prior art handheld computer interfaces are often single  
enclosures 40 incorporating a miniature display screen 42 with buttons 44 and  
a pointing device 46. The computer enclosure 40 is often held in one hand,  
while the pointing device 46 is held with the other hand. Wireless  
communications port 48 can both transmit 50 signals and receive 38 signals  
25 transmitted by wireless transceiver interface 36, which interfaces to network  
32 via physical transport mechanism 34. Other exemplary uses of such  
devices include mounting enclosure 40 on a wrist- or arm-band, thus freeing  
one hand.

Other exemplary prior art computer systems include but are not limited to devices incorporating one or more audio speakers such as 6 or 8, at least one audio microphone 22, which may or may not possess a display screen 2, but often possess a miniature display screen 42 and often several buttons 44 or  
5 keyboard 14. Cellular telephones, both hand held and vehicle-mounted, possessing all these features are readily available connecting to either local wireless networks or larger national and international networks, in some cases through orbiting satellite transceivers 36, which use separate carriers 34 to further interface to ground base stations which provide high bandwidth  
10 gateways to large Wide Area Networks (WANs), including the Internet and the World Wide Web.

These exemplary devices are often capable of receiving messages, such as e-mail and paging messages. Many of these exemplary devices are capable of audio exchanges in a fashion similar to a telephone with a telephone  
15 messaging center. Many of these exemplary devices may further support the loading and adding of programs to provide upgraded services and new service capabilities. Many of these systems possess the ability to retain such loaded or added programs after the power to the module has been turned off.

Such devices have been used to further provide a communication avenue  
20 between patients and physicians, through email and paging-style messages. Paging a doctor with a short message such as "Water has broken" may give an adequate portrayal of some situations such as the imminence of labor in childbirth. However, such a messaging system could not adequately portray the circumstances regarding a potential breach birth.

25 Traditional telephones have often been used to permit a physician and patient to communicate. However, there are problems with such devices. Telephones without answering or message centers require that both patient and physician be available at essentially the same time, which is often difficult to arrange. Telephones, even with messaging centers, still have problems.  
30 Often the stored messages are short in duration. Even when the messages

may be quite long, patients do not tend to give concise, clear and complete verbal medical descriptions of exactly the relevant conditions needed to describe their medical condition. This leads to a situation of question and answers, often with the patient and/or doctor having to wait significant amounts of time between each “bounce” before there is enough information in front of the physician to respond with a consultation. Further, physicians must listen through their patients messages, often wasting time trying to sort through the words to determine the observed medical conditions. This is an inefficient use of the physicians’ time.

Email exchanges between patients and physicians can provide greater amounts of information. However, there is a tendency to waste both patient and doctor time for several reasons. First, patients do not tend to write concise, clear and complete medical descriptions of exactly the relevant conditions needed to describe their medical condition. This is understandable, most people are not trained enough at medicine to know what a physician will need to know. This again leads to question and answer situations, often with the patient and doctor having to wait significant amounts of time between each “bounce” before there is enough information in front of the physician to respond with a consultation. Further, physicians must read what their patients have written, often wasting time trying to sort through the words to determine the observed medical conditions. This is an inefficient use of the physicians’ time.

The devices mentioned above have also been used to further provide a communication avenue between clients and service providers for various kinds of service support, through email and paging-style messages. Brief messages such as “flat tire” may convey adequate information in some circumstances but would be fundamentally inadequate in situations based around mission critical technologies such as aircraft.

Consider a commonly occurring scenario in the airline industry. A technician in an isolated location finds an intermittent failure in testing a system

possessing electromechanical, fluidic and airfoil control components, by way of example. The determination of the proper course of action involves decisions regarding each of these areas of the aircraft's technologists, combined with an understanding of the reliability history of the system  
5 involved and the relevant government and airline regulations. Client such as the local airport technician need access to high level, integrated service provider responses.

Traditional telephones have often been used to permit a service provider and client to communicate. However, there are problems with such devices.  
10 Telephones without answering or message centers require that both client and service provider be available at essentially the same time, which is often difficult to arrange or involve the clients waiting for extended periods of time "on hold". Telephones, even with messaging centers, still have problems. Often the stored messages are short in duration. Even when the messages  
15 may be quite long, clients do not tend to give concise, clear and complete verbal service descriptions of exactly the relevant conditions needed to describe their service condition. This leads to a situation of question and answers, often with the client and/or doctor having to wait significant amounts of time between each "bounce" before there is enough information in front of  
20 the service provider to respond with a consultation. Also, the expertise of the service providers may vary greatly, making the omission of specific questions possible, limiting the utility of the direct contact. Further, service providers must listen through their clients messages, often wasting time trying to sort through the words to determine the observed service conditions. This is an  
25 inefficient use of the service providers' time.

Email exchanges between clients and service providers can provide greater amounts of information. However, there is a tendency to waste both client and doctor time for several reasons. First, clients do not tend to write concise, clear and complete service descriptions of exactly the relevant conditions  
30 needed to describe their service condition. This is understandable, most people are not trained enough in the service area's technology to know what a

service provider will need to know. This again leads to question and answer situations, often with the client and doctor having to wait significant amounts of time between each “bounce” before there is enough information in front of the service provider to respond with a consultation. Further, service providers  
5 must read what their clients have written, often wasting time trying to sort through the words to determine the observed service conditions. This is an inefficient use of the service providers’ time.

Figure 2 depicts a generic prior art block of a messaging communications system supporting the online ordering of prescriptions by physicians  
10 interacting with pharmacies. Email and other messaging systems have been used to provide a limited form of automation for the placing of prescription orders with various pharmacies possessing online message capabilities. Physician **100** interacts **102** with a physician-operated computer **104**, which may be a desktop, notebook, or handheld computer, possibly embedded in a  
15 cellular telephone. The physician operated computer **104** sends a specialized message, a prescription ordering message, using physical transport mechanism **106** to a network **108**, which is controlled and accessed **110** by network server **112**. Network server **112** accesses **114** medical databases and patient database **116**. Network server **112** then sends a specialized  
20 pharmaceutical order message to a pharmacy computer **120** which is linked **118** to the same network **110**.

There is a central problem with such systems. The patient is not part of the interaction. The patient cannot choose whether to order the prescription. The patient cannot choose which pharmacy or where the pharmacy sends the  
25 prescription, or whether a traditional brick and mortar pharmacy is preferred. The patient cannot choose between different brands.

## **Summary of the Invention**

One aspect of this invention embodies a method of messaging upon a network involving at least one physician, at least one patient and a workflow engine. Each physician operates a computer, which from time to time is capable of receiving and sending messages upon the network at a corresponding address on the network. Each patient operates a computer, which from time to time, is capable of receiving and sending messages upon the network at a corresponding address on the network. The workflow engine accesses the network for receiving and sending messages upon the network using at least one workflow engine address on the network. The method comprises using a first medical message wizard by the patient on the patient operated computer, a medical profiler process performed by the workflow engine and a second medical message wizard by the first physician on the physician operated computer at the first corresponding physician address.

Using the first medical message wizard by the patient is further comprised of generating an educated query message and sending the educated query message to the medical profiler address. Performing the medical profiler process by the workflow engine is further comprised of receiving the educated query message at the medical profiler address; processing the received educated query message; generating a patient message log entry in a medical profile of the patient; generating a patient medical query message; sending the patient medical query message to a first physician with the corresponding physician address. Using the second medical message wizard by the first physician is further comprised of receiving the patient medical query message; processing the patient medical query message; generating a physician-viewable patient medical query message; and displaying a physician-viewable patient medical query message.

This embodiment of the invention has several advantageous characteristics: It minimizes the need for extensive typing for the patient. It decreases the need for message "ping-pong" between patient and physician due to insufficient

information in the patient's messages to the physician. It allows the physician to read in an optimized format, which minimizes the physician's reading time. In many cases, the physician will not need to poll a chart pool, because the medical profile will cover the required information. There is no need for phone  
5 tag with patients.

A further aspect of this invention involves further embodiments of the first messaging wizard, medical profiler process and second messaging wizard. The second medical message wizard further comprises responding to the  
10 physician-viewable patient medical query message; generating a patient response message; sending the patient response message; and copying the patient response message with an appended physician billing data to the workflow engine. Responding to the physician-viewable patient medical query message creates a first-physician response. Generating a patient response  
15 message from the physician-viewable patient medical query message and the first-physician response. Sending the patient response message to the patient at the corresponding patient address.

The medical profiler process further comprises: receiving the copied patient response message with the appended physician billing data; processing the  
20 received, copied patient response message with the appended physician billing data; generating a patient response log entry in the medical profile of the patient. Processing the received, copied patient response message with the appended physician billing data creates a processed, received, copied patient response message with the appended physician billing data. The  
25 generating a patient response log entry in the medical profile of the patient is from the processed, received, copied patient response message with the appended physician billing data.

The first message wizard further comprises: receiving the patient response message; processing the received patient response message to create a  
30 processed, received patient response message; and displaying the processed, received patient response message.

This aspect of the invention is advantageous for several reasons. It supports the physician responding to the optimized educated query of the patient. It supports the automated logging of physician responses with billing information at the workflow engine. It supports the patient receiving the physician's  
5 response.

Further embodiments of this invention advantageously support the use of authentication keys insuring secure communications between patient and workflow engine, between patient and physician and between physician and workflow engine.

10 Further embodiments of this invention advantageously support physician extenders, including nurses, physician assistants and administrators.

Further embodiments of this invention advantageously support prescriptions involving, not only the physician, workflow engine and pharmacy, but also the patient. This is advantageous for several reasons. The patient takes part in  
15 the prescription-ordering interaction. The patient can choose whether to order the prescription. The patient can choose which pharmacy to purchase the prescription from. The patient can choose where the pharmacy sends the prescription. The patient can choose whether a traditional brick and mortar pharmacy is preferred. The patient can choose between different brands.

20 Another aspect of this invention embodies a computer program residing on a computer readable medium accessible by the patient operated computer capable of receiving patient response messages and sending messages to a workflow engine. It includes code for receiving the patient response message with an embedded prescription; code for displaying the received patient  
25 response message; code for responding to the patient response message; code for sending the patient prescription message to the workflow engine. The code for responding to the patient response message further includes code for generating a patient prescription message from the embedded prescription.

This aspect of the invention is advantageous for several reasons. The patient takes part in the prescription-ordering interaction. The patient can choose whether to order the prescription. The patient can choose which pharmacy to purchase the prescription from. The patient can choose where the pharmacy  
5 sends the prescription. The patient can choose whether a traditional brick and mortar pharmacy is preferred. The patient can choose between different brands.

Another aspect of this invention embodies a method of messaging upon a network involving at least one service provider, at least one client and a  
10 service-flow engine. Each service provider operates a computer, which from time to time is capable of receiving and sending messages upon the network at a corresponding address on the network. Each client operates a computer, which from time to time, is capable of receiving and sending messages upon the network at a corresponding address on the network. The service-flow  
15 engine accesses the network for receiving and sending messages upon the network using at least one service-flow engine address on the network. The method comprises using a first service message interface by the client on the client operated computer, a service profiler process performed by the service-flow engine and a second service message interface by the first service  
20 provider on the service provider operated computer at the first corresponding service provider address.

Using the first service message interface by the client is further comprised of generating an educated query message and sending the educated query message to the service profiler address. Performing the service profiler  
25 process by the service-flow engine is further comprised of receiving the educated query message at the service profiler address; processing the received educated query message; generating a client message log entry in a service profile of the client; generating a client service query message; sending the client service query message to a first service provider with the  
30 corresponding service provider address. Using the second service message interface by the first service provider is further comprised of receiving the

client service query message; processing the client service query message; generating a service provider-viewable client service query message; and displaying a service provider-viewable client service query message.

This embodiment of the invention has several advantageous characteristics: It minimizes the need for extensive typing for the client. It decreases the need for message “ping-pong” between client and service provider due to insufficient information in the client’s messages to the service provider. It allows the service provider to read in an optimized format, which minimizes the service provider’s reading time. In many cases, the service provider will not need to poll a chart pool, because the service profile will cover the required information. There is no need for phone tag with clients.

A further aspect of this invention involves further embodiments of the first message interface, service profiler process and second message interface. The second service message interface further comprising responding to the service provider-viewable client service query message; generating a client response message; sending the client response message; and copying the client response message with an appended service provider billing data to the service-flow engine. Responding to the service provider-viewable client service query message creates a first-service provider response. Generating a client response message from the service provider-viewable client service query message and the first-service provider response. Sending the client response message to the client at the corresponding client address.

The service profiler process further comprises: receiving the copied client response message with the appended service provider billing data; processing the received, copied client response message with the appended service provider billing data; generating a client response log entry in the service profile of the client. Processing the received, copied client response message with the appended service provider billing data creates a processed, received, copied client response message with the appended service provider billing data. The generating a client response log entry in the service profile of

the client is from the processed, received, copied client response message with the appended service provider billing data.

The first message interface further comprises: receiving the client response message; processing the received client response message to create a  
5 processed, received client response message; and displaying the processed, received client response message.

This aspect of the invention is advantageous for several reasons. It supports the service provider responding to the optimized educated query of the client. It supports the automated logging of service provider responses with billing  
10 information at the service-flow engine. It supports the client receiving the service provider's response.

Further embodiments of this invention advantageously support the use of authentication keys insuring secure communications between client and service-flow engine, between client and service provider and between service  
15 provider and service-flow engine.

Further embodiments of this invention advantageously support service extenders, including service assistants, service provider assistants and administrators.

Further embodiments of this invention advantageously supports service  
20 recommendations involving the service provider, service-flow engine and supplier, but also the client. This is advantageous for several reasons. The client takes part in the service recommendation-ordering interaction. The client can choose whether to order the service recommendation. The client can choose which supplier to purchase the service recommendation from.  
25 The client can choose where the supplier sends the service recommendation. The client can choose whether a traditional brick and mortar supplier is preferred. The client can choose between different brands.

Another aspect of this invention embodies a computer program residing on a computer readable medium accessible by the client operated computer

capable of receiving client response messages and sending messages to a service-flow engine. It includes code for receiving the client response message with an embedded service recommendation; code for displaying the received client response message; code for responding to the client response  
5 message; code for sending the client service recommendation message to the service-flow engine. The code for responding to the client response message further includes code for generating a client service recommendation message from the embedded service recommendation.

This aspect of the invention is advantageous for several reasons. The client  
10 takes part in the service recommendation-ordering interaction. The client can choose whether to order the recommended service(s). The client can choose which supplier to purchase the recommended service(s) from. The client can choose where the supplier delivers the recommended service(s). The client can choose whether a traditional brick and mortar supplier is preferred. The  
15 client can choose between different brands.

These and other advantages of the present invention will become apparent upon reading the following detailed descriptions and studying the various figures of the drawings.

### **Brief Description of the Drawings**

Figure 1 depicts prior art human-computer interface capable of supporting messaging upon communications networks;

Figure 2 depicts a generic prior art block of a messaging communications  
5 system supporting the online ordering of prescriptions by physicians interacting with pharmacies;

Figure 3A depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments;

Figure 3B depicts a more detailed flow diagram of an embodiment of the  
10 invention in accordance with certain embodiments;

Figure 4 depicts an interactive flow between a patient using a first messaging wizard, medical profiler performing a medical profiler process and physician using a second messaging wizard in accordance with an embodiment of the invention;

15 Figure 5 depicts a flowchart of operations supporting the generation and sending of an educated query by a patient using the first messaging wizard in accordance with embodiments supporting Figure 4;

Figure 6 depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the patient, and the  
20 generation and sending of the patient medical query message to a physician by the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 4;

Figure 7 depicts a flowchart of operations supporting reception, processing and viewing the patient medical query message by the second message  
25 wizard for the physician in accordance with embodiments supporting Figure 4;

Figure 8 depicts a flowchart of operations supporting reception, generation and sending a patient response message, as well as copying the patient response message with an appended physician billing data to the medical profiler address in accordance with embodiments supporting Figure 4;

- 5 Figure 9 depicts a flowchart of operations supporting the reception, processing, logging the copied patient response message with an appended physician billing data by the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 4;

10 Figure 10 depicts a flowchart of operations supporting reception, processing and display of the patient response message using the first messaging wizard on the patient operated computer in accordance with embodiments supporting Figure 4;

15 Figure 11 depicts a flowchart of further details regarding operation 604, generation of an educated query message by the first messaging wizard in accordance with embodiments supporting Figure 5;

Figure 12 depicts a flowchart of further details regarding operation 638, processing the educated query message using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 6;

- 20 Figure 13 depicts a flowchart of further details regarding operation 642, generation of a patient medical query message by the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 6;

25 Figure 14 depicts a flowchart of further details regarding operation 678, processing the received patient medical query message by the second messaging wizard in accordance with embodiments supporting Figure 7;

Figure 15 depicts a flowchart of further details regarding operation 722, copying the patient response message with appended physician billing data to

the medical profiler by the second messaging wizard in accordance with embodiments supporting Figure 8;

Figure 16 depicts a flowchart of further details regarding operation 748, processing the received, copied the patient response message with appended  
5 physician billing data using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 9;

Figure 17 depicts a flowchart of further details regarding operation 708, generating patient response message using the second message wizard in accordance with embodiments supporting Figure 8;

10 Figure 18 depicts a flowchart of further details regarding operation 778, processing the received patient response message using the first message wizard in accordance with embodiments supporting Figure 10;

Figure 19 depicts a flowchart of further details regarding operation 712, sending the patient response message with appended physician billing data  
15 using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 8;

Figure 20 depicts a flowchart of further details regarding operation 708, generating the patient response message using the second message wizard in accordance with embodiments supporting Figure 8;

20 Figure 21 depicts a flowchart of operations of the medical profiler process performed by the medical profiler in accordance with alternative embodiments supporting Figure 4;

Figure 22 depicts a flowchart of further details regarding operation 1048, processing the patient response message destined for the patient using the  
25 medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 21;

Figure **23** depicts a flowchart of further details regarding operation **642**, generating a patient medical query message using the medical profiler process performed by the medical profiler in accordance with embodiments;

Figure **24** depicts a flowchart of operations using the third message wizard on the physician extender computer in accordance with embodiments supporting Figure **9**;

Figure **25** depicts a flowchart of further details regarding operation **602**, generating the physician-viewable patient medical query message in accordance with embodiments supporting Figures **7**;

Figure **26** depicts a flowchart of further details regarding operation **708**, generating the patient response message using the second message wizard in accordance with embodiments supporting Figure **8**;

Figure **27** depicts a flowchart of further operations embodying the third message wizard in accordance with certain embodiments;

Figure **28** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments;

Figure **29** depicts a flowchart of further operations embodied in a second messaging wizard in accordance with certain embodiments supporting prescriptions;

Figure **30** depicts a flowchart of further operations embodied in a medical profiler in accordance with certain embodiments supporting prescriptions;

Figure **30A** depicts a flowchart of further details regarding operation **1311**, integrating a prescription order in the medical profiler process in accordance with embodiments supporting Figure **30**;

Figure **31** depicts a flowchart of further operations embodied in the first messaging wizard in accordance with certain embodiments supporting prescriptions;

Figure **32** depicts a flowchart of further details of operation **1352**, ordering the embedded prescription of Figure **31**;

Figure **33** depicts a flowchart of further details of operation **1170** of Figure **25**;

Figure **34** depicts a flowchart of further details of operation **1222** of Figure **27**;

5 Figure **35** depicts a flowchart of further details of operation **1402** of Figure **34**;

Figure **36** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing patients;

10 Figure **37** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing patients;

Figure **38** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments;

Figure **39** depicts a flowchart of further details of operation **1518** of Figure **38**;

15 Figure **40** depicts a flowchart of further details of operation **708** of Figure **8** supporting a physician requesting a second opinion in accordance with certain embodiments;

20 Figure **41** depicts a flowchart of operations embodied in the second message wizard supporting a second physician and a second opinion request in accordance with certain embodiments;

Figure **42** depicts a flowchart of operations embodied in a second message wizard supporting maintaining a collection of patient response templates in accordance with certain embodiments;

25 Figure **43** depicts a flowchart of further details of operation **704** of Figure **8** supporting use of a patient response template to create a first-physician response in accordance with certain embodiments;

Figure **44** depicts a flowchart of operations embodied in a first messaging wizard to support maintaining a collection of patient problem templates in accordance with certain embodiments;

5 Figure **45** depicts a flowchart of further details of operation **604** of Figure 5 supporting use of a patient problem template to create an educated medical query using a first medical wizard in accordance with certain embodiments;

Figure **46** depicts a flowchart of operations embodied in a medical profiler process to generate and send patient problem templates to patients in accordance with certain embodiments;

10 Figure **47** depicts a flow diagram of a medical profiler process in accordance with certain embodiments;

Figure **48** depicts a flow diagram of a computer program capable of receiving a message from a physician containing a prescription and responding to the message containing the prescription by generating and sending a prescription  
15 order message in accordance with certain embodiments in accordance with an aspect of the invention;

Figure **49** depicts a flowchart of further details of the code of **1854** of Figure **48** supporting receiving a patient response message with an embedded prescription in accordance with certain embodiments; and

20 Figure **50** depicts a flowchart of further details of the code of **1862** of Figure **48** supporting responding to the patient response message in accordance with certain embodiments.

Figure **50A** depicts a flowchart of further details of **1311** of Figure **30** supporting integrating a prescription order in accordance with certain  
25 embodiments;

Figure **50B** depicts a flowchart of further details of **1324** of Figure **30A** supporting generating a pharmacy prescription order in accordance with certain embodiments;

Figure **50C** depicts a flowchart of further details of **1326** of Figure **30A** supporting sending a pharmacy prescription order to a pharmacy in accordance with certain embodiments;

Figure **50D** depicts a flowchart of further details of **1106** of Figure **23**  
5 supporting determining a routing chain of physician extenders and embedding the routing chain into a second patient query in accordance with certain embodiments;

Figure **50E** depicts a flowchart of further details of **1178** of Figure **24** supporting determining successor physician extenders in an embedded  
10 physician extender routing chain, generating a successor medical query message with embedded proposed patient response and sending the successor patient medical query to the successor physician extender;

Figure **50F** depicts a flowchart of further details of **646** of Figure **6** supporting generating a routing tree of physicians with first physician final destination and  
15 source list of physicians, generating and sending a source medical query to each physician included in the physician source list;

Figure **51** depicts a more detailed flow diagram of an embodiment of the invention in accordance with certain embodiments;

Figure **52** depicts an interactive flow between a client using a first message  
20 interface, service profiler performing a service profiler process and service provider using a second message interface in accordance with an embodiment of the invention;

Figure **52A** depicts an interactive flow between a client using a first message interface, service profiler performing a service profiler process and service  
25 provider using a second message interface in accordance with a further embodiment of the invention;

Figure 53 depicts a flowchart of operations supporting the generation and sending of an educated query by a client using the first message interface in accordance with embodiments supporting Figure 52;

Figure 54 depicts a flowchart of operations supporting the reception,  
5 processing, logging of the educated query message from the client, and the generation and sending of the client service query message to a service provider by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure 52;

Figure 55 depicts a flowchart of operations supporting reception, processing  
10 and viewing the client service query message by the second message interface for the service provider in accordance with embodiments supporting Figure 52;

Figure 56 depicts a flowchart of operations supporting reception, generation and sending a client response message, as well as copying the client  
15 response message with an appended service provider billing data to the service profiler address in accordance with embodiments supporting Figure 52;

Figure 57 depicts a flowchart of operations supporting the reception, processing, logging the copied client response message with an appended  
20 service provider billing data by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure 52;

Figure 58 depicts a flowchart of operations supporting reception, processing and display of the client response message using the first message interface on the client operated computer in accordance with embodiments supporting  
25 Figure 52;

Figure 59 depicts a flowchart of further details regarding operation 2604, generation of an educated query message by the first message interface in accordance with embodiments supporting Figure 53;

Figure **60** depicts a flowchart of further details regarding operation **2638**, processing the educated query message using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **54**;

- 5 Figure **61** depicts a flowchart of further details regarding operation **2642**, generation of a client service query message by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **54**;

- 10 Figure **62** depicts a flowchart of further details regarding operation **2678**, processing the received client service query message by the second message interface in accordance with embodiments supporting Figure **55**;

- 15 Figure **63** depicts a flowchart of further details regarding operation **2722**, copying the client response message with appended service provider billing data to the service profiler by the second message interface in accordance with embodiments supporting Figure **56**;

Figure **64** depicts a flowchart of further details regarding operation **2748**, processing the received, copied the client response message with appended service provider billing data using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **57**;

- 20 Figure **65** depicts a flowchart of further details regarding operation **2708**, generating client response message using the second message interface in accordance with embodiments supporting Figure **56**;

- 25 Figure **66** depicts a flowchart of further details regarding operation **2778**, processing the received client response message using the first message interface in accordance with embodiments supporting Figure **58**;

Figure **67** depicts a flowchart of further details regarding operation **2712**, sending the client response message with appended service provider billing

data using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure 56;

Figure 68 depicts a flowchart of further details regarding operation 2708, generating the client response message using the second message interface  
5 in accordance with embodiments supporting Figure 56;

Figure 69 depicts a flowchart of operations of the service profiler process performed by the service profiler in accordance with alternative embodiments supporting Figure 52;

Figure 70 depicts a flowchart of further details regarding operation 3048,  
10 processing the client response message destined for the client using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure 69;

Figure 71 depicts a flowchart of further details regarding operation 2642, generating a client service query message using the service profiler process  
15 performed by the service profiler in accordance with embodiments;

Figure 72 depicts a flowchart of operations using the third message interface on the service extender computer in accordance with embodiments supporting Figure 57;

Figure 73 depicts a flowchart of further details regarding operation 2602,  
20 generating the service-provider-viewable client service query message in accordance with embodiments supporting Figures 55;

Figure 74 depicts a flowchart of further details regarding operation 2708, generating the client response message using the second message interface in accordance with embodiments supporting Figure 56;

25 Figure 75 depicts a flowchart of further operations embodying the third message interface in accordance with certain embodiments;

Figure **76** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments;

Figure **77** depicts a flowchart of further operations embodied in a second message interface in accordance with certain embodiments supporting  
5 service recommendations;

Figure **78** depicts a flowchart of further operations embodied in a service profiler in accordance with certain embodiments supporting service recommendations;

Figure **78A** depicts a flowchart of further details regarding operation **3311**,  
10 integrating a service order in the service profiler process in accordance with embodiments supporting Figure **78**;

Figure **79** depicts a flowchart of further operations embodied in the first message interface in accordance with certain embodiments supporting service recommendations;

15 Figure **80** depicts a flowchart of further details of operation **3352**, ordering the embedded service recommendation of Figure 79;

Figure **81** depicts a flowchart of further details of operation **3170** of Figure **73**;

Figure **82** depicts a flowchart of further details of operation **3222** of Figure **75**;

Figure **83** depicts a flowchart of further details of operation **3402** of Figure **82**;

20 Figure **84** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing clients;

Figure **85** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting  
25 billing clients;

Figure **86** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments;

Figure **87** depicts a flowchart of further details of operation **3518** of Figure **86**;

Figure **88** depicts a flowchart of further details of operation **2704** of Figure **56**  
5 supporting a service provider requesting a second opinion in accordance with certain embodiments;

Figure **89** depicts a flowchart of operations embodied in the second message interface supporting a second service provider and a second opinion request in accordance with certain embodiments;

10 Figure **90** depicts a flowchart of operations embodied in a second message interface supporting maintaining a collection of client response templates in accordance with certain embodiments;

Figure **91** depicts a flowchart of further details of operation **2704** of Figure **56**  
15 supporting use of a client response template to create a first-service-provider response in accordance with certain embodiments;

Figure **92** depicts a flowchart of operations embodied in a first message interface to support maintaining a collection of client problem templates in accordance with certain embodiments;

Figure **93** depicts a flowchart of further details of operation **2604** of Figure **53**  
20 supporting use of a client problem template to create an educated service query using a first service interface in accordance with certain embodiments;

Figure **94** depicts a flowchart of operations embodied in a service profiler process to generate and send client problem templates to clients in accordance with certain embodiments;

25 Figure **95** depicts a flow diagram of a service profiler process in accordance with certain embodiments;

Figure **96** depicts a flow diagram of a computer program capable of receiving a message from a service provider containing a service recommendation and responding to the message containing the service recommendation by generating and sending a service order message in accordance with certain  
5 embodiments in accordance with an aspect of the invention;

Figure **97** depicts a flowchart of further details of the code of **3854** of Figure **96** supporting receiving a client response message with an embedded service recommendation in accordance with certain embodiments; and

Figure **98** depicts a flowchart of further details of the code of **3862** of Figure  
10 **96** supporting responding to the client response message in accordance with certain embodiments.

Figure **98A** depicts a flowchart of further details of **3311** of Figure **78** supporting integrating a service order in accordance with certain embodiments;

15 Figure **98B** depicts a flowchart of further details of **3324** of Figure **78A** supporting generating a supplier service order in accordance with certain embodiments;

Figure **98C** depicts a flowchart of further details of **3326** of Figure **78A** supporting sending a supplier service order to a supplier in accordance with  
20 certain embodiments;

Figure **98D** depicts a flowchart of further details of **3106** of Figure **71** supporting determining a routing chain of service extenders and embedding the routing chain into a second client query in accordance with certain embodiments;

25 Figure **98E** depicts a flowchart of further details of **3178** of Figure **72** supporting determining successor service extenders in an embedded service extender routing chain, generating a successor medical query message with

embedded proposed client response and sending the successor client medical query to the successor service extender;

Figure **98F** depicts a flowchart of further details of **2646** of Figure **53** supporting generating a routing tree of service providers with first service  
5 provider final destination and source list of service providers, generating and sending a source medical query to each service provider included in the service provider source list;

### **Detailed Description of the Invention**

Figure 1 and 2 refer to prior art and were previously discussed in the Background of the invention.

Discussion of Primary Terms as used herein:

- 5 A message will refer to a communication session with a source and a destination whose contents can be described in a digital fashion. Examples of messages include but are not limited to phone mail, email and pager messages.

- 10 A medical profile of a patient is a collection of information residing in some computer accessible media which from time to time a computer may be able to access.

- 15 The medical profiler process is the system-wide activities which are performed in an automated fashion by the workflow engine to facilitate the medical communication between patients, physicians, physician extenders and pharmacies to support at least the following: medical queries, replies and transactions involved in prescriptions.

- 20 The workflow engine is the mechanism performing the collection of operations known as the medical profiler process. It has at least one address on the network shared with patients, physicians, physician extenders and pharmacies. Note that this shared network may in fact be partitioned into a collection of networks, each possessing gateways, firewalls and the like as is well known in the art. Note that the workflow engine may include but is not limited to one computer, and in fact, in certain embodiments preferably involves more than one server computer as will be discussed later.

- 25 A patient as used herein will have two components of meaning: the first component being the entity about whose health the medical profile, query messages, response message and prescriptions are directed; the second is the responsible adult acting for the patient in all the transactions, such as

generating the query messages, receiving and considering the response messages and ordering the prescriptions. Note that a list of the first component entities includes but is not limited to pets, trees, children, the physically incapacitated, the mentally incapacitated and the emotionally  
5 incapacitated.

Figure **3A** depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. There are two main flows of information likely to be prevalent with users of this invention. The most common flow would be a patient **200** initiate **202** query **204**, where the patient  
10 will launch an electronic message **206**. These messages can subcategorized in four main groups- Request a refill, Schedule an appointment, Consult symptoms with the physician **212** and page the physician **212**. The second possible flow is initiation of messages by the clinic/physician **212** aimed at broadcasting information to patients **200**.

15 At the time of registration or post sending the first consultation/refill request the patient **200** is being asked to fill in his/her medical profile **208**. Medical profile **208** would contain the patient **200**'s medication list, allergies, problems and demographics. The medical profile **208** is then validated by the patient **200**'s medical staff and is approved. Once approved the medical profile **208** is  
20 locked and the patient **200** may not alter the profile. The profile **208** is updated automatically by transactions made by the workflow engine or by the patient's medical staff. In the event that the patient **200** wants to edit the medical profile **208** then the patient initiates a query **204** to the medical staff informing them that the profile needs corrections. The medical staff can with one click  
25 approve the patient query **204** and update the profile **208**.

Figure **3A** portrays the typical flow of a patient **200** initiated query **204**. The patient **200** through the use of a wizard **202**, initiates an educated query **204**. Using a problem-related database and knowledge of the patient medical profile **208**, the application generates a problem specific questioner (form).  
30 This form is both problem and patient **200** specific. The form is advantageous

in that it removes the need for a great deal of typing on behalf of the patient **200**. It is further advantageous in decreasing the need for message ping pong between the patient **200** and the physician **212** due to insufficient data. It is further advantageous in allowing the physician **212** to read a more  
5 readable and intelligent format than that of a patient **200** free text waffle.

The next step in the flow of the message is attaching the summary of the patient medical record or as we call it 'medical profile' **208** to the message. The patient **200** initiates the medical profile at the point of registration to the workflow engine or at the time of the first refill/consult request. The patient  
10 **200** is asked by the workflow engine to fill in his/her medical profile i.e. problems allergies and medications. This medical profile **208** is interactive and will be later validated by the nurse **242** or physician **212**. Once validated for the first time it is locked and the patient **200** can no longer tamper with the data. Any prescription **252** sent through the workflow engine automatically  
15 updates the medical profile **208**. The patient **200** may add data to the 'locked' medical profile **208** but that data will not be embedded in the medical profile **208** prior to the physician **212** or his staff validating the new data. The workflow engine attaches the medical profile **208** to any patient related document thus avoids the need for a chart pull at the point of care, plus it  
20 allows the patient **200** to present the medical profile **208** to foreign physicians **212** when on the move.

The workflow engine then takes the message and the medical profile **208** attached and routes it to the proper physician extender according to the type of message sent. As an example, a refill messages would be routed to the  
25 nurse **242**, an urgent scheduling query will also get to the nurse **242**, a non-urgent query will be routed to the scheduling desk. This process allows the physician **212** to share the workload with his extenders.

Each member of the physician's staff can create his own canned replies **246**. These are replies that were typed once by the staff were saved and may be  
30 pasted with two clicks to message bodies of future replies. With many

physicians complaining about repetitious replies to their patients this tool allows both the saving of time and a reduction in typing need. The pasted 'canned replies' are then editable and customizable.

Once edited and filled by the medical staff the messages are routed to the physician **212** who in most cases needs to do nothing more then approve his staff's work and in a single click send the message to the patient **200**. The physician **212** at this stage may determine a fee for the service and add educational material **220** and pointers (from a library) to sites of further patient education. The workflow engine notifies the patient **200** via regular e-mail ([patient@aol.com](mailto:patient@aol.com)) that a message is waiting for him in his Healinx inbox and provides an hyperlink to lead the patient **200** to his Healinx inbox.

The physician/physician extender may also prescribe medication and attach it to the outgoing message, this in turn checks the medication using a licensed database against the patient's medical profile for drug/drug, drug/allergy conflicts and alerts the physician. It also allows us to attach education material to the prescription alerting the patient **200** for possible side effects and actions that should or should not be taken with the prescribed medication. Education material **220** taken from the database is attached to the prescription and can be viewed by the patient **200**.

The patient **200** reading the message views the embedded prescription and has the choice of ordering **264** the prescription in the pharmacy of his choice to be delivered from an online pharmacy **260** or to be picked up from his favorite brick and mortar traditional pharmacy **260**. In addition in the event that the patient **200** is on the move then he may choose with a single click the closest pharmacy **260** and the prescription will be electronically shipped to that pharmacy **260** at no extra cost or hassle.

Physicians **212** may set the workflow engine to allow patient **200** paging, the message **204** typed by the patient **200** will be sent to the physician **212** over pager or phone. The physician **212** can then request **214** additional information such as the patient medical profile and initiate a call back **216** to

the patient **200**. The physician **212** may set up the times of day he willing to be accessible by pager and the pricing per beep dependant on the time of day.

Further embodiments of the invention support the workflow engine creating  
5 routing chains of physician extenders starting with a first physician extender proceeding through successor physician extenders until the routing chain terminates with a physician reviewing the collective proposed patient response. The routing chain may be generated by the workflow engine based upon the patient's educated query message.

10 Further embodiments of the invention support the workflow engine creating routing trees of physicians with patent query messages starting with a source list of physicians, possibly routing to intermediate physicians and culminating in a first physician who reviews the collective physician responses to their respective patient medical queries.

15 Using outsourced solutions, the patients **200** can monitor their readings of blood pressure, sugar level, or other monitoring and transmit it to Healinx. We then take the readings and imbed these in the patient medical profile **208**. If abnormal readings are found both patient **200** and physician **212** are notified.

Through an embedded database and the patient's medical profile **208** the  
20 workflow engine searches for patient **200** as to who should schedule a preventive examination. As an example the workflow engine would remind all women 25-45 to schedule a mammogram. The workflow engine will hold a customized preventive health calendar per patient **200** and remind that patient **200** to schedule an appointment if needed.

25 Through the medical profile **208** of patient **200**'s the workflow engine will allow clinics to search for certain patient characteristics. Using this filter the clinic can rapidly create variable patient mailing lists to which they can mail at once. For example in the event that the clinic seeks to contact all males aged 25-45 who are smokers that take Prozac.

Further embodiments of the invention include the capability for a vendor to author templates and routing them through an authoring tool. Templates would be descriptions of the most common customer queries. The templates would support the customer diagnostics of the problem and allow the customer to provide a comprehensive description of the problem encountered.

The customer can then be provided with the most common solutions to the diagnosis. And allow the client to choose whether the off-the-shelf reply is adequate or not. If not then the customer may send the query to the vendor. For premium pricing the customer may page and get an immediate phone response.

Identifying the template used allows triage of the mail into the most adequate department for reply. This allows the people in charge of replying to customize their replies and paste these in the message body. The message according to its severity can then be sent to a supervisor for approval or directly to the patient **200**.

The vendor may attach a prescription (the spare part needed) and allow the patient **200** to choose the most convenient service center. The order is then sent to a service center of the customer's **200** choice and authorization and pricing of the entire service are controlled by the vendor.

Figure **3B** depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. Patient **200** is the primary initiator of this invention. Arrow **202** depicts the interactions of patient **200** to create the educated query message **204**. The educated query message **204** is an optimized medical query directed by the patient to address concerns and conditions involving the patient. Arrow **206** depicts the sending of educated query message **204** to the medical profile **208** which is managed by the medical profiler process. The workflow engine performs the various medical profiler process operations. More will be said about the workflow engine shortly. Arrow **210** depicts interactive communication between the workflow engine **208** and the physicians **212** primarily regarding the medical profiler.

Physicians **212** are the central destination of patient generated educated medical query messages as sent by **210** from the medical profiler process to the physician **212**. Arrow **214** depicts the response of physician **212** to the educated query message, generating a consultative response **216**.  
5 Consultation **216** provides the basis of the patient response message **226**. Arrow **218** depicts the inclusion of the physician consultative response **216** with educational material **220**. Educational material **220** is included in certain, but not all cases, to meet mandated regulations as well as provide the physicians a mechanism to distribute standard material regarding various  
10 conditions and treatments. Arrow **222** depicts the workflow engine activities required to incorporate the consultative response and included materials **220** with billing information (charging) **224**. Charging **224** performs tasks of notifying a patient medical profile of the consultative transaction, what was the query, response, educational materials included and the medical service  
15 expenses. Arrow **226** depicts the actual patient response message derived from **224** query, physician response, educational materials included and the medical service expenses sent to patient **200**.

Arrow **230** depicts the message information flow from the workflow engine to physician extender **232**. Physician extenders **232** perform a number of  
20 medical service tasks under the direction of physicians **212**. Arrow **234** depicts the sending of proposed patient response messages generated by physician extenders **232** to a physician **212**. Arrow **240** depicts another message information flow from the workflow engine to a nurse **242**. While nurses are physician extenders, a nurse **242** performs a specific additional  
25 task distinguishing them from other physician extenders, such as physician assistants and administrators. Nurse **242** can propose prescription refills for example. Arrow **244** depicts the sending of proposed patient response message, which may further include proposed embedded prescription refills, from nurse **242** to physician **246**.

30 Physician **212** performs a review on the proposed patient response messages from physician extenders, including nurses, as delivered by arrows **234** and

**244.** Template replies **246** offer the capability for physicians to optimize the quality and efficiency of response in making many standard replies. Arrow **248** depicts the interaction between template replies **246** and physician **212**.

Arrow **250** depicts the information and activity flow based upon the consultative response **216** and the placing of a prescription message **252**. Prescription message **252** is created based upon the physician's consultative response **216**, which in turn is based upon the patient's medical query message and possibly a nurse's proposed prescription refill. Arrow **254** depicts sending a prescription message **252** to ordering process **256**. Patient **200** receives the patent response message **226**, and may respond by ordering the embedded prescription, which is depicted by arrow **264** indicating a patient prescription message sent to ordering process **256**. Ordering process **256** waits until both the physician prescription message **254** and patient prescription message **264** have been received and processed before the order **258** is actually placed with pharmacy **260**. Pharmacy **260** sends the prescription to patient **300** as indicated by arrow **362**.

Figure **4** depicts an interactive flow between a patient using a first messaging wizard, workflow engine performing a medical profiler process and physician using a second messaging wizard in accordance with an embodiment of the invention. Patient **300** interacts **302** with patient operated computer **304**, which can access **306** and perform the operations of first messaging wizard **308**. Physician **350** interacts **352** with physician operated computer **354**, which can access **356** and perform the operations of second messaging wizard **358**. Physician extender **400** interacts **402** with physician extender operated computer **404**, which can access **406** and perform the operations of second messaging wizard **408**.

Patient **300** using first messaging wizard **308** on patient operated computer **304** generates **310** educated query message **312** and sends it **314** to workflow engine **320** where it is received by medical profiler process **322**. Medical profiler process **322** generates **324** patient message log entry **326**,

which is added **328** to the patient medical profile **330**. Medical profiler process **322** further generates **340** patient medical query message **342**, which is sent **344** to physician operated computer **354**.

Physician **350** using second messaging wizard **358** on physician operated computer **354** receives and responds to the patient medical query message **342**, generating **360** a patient response message **362**, which in certain embodiments is sent **364** directly to the patient operated computer **304**. In certain alternative embodiments, patient response message **362** is sent **370** to the workflow engine, where the medical profiler process **322** then sends **372** a version to the patient operated computer **304**. Physician **350** using second messaging wizard **358** on physician operated computer **354** further responds to the patient medical query message **342**, generating a patient response message with appended physician billing data **382**, which is sent **384** to to the workflow engine, where the medical profiler process **322** then generates **390** a patient response log entry **392** which is added **394** to the patient medical profile **330**.

In certain situations, a prescription is embedded into patient response message **362** by the physician **350** using second messaging wizard **358** on physician operated computer **354** in response to the patient medical query message **342**, which embedded into the patient response message **362**. Physician **350** using second messaging wizard **358** on physician operated computer **354** also generates **480** physician prescription message **482**, which is sent **484** to the workflow engine using the medical profiler process **322**. Patient **300** using first messaging wizard **308** on patient operated computer **304** generates **490** patient prescription order message **492** and sends it **494** to workflow engine **320** where it is received by medical profiler process **322**. Once both physician prescription message **482** and patient prescription order message **492** have been received and authenticated, the medial profiler process **322** generates **500** a pharmacy prescription order message **502** which is sent **504** to the pharmacy computer **506**.

Medical profiler process **322** accesses **510** the patient medical profile **330** to generate **512** patient billing report message **514** which is sent **516** to billing system **518**. Note that the billing system **518** in certain embodiments is a separate system element external to the workflow engine. In certain  
5 alternative embodiments, billing system **518** resides within the operations performed by the workflow engine. In certain further embodiments, billing system **518** is part of the medical profiler process.

Medical profiler process **322** further generates **400** a second patient medical query message **402**, which is sent **404** to physician extender operated  
10 computer **414**. Physician extender **410** using third messaging wizard **418** on physician operated computer **414** receives and responds to the second patient medical query message **412**, generating **430** a proposed patient response message **432**, which is sent **434** directly to the physician operated computer **354**, where it is inserted into the patient medical query message  
15 **342**. In certain alternative embodiments, patient response message **432** is sent **436** to the workflow engine, where the medical profiler process **322** then sends a version to the physician operated computer **354**. Physician extender **410** using third messaging wizard **418** on physician operated computer **414** further responds **440** to the second patient medical query message **402**,  
20 generating a proposed patient response message with appended physician extender billing data **442**, which is sent **444** to the workflow engine, where the medical profiler process **322** then generates **450** a proposed patient response with appended physician extender billing data log entry **452** which is added **454** to the patient medical profile **330**.

25 Note that in the flowcharts included herein, the starting operation of a flowchart may perform operations to allocate systems resources for use by the subsequent operations of the flowchart in certain embodiments. The starting operation of a flowchart may further perform initialize systems resources in certain embodiments.

Note also that in the flowcharts included herein, the terminating or exit operation of a flowchart may perform operations to release allocated systems resources used by the subsequent operations of the flowchart in certain embodiments. The terminating operation of a flowchart may further perform a  
5 “return” operation in certain embodiments. Alternatively, the terminating operation of a flowchart may not perform a “return” operation in certain embodiments.

Figure 5 depicts a flowchart of operations supporting the generation and sending of an educated query by a patient using the first messaging wizard in  
10 accordance with embodiments supporting Figure 4. Operation **600** starts the operations of this flowchart. Arrow **602** directs the flow of execution from operation **600** to operation **604**. Operation **604** performs generating of an educated query message. Arrow **606** directs execution from operation **604** to operation **608**. Operation **608** performs sending the educated query message  
15 to the workflow engine. Arrow **610** directs execution from operation **608** to operation **612**. Operation **612** terminates the operations of this flowchart.

Figure 6 depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the patient, and the generation and sending of the patient medical query message to a physician  
20 by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 4. Operation **630** starts the operations of this flowchart. Arrow **632** directs the flow of execution from operation **630** to operation **634**. Operation **634** performs receiving the educated query message at the workflow engine. Arrow **636** directs  
25 execution from operation **634** to operation **638**. Operation **638** performs processing the received educated query message to create the processed, received educated query message. Arrow **640** directs execution from operation **638** to operation **642**. Operation **642** performs generating a patient medical query message. Arrow **644** directs execution from operation **642** to  
30 operation **646**. Operation **646** performs sending the patient medical query message to first physician at corresponding physician address. Arrow **648**

directs execution from operation **646** to operation **650**. Operation **650** terminates the operations of this flowchart.

In certain embodiments, operation **646** further includes selecting a first physician. In certain further embodiments, operation **646** further includes  
5 selecting a first physician based upon the received educated query message. In certain further embodiments, operation **646** further includes selecting a first physician based upon the processed, received educated query message.

Arrow **652** directs the flow of execution from starting operation **638** to operation **654**. Operation **654** performs generating a patient message log  
10 entry in the patient medical profile. Arrow **656** directs execution from operation **654** to operation **650**.

Figure **7** depicts a flowchart of operations supporting reception, processing and viewing the patient medical query message by the second message wizard for the physician in accordance with embodiments supporting Figure **4**.  
15 Operation **670** starts the operations of this flowchart. Arrow **672** directs the flow of execution from operation **670** to operation **674**. Operation **674** performs receiving the patient query message. Arrow **676** directs execution from operation **674** to operation **678**. Operation **678** performs processing the received patient medical query message to create the processed, received  
20 patient medical message. Arrow **680** directs execution from operation **678** to operation **682**. Operation **682** performs generating a physician-viewable patient medical query message from the processed, received patient medical query message. Arrow **684** directs execution from operation **682** to operation **686**. Operation **686** performs displaying the physician-viewable patient  
25 medical query message. Arrow **688** directs execution from operation **686** to operation **690**. Operation **690** terminates the operations of this flowchart.

Figure **8** depicts a flowchart of operations supporting reception, generation and sending a patient response message, as well as copying the patient response message with an appended physician billing data to the workflow  
30 engine in accordance with embodiments supporting Figure **4**. Operation **700**

starts the operations of this flowchart. Arrow **702** directs the flow of execution from operation **700** to operation **704**. Operation **704** performs responding to the physician-viewable patient medical query message to create a first-physician response. Arrow **706** directs execution from operation **704** to  
5 operation **708**. Operation **708** performs generating a patient response message from the first-physician response. Arrow **710** directs execution from operation **708** to operation **712**. Operation **712** performs sending the patient response message to the patient at the corresponding patient address. Arrow **714** directs execution from operation **712** to operation **716**. Operation **716**  
10 terminates the operations of this flowchart.

Arrow **720** directs the flow of execution from starting operation **708** to operation **722**. Operation **722** performs copying the patient response message with appended physician billing data to workflow engine. Arrow **724** directs execution from operation **722** to operation **716**.

15 Figure **9** depicts a flowchart of operations supporting the reception, processing, logging the copied patient response message with an appended physician billing data by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 4. Operation **740** starts the operations of this flowchart. Arrow **742** directs the  
20 flow of execution from operation **740** to operation **744**. Operation **744** performs receiving the copied patient response message with appended physician billing data. Arrow **746** directs execution from operation **744** to operation **748**. Operation **748** performs processing the received, copied patient response message with appended physician billing data to create the  
25 processed, received, copied patient response message with appended physician billing data. Arrow **750** directs execution from operation **748** to operation **752**. Operation **752** performs generating a patient response log entry in patient medical profile from the processed, received, copied patient response message with appended physician billing data. Arrow **754** directs  
30 execution from operation **752** to operation **756**. Operation **756** terminates the operations of this flowchart.

Figure **10** depicts a flowchart of operations supporting reception, processing and display of the patient response message using the first messaging wizard on the patient operated computer in accordance with embodiments supporting Figure **4**. Operation **Q0** starts the operations of this flowchart. Arrow **772**  
5 directs the flow of execution from operation **770** to operation **774**. Operation **774** performs receiving the patient response message. Arrow **776** directs execution from operation **774** to operation **778**. Operation **778** performs processing the received patient response message, to create a processed, received patient response message. Arrow **780** directs execution from  
10 operation **778** to operation **782**. Operation **782** performs displaying the processed, received patient response message. Arrow **784** directs execution from operation **782** to operation **786**. Operation **786** terminates the operations of this flowchart.

Figure **11** depicts a flowchart of further details regarding operation **604**,  
15 generation of an educated query message by the first messaging wizard in accordance with embodiments supporting Figure **5**. Arrow **800** directs the flow of execution from starting operation **604** to operation **802**. Operation **802** performs providing a patient-to-profiler authentication key. Arrow **804** directs execution from operation **802** to operation **806**. Operation **806** performs  
20 encrypting the educated query message with patient-to-profiler authentication key. Arrow **808** directs execution from operation **806** to operation **810**. Operation **810** terminates the operations of this flowchart.

Figure **12** depicts a flowchart of further details regarding operation **638**, processing the educated query message using the medical profiler process  
25 performed by the workflow engine in accordance with embodiments supporting Figure **6**. Arrow **820** directs the flow of execution from starting operation **638** to operation **822**. Operation **822** performs providing a profiler-from-patient authentication key. Arrow **824** directs execution from operation **822** to operation **826**. Operation **826** performs decrypting the received,  
30 educated query message with profiler-from-patient authentication key. Arrow

**828** directs execution from operation **826** to operation **830**. Operation **830** terminates the operations of this flowchart.

Figure **13** depicts a flowchart of further details regarding operation **642**, generation of a patient medical query message by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 6. Arrow **850** directs the flow of execution from starting operation **642** to operation **852**. Operation **852** performs providing profiler-from-first-physician authentication key. Arrow **854** directs execution from operation **852** to operation **856**. Operation **856** performs encrypting patient medical query message with profiler-from-first-physician authentication key. Arrow **858** directs execution from operation **856** to operation **860**. Operation **860** terminates the operations of this flowchart.

Figure **14** depicts a flowchart of further details regarding operation **678**, processing the received patient medical query message by the second messaging wizard in accordance with embodiments supporting Figure 7. Arrow **880** directs the flow of execution from starting operation **678** to operation **882**. Operation **882** performs providing a first-physician-from-profiler authentication key. Arrow **884** directs execution from operation **882** to operation **886**. Operation **886** performs decrypting the received patient medical query message with the first-physician-from-profiler authentication key. Arrow **888** directs execution from operation **886** to operation **890**. Operation **890** terminates the operations of this flowchart.

Figure **15** depicts a flowchart of further details regarding operation **722**, copying the patient response message with appended physician billing data to the workflow engine by the second messaging wizard in accordance with embodiments supporting Figure 8. Arrow **900** directs the flow of execution from starting operation **722** to operation **902**. Operation **902** performs providing a first-physician-to-profiler authentication key. Arrow **904** directs execution from operation **902** to operation **906**. Operation **906** performs encrypting the patient response message with appended physician billing data

with the first-physician-to-profiler authentication key. Arrow **908** directs execution from operation **906** to operation **910**. Operation **910** performs sending first-physician-to-profiler encrypted patient response message with appended physician billing data to the workflow engine. Arrow **912** directs  
5 execution from operation **910** to operation **914**. Operation **914** terminates the operations of this flowchart.

Figure **16** depicts a flowchart of further details regarding operation **748**, processing the received, copied the patient response message with appended physician billing data using the medical profiler process performed by the  
10 workflow engine in accordance with embodiments supporting Figure **9**. Arrow **930** directs the flow of execution from starting operation **748** to operation **932**. Operation **932** performs providing a profiler-from-first-physician authentication key. Arrow **934** directs execution from operation **932** to operation **936**. Operation **936** performs decrypting the received, copied patient response  
15 message with appended physician billing data with the profiler-from-first physician authentication key to create the processed, received patient response message with appended physician billing data. Arrow **938** directs execution from operation **936** to operation **940**. Operation **940** terminates the operations of this flowchart.

20 Figure **17** depicts a flowchart of further details regarding operation **708**, generating patient response message using the second message wizard in accordance with embodiments supporting Figure **8**. Arrow **950** directs the flow of execution from starting operation **708** to operation **952**. Operation **952** performs providing first-physician-to-patient authentication key. Arrow **954**  
25 directs execution from operation **952** to operation **956**. Operation **956** performs generating an unencrypted patient response message from the physician-viewable patient medical query message and the first-physician response. Arrow **958** directs execution from operation **956** to operation **960**. Operation **960** performs encrypt the unencrypted patient response message  
30 with the first-physician-to-patient authentication key to create the patient

response message. Arrow **962** directs execution from operation **960** to operation **964**. Operation **964** terminates the operations of this flowchart.

Note that operations **952** and **956** may be performed either in the order presented by this flowchart, or in certain alternative embodiments, in the reverse order to that shown, or further alternatively, concurrently with each other.

Figure **18** depicts a flowchart of further details regarding operation **778**, processing the received patient response message using the first message wizard in accordance with embodiments supporting Figure **10**. Arrow **980** directs the flow of execution from starting operation **778** to operation **982**. Operation **982** performs providing a patient-from-first-physician authentication key. Arrow **984** directs execution from operation **982** to operation **986**. Operation **986** performs decrypting the received patient response message with the patient-from-first-physician authentication key to create the processed, received patient response message. Arrow **988** directs execution from operation **986** to operation **990**. Operation **990** terminates the operations of this flowchart.

Figure **19** depicts a flowchart of further details regarding operation **712**, sending the patient response message with appended physician billing data using the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure **8**. Arrow **1000** directs the flow of execution from starting operation **712** to operation **1002**. Operation **1002** performs sending patient response message destined to patient to workflow engine. Arrow **1004** directs execution from operation **1002** to operation **1006**. Operation **1006** terminates the operations of this flowchart.

Figure **20** depicts a flowchart of further details regarding operation **708**, generating the patient response message using the second message wizard in accordance with embodiments supporting Figure **8**. Arrow **1010** directs the flow of execution from starting operation **708** to operation **1012**. Operation **1012** performs providing the first-physician-to-profiler authentication code.

Arrow **1014** directs execution from operation **1012** to operation **1016**. Operation **1016** performs providing the patient address as destination address within the patient response message, to create an unencrypted patient response message with patient address destination. Arrow **1018** directs  
5 execution from operation **1016** to operation **1020**. Operation **1020** performs encrypting the unencrypted patient response message with the first-physician-to-profiler authentication code to create the patient response message destined for the patient at the corresponding patient address. Arrow **1022** directs execution from operation **1020** to operation **1024**. Operation **1024**  
10 terminates the operations of this flowchart.

Note that operations **1012** and **1016** in certain alternative embodiments may be performed in reverse order, and in certain further alternative embodiments, may be concurrently performed.

Figure **21** depicts a flowchart of operations of the medical profiler process  
15 performed by the workflow engine in accordance with alternative embodiments supporting Figure 4. Operation **1040** starts the operations of this flowchart. Arrow **1042** directs the flow of execution from operation **1040** to operation **1044**. Operation **1044** performs receiving the patient response message destined for the patient at the corresponding patient address. Arrow  
20 **1046** directs execution from operation **1044** to operation **1048**. Operation **1048** performs processing the received patient response message destined for the patient at the corresponding patient address, to create the patient response message for the patient at the corresponding patient address. Arrow **1050** directs execution from operation **1048** to operation **1052**.  
25 Operation **1052** performs sending the patient response message to the patient at the corresponding patient address. Arrow **1054** directs execution from operation **1052** to operation **1056**. Operation **1056** terminates the operations of this flowchart.

Figure **22** depicts a flowchart of further details regarding operation **1048**,  
30 processing the patient response message destined for the patient using the

medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 21. Arrow 1070 directs the flow of execution from starting operation 1048 to operation 1072. Operation 1072 performs providing a profiler-from-first-physician authentication key. Arrow 1074 directs execution from operation 1072 to operation 1076. Operation 1076 performs decrypting the received patient response message destined for the patient at the corresponding patient address to create the processed, received patient response message for the patient at the corresponding patient address. Arrow 1078 directs execution from operation 1076 to operation 1080. Operation 1080 terminates the operations of this flowchart.

Figure 23 depicts a flowchart of further details regarding operation 642, generating a patient medical query message using the medical profiler process performed by the workflow engine in accordance with embodiments. Arrow 1100 directs the flow of execution from starting operation 642 to operation 1102. Operation 1102 performs selecting a first physician extender from the physician extenders. Arrow 1104 directs execution from operation 1102 to operation 1106. Operation 1106 performs generating a second patient medical query message for the first physician extender. Arrow 1108 directs execution from operation 1106 to operation 1110. Operation 1110 performs sending the second patient medical query message to the first physician extender at the corresponding physician extender address. Arrow 1112 directs execution from operation 1110 to operation 1114. Operation 1114 terminates the operations of this flowchart.

Note that in certain embodiments, operation 1102 is based upon the received educated query message. In certain further embodiments, operation 1102 is based upon the processed, received educated query message.

Figure 24 depicts a flowchart of operations using the third message wizard on the physician extender computer in accordance with embodiments supporting Figure 9. Operation 1150 starts the operations of this flowchart. Arrow 1152 directs the flow of execution from operation 1150 to operation 1154.

Operation **1154** performs receiving a second patient message by first physician extender operating a computer at the corresponding physician extender address. Arrow **1156** directs execution from operation **1154** to operation **1158**. Operation **1158** performs processing the received second patient medical query message to create a processed, received second patient medical query message. Arrow **1160** directs execution from operation **1158** to operation **1162**. Operation **1162** performs generating a physician extender-viewable patient medical query message from the processed, received second patient medical query message. Arrow **1164** directs execution from operation **1162** to operation **1166**. Operation **1166** performs displaying the physician extender-viewable medical query message. Arrow **1168** directs execution from operation **1166** to operation **1170**. Operation **1170** performs responding to the physician extender-viewable medical query message to create a physician extender response. Arrow **1172** directs execution from operation **1170** to operation **1174**. Operation **1174** performs generating the proposed patient response message from physician extender response. Arrow **1176** directs execution from operation **1174** to operation **1178**. Operation **1178** performs sending the proposed patient response message to the first physician at the corresponding physician address. Arrow **1180** directs execution from operation **1178** to operation **1182**. Operation **1182** terminates the operations of this flowchart.

Figure **25** depicts a flowchart of further details regarding operation **682**, generating the physician-viewable patient medical query message in accordance with embodiments supporting Figures **7**. Arrow **1200** directs the flow of execution from starting operation **682** to operation **1202**. Operation **1202** performs receiving proposed patient response message from first physician extender. Arrow **1204** directs execution from operation **1202** to operation **1206**. Operation **1206** performs processing the received patient response message to create processed, received patient response message. Arrow **1208** directs execution from operation **1206** to operation **1210**. Operation **1210** performs inserting the processed, received proposed patient response message as part of the physician-viewable patient medical query

message. Arrow **1212** directs execution from operation **1210** to operation **1214**. Operation **1214** terminates the operations of this flowchart.

Figure **26** depicts a flowchart of further details regarding operation **708**, generating the patient response message using the second message wizard  
5 in accordance with certain embodiments. Arrow **1220** directs the flow of execution from starting operation **708** to operation **1222**. Operation **1222** performs reviewing the proposed patient response message. Arrow **1224** directs execution from operation **1222** to operation **1226**. Operation **1226** terminates the operations of this flowchart.

10 Figure **27** depicts a flowchart of further operations embodying the third message wizard in accordance with certain embodiments. Arrow **1240** directs the flow of execution from starting operation **1240** to operation **1242**. Operation **1242** performs generating a copied proposed patient response message with appended physician extender billing data from the physician  
15 extender-viewable patient medical query message and first physician extender response. Arrow **1244** directs execution from operation **1242** to operation **1246**. Operation **1246** performs sending copied proposed patient response with appended physician extender billing data to workflow engine. Arrow **1248** directs execution from operation **1246** to operation **1250**.  
20 Operation **1250** terminates the operations of this flowchart.

Figure **28** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments. Operation **1270** starts the operations of this flowchart. Arrow **1272** directs the flow of execution from operation **1270** to operation **1274**. Operation **1274** performs  
25 receiving the copied proposed patient response message with the appended physician extender billing data. Arrow **1276** directs execution from operation **1274** to operation **1278**. Operation **1278** performs processing the received copied proposed patient response message with the appended physician extender billing data, to create a processed, received copied proposed patient  
30 response message with the appended physician extender billing data. Arrow

1280 directs execution from operation 1278 to operation 1282. Operation 1282 performs generating a physician extender log entry in the medical profile of the patient from the processed, received copied patient response message with the appended physician extender billing data. Arrow 1284 directs  
5 execution from operation 1282 to operation 1286. Operation 1286 terminates the operations of this flowchart.

Figure 29 depicts a flowchart of further operations embodied in a second messaging wizard in accordance with certain embodiments supporting prescriptions. Operation 1290 starts the operations of this flowchart. Arrow  
10 1291 directs the flow of execution from operation 1290 to operation 1292. Operation 1292 performs generating an embedded prescription. Arrow 1293 directs execution from operation 1292 to operation 1294. Operation 1294 performs inserting the embedded prescription into patient response message. Arrow 1295 directs execution from operation 1294 to operation 1296.  
15 Operation 1296 performs generating a physician prescription message from the embedded prescription. Arrow 1297 directs execution from operation 1296 to operation 1298. Operation 1298 performs sending the physician prescription message to the workflow engine. Arrow 1299 directs execution from operation 1298 to operation 1300. Operation 1300 terminates the  
20 operations of this flowchart.

Figure 30 depicts a flowchart of further operations embodied in a medical profiler in accordance with certain embodiments supporting prescriptions. Operation 1305 starts the operations of this flowchart. Arrow 1306 directs the flow of execution from operation 1305 to operation 1307. Operation 1307  
25 performs maintaining a list of pharmacies, each with a corresponding pharmacy address. Arrow 1308 directs execution from operation 1307 to operation 1309. Operation 1309 terminates the operations of this flowchart.

Arrow 1310 directs the flow of execution from starting operation 1305 to operation 1311. Operation 1311 performs integrating a prescription order.

Arrow **1312** directs execution from operation **1311** to operation **1309**. Operation **1309** terminates the operations of this flowchart.

Note that arrows **1306** and **1310** may be concurrently active, the pharmacy list may be undergoing maintenance operations and the integration of prescription orders may be performed concurrently on either the same computer or distinct computers according to various embodiments of the invention.

Figure **30A** depicts a flowchart of further details regarding operation **1311**, integrating a prescription order in the medical profiler process in accordance with embodiments supporting Figure **30**. Arrow **1315** directs the flow of execution from the starting of operation **1311** to operation **1316**. Operation **1316** performs receiving the physician prescription message. Arrow **1317** directs execution from operation **1316** to operation **1318**. Operation **1318** performs processing the received physician prescription message, to create a processed, received physician prescription message.

Arrow **1319** directs execution from operation **1311** to operation **1320**. Operation **1320** performs receiving a patient prescription order message. Arrow **1321** directs execution from operation **1320** to operation **1322**. Operation **1322** performs processing the received patient prescription order message to create a processed, received patient prescription order message.

Arrow **1323** directs execution from operation **1322** to operation **1324**. Arrow **1330** directs execution from operation **1318** to operation **1324**. Note that in certain embodiments, both arrows **1323** and **1330** must perform their flow of execution before operation **1324** can execute. Operation **1324** performs generating a pharmacy prescription order message from the processed, received physician prescription message and the processed, received patient prescription order message. Arrow **1325** directs execution from operation **1324** to operation **1326**. Operation **1326** performs sending the pharmacy prescription order message to one of the pharmacies at the corresponding

pharmacy address. Arrow **1327** directs execution from operation **1326** to operation **1328**. Operation **1328** terminates the operations of this flowchart.

Figure **31** depicts a flowchart of further operations embodied in the first messaging wizard in accordance with certain embodiments supporting prescriptions. Operation **1340** starts the operations of this flowchart. Arrow **1342** directs the flow of execution from operation **1340** to operation **1344**. Operation **1344** performs responding to the embedded prescription within the processed, received patient response message. Arrow **1346** directs execution from operation **1344** to operation **1348**. Operation **1348** terminates the operations of this flowchart.

Arrow **1350** directs the flow of execution from starting operation **1340** to operation **1352**. Operation **1352** performs ordering the embedded prescription from the processed, received patient response message. Arrow **1354** directs execution from operation **1352** to operation **1348**. Operation **1348** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **32** depicts a flowchart of further details of operation **1352**, ordering the embedded prescription of Figure **31**. Arrow **1360** directs the flow of execution from starting operation **1352** to operation **1362**. Operation **1362** performs generating a patient prescription message from the processed, received patient response message. Arrow **1364** directs execution from operation **1362** to operation **1366**. Operation **1366** performs sending the patient prescription message to the workflow engine. Arrow **1368** directs execution from operation **1366** to operation **1370**. Operation **1370** terminates the operations of this flowchart.

Figure **33** depicts a flowchart of further details of operation **1170** of Figure **25**. Arrow **1380** directs the flow of execution from starting operation **1170** to operation **1382**. Operation **1382** performs generating a proposed embedded prescription refill in the proposed patient response. Arrow **1384** directs  
5 execution from operation **1382** to operation **1386**. Operation **1386** terminates the operations of this flowchart.

Figure **34** depicts a flowchart of further details of operation **1222** of Figure **27**. Arrow **1400** directs the flow of execution from starting operation **1222** to operation **1402**. Operation **1402** performs reviewing the proposed embedded  
10 prescription refill. Arrow **1404** directs execution from operation **1402** to operation **1406**. Operation **1406** terminates the operations of this flowchart.

Figure **35** depicts a flowchart of further details of operation **1402** of Figure **34**. Arrow **1420** directs the flow of execution from starting operation **1402** to operation **1422**. Operation **1422** performs approving the proposed  
15 prescription refill. Arrow **1424** directs execution from operation **1422** to operation **1426**. Operation **1426** terminates the operations of this flowchart.

Arrow **1430** directs the flow of execution from starting operation **1402** to operation **1432**. Operation **1432** performs revising the proposed embedded prescription refill. Arrow **1434** directs execution from operation **1432** to  
20 operation **1426**. Operation **1426** terminates the operations of this flowchart.

Arrow **1440** directs the flow of execution from starting operation **1402** to operation **1442**. Operation **1442** performs deleting the proposed embedded prescription refill. Arrow **1444** directs execution from operation **1442** to operation **1426**. Operation **1426** terminates the operations of this flowchart.

25 Arrow **1450** directs the flow of execution from starting operation **1402** to operation **1452**. Operation **1452** performs generating a second embedded prescription. Arrow **1454** directs execution from operation **1452** to operation **1426**. Operation **1426** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

5 Figure 36 depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing patients. Operation 1470 starts the operations of this flowchart. Arrow 1472 directs the flow of execution from operation 1470 to operation 1474. Operation 1474 performs generating a billing report from the patient medical  
10 profile. Arrow 1476 directs execution from operation 1474 to operation 1478. Operation 1478 terminates the operations of this flowchart.

Figure 37 depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing patients. Operation 1490 starts the operations of this flowchart. Arrow  
15 1492 directs the flow of execution from operation 1490 to operation 1494. Operation 1494 performs sending the billing report to the billing system. Arrow 1496 directs execution from operation 1494 to operation 1498. Operation 1498 terminates the operations of this flowchart.

Figure 38 depicts a flowchart of further operations embodying a billing  
20 process in accordance with certain embodiments. Operation 1510 starts the operations of this flowchart. Arrow 1512 directs the flow of execution from operation 1510 to operation 1514. Operation 1514 performs receiving the billing report for the patient. Arrow 1516 directs execution from operation 1514 to operation 1518. Operation 1518 performs generating a bill for the  
25 patient based from the received billing report for the patient. Arrow 1520 directs execution from operation 1518 to operation 1522. Operation 1522 terminates the operations of this flowchart. ###

Figure 39 depicts a flowchart of further details of operation 1518 of Figure 38. Arrow 1540 directs the flow of execution from starting operation 1518 to  
30 operation 1542. Operation 1542 performs generating a personal bill for the

patient. Arrow **1544** directs execution from operation **1542** to operation **1546**. Operation **1546** terminates the operations of this flowchart.

Arrow **1550** directs the flow of execution from starting operation **1518** to operation **1552**. Operation **1552** performs generating an insurance bill for the patient to corresponding insurance provider. Arrow **1554** directs execution from operation **1552** to operation **1546**. Operation **1546** terminates the operations of this flowchart.

Note that a patient may not have insurance, so that in such circumstances, no insurance bills would be generated. Note also, that in certain circumstances, there may be an overall insuring, such as a governmental agency, fully paying for the health costs. In such circumstances, no personal medical bill might be generated. In certain alternative embodiments, the performing of these operations might not lead to output of one or the other kinds of medical bills.

Figure **40** depicts a flowchart of further details of operation **708** of Figure **8** supporting a physician requesting a second opinion in accordance with certain embodiments. Arrow **1570** directs the flow of execution from starting operation **704** to operation **1572**. Operation **1572** performs generating a first-physician-second opinion request message. Arrow **1574** directs execution from operation **1572** to operation **1576**. Operation **1576** performs sending the first-physician-second opinion request message to the second physician at the corresponding physician address. Arrow **1578** directs execution from operation **1576** to operation **1580**. Operation **1580** terminates the operations of this flowchart.

Figure **41** depicts a flowchart of operations embodied in the second message wizard supporting a second physician and a second opinion request in accordance with certain embodiments. Operation **1600** starts the operations of this flowchart. Arrow **1602** directs the flow of execution from operation **1600** to operation **1604**. Operation **1604** performs receiving the first-physician-second opinion request message. Arrow **1606** directs execution from operation **1604** to operation **1608**. Operation **1608** performs processing

the received, first-physician-second opinion request message to create the processed, received first-physician-second opinion request. Arrow **1610** directs execution from operation **1608** to operation **1612**. Operation **1612** performs displaying the processed, received first-physician-second-opinion request. Arrow **1614** directs execution from operation **1612** to operation **1616**. Operation **1616** performs responding to the displayed, processed, received first-physician-second opinion request to create a second opinion response. Arrow **1618** directs execution from operation **1616** to operation **1620**. Operation **1620** performs generating a second opinion message from the second opinion response. Arrow **1622** directs execution from operation **1620** to operation **1624**. Operation **1624** performs sending the second opinion message to the first-physician at the corresponding physician address. Arrow **1626** directs execution from operation **1624** to operation **1628**. Operation **1628** terminates the operations of this flowchart.

Figure **42** depicts a flowchart of operations embodied in a second message wizard supporting maintaining a collection of patient response templates in accordance with certain embodiments. Operation **1640** starts the operations of this flowchart. Arrow **1642** directs the flow of execution from operation **1640** to operation **1644**. Operation **1644** performs creating a patient response template. Arrow **1646** directs execution from operation **1644** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

Arrow **1650** directs the flow of execution from starting operation **1640** to operation **1652**. Operation **1652** performs editing one of the patient response templates. Arrow **1654** directs execution from operation **1652** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

Arrow **1660** directs the flow of execution from starting operation **1640** to operation **1662**. Operation **1662** performs deleting one of the patient response templates. Arrow **1664** directs execution from operation **1662** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

5 Figure 43 depicts a flowchart of further details of operation 704 of Figure 8 supporting use of a patient response template to create a first-physician response in accordance with certain embodiments. Arrow 1670 directs the flow of execution from starting operation 704 to operation 1672. Operation 1672 performs invoking one of the patient response templates in conjunction  
10 with the processed, received patient medical query message. Arrow 1674 directs execution from operation 1672 to operation 1676. Operation 1676 performs responding by first physician to invoked patient response template and processed, received patient medical query message to create the first-physician response. Arrow 1678 directs execution from operation 1676 to  
15 operation 1680. Operation 1680 terminates the operations of this flowchart.

Figure 44 depicts a flowchart of operations embodied in a first messaging wizard to support maintaining a collection of patient problem templates in accordance with certain embodiments. Operation 1700 starts the operations of this flowchart. Arrow 1702 directs the flow of execution from operation  
20 1700 to operation 1704. Operation 1704 performs receiving the patient problem template from workflow engine. Arrow 1706 directs execution from operation 1704 to operation 1708. Operation 1708 performs processing the received patient problem template to create a processed, received patient problem template. Arrow 1710 directs execution from operation 1708 to  
25 operation 1712. Operation 1712 performs adding the processed, received patient problem template to the collection of patient problem templates. Arrow 1714 directs execution from operation 1712 to operation 1716. Operation 1716 terminates the operations of this flowchart.

Figure 45 depicts a flowchart of further details of operation 604 of Figure 5  
30 supporting use of a patient problem template to create an educated medical

query using a first medical wizard in accordance with certain embodiments. Arrow **1730** directs the flow of execution from starting operation **604** to operation **1732**. Operation **1732** performs invoking one of the patient problem templates. Arrow **1734** directs execution from operation **1732** to operation **1736**. Operation **1736** performs responding by patient to invoked patient problem templates to create the educated query message. Arrow **1738** directs execution from operation **1736** to operation **1740**. Operation **1740** terminates the operations of this flowchart.

Figure **46** depicts a flowchart of operations embodied in a medical profiler process performed by a workflow engine to generate and send patient problem templates to patients in accordance with certain embodiments. Operation **1760** starts the operations of this flowchart. Arrow **1762** directs the flow of execution from operation **1760** to operation **1764**. Operation **1764** performs generating a patient problem template from the patient medical profile. Arrow **1766** directs execution from operation **1764** to operation **1768**. Operation **1768** performs sending the patient problem template to the patient at the corresponding patient address. Arrow **1770** directs execution from operation **1768** to operation **1772**. Operation **1772** terminates the operations of this flowchart.

Figure **47** depicts a flow diagram of a medical profiler process in accordance with certain embodiments. Box **1800** designates a Medical Profiler Process Dispatcher. This communicates via physical transport mechanism **1802** to network **1804**. Box **1808** designates Medical profiler sub-process 1 on workflow engine 1, performing the operation **630** of Figure 6. This communicates via physical transport mechanism **1806** to network **1804**. Box **1812** designates Medical profiler sub-process 2 on workflow engine 2, performing the operation **740** of Figure 9. This communicates via physical transport mechanism **1810** to network **1804**. Box **1816** designates Medical profiler sub-process 3 on workflow engine 3, performing the operation **1040** of Figure 21. This communicates via physical transport mechanism **1814** to network **1804**. Box **1820** designates Medical profiler sub-process 4 on

workflow engine 4, performing the operation **1270** of Figure **28**. This communicates via physical transport mechanism **1818** to network **1804**. Box **1824** designates Medical profiler sub-process 5 on workflow engine 5, performing the operation **1470** of Figure **36**. This communicates via physical transport mechanism **1822** to network **1804**. Box **1828** designates Medical profiler sub-process 6 on workflow engine 6, performing the operation **1490** of Figure **37**. This communicates via physical transport mechanism **1826** to network **1804**. Box **1832** designates Medical profiler sub-process 7 on workflow engine 7, performing the operation **1760** of Figure **46**. This communicates via physical transport mechanism **1830** to network **1804**.

Note that in certain alternative embodiments, collections of these sub-processes may preferably reside on a single workflow engine. Note that in certain other embodiments, multiple workflow engines may be performing a given sub-process.

Figure **48** depicts a flow diagram of a computer program capable of receiving a message from a physician containing a prescription and responding to the message containing the prescription in accordance with an aspect of the invention. Operation **1850** starts the operations of this flowchart. Arrow **1852** directs the flow of execution from operation **1850** to operation **1854**. Operation **1854** performs receiving the patient message with an embedded prescription. Arrow **1856** directs execution from operation **1854** to operation **1858**. Operation **1858** performs displaying the received patient message with embedded prescription. Arrow **1860** directs execution from operation **1858** to operation **1862**. Operation **1862** performs responding to the patient message with embedded prescription. Arrow **1864** directs execution from operation **1862** to operation **1866**. Operation **1866** terminates the operations of this flowchart.

Figure **49** depicts a flowchart of further details of the code of **1854** of Figure **48** supporting receiving a patient message with an embedded prescription in accordance with certain embodiments. Arrow **1880** directs the flow of

execution from starting operation **1854** to operation **1882**. Operation **1882** performs receiving an encrypted patient message with embedded prescription. Arrow **1884** directs execution from operation **1882** to operation **1886**. Operation **1886** performs processing the received, encrypted patient message with embedded prescription to create the received patient message with embedded prescription. Arrow **1888** directs execution from operation **1886** to operation **1890**. Operation **1890** terminates the operations of this flowchart.

Figure **50** depicts a flowchart of further details of the code of **1862** of Figure **48** supporting responding to the patient response message in accordance with certain embodiments. Arrow **1900** directs the flow of execution from starting operation **1862** to operation **1902**. Operation **1902** performs generating a patient prescription message from said embedded prescription. Arrow **1904** directs execution from operation **1902** to operation **1906**. Operation **1906** performs sending said patient prescription message to said workflow engine. Arrow **1908** directs execution from operation **1906** to operation **1910**. Operation **1910** terminates the operations of this flowchart.

Figure **50A** depicts a flowchart of further details of **1311** of Figure **30** supporting integrating a prescription order in accordance with certain embodiments.

Arrow **1920** directs the flow of execution from starting operation **1311** to operation **1922**. Operation **1922** determines if the received patient response message contains an embedded prescription. Arrow **1924** directs execution from operation **1922** to operation **1926**. Arrow **1924** directs execution when the determination is 'Yes' to operation **1926**. Arrow **1954** directs execution when the determination is 'No' to operation **1946**.

Operation **1926** performs receiving the patient prescription order message from the first patient. Arrow **1928** directs execution from operation **1926** to operation **1930**. Operation **1930** determines if the patient prescription order message from the first patient is compatible with the embedded prescription

contained in the received patient response message. Arrow **1932** directs execution from operation **1930** to operation **1934**. Arrow **1932** directs execution when the determination is 'Yes' to operation **1934**. Arrow **1956** directs execution when the determination is 'No' to operation **1946**.

- 5 Operation **1934** determines if the patient prescription order received from the first patient authorizes the prescription order. Arrow **1936** directs execution from operation **1934** to operation **1938**. Arrow **1936** directs execution when the determination is 'Yes' to operation **1938**. Arrow **1958** directs execution when the determination is 'No' to operation **1946**.
- 10 Operation **1938** determines a first pharmacy from the patient prescription order. Arrow **1940** directs execution from operation **1938** to operation **1942**. Operation **1942** performs generates and sends the prescription order message to the first pharmacy based upon the received patient response message and the received patient prescription order message. Arrow **1944**
- 15 directs execution from operation **1942** to operation **1946**. Operation **1946** terminates the operations of this flowchart.

Figure **50B** depicts a flowchart of further details of **1324** of Figure **30A** supporting generating a pharmacy prescription order in accordance with certain embodiments.

- 20 Arrow **1960** directs the flow of execution from starting operation **1324** to operation **1962**. Operation **1962** determines if the processed, received patient prescription order is compatible with the processed, received physician prescription. Arrow **1964** directs execution when the determination is 'Yes' to operation **1966**. Arrow **1978** directs usage when the determination is 'No' to
- 25 operation **1970**.

- Operation **1966** generates a pharmacy prescription order message from the processed, received physician prescription message and the processed, received patient prescription order. Arrow **1968** directs execution from operation **1966** to operation **1970**. Operation **1970** terminates the operations
- 30 of this flowchart.

Figure **50C** depicts a flowchart of further details of **1326** of Figure **30A** supporting sending a pharmacy prescription order to a pharmacy in accordance with certain embodiments.

Arrow **1980** directs the flow of execution from starting operation **1326** to operation **1962**. Operation **1962** determines if the processed, received patient prescription order is compatible with the processed, received physician prescription. Arrow **1984** directs execution from operation **1962** to operation **1986**. Arrow **1984** directs execution when the determination is 'Yes' to operation **1986**. Arrow **1998** directs usage when the determination is 'No' to operation **1994**.

Operation **1986** performs determine the first pharmacy from the processed, received patient prescription order. Arrow **1988** directs execution from operation **1986** to operation **1990**. Operation **1990** performs sending the pharmacy prescription order message to the first pharmacy. Arrow **1992** directs execution from operation **1990** to operation **1994**. Operation **1994** terminates the operations of this flowchart.

Figure **50D** depicts a flowchart of further details of **1106** of Figure **23** supporting determining a routing chain of physician extenders and embedding the routing chain into a second patient query in accordance with certain embodiments.

Arrow **2010** directs the flow of execution from starting operation **1106** to operation **2012**. Operation **2012** determines a routing chain of physician extenders. Arrow **2014** directs execution from operation **2012** to operation **2016**. Operation **2016** embeds the routing chain of physician extenders into the second medical query. Arrow **2018** directs execution from operation **2016** to operation **2020**. Operation **2020** terminates the operations of this flowchart.

Note that a routing chain of physician extenders is a collection of at least one physician extender to whom the second patient query will be routed after the first physician extender has added their proposed response to the patient query.

Figure **50E** depicts a flowchart of further details of **1178** of Figure **24** supporting determining successor physician extenders in an embedded physician extender routing chain, generating a successor medical query message with embedded proposed patient response and sending the  
5 successor patient medical query to the successor physician extender.

Arrow **2030** directs the flow of execution from starting operation **1178** to operation **2032**. Operation **2032** determines if there is a successor physician extender in the embedded physician extender chain. Arrow **2034** directs execution from operation **2032** to operation **2036**. Arrow **2034** directs  
10 execution when the determination is 'Yes' to operation **2032**. Arrow **2048** directs execution when the determination is 'No' to operation **2044**.

Operation **2036** generates the successor medical query message with the embedded proposed patient response. Arrow **2038** directs execution from operation **2036** to operation **2040**. Operation **2040** send the successor  
15 patient medical query to the successor physician extender. Arrow **2042** directs execution from operation **2040** to operation **2044**. Operation **2044** terminates the operations of this flowchart.

Figure **50F** depicts a flowchart of further details of **646** of Figure **6** supporting generating a routing tree of physicians with first physician final destination and  
20 source list of physicians, generating and sending a source medical query to each physician included in the physician source list.

Arrow **2060** directs the flow of execution from starting operation **646** to operation **2062**. Operation **2062** performs generating a routing tree of physicians with the first physician the final destination of the routing tree and a  
25 source list of physicians of the routing tree. Arrow **2064** directs execution from operation **2062** to operation **2066**. Operation **2066** performs generating and sending a source medical query for and to each physician belonging to the source list of the routing tree. Arrow **2068** directs execution from operation **2066** to operation **2070**. Operation **2070** terminates the operations  
30 of this flowchart.

Additional Discussion of Primary Terms as used herein:

A service profile of a client is a collection of information residing in some computer accessible media which from time to time a computer may be able to access.

- 5 The service profiler process is the system-wide activities which are performed in an automated fashion by the service-flow engine to facilitate the service communication between clients, service providers, service extenders and suppliers to support at least the following: service queries, replies and transactions involved in service recommendations.
- 10 The service-flow engine is the mechanism performing the collection of operations known as the service profiler process. It has at least one address on the network shared with clients, service providers, service extenders and suppliers. Note that this shared network may in fact be partitioned into a collection of networks, each possessing gateways, firewalls and the like as is
- 15 well known in the art. Note that the service-flow engine may include but is not limited to one computer, and in fact, in certain embodiments preferably involves more than one server computer as will be discussed later.

A client as used herein will have two components of meaning: The first component being the entity about whom the service profile, query messages,

20 response message and service recommendations are directed; the second is a responsible individual acting for the client in all the transactions, such as generating the query messages, receiving and considering the response messages and ordering the service recommendations. Note that a list of the first component entities includes but is not limited to people, corporations,

25 companies, organizations, as well as real estate, machinery including but not limited to automobiles, computer systems, web sites, software, telephones, communications networks and systems.

Further embodiments of the invention support the service-flow engine creating routing chains of service extenders starting with a first service extender

proceeding through successor service provider extenders until the routing chain terminates with a service provider reviewing the collective proposed client response. The routing chain may be generated by the service-flow engine based upon the client's educated query message.

- 5 Further embodiments of the invention support the service-flow engine creating routing trees of service providers with patent query messages starting with a source list of service providers, possibly routing to intermediate service providers and culminating in a first service provider who reviews the collective service provider responses to their respective client service queries.
- 10 Figure 51 depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. Client 2200 is the primary initiator of this invention. Arrow 2202 depicts the interactions of client 2200 to create the educated query message 2204. The educated query message 2204 is an optimized service query directed by the client to address concerns and
- 15 conditions involving the client. Arrow 2206 depicts the sending of educated query message 2204 to the service profile 2208 which is managed by the service profiler process. The service-flow engine performs the various service profiler process operations. More will be said about the service-flow engine shortly. Arrow 2210 depicts interactive communication between the service-
- 20 flow engine 2208 and the service providers 2212 primarily regarding the service profiler. Service providers 2212 are the central destination of client generated educated service query messages as sent by 2210 from the service profiler process to the service provider 2212. Arrow 2214 depicts the response of service provider 2212 to the educated query message,
- 25 generating a consultative response 2216. Consultation 2216 provides the basis of the client response message 2226. Arrow 2218 depicts the inclusion of the service provider consultative response 2216 with educational material 2220. Educational material 2220 is included in certain, but not all cases, to meet mandated regulations as well as provide the service providers a
- 30 mechanism to distribute standard material regarding various conditions and treatments. Arrow 2222 depicts the service-flow engine activities required to

incorporate the consultative response and included materials **2220** with billing information (charging) **2224**. Charging **2224** performs tasks of notifying a client service profile of the consultative transaction, what was the query, response, educational materials included and the service expenses. Arrow  
5 **2226** depicts the actual patent response message derived from **2224** query, service provider response, educational materials included and the service expenses sent to client **2200**.

Arrow **2230** depicts the message information flow from the service-flow engine to service extender **2232**. Service extenders **2232** perform a number  
10 of service tasks under the direction of service providers **2212**. Arrow **2234** depicts the sending of proposed client response messages generated by service extenders **2232** to a service provider **2212**. Arrow **2240** depicts another message information flow from the service-flow engine to a service assistant **2242**. While service assistants are service extenders, a service  
15 assistant **2242** performs a specific additional task distinguishing them from other service extenders, such as service provider assistants and administrators. Service assistant **2242** can propose service recommendation refills for example. Arrow **2244** depicts the sending of proposed client response message, which may further include proposed embedded service  
20 recommendation refills, from service assistant **2242** to service provider **2246**.

Service provider **2212** performs a review on the proposed client response messages from service extenders, including service assistants, as delivered by arrows **2234** and **2244**. Template replies **2246** offer the capability for service providers to optimize the quality and efficiency of response in making  
25 many standard replies. Arrow **2248** depicts the interaction between template replies **2246** and service provider **2212**.

Arrow **2250** depicts the information and activity flow based upon the consultative response **2216** and the placing of a service recommendation message **2252**. Service recommendation message **2252** is created based  
30 upon the service provider's consultative response **2216**, which in turn is based

upon the client's service query message and possibly a service assistant's proposed service recommendation refill. Arrow **2254** depicts sending a service recommendation message **2252** to ordering process **2256**. Client **2200** receives the patent response message **2226**, and may respond by  
5 ordering the embedded service recommendation, which is depicted by arrow **2264** indicating a client service recommendation message sent to ordering process **2256**. Ordering process **2256** waits until both the service provider service recommendation message **2254** and client service recommendation message **2264** have been received and processed before the order **2258** is  
10 actually placed with supplier **2260**. Supplier **2260** sends the service recommendation to client **2300** as indicated by arrow **2362**.

Figure **52** depicts an interactive flow between a client using a first message interface, service-flow engine performing a service profiler process and service provider using a second message interface in accordance with an  
15 embodiment of the invention. Client **2300** interacts **2302** with client operated computer **2304**, which can access **2306** and perform the operations of first message interface **2308**. Service provider **2350** interacts **2352** with service provider operated computer **2354**, which can access **2356** and perform the operations of second message interface **2358**. Service extender **2400**  
20 interacts **2402** with service extender operated computer **2404**, which can access **2406** and perform the operations of second message interface **2408**.

Client **2300** using first message interface **2308** on client operated computer **2304** generates **2310** educated query message **2312** and sends it **2314** to service-flow engine **2320** where it is received by service profiler process **2322**.  
25 Service profiler process **2322** generates **2324** client message log entry **2326**, which is added **2328** to the client service profile **2330**. Service profiler process **2322** further generates **2340** client service query message **2342**, which is sent **2344** to service provider operated computer **2354**.

Service provider **2350** using second message interface **2358** on service  
30 provider operated computer **2354** receives and responds to the client service

query message **2342**, generating **2360** a client response message **2362**, which in certain embodiments is sent **2364** directly to the client operated computer **2304**. In certain alternative embodiments, client response message **2362** is sent **2370** to the service-flow engine, where the service profiler process **2322** then sends **2372** a version to the client operated computer **2304**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** further responds to the client service query message **2342**, generating a client response message with appended service provider billing data **2382**, which is sent **2384** to the service-flow engine, where the service profiler process **2322** then generates **2390** a client response log entry **2392** which is added **2394** to the client service profile **2330**.

In certain situations, a service recommendation is embedded into client response message **2362** by the service provider **2350** using second message interface **2358** on service provider operated computer **2354** in response to the client service query message **2342**, which embedded into the client response message **2362**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** also generates **2480** service provider service recommendation message **2482**, which is sent **2484** to the service-flow engine using the service profiler process **2322**. Client **2300** using first message interface **2308** on client operated computer **2304** generates **2490** client order message **2492** and sends it **2494** to service-flow engine **2320** where it is received by service profiler process **2322**. Once both service provider service recommendation message **2482** and client order message **2492** have been received and authenticated, the medial profiler process **2322** generates **2500** a supplier service order message **2502** which is sent **2504** to the supplier computer **2506**.

Service profiler process **2322** accesses **2510** the client service profile **2330** to generate **2512** client billing report message **2514** which is sent **2516** to billing system **2518**. Note that the billing system **2518** in certain embodiments is a separate system element external to the service-flow engine. In certain

alternative embodiments, billing system **2518** resides within the operations performed by the service-flow engine. In certain further embodiments, billing system **2518** is part of the service profiler process.

Note that in the flowcharts included herein, the starting operation of a flowchart may perform operations to allocate systems resources for use by the subsequent operations of the flowchart in certain embodiments. The starting operation of a flowchart may further perform initialize systems resources in certain embodiments.

Note also that in the flowcharts included herein, the terminating or exit operation of a flowchart may perform operations to release allocated systems resources used by the subsequent operations of the flowchart in certain embodiments. The terminating operation of a flowchart may further perform a "return" operation in certain embodiments. Alternatively, the terminating operation of a flowchart may not perform a "return" operation in certain embodiments.

Figure **52A** depicts an interactive flow between a client using a first message interface, service-flow engine performing a service profiler process and service provider using a second message interface in accordance with a further embodiment of the invention. Client **2300** interacts **2302** with client operated computer **2304**, which can access **2306** and perform the operations of first message interface **2308**. Service provider **2350** interacts **2352** with service provider operated computer **2354**, which can access **2356** and perform the operations of second message interface **2358**. Service extender **2400** interacts **2402** with service extender operated computer **2404**, which can access **2406** and perform the operations of second message interface **2408**.

Client **2300** using first message interface **2308** on client operated computer **2304** generates **2310** educated query message **2312** and sends it **2314** to service-flow engine **2320** where it is received by service profiler process **2322**. Service profiler process **2322** generates **2324** client message log entry **2326**,

which is added **2328** to the client service profile **2330**. Service profiler process **2322** further generates **2340** client service query message **2342**, which is sent **2344** to service provider operated computer **2354**.

Service provider **2350** using second message interface **2358** on service provider operated computer **2354** receives and responds to the client service query message **2342**, generating **2360** a client response message **2362**, which in certain embodiments is sent **2364** directly to the client operated computer **2304**. In certain alternative embodiments, client response message **2362** is sent **2370** to the service-flow engine, where the service profiler process **2322** then sends **2372** a version to the client operated computer **2304**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** further responds to the client service query message **2342**, generating a client response message with appended service provider billing data **2382**, which is sent **2384** to to the service-flow engine, where the service profiler process **2322** then generates **2390** a client response log entry **2392** which is added **2394** to the client service profile **2330**.

In certain situations, a service recommendation is embedded into client response message **2362** by the service provider **2350** using second message interface **2358** on service provider operated computer **2354** in response to the client service query message **2342**, which embedded into the client response message **2362**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** also generates **2480** service provider service recommendation message **2482**, which is sent **2484** to the service-flow engine using the service profiler process **2322**. Client **2300** using first message interface **2308** on client operated computer **2304** generates **2490** client order message **2492** and sends it **2494** to service-flow engine **2320** where it is received by service profiler process **2322**. Once both service provider service recommendation message **2482** and client order message **2492** have been received and authenticated, the medial profiler process **2322**

generates **2500** a supplier service order message **2502** which is sent **2504** to the supplier computer **2506**.

Service profiler process **2322** accesses **2510** the client service profile **2330** to generate **2512** client billing report message **2514** which is sent **2516** to billing system **2518**. Note that the billing system **2518** in certain embodiments is a separate system element external to the service-flow engine. In certain alternative embodiments, billing system **2518** resides within the operations performed by the service-flow engine. In certain further embodiments, billing system **2518** is part of the service profiler process.

Service profiler process **2322** further generates **2400** a second client service query message **2402**, which is sent **2404** to service extender operated computer **2414**. Service extender **2410** using third message interface **2418** on service provider operated computer **2414** receives and responds to the second client service query message **2412**, generating **2430** a proposed client response message **2432**, which is sent **2434** directly to the service provider operated computer **2354**, where it is inserted into the client service query message **2342**. In certain alternative embodiments, client response message **2432** is sent **2436** to the service-flow engine, where the service profiler process **2322** then sends a version to the service provider operated computer **2354**. Service extender **2410** using third message interface **2418** on service provider operated computer **2414** further responds **2440** to the second client service query message **2402**, generating a proposed client response message with appended service extender billing data **2442**, which is sent **2444** to the service-flow engine, where the service profiler process **2322** then generates **2450** a proposed client response with appended service extender billing data log entry **2452** which is added **2454** to the client service profile **2330**.

Figure **53** depicts a flowchart of operations supporting the generation and sending of an educated query by a client using the first message interface in accordance with embodiments supporting Figure **52**. Operation **2600** starts

the operations of this flowchart. Arrow **2602** directs the flow of execution from operation **2600** to operation **2604**. Operation **2604** performs generating of an educated query message. Arrow **2606** directs execution from operation **2604** to operation **2608**. Operation **2608** performs sending the educated query message to the service-flow engine. Arrow **2610** directs execution from operation **2608** to operation **2612**. Operation **2612** terminates the operations of this flowchart.

Figure **54** depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the client, and the generation and sending of the client service query message to a service provider by the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **52**. Operation **2630** starts the operations of this flowchart. Arrow **2632** directs the flow of execution from operation **2630** to operation **2634**. Operation **2634** performs receiving the educated query message at the service-flow engine. Arrow **2636** directs execution from operation **2634** to operation **2638**. Operation **2638** performs processing the received educated query message to create the processed, received educated query message. Arrow **2640** directs execution from operation **2638** to operation **2642**. Operation **2642** performs generating a client service query message. Arrow **2644** directs execution from operation **2642** to operation **2646**. Operation **2646** performs sending the client service query message to first service provider at corresponding service provider address. Arrow **2648** directs execution from operation **2646** to operation **2650**. Operation **2650** terminates the operations of this flowchart.

In certain embodiments, operation **646** further includes selecting a first service provider. In certain further embodiments, operation **646** further includes selecting a first service provider based upon the received educated query message. In certain further embodiments, operation **646** further includes selecting a first service provider based upon the processed, received educated query message.

Arrow **2652** directs the flow of execution from starting operation **2638** to operation **2654**. Operation **2654** performs generating a client message log entry in the client service profile. Arrow **2656** directs execution from operation **2654** to operation **2650**.

- 5 Figure **55** depicts a flowchart of operations supporting reception, processing and viewing the client service query message by the second message interface for the service provider in accordance with embodiments supporting Figure **52**. Operation **2670** starts the operations of this flowchart. Arrow **2672** directs the flow of execution from operation **2670** to operation **2674**.
- 10 Operation **2674** performs receiving the client query message. Arrow **2676** directs execution from operation **2674** to operation **2678**. Operation **2678** performs processing the received client service query message to create the processed, received client service message. Arrow **2680** directs execution from operation **2678** to operation **2682**. Operation **2682** performs generating
- 15 a service-provider-viewable client service query message from the processed, received client service query message. Arrow **2684** directs execution from operation **2682** to operation **2686**. Operation **2686** performs displaying the service-provider-viewable client service query message. Arrow **2688** directs execution from operation **2686** to operation **2690**. Operation **2690** terminates
- 20 the operations of this flowchart.

- Figure **56** depicts a flowchart of operations supporting reception, generation and sending a client response message, as well as copying the client response message with an appended service provider billing data to the service-flow engine in accordance with embodiments supporting Figure **52**.
- 25 Operation **2700** starts the operations of this flowchart. Arrow **2702** directs the flow of execution from operation **2700** to operation **2704**. Operation **2704** performs responding to the service-provider-viewable client service query message to create a first-service-provider response. Arrow **2706** directs execution from operation **2704** to operation **2708**. Operation **2708** performs
- 30 generating a client response message from the first-service-provider response. Arrow **2710** directs execution from operation **2708** to operation

**2712.** Operation **2712** performs sending the client response message to the client at the corresponding client address. Arrow **2714** directs execution from operation **2712** to operation **2716**. Operation **2716** terminates the operations of this flowchart.

- 5 Arrow **2720** directs the flow of execution from starting operation **2708** to operation **2722**. Operation **2722** performs copying the client response message with appended service provider billing data to service-flow engine. Arrow **2724** directs execution from operation **2722** to operation **2716**.

- Figure **57** depicts a flowchart of operations supporting the reception,  
10 processing, logging the copied client response message with an appended service provider billing data by the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **52**. Operation **2740** starts the operations of this flowchart. Arrow **2742** directs the flow of execution from operation **2740** to operation **2744**. Operation **2744**  
15 performs receiving the copied client response message with appended service provider billing data. Arrow **2746** directs execution from operation **2744** to operation **2748**. Operation **2748** performs processing the received, copied client response message with appended service provider billing data to create the processed, received, copied client response message with  
20 appended service provider billing data. Arrow **2750** directs execution from operation **2748** to operation **2752**. Operation **2752** performs generating a client response log entry in client service profile from the processed, received, copied client response message with appended service provider billing data. Arrow **2754** directs execution from operation **2752** to operation **2756**.  
25 Operation **2756** terminates the operations of this flowchart.

- Figure **58** depicts a flowchart of operations supporting reception, processing and display of the client response message using the first message interface on the client operated computer in accordance with embodiments supporting Figure **52**. Operation **2770** starts the operations of this flowchart. Arrow **2772**  
30 directs the flow of execution from operation **2770** to operation **2774**.

Operation **2774** performs receiving the client response message. Arrow **2776** directs execution from operation **2774** to operation **2778**. Operation **2778** performs processing the received client response message, to create a processed, received client response message. Arrow **2780** directs execution  
5 from operation **2778** to operation **2782**. Operation **2782** performs displaying the processed, received client response message. Arrow **2784** directs execution from operation **2782** to operation **2786**. Operation **2786** terminates the operations of this flowchart.

Figure **59** depicts a flowchart of further details regarding operation **2604**,  
10 generation of an educated query message by the first message interface in accordance with embodiments supporting Figure **53**. Arrow **2800** directs the flow of execution from starting operation **2604** to operation **2802**. Operation **2802** performs providing a client-to-profiler authentication key. Arrow **2804** directs execution from operation **2802** to operation **2806**. Operation **2806**  
15 performs encrypting the educated query message with client-to-profiler authentication key. Arrow **2808** directs execution from operation **2806** to operation **2810**. Operation **2810** terminates the operations of this flowchart.

Figure **60** depicts a flowchart of further details regarding operation **2638**, processing the educated query message using the service profiler process  
20 performed by the service-flow engine in accordance with embodiments supporting Figure **54**. Arrow **2820** directs the flow of execution from starting operation **2638** to operation **2822**. Operation **2822** performs providing a profiler-from-client authentication key. Arrow **2824** directs execution from operation **2822** to operation **2826**. Operation **2826** performs decrypting the  
25 received, educated query message with profiler-from-client authentication key. Arrow **2828** directs execution from operation **2826** to operation **2830**. Operation **2830** terminates the operations of this flowchart.

Figure **61** depicts a flowchart of further details regarding operation **2642**, generation of a client service query message by the service profiler process  
30 performed by the service-flow engine in accordance with embodiments

supporting Figure 54. Arrow 2850 directs the flow of execution from starting operation 2642 to operation 2852. Operation 2852 performs providing profiler-from-first-service-provider authentication key. Arrow 2854 directs execution from operation 2852 to operation 2856. Operation 2856 performs  
5 encrypting client service query message with profiler-from-first-service-provider authentication key. Arrow 2858 directs execution from operation 2856 to operation 2860. Operation 2860 terminates the operations of this flowchart.

Figure 62 depicts a flowchart of further details regarding operation 2678,  
10 processing the received client service query message by the second message interface in accordance with embodiments supporting Figure 55. Arrow 2880 directs the flow of execution from starting operation 2678 to operation 2882. Operation 2882 performs providing a first-service-provider-from-profiler authentication key. Arrow 2884 directs execution from operation 2882 to  
15 operation 2886. Operation 2886 performs decrypting the received client service query message with the first-service-provider-from-profiler authentication key. Arrow 2888 directs execution from operation 2886 to operation 2890. Operation 2890 terminates the operations of this flowchart.

Figure 63 depicts a flowchart of further details regarding operation 2722,  
20 copying the client response message with appended service provider billing data to the service-flow engine by the second message interface in accordance with embodiments supporting Figure 56. Arrow 2900 directs the flow of execution from starting operation 2722 to operation 2902. Operation 2902 performs providing a first-service-provider-to-profiler authentication key.  
25 Arrow 2904 directs execution from operation 2902 to operation 2906. Operation 2906 performs encrypting the client response message with appended service provider billing data with the first-service-provider-to-profiler authentication key. Arrow 2908 directs execution from operation 2906 to operation 2910. Operation 2910 performs sending first-service-provider-to-  
30 profiler encrypted client response message with appended service provider billing data to the service-flow engine. Arrow 2912 directs execution from

operation **2910** to operation **2914**. Operation **2914** terminates the operations of this flowchart.

Figure **64** depicts a flowchart of further details regarding operation **2748**, processing the received, copied the client response message with appended  
5 service provider billing data using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **57**. Arrow **2930** directs the flow of execution from starting operation **2748** to operation **2932**. Operation **2932** performs providing a profiler-from-first-service-provider authentication key. Arrow **2934** directs execution from  
10 operation **2932** to operation **2936**. Operation **2936** performs decrypting the received, copied client response message with appended service provider billing data with the profiler-from-first service provider authentication key to create the processed, received client response message with appended service provider billing data. Arrow **2938** directs execution from operation  
15 **2936** to operation **2940**. Operation **2940** terminates the operations of this flowchart.

Figure **65** depicts a flowchart of further details regarding operation **2708**, generating client response message using the second message interface in accordance with embodiments supporting Figure **56**. Arrow **2950** directs the  
20 flow of execution from starting operation **2708** to operation **2952**. Operation **2952** performs providing first-service-provider-to-client authentication key. Arrow **2954** directs execution from operation **2952** to operation **2956**. Operation **2956** performs generating an unencrypted client response message from the service-provider-viewable client service query message  
25 and the first-service-provider response. Arrow **2958** directs execution from operation **2956** to operation **2960**. Operation **2960** performs encrypt the unencrypted client response message with the first-service-provider-to-client authentication key to create the client response message. Arrow **2962** directs execution from operation **2960** to operation **2964**. Operation **2964** terminates  
30 the operations of this flowchart.

Note that operations **2952** and **2956** may be performed either in the order presented by this flowchart, or in certain alternative embodiments, in the reverse order to that shown, or further alternatively, concurrently with each other.

5 Figure **66** depicts a flowchart of further details regarding operation **2778**, processing the received client response message using the first message interface in accordance with embodiments supporting Figure **58**. Arrow **2980** directs the flow of execution from starting operation **2778** to operation **2982**. Operation **2982** performs providing a client-from-first-service-provider authentication key. Arrow **2984** directs execution from operation **2982** to operation **2986**. Operation **2986** performs decrypting the received client response message with the client-from-first-service-provider authentication key to create the processed, received client response message. Arrow **2988** directs execution from operation **2986** to operation **2990**. Operation **2990** terminates the operations of this flowchart.

Figure **67** depicts a flowchart of further details regarding operation **2712**, sending the client response message with appended service provider billing data using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **56**. Arrow **3000** directs the flow of execution from starting operation **2712** to operation **3002**. Operation **3002** performs sending client response message destined to client to service-flow engine. Arrow **3004** directs execution from operation **3002** to operation **3006**. Operation **3006** terminates the operations of this flowchart.

Figure **68** depicts a flowchart of further details regarding operation **2708**, generating the client response message using the second message interface in accordance with embodiments supporting Figure **56**. Arrow **3010** directs the flow of execution from starting operation **2708** to operation **3012**. Operation **3012** performs providing the first-service-provider-to-profiler authentication code. Arrow **3014** directs execution from operation **3012** to operation **3016**. Operation **3016** performs providing the client address as destination address

within the client response message, to create an unencrypted client response message with client address destination. Arrow **3018** directs execution from operation **3016** to operation **3020**. Operation **3020** performs encrypting the unencrypted client response message with the first-service-provider-to-profiler authentication code to create the client response message destined for the client at the corresponding client address. Arrow **3022** directs execution from operation **3020** to operation **3024**. Operation **3024** terminates the operations of this flowchart.

Note that operations **3012** and **3016** in certain alternative embodiments may be performed in reverse order, and in certain further alternative embodiments, may be concurrently performed.

Figure **69** depicts a flowchart of operations of the service profiler process performed by the service-flow engine in accordance with alternative embodiments supporting Figure **52**. Operation **3040** starts the operations of this flowchart. Arrow **3042** directs the flow of execution from operation **3040** to operation **3044**. Operation **3044** performs receiving the client response message destined for the client at the corresponding client address. Arrow **3046** directs execution from operation **3044** to operation **3048**. Operation **3048** performs processing the received client response message destined for the client at the corresponding client address, to create the client response message for the client at the corresponding client address. Arrow **3050** directs execution from operation **3048** to operation **3052**. Operation **3052** performs sending the client response message to the client at the corresponding client address. Arrow **3054** directs execution from operation **3052** to operation **3056**. Operation **3056** terminates the operations of this flowchart.

Figure **70** depicts a flowchart of further details regarding operation **3048**, processing the client response message destined for the client using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **69**. Arrow **3070** directs the flow of

execution from starting operation **3048** to operation **3072**. Operation **3072** performs providing a profiler-from-first-service-provider authentication key. Arrow **3074** directs execution from operation **3072** to operation **3076**. Operation **3076** performs decrypting the received client response message  
5 destined for the client at the corresponding client address to create the processed, received client response message for the client at the corresponding client address. Arrow **3078** directs execution from operation **3076** to operation **3080**. Operation **3080** terminates the operations of this flowchart.

10 Figure **71** depicts a flowchart of further details regarding operation **2642**, generating a client service query message using the service profiler process performed by the service-flow engine in accordance with embodiments. Arrow **3100** directs the flow of execution from starting operation **2642** to operation **3102**. Operation **3102** performs selecting a first service extender from the  
15 service extenders. Arrow **3104** directs execution from operation **3102** to operation **3106**. Operation **3106** performs generating a second client service query message for the first service extender. Arrow **3108** directs execution from operation **3106** to operation **3110**. Operation **3110** performs sending the second client service query message to the first service extender at the  
20 corresponding service extender address. Arrow **3112** directs execution from operation **3110** to operation **3114**. Operation **3114** terminates the operations of this flowchart.

Note that in certain embodiments, operation **3102** is based upon the received educated query message. In certain further embodiments, operation **3102** is  
25 based upon the processed, received educated query message.

Figure **72** depicts a flowchart of operations using the third message interface on the service extender computer in accordance with embodiments supporting Figure **57**. Operation **3150** starts the operations of this flowchart. Arrow **3152** directs the flow of execution from operation **3150** to operation  
30 **3154**. Operation **3154** performs receiving a second client message by first

service extender operating a computer at the corresponding service extender address. Arrow **3156** directs execution from operation **3154** to operation **3158**. Operation **3158** performs processing the received second client service query message to create a processed, received second client service query message. Arrow **3160** directs execution from operation **3158** to operation **3162**. Operation **3162** performs generating a service extender-viewable client service query message from the processed, received second client service query message. Arrow **3164** directs execution from operation **3162** to operation **3166**. Operation **3166** performs displaying the service extender-viewable service query message. Arrow **3168** directs execution from operation **3166** to operation **3170**. Operation **3170** performs responding to the service extender-viewable service query message to create a service extender response. Arrow **3172** directs execution from operation **3170** to operation **3174**. Operation **3174** performs generating the proposed client response message from service extender response. Arrow **3176** directs execution from operation **3174** to operation **3178**. Operation **3178** performs sending the proposed client response message to the first service provider at the corresponding service provider address. Arrow **3180** directs execution from operation **3178** to operation **3182**. Operation **3182** terminates the operations of this flowchart.

Figure **73** depicts a flowchart of further details regarding operation **2682**, generating the service-provider-viewable client service query message in accordance with embodiments supporting Figures **55**. Arrow **3200** directs the flow of execution from starting operation **2682** to operation **3202**. Operation **3202** performs receiving proposed client response message from first service extender. Arrow **3204** directs execution from operation **3202** to operation **3206**. Operation **3206** performs processing the received client response message to create processed, received client response message. Arrow **3208** directs execution from operation **3206** to operation **3210**. Operation **3210** performs inserting the processed, received proposed client response message as part of the service-provider-viewable client service query

message. Arrow **3212** directs execution from operation **3210** to operation **3214**. Operation **3214** terminates the operations of this flowchart.

Figure **74** depicts a flowchart of further details regarding operation **2708**, generating the client response message using the second message interface  
5 in accordance with certain embodiments. Arrow **3220** directs the flow of execution from starting operation **2708** to operation **3222**. Operation **3222** performs reviewing the proposed client response message. Arrow **3224** directs execution from operation **3222** to operation **3226**. Operation **3226** terminates the operations of this flowchart.

10 Figure **75** depicts a flowchart of further operations embodying the third message interface in accordance with certain embodiments. Arrow **3240** directs the flow of execution from starting operation **3240** to operation **3242**. Operation **3242** performs generating a copied proposed client response message with appended service extender billing data from the service  
15 extender-viewable client service query message and first service extender response. Arrow **3244** directs execution from operation **3242** to operation **3246**. Operation **3246** performs sending copied proposed client response with appended service extender billing data to service-flow engine. Arrow **3248** directs execution from operation **3246** to operation **3250**. Operation  
20 **3250** terminates the operations of this flowchart.

Figure **76** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments. Operation **3270** starts the operations of this flowchart. Arrow **3272** directs the flow of execution from operation **3270** to operation **3274**. Operation **3274** performs  
25 receiving the copied proposed client response message with the appended service extender billing data. Arrow **3276** directs execution from operation **3274** to operation **3278**. Operation **3278** performs processing the received copied proposed client response message with the appended service extender billing data, to create a processed, received copied proposed client  
30 response message with the appended service extender billing data. Arrow

**3280** directs execution from operation **3278** to operation **3282**. Operation **3282** performs generating a service extender log entry in the service profile of the client from the processed, received copied client response message with the appended service extender billing data. Arrow **3284** directs execution  
5 from operation **3282** to operation **3286**. Operation **3286** terminates the operations of this flowchart.

Figure **77** depicts a flowchart of further operations embodied in a second message interface in accordance with certain embodiments supporting service recommendations. Operation **3290** starts the operations of this  
10 flowchart. Arrow **3291** directs the flow of execution from operation **3290** to operation **3292**. Operation **3292** performs generating an embedded service recommendation. Arrow **3293** directs execution from operation **3292** to operation **3294**. Operation **3294** performs inserting the embedded service recommendation into client response message. Arrow **3295** directs execution  
15 from operation **3294** to operation **3296**. Operation **3296** performs generating a service provider service recommendation message from the embedded service recommendation. Arrow **3297** directs execution from operation **3296** to operation **3298**. Operation **3298** performs sending the service provider service recommendation message to the service-flow engine. Arrow **3299**  
20 directs execution from operation **3298** to operation **3300**. Operation **3300** terminates the operations of this flowchart.

Figure **78** depicts a flowchart of further operations embodied in a service profiler in accordance with certain embodiments supporting service recommendations. Operation **3305** starts the operations of this flowchart.  
25 Arrow **3306** directs the flow of execution from operation **3305** to operation **3307**. Operation **3307** performs maintaining a list of suppliers, each with a corresponding supplier address. Arrow **3308** directs execution from operation **3307** to operation **3309**. Operation **3309** terminates the operations of this flowchart.

Arrow **3310** directs the flow of execution from starting operation **3305** to operation **3311**. Operation **3311** performs integrating a service order. Arrow **3312** directs execution from operation **3311** to operation **3309**. Operation **3309** terminates the operations of this flowchart.

- 5 Note that arrows **3306** and **3310** may be concurrently active, the supplier list may be undergoing maintenance operations and the integration of service orders may be performed concurrently on either the same computer or distinct computers according to various embodiments of the invention.

Figure **78A** depicts a flowchart of further details regarding operation **3311**,  
10 integrating a service order in the service profiler process in accordance with embodiments supporting Figure **78**. Arrow **3315** directs the flow of execution from the starting of operation **3311** to operation **3316**. Operation **3316** performs receiving the service provider service recommendation message. Arrow **3317** directs execution from operation **3316** to operation **3318**.  
15 Operation **3318** performs processing the received service provider service recommendation message, to create a processed, received service provider service recommendation message.

Arrow **3319** directs execution from operation **3311** to operation **3320**. Operation **3320** performs receiving a client order message. Arrow **3321**  
20 directs execution from operation **3320** to operation **3322**. Operation **3322** performs processing the received client order message to create a processed, received client order message.

Arrow **3323** directs execution from operation **3322** to operation **3324**. Arrow **3330** directs execution from operation **3318** to operation **3324**. Note that in  
25 certain embodiments, both arrows **3323** and **3330** must perform their flow of execution before operation **3324** can execute. Operation **3324** performs generating a supplier service order message from the processed, received service provider service recommendation message and the processed, received client order message. Arrow **3325** directs execution from operation  
30 **3324** to operation **3326**. Operation **3326** performs sending the supplier

service order message to one of the suppliers at the corresponding supplier address. Arrow **3327** directs execution from operation **3326** to operation **3328**. Operation **3328** terminates the operations of this flowchart.

Figure **79** depicts a flowchart of further operations embodied in the first message interface in accordance with certain embodiments supporting service recommendations. Operation **3340** starts the operations of this flowchart. Arrow **3342** directs the flow of execution from operation **3340** to operation **3344**. Operation **3344** performs responding to the embedded service recommendation within the processed, received client response message. Arrow **3346** directs execution from operation **3344** to operation **3348**. Operation **3348** terminates the operations of this flowchart.

Arrow **3350** directs the flow of execution from starting operation **3340** to operation **3352**. Operation **3352** performs ordering the embedded service recommendation from the processed, received client response message. Arrow **3354** directs execution from operation **3352** to operation **3348**. Operation **3348** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by client choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **80** depicts a flowchart of further details of operation **3352**, ordering the embedded service recommendation of Figure **79**. Arrow **3360** directs the flow of execution from starting operation **3352** to operation **3362**. Operation **3362** performs generating a client service recommendation message from the processed, received client response message. Arrow **3364** directs execution from operation **3362** to operation **3366**. Operation **3366** performs sending the client service recommendation message to the service-flow engine. Arrow **3368** directs execution from operation **3366** to operation **3370**. Operation **3370** terminates the operations of this flowchart.

Figure **81** depicts a flowchart of further details of operation **3170** of Figure **73**. Arrow **3380** directs the flow of execution from starting operation **3170** to operation **3382**. Operation **3382** performs generating a proposed embedded service recommendation refill in the proposed client response. Arrow **3384**  
5 directs execution from operation **3382** to operation **3386**. Operation **3386** terminates the operations of this flowchart.

Figure **82** depicts a flowchart of further details of operation **3222** of Figure **75**. Arrow **3400** directs the flow of execution from starting operation **3222** to operation **3402**. Operation **3402** performs reviewing the proposed embedded  
10 service recommendation refill. Arrow **3404** directs execution from operation **3402** to operation **3406**. Operation **3406** terminates the operations of this flowchart.

Figure **83** depicts a flowchart of further details of operation **3402** of Figure **82**. Arrow **3420** directs the flow of execution from starting operation **3402** to  
15 operation **3422**. Operation **3422** performs approving the proposed service recommendation refill. Arrow **3424** directs execution from operation **3422** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Arrow **3430** directs the flow of execution from starting operation **3402** to operation **3432**. Operation **3432** performs revising the proposed embedded  
20 service recommendation refill. Arrow **3434** directs execution from operation **3432** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Arrow **3440** directs the flow of execution from starting operation **3402** to operation **3442**. Operation **3442** performs deleting the proposed embedded  
25 service recommendation refill. Arrow **3444** directs execution from operation **3442** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Arrow **3450** directs the flow of execution from starting operation **3402** to operation **3452**. Operation **3452** performs generating a second embedded

service recommendation. Arrow **3454** directs execution from operation **3452** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by client choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **84** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing clients. Operation **3470** starts the operations of this flowchart. Arrow **3472** directs the flow of execution from operation **3470** to operation **3474**. Operation **3474** performs generating a billing report from the client service profile. Arrow **3476** directs execution from operation **3474** to operation **3478**. Operation **3478** terminates the operations of this flowchart.

Figure **85** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing clients. Operation **3490** starts the operations of this flowchart. Arrow **3492** directs the flow of execution from operation **3490** to operation **3494**. Operation **3494** performs sending the billing report to the billing system. Arrow **3496** directs execution from operation **3494** to operation **3498**. Operation **3498** terminates the operations of this flowchart.

Figure **86** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments. Operation **3510** starts the operations of this flowchart. Arrow **3512** directs the flow of execution from operation **3510** to operation **3514**. Operation **3514** performs receiving the billing report for the client. Arrow **3516** directs execution from operation **3514** to operation **3518**. Operation **3518** performs generating a bill for the client based from the received billing report for the client. Arrow **3520** directs execution from operation **3518** to operation **3522**. Operation **3522** terminates the operations of this flowchart.

Figure **87** depicts a flowchart of further details of operation **3518** of Figure **86**. Arrow **3540** directs the flow of execution from starting operation **3518** to operation **3542**. Operation **3542** performs generating a personal bill for the client. Arrow **3544** directs execution from operation **3542** to operation **3546**.  
5 Operation **3546** terminates the operations of this flowchart.

Arrow **3550** directs the flow of execution from starting operation **3518** to operation **3552**. Operation **3552** performs generating an insurance bill for the client to corresponding insurance provider. Arrow **3554** directs execution from operation **3552** to operation **3546**. Operation **3546** terminates the operations  
10 of this flowchart.

Note that a client may not have insurance, so that in such circumstances, no insurance bills would be generated. Note also, that in certain circumstances, there may be an overall insuring, such as a governmental agency, fully paying for the health costs. In such circumstances, no personal service bill might be  
15 generated. In certain alternative embodiments, the performing of these operations might not lead to output of one or the other kinds of service bills.

Figure **88** depicts a flowchart of further details of operation **2704** of Figure **56** supporting a service provider requesting a second opinion in accordance with certain embodiments. Arrow **3570** directs the flow of execution from starting  
20 operation **2704** to operation **3572**. Operation **3572** performs generating a first-service-provider-second opinion request message. Arrow **3574** directs execution from operation **3572** to operation **3576**. Operation **3576** performs sending the first-service-provider-second opinion request message to the second service provider at the corresponding service provider address. Arrow  
25 **3578** directs execution from operation **3576** to operation **3580**. Operation **3580** terminates the operations of this flowchart.

Figure **89** depicts a flowchart of operations embodied in the second message interface supporting a second service provider and a second opinion request in accordance with certain embodiments. Operation **3600** starts the  
30 operations of this flowchart. Arrow **3602** directs the flow of execution from

operation **3600** to operation **3604**. Operation **3604** performs receiving the first-service-provider-second opinion request message. Arrow **3606** directs execution from operation **3604** to operation **3608**. Operation **3608** performs processing the received, first-service-provider-second opinion request message to create the processed, received first-service-provider-second opinion request. Arrow **3610** directs execution from operation **3608** to operation **3612**. Operation **3612** performs displaying the processed, received first-service-provider-second-opinion request. Arrow **3614** directs execution from operation **3612** to operation **3616**. Operation **3616** performs responding to the displayed, processed, received first-service-provider-second opinion request to create a second opinion response. Arrow **3618** directs execution from operation **3616** to operation **3620**. Operation **3620** performs generating a second opinion message from the second opinion response. Arrow **3622** directs execution from operation **3620** to operation **3624**. Operation **3624** performs sending the second opinion message to the first-service-provider at the corresponding service provider address. Arrow **3626** directs execution from operation **3624** to operation **3628**. Operation **3628** terminates the operations of this flowchart.

Figure **90** depicts a flowchart of operations embodied in a second message interface supporting maintaining a collection of client response templates in accordance with certain embodiments. Operation **3640** starts the operations of this flowchart. Arrow **3642** directs the flow of execution from operation **3640** to operation **3644**. Operation **3644** performs creating a client response template. Arrow **3646** directs execution from operation **3644** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

Arrow **3650** directs the flow of execution from starting operation **3640** to operation **3652**. Operation **3652** performs editing one of the client response templates. Arrow **3654** directs execution from operation **3652** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

Arrow **3660** directs the flow of execution from starting operation **3640** to operation **3662**. Operation **3662** performs deleting one of the client response templates. Arrow **3664** directs execution from operation **3662** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

- 5 Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by client choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **91** depicts a flowchart of further details of operation **2704** of Figure **56**  
10 supporting use of a client response template to create a first-service-provider response in accordance with certain embodiments. Arrow **3670** directs the flow of execution from starting operation **2704** to operation **3672**. Operation **3672** performs invoking one of the client response templates in conjunction with the processed, received client service query message. Arrow **3674**  
15 directs execution from operation **3672** to operation **3676**. Operation **3676** performs responding by first service provider to invoked client response template and processed, received client service query message to create the first-service-provider response. Arrow **3678** directs execution from operation **3676** to operation **3680**. Operation **3680** terminates the operations of this  
20 flowchart.

Figure **92** depicts a flowchart of operations embodied in a first message interface to support maintaining a collection of client problem templates in accordance with certain embodiments. Operation **3700** starts the operations of this flowchart. Arrow **3702** directs the flow of execution from operation  
25 **3700** to operation **3704**. Operation **3704** performs receiving the client problem template from service-flow engine. Arrow **3706** directs execution from operation **3704** to operation **3708**. Operation **3708** performs processing the received client problem template to create a processed, received client problem template. Arrow **3710** directs execution from operation **3708** to  
30 operation **3712**. Operation **3712** performs adding the processed, received

client problem template to the collection of client problem templates. Arrow **3714** directs execution from operation **3712** to operation **3716**. Operation **3716** terminates the operations of this flowchart.

Figure **93** depicts a flowchart of further details of operation **2604** of Figure **53**  
5 supporting use of a client problem template to create an educated service query using a first service interface in accordance with certain embodiments. Arrow **3730** directs the flow of execution from starting operation **2604** to operation **3732**. Operation **3732** performs invoking one of the client problem templates. Arrow **3734** directs execution from operation **3732** to operation  
10 **3736**. Operation **3736** performs responding by client to invoked client problem templates to create the educated query message. Arrow **3738** directs execution from operation **3736** to operation **3740**. Operation **3740** terminates the operations of this flowchart.

Figure **94** depicts a flowchart of operations embodied in a service profiler  
15 process performed by a service-flow engine to generate and send client problem templates to clients in accordance with certain embodiments. Operation **3760** starts the operations of this flowchart. Arrow **3762** directs the flow of execution from operation **3760** to operation **3764**. Operation **3764** performs generating a client problem template from the client service profile.  
20 Arrow **3766** directs execution from operation **3764** to operation **3768**. Operation **3768** performs sending the client problem template to the client at the corresponding client address. Arrow **3770** directs execution from operation **3768** to operation **3772**. Operation **3772** terminates the operations of this flowchart.

25 Figure **95** depicts a flow diagram of a service profiler process in accordance with certain embodiments. Box **3800** designates a Service Profiler Process Dispatcher. This communicates via physical transport mechanism **3802** to network **3804**. Box **3808** designates Service profiler sub-process 1 on service-flow engine 1, performing the operation **2630** of Figure **54**. This  
30 communicates via physical transport mechanism **3806** to network **3804**. Box

**3812** designates Service profiler sub-process 2 on service-flow engine 2, performing the operation **2740** of Figure **57**. This communicates via physical transport mechanism **3810** to network **3804**. Box **3816** designates Service profiler sub-process 3 on service-flow engine 3, performing the operation **3040** of Figure **69**. This communicates via physical transport mechanism **3814** to network **3804**. Box **3820** designates Service profiler sub-process 4 on service-flow engine 4, performing the operation **3270** of Figure **76**. This communicates via physical transport mechanism **3818** to network **3804**. Box **3824** designates Service profiler sub-process 5 on service-flow engine 5, performing the operation **3470** of Figure **84**. This communicates via physical transport mechanism **3822** to network **3804**. Box **3828** designates Service profiler sub-process 6 on service-flow engine 6, performing the operation **3490** of Figure **85**. This communicates via physical transport mechanism **3826** to network **3804**. Box **3832** designates Service profiler sub-process 7 on service-flow engine 7, performing the operation **3760** of Figure **94**. This communicates via physical transport mechanism **3830** to network **3804**.

Note that in certain alternative embodiments, collections of these sub-processes may preferably reside on a single service-flow engine. Note that in certain other embodiments, multiple service-flow engines may be performing a given sub-process.

Figure **96** depicts a flow diagram of a computer program capable of receiving a message from a service provider containing a service recommendation and responding to the message containing the service recommendation in accordance with an aspect of the invention. Operation **3850** starts the operations of this flowchart. Arrow **3852** directs the flow of execution from operation **3850** to operation **3854**. Operation **3854** performs receiving the client message with an embedded service recommendation. Arrow **3856** directs execution from operation **3854** to operation **3858**. Operation **3858** performs displaying the received client message with embedded service recommendation. Arrow **3860** directs execution from operation **3858** to operation **3862**. Operation **3862** performs responding to the client message

with embedded service recommendation. Arrow **3864** directs execution from operation **3862** to operation **3866**. Operation **3866** terminates the operations of this flowchart.

Figure **97** depicts a flowchart of further details of the code of **3854** of Figure **96** supporting receiving a client message with an embedded service recommendation in accordance with certain embodiments. Arrow **3880** directs the flow of execution from starting operation **3854** to operation **3882**. Operation **3882** performs receiving an encrypted client message with embedded service recommendation. Arrow **3884** directs execution from operation **3882** to operation **3886**. Operation **3886** performs processing the received, encrypted client message with embedded service recommendation to create the received client message with embedded service recommendation. Arrow **3888** directs execution from operation **3886** to operation **3890**. Operation **3890** terminates the operations of this flowchart.

Figure **98** depicts a flowchart of further details of the code of **3862** of Figure **96** supporting responding to the client response message in accordance with certain embodiments. Arrow **3900** directs the flow of execution from starting operation **3862** to operation **3902**. Operation **3902** performs generating a client service recommendation message from said embedded service recommendation. Arrow **3904** directs execution from operation **3902** to operation **3906**. Operation **3906** performs sending said client service recommendation message to said service-flow engine. Arrow **3908** directs execution from operation **3906** to operation **3910**. Operation **3910** terminates the operations of this flowchart.

Figure **98A** depicts a flowchart of further details of **3311** of Figure **78** supporting integrating a service order in accordance with certain embodiments.

Arrow **3920** directs the flow of execution from starting operation **3311** to operation **3922**. Operation **3922** determines if the received client response message contains an embedded service recommendation. Arrow **3924**

directs execution from operation **3922** to operation **3926**. Arrow **3924** directs execution when the determination is 'Yes' to operation **3926**. Arrow **3954** directs execution when the determination is 'No' to operation **3946**.

5 Operation **3926** performs receiving the client service order message from the first client. Arrow **3928** directs execution from operation **3926** to operation **3930**. Operation **3930** determines if the client service order message from the first client is compatible with the embedded service recommendation contained in the received client response message. Arrow **3932** directs execution from operation **3930** to operation **3934**. Arrow **3932** directs  
10 execution when the determination is 'Yes' to operation **3934**. Arrow **3956** directs execution when the determination is 'No' to operation **3946**.

Operation **3934** determines if the client service order received from the first client authorizes the service order. Arrow **3936** directs execution from operation **3934** to operation **3938**. Arrow **3936** directs execution when the  
15 determination is 'Yes' to operation **3938**. Arrow **3958** directs execution when the determination is 'No' to operation **3946**.

Operation **3938** determines a first pharmacy from the client service order. Arrow **3940** directs execution from operation **3938** to operation **3942**. Operation **3942** performs generates and sends the service order message to  
20 the first pharmacy based upon the received client response message and the received client service order message. Arrow **3944** directs execution from operation **3942** to operation **3946**. Operation **3946** terminates the operations of this flowchart.

Figure **98B** depicts a flowchart of further details of **3324** of Figure **78A**  
25 supporting generating a pharmacy service order in accordance with certain embodiments.

Arrow **3960** directs the flow of execution from starting operation **1324** to operation **3962**. Operation **3962** determines if the processed, received client service order is compatible with the processed, received service provider  
30 service recommendation. Arrow **3964** directs execution when the

determination is 'Yes' to operation **3966**. Arrow **3978** directs usage when the determination is 'No' to operation **3970**.

Operation **3966** generates a pharmacy service order message from the processed, received service provider service recommendation message and  
5 the processed, received client service order. Arrow **3968** directs execution from operation **3966** to operation **3970**. Operation **3970** terminates the operations of this flowchart.

Figure **98C** depicts a flowchart of further details of **3326** of Figure **78A** supporting sending a pharmacy service order to a pharmacy in accordance  
10 with certain embodiments.

Arrow **3980** directs the flow of execution from starting operation **3326** to operation **3962**. Operation **3962** determines if the processed, received client service order is compatible with the processed, received service provider service recommendation. Arrow **3984** directs execution from operation **3962**  
15 to operation **3986**. Arrow **3984** directs execution when the determination is 'Yes' to operation **3986**. Arrow **3998** directs usage when the determination is 'No' to operation **3994**.

Operation **3986** performs determine the first pharmacy from the processed, received client service order. Arrow **3988** directs execution from operation  
20 **3986** to operation **3990**. Operation **3990** performs sending the pharmacy service order message to the first pharmacy. Arrow **3992** directs execution from operation **3990** to operation **3994**. Operation **3994** terminates the operations of this flowchart.

Figure **98D** depicts a flowchart of further details of **3106** of Figure **71** supporting determining a routing chain of service extenders and embedding  
25 the routing chain into a second client query in accordance with certain embodiments.

Arrow **4010** directs the flow of execution from starting operation **1106** to operation **4012**. Operation **4012** determines a routing chain of service  
30 extenders. Arrow **4014** directs execution from operation **4012** to operation

**4016.** Operation **4016** embeds the routing chain of service extenders into the second service query. Arrow **4018** directs execution from operation **4016** to operation **4020**. Operation **4020** terminates the operations of this flowchart.

Note that a routing chain of service extenders is a collection of at least one service extender to whom the second client query will be routed after the first service extender has added their proposed response to the client query.

Figure **98E** depicts a flowchart of further details of **3178** of Figure **72** supporting determining successor service extenders in an embedded service extender routing chain, generating a successor service query message with embedded proposed client response and sending the successor client service query to the successor service extender.

Arrow **4030** directs the flow of execution from starting operation **1178** to operation **4032**. Operation **4032** determines if there is a successor service extender in the embedded service extender chain. Arrow **4034** directs execution from operation **4032** to operation **4036**. Arrow **4034** directs execution when the determination is 'Yes' to operation **4032**. Arrow **4048** directs execution when the determination is 'No' to operation **4044**.

Operation **4036** generates the successor service query message with the embedded proposed client response. Arrow **4038** directs execution from operation **4036** to operation **4040**. Operation **4040** send the successor client service query to the successor service extender. Arrow **4042** directs execution from operation **4040** to operation **4044**. Operation **4044** terminates the operations of this flowchart.

Figure **98F** depicts a flowchart of further details of **2646** of Figure **54** supporting generating a routing tree of service providers with first service provider final destination and source list of service providers, generating and sending a source service query to each service provider included in the service provider source list.

Arrow **4060** directs the flow of execution from starting operation **646** to operation **4062**. Operation **4062** performs generating a routing tree of service

providers with the first service provider the final destination of the routing tree and a source list of service providers of the routing tree. Arrow **4064** directs execution from operation **4062** to operation **4066**. Operation **4066** performs generating and sending a source service query for and to each service  
5 provider belonging to the source list of the routing tree. Arrow **4068** directs execution from operation **4066** to operation **4070**. Operation **4070** terminates the operations of this flowchart.

This disclosure is provided to reveal a embodiment of the invention and a best  
10 mode for practicing the invention. However, one skilled in the art will readily appreciate that other approaches may be substituted for those set forth herein without departing from the spirit and scope of the present invention. Further, additional advantages, applications and modifications of the invention will readily occur to those skilled in the art. Accordingly, the invention should only  
15 be limited by the claims included below.

### **In the Claims**

1. A method of messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer from time to time capable of receiving and sending messages upon said network at a  
5 corresponding physician address on said network, at least one patient, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding patient address on said network, and a workflow engine accessing said network capable of receiving and sending messages upon said network at least one workflow engine  
10 address on said network, comprising:  
    using a first medical message wizard by said patient on said patient operated computer further comprising;  
    generating an educated query message; and  
    sending said educated query message to one of said workflow engine  
15 addresses; and  
performing a medical profiler process by said workflow engine further comprising  
    receiving said educated query message at said workflow engine address;  
20 processing said received educated query message, to create a processed, received educated query message;  
    generating a patient message log entry in a medical profile of said patient from said processed, received educated query message;  
    generating a patient medical query message from said processed,  
25 received educated query message; and  
    sending said patient medical query message to a first physician with said corresponding physician address; and  
using a second medical message wizard by said first physician on said first physician operated computer at said corresponding physician address further  
30 comprising:  
    receiving said patient medical query message;

processing said received patient medical query message, to create a processed, received patient medical query message;

generating a physician-viewable patient medical query message from said processed, received patient medical query message; and

5 displaying said physician-viewable patient medical query message.

2. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1;

wherein using said second medical message wizard by said first physician further comprises;

15 responding to said physician-viewable patient medical query message, to create a first-physician response;

generating a patient response message from said physician-viewable patient medical query message and said first-physician response;

20 sending said patient response message to said patient at said corresponding patient address; and

copying said patient response message with an appended physician billing data to said workflow engine address; and

25 wherein said medical profiler process further comprises:

receiving said copied patient response message with said appended physician billing data;

30 processing said received, copied patient response message with said appended physician billing data, generating a processed, received copied patient response message with said appended physician billing data; and

generating a patient response log entry in said medical profile of said patient

from said processed, received copied patient response message with said appended physician billing data; and

using said first message wizard on said patient operated computer at said corresponding patient address further comprises;

5 receiving said patient response message;

processing said received patient response message to create a processed,

received patient response message; and

displaying said processed, received patient response message.

10 3. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
15 medical profiler address on said network, as recited in claim 2;

wherein generating said educated query message by said first message wizard on said patient operated computer further comprises;

providing patient-to-profiler authentication key; and

20 encrypting said educated query message with said patient-to-profiler authentication key; and

wherein processing said received educated query message by said medical profiler process further comprises;

providing profiler-from-patient authentication key; and

25 decrypting said received educated query message with said profiler-from patient authentication key; and

patient authentication key; and

wherein generating said patient medical query message by said medical profiler process further comprises;

providing a profiler-to-first-physician authentication key; and

30 encrypting said patient medical query message with said profiler-to-first physician authentication key; and

wherein processing said received patient medical query message using said second message wizard further comprises;

providing a first-physician-from-profiler authentication key; and

5 decrypting said received patient medical query message with said first physician-from-profiler authentication key; and

wherein copying said patient response message with an appended physician billing data to said workflow engine address using said second message wizard further comprises;

providing a first-physician-to-profiler authentication key;

10 encrypting said patient response message with an appended physician billing data with said first-physician-to-profiler authentication key, to create a first-physician-to-profiler encrypted patient response message with an appended physician billing data; and

15 sending said first-physician-to-profiler encrypted patient response message with an appended physician billing data to said workflow engine as said copied patient response message with an appended physician billing data; and

20 wherein processing said received, copied patient response message with said appended physician billing data by said medical profiler process further comprises;

providing profiler-from-first-physician authentication key; and

25 decrypting said received, copied patient response message with said appended physician billing data with said profiler-from-first-physician authentication key, generating said processed, received patient response message with said appended physician billing data.

4. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
30 medical profiler address on said network, as recited in claim 3;

wherein generating said patient response message by said second message wizard on said first physician operated computer further comprises providing a first-physician-to-patient authentication key;

generating an unencrypted patient response message from said  
5 physician  
viewable patient medical query message and said first-physician response;  
and

encrypting said unencrypted patient response message with said first physician-to-patient authentication key, to create said patient response  
10 message; and

wherein processing said received patient response message using said first message wizard on said patient operated computer further comprises providing a patient-from-first-physician authentication key; and

decrypting said received patient response message with said patient-  
15 from  
first-physician authentication key, to create said processed, received patient response message.

5. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a  
20 computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 3;

wherein sending said patient response message to said patient at said  
25 corresponding patient address using said second message wizard by said first physician further comprises sending a patient response message destined for said patient at said corresponding patient address to said workflow engine address;

wherein generating said patient response message by said second  
30 message wizard on said first physician operated computer further comprises providing a first-physician-to-profiler authentication key;  
providing said patient corresponding patient address as a destination

address within said patient response message, to create an unencrypted patient response message with said patient corresponding address destination; and

5        encrypting said unencrypted patient response message with said patient

corresponding address destination with said first-physician-to-patient authentication key, to create said patient response message destined for said patient at said corresponding patient address; and

10        wherein performing said medical profiler process by said workflow engine further comprises:

receiving said patient response message destined for said patient at said corresponding patient address at said workflow engine address;

15        processing said received patient response message destined for said patient at said corresponding patient address, to create said processed patient response message for said patient at said corresponding patient address further comprises;

providing a profiler-from-first-physician authentication key; and

20        decrypting said patient response message destined for said patient at said corresponding patient address with said profiler-from-first-physician authentication key, to create processed patient response message for said patient at said corresponding patient address;

sending processed patient response message for said patient at said corresponding patient address to said patient at said corresponding address.

6.        A method supporting messaging upon a network implementing a  
25        messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 3;

30        wherein there is at least one physician extender operating a computer capable of receiving and sending messages at a corresponding address upon said network; and

wherein generating a patient medical query message in said medical profiler process further comprises

selecting a first of said physician extenders;

generating a second patient medical query message for said first  
5 physician  
extender; and

sending said second patient medical query message to said first  
physician  
extender at said corresponding physician extender address; and

10 further comprising using a third medical message wizard by said first  
physician extender on said first physician extender operated computer further  
comprising:

receiving said second patient medical query message at said first  
physician

15 extender corresponding physician extender address;

processing said received second patient medical query message, to  
create a

processed, received second patient medical query message;

generating a physician extender-viewable patient medical query  
20 message

from said processed, received second patient medical query message;

displaying said physician extender-viewable patient medical query  
message;

responding to said physician extender-viewable patient medical query  
25 message to create a first physician extender response;

generating a proposed patient response message from said physician  
extender-viewable patient medical query message and said first physician  
extender response; and

sending said proposed patient response message to said first-  
30 physician at

said corresponding physician address; and

generating said physician-viewable patient medical query message using said second message wizard further comprising

receiving said proposed patient response message from said first physician

5 extender at said corresponding physician extender address;

processing said received proposed patient response message, to create a

processed, received proposed patient response message; and

10 inserting said processed, received proposed patient response message as

part of said physician-viewable patient medical query message; and

generating said patient response message using said second message wizard further comprising reviewing said proposed patient response message to create said patient response message.

15 7. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
20 medical profiler address on said network, as recited in claim 6;

wherein at least one of said physician extenders is an administrator.

8. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a  
25 computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 6;

30 wherein at least one of said physician extenders is a physician assistant.

9. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on  
5 said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 6;

wherein using said third medical message wizard on further comprises:

generating a copied proposed patient response message with an appended physician extender billing data from said physician extender-viewable patient medical query message and said first physician extender  
10 response; and

sending said copied proposed patient response message sent with an appended physician extender billing data to said workflow engine address;  
and

15 wherein said medical profiler process further comprises:

receiving said copied proposed patient response message with said appended physician extender billing data;

processing said received copied proposed patient response message with

20 said appended physician extender billing data, to create a processed, received copied proposed patient response message with said appended physician extender billing data; and

generating a physician extender log entry in said medical profile of said patient from said processed, received copied patient response message with  
25 said appended physician extender billing data.

10. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one  
30 patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 6;

wherein generating said patient response message to said patient address in using said second medical message wizard further comprises:

generating an embedded prescription;

inserting said embedded prescription in said patient response  
5 message;

generating a physician prescription message from said embedded prescription;

sending said physician prescription message to said workflow engine;

said medical profiler process performed by said workflow engine further  
10 comprising:

integrating a prescription order further comprising:

receiving said physician prescription message;

processing said received physician prescription message to create a  
processed, received physician prescription message.

15

11. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on  
20 said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 10;

wherein said network further involves at least one pharmacy, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding pharmacy address on said  
25 network;

wherein generating said patient response message to said patient address in using said second medical message wizard further comprises:

maintaining a list of said pharmacies each with said corresponding  
pharmacy

30 address; and

integrating a prescription order further comprising:

receiving a patient prescription order message;

processing said patient prescription message to create a processed,  
received patient prescription message;

generating a pharmacy prescription order message from said  
processed, received physician prescription message and said processed,  
5 received patient prescription message and said list of said pharmacies; and

sending said pharmacy prescription order message to one of said  
pharmacies at said corresponding address; and

using said first message wizard on said patient operated computer at  
said corresponding patient address further comprises:

10 responding to said patient response message using said first  
messaging

wizard further comprising;

generating a patient prescription message from said embedded  
prescription; and

15 sending said patient prescription message to said workflow engine.

12. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a  
computer at a corresponding physician address on said network, at least one  
patient, each operating a computer at a corresponding patient address on  
20 said network, and a medical profiler accessing said network with at least one  
medical profiler address on said network, as recited in claim 10;

wherein at least one of said physician extenders is a nurse;

wherein generating said proposed patient response message using  
said third medical message wizard by said nurse further comprises

25 generating a proposed embedded prescription refill in said proposed  
patient

response message;

reviewing said proposed patient response message using said second  
messaging wizard by said first physician further comprises reviewing said  
30 proposed embedded prescription refill further comprising at least one of the  
collection containing;

approving said proposed embedded prescription refill;

revising said proposed embedded prescription refill;  
deleting said proposed embedded prescription refill; and  
generating a second embedded prescription.

13. A method supporting messaging upon a network implementing a  
5 messaging protocol involving at least one physician, each operating a  
computer at a corresponding physician address on said network, at least one  
patient, each operating a computer at a corresponding patient address on  
said network, and a medical profiler accessing said network with at least one  
medical profiler address on said network, as recited in claim 6;

10 wherein said third message wizard is implemented as a computer  
program residing in computer readable media accessible by said physician  
extender operating said computer.

14. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a  
15 computer at a corresponding physician address on said network, at least one  
patient, each operating a computer at a corresponding patient address on  
said network, and a medical profiler accessing said network with at least one  
medical profiler address on said network, as recited in claim 2

20 wherein said medical profiler process further comprises generating a  
billing report from said medical profile of said patient.

15. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a  
computer at a corresponding physician address on said network, at least one  
patient, each operating a computer at a corresponding patient address on  
25 said network, and a medical profiler accessing said network with at least one  
medical profiler address on said network, as recited in claim 14;

wherein said network further involves a billing system accessing said  
network at a billing system address on said network; and

wherein said workflow engine process further comprises

sending said billing report from said medical profile of said patient to said

billing system address; and

further comprising a billing process performed by said billing system

5 further comprising:

receiving said billing report for said patient sent from said workflow engine

process; and

generating a bill for said patient from said received billing report.

10 16. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
15 medical profiler address on said network, as recited in claim 15;

wherein generating said bill for said patient from said received billing report further comprises at least one of the collection comprising:

generating a personal bill for said patient; and

generating at least one insurance bills for said patient to a  
20 corresponding insurance provider.

17. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on  
25 said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 16, wherein said corresponding insurance provider includes the United States Government.

18. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a  
30 computer at a corresponding physician address on said network, at least one

patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 16, wherein said corresponding insurance provider includes a commercial insurance provider.

5 19. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
10 medical profiler address on said network, as recited in claim 2;

wherein said network involves at least two physicians including a second physician;

wherein responding to said physician-viewable patient medical query message using said second message wizard by said first physician further  
15 comprises;

generating a first-physician-second opinion request message;

sending said first-physician-second opinion request message to said  
second

physician at said corresponding physician address;

20 further comprising using said second message wizard by said second physician operating said computer at said corresponding physician address further comprises;

receiving said first-physician-second opinion request message at said  
second

25 physician corresponding physician address;

processing said received first-physician-second opinion request  
message, to

create a processed, received first-physician-second opinion request;

30 displaying said processed, received first-physician-second opinion  
request;

responding to said displayed processed, received first-physician-  
second

opinion request to create a second opinion response;  
generating a second opinion message from said second opinion  
response;  
and

5 sending said second opinion message to said first physician at said  
corresponding physician address.

20. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a  
computer at a corresponding physician address on said network, at least one  
10 patient, each operating a computer at a corresponding patient address on  
said network, and a medical profiler accessing said network with at least one  
medical profiler address on said network, as recited in claim 2;

wherein using said second wizard further comprises maintaining a  
collection of patient response templates, further comprising

15 creating one of said patient response templates of said patient  
response  
template collection;

editing one of said patient response templates of said patient response  
template collection; and

20 deleting one of said patient response templates of said patient  
response  
template collection; and

wherein responding to said patient medical query message using said  
second wizard further comprises

25 invoking one of said patient response template in conjunction with said  
processed, received patient medical query message; and

responding to said invoked patient response template and said  
processed,

received patient medical query message to create said first-physician  
30 response.

21. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on  
5 said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1;

wherein using said first message wizard further comprises maintaining a collection of patient problem templates, further comprising

receiving a patient problem template from said medical profiler;

10 processing said received patient problem template to create a processed,

received patient problem template; and

adding said processed, received patient problem template to said collection

15 of patient problem templates; and

wherein generating an educated query message using said first message wizard further comprises

invoking one of said patient problem template; and

20 responding to said invoked patient problem template to generate said educated query message; and

wherein performing said workflow engine processes further comprises generating a patient problem template from said medical profile of said patient;

sending said generated patient problem template to said patient.

25 22. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one  
30 medical profiler address on said network, as recited in claim 1;

wherein performing said medical profiler process further comprises maintaining a routing table comprised of at least one routing directive to said first physician;

wherein sending said patient medical query message to a first physician with said corresponding physician address further comprises:

examining said routing table based upon said patient medical query message to find a first of said routing directives to said first physician compatible with said patient medical query message; and

finding said first routing directive to said first physician compatible with said patient medical query message.

23. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 22;

wherein maintaining a routing table comprised of at least one routing directive to said first physician comprises

extracting from said medical profile one of said patients a patient routing extract;

and integrating into the routing table said patient routing extract.

24. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 22;

wherein maintaining a routing table comprised of at least one routing directive to said first physician comprises

extracting from said medical profile of at least two of said patients a patient routing pattern;

and integrating into the routing table said patient routing pattern.

25. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one  
5 patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1, wherein said messaging protocol supports email.

26. A method supporting messaging upon a network implementing a  
10 messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 25, wherein said  
15 messaging protocol supports TCPIP.

27. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on  
20 said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 26, wherein said messaging protocol supports the World Wide Web.

28. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a  
25 computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1, wherein said second message wizard is implemented as a computer program residing on a  
30 computer readable medium accessible by said physician operated computer.

29. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1, wherein said first message wizard is implemented as a computer program residing on a computer readable medium accessible by said patient operated computer.

30. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1;

wherein said medical profiler resides on at least one server capable of accessing said network to receive and send messages; and

wherein said workflow engine process is implemented as a program system wherein the various stated operations of said process are implemented as component program which may be concurrently operating.

31. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 30, wherein said workflow engine resides on exactly one server capable of accessing said network to receive and send messages.

32. A method supporting messaging upon a network implementing a messaging

protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 31;

wherein said medical profiler resides on a first server and a second server coupled to said first server by a second network implementing a second messaging protocol;

wherein said first server capable of accessing said network to receive and send messages and maintaining a firewall to filter all messages received from said network providing at least one of said filtered, received messages from said first network to be received by said second server upon said second network; and

wherein said second server performs at least one of the stated operations of said workflow engine process.

33. A computer program residing on a computer readable medium accessible by said patient operated computer capable of receiving a patient message with an embedded prescription and sending messages to a workflow engine including;

code for receiving said patient message with said embedded prescription;

code for displaying said received patient message with said embedded prescription;

code for responding to said patient message with said embedded prescription further comprising:

code for generating a patient prescription message from said embedded prescription; and

code for sending said patient prescription message to said workflow engine.

34. A method of messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding service provider address on said network, at least one client, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding client address on said network, and a service-flow engine accessing said network capable of receiving and sending messages upon said network at least one service-flow engine address on said network, comprising;
- 5 using a first service message interface by said client on said client operated computer further comprising:
- generating an educated query message; and
  - sending said educated query message to one of said service-flow engine addresses; and
- 10 performing a service profiler process by said service-flow engine further comprising
- receiving said educated query message at said service-flow engine address;
  - processing said received educated query message, to create a processed, received educated query message;
  - generating a client message log entry in a service profile of said client from said processed, received educated query message;
  - generating a client service query message from said processed, received
- 15 educated query message; and
- sending said client service query message to a first service provider with said corresponding service provider address; and
  - using a second service message interface by said first service provider on said first service provider operated computer at said corresponding service
- 20 provider address further comprising:
- receiving said client service query message;
  - processing said received client service query message, to create a
- 25
- 30

processed, received client service query message;  
generating a service-provider-viewable client service query message  
from  
said processed, received client service query message; and  
5 displaying said service-provider-viewable client service query  
message.

35. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at  
10 least one client, each operating a computer at a corresponding client address  
on said network, and a service profiler accessing said network with at least  
one service profiler address on said network, as recited in claim 34;

wherein using said second service message interface by said first  
service provider further comprises:

15 responding to said service-provider-viewable client service query  
message,

to create a first-service-provider response;

generating a client response message from said service-provider-  
viewable

20 client service query message and said first-service-provider response;

sending said client response message to said client at said  
corresponding  
client address; and

25 copying said client response message with an appended service  
provider

billing data to said service-flow engine address; and

wherein said service profiler process further comprises:

receiving said copied client response message with said appended  
service

30 provider billing data;

processing said received, copied client response message with said

appended service provider billing data, generating a processed, received copied client response message with said appended service provider billing data; and

generating a client response log entry in said service profile of said  
5 client from

said processed, received copied client response message with said appended service provider billing data; and

using said first message interface on said client operated computer at said corresponding client address further comprises:

10 receiving said client response message;

processing said received client response message to create a processed,

received client response message; and

displaying said processed, received client response message.

15 36. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least  
20 one service profiler address on said network, as recited in claim 35;

wherein generating said educated query message by said first message interface on said client operated computer further comprises

providing client-to-profiler authentication key; and

25 encrypting said educated query message with said client-to-profiler authentication key; and

wherein processing said received educated query message by said service profiler process further comprises

providing profiler-from-client authentication key; and

30 decrypting said received educated query message with said profiler-from

client authentication key; and

wherein generating said client service query message by said service profiler process further comprises

providing a profiler-to-first-service-provider authentication key; and

5 encrypting said client service query message with said profiler-to-first service provider authentication key; and

wherein processing said received client service query message using said second message interface further comprises

providing a first-service-provider-from-profiler authentication key; and

10 decrypting said received client service query message with said first service-provider-from-profiler authentication key; and

wherein copying said client response message with an appended service provider billing data to said service-flow engine address using said second message interface further comprises

providing a first-service-provider-to-profiler authentication key;

15 encrypting said client response message with an appended service provider billing data with said first-service-provider-to-profiler authentication key, to create a first-service-provider-to-profiler encrypted client response message with an appended service provider billing data; and

20 sending said first-service-provider-to-profiler encrypted client response message with an appended service provider billing data to said service-flow engine as said copied client response message with an appended service provider billing data; and

25 wherein processing said received, copied client response message with said appended service provider billing data by said service profiler process further comprises

providing profiler-from-first-service-provider authentication key; and

30 decrypting said received, copied client response message with said appended service provider billing data with said profiler-from-first-service-provider authentication key, generating said processed, received client response message with said appended service provider billing data.

37. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a

computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36;

5 wherein generating said client response message by said second message interface on said first service provider operated computer further comprises

providing a first-service-provider-to-client authentication key;

generating an unencrypted client response message from said service  
10 provider viewable client service query message and said first-service-provider response; and

encrypting said unencrypted client response message with said first service-provider-to-client authentication key, to create said client response message; and

15 wherein processing said received client response message using said first message interface on said client operated computer further comprises

providing a client-from-first-service-provider authentication key; and

decrypting said received client response message with said client-from first-service-provider authentication key, to create said processed, received  
20 client response message.

38. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address  
25 on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36:

wherein sending said client response message to said client at said corresponding client address using said second message interface by said first service provider further comprises sending a client response message  
30 destined for said client at said corresponding client address to said service-flow engine address;

wherein generating said client response message by said second message interface on said first service provider operated computer further comprises

providing a first-service-provider-to-profiler authentication key;

5 providing said client corresponding client address as a destination address within said client response message, to create an unencrypted client response message with said client corresponding address destination; and

encrypting said unencrypted client response message with said client corresponding address destination with said first-service-provider-to-client authentication key, to create said client response message destined for said client at said corresponding client address; and

wherein performing said service profiler process by said service-flow engine further comprises:

receiving said client response message destined for said client at said corresponding client address at said service-flow engine address;

processing said received client response message destined for said client at said corresponding client address, to create said processed client response message for said client at said corresponding client address further comprises

20 providing a profiler-from-first-service-provider authentication key; and

decrypting said client response message destined for said client at said corresponding client address with said profiler-from-first-service-provider authentication key, to create processed client response message for said client at said corresponding client address;

25 sending processed client response message for said client at said corresponding client address to said client at said corresponding address.

39. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36;

wherein there is at least one service extender operating a computer capable of receiving and sending messages at a corresponding address upon said network; and

wherein generating a client service query message in said service  
5 profiler process further comprises

selecting a first of said service extenders;

generating a second client service query message for said first service  
provider extender; and

10 sending said second client service query message to said first service  
provider

extender at said corresponding service extender address; and

further comprising using a third service message interface by said first  
service extender on said first service extender operated computer further  
comprising:

15 receiving said second client service query message at said first service  
provider

extender corresponding service extender address;

processing said received second client service query message, to  
create a

20 processed, received second client service query message;

generating a service extender-viewable client service query message  
from said processed, received second client service query message;

displaying said service extender-viewable client service query  
message;

25 responding to said service extender-viewable client service query  
message to create a first service extender response;

generating a proposed client response message from said service  
provider

30 extender-viewable client service query message and said first service  
extender response; and

sending said proposed client response message to said first-service-  
provider at

said corresponding service provider address; and

generating said service-provider-viewable client service query message using said second message interface further comprising

receiving said proposed client response message from said first  
5 service provider

extender at said corresponding service extender address;

processing said received proposed client response message, to create  
a

processed, received proposed client response message; and

10 inserting said processed, received proposed client response message  
as

part of said service-provider-viewable client service query message; and

generating said client response message using said second message  
interface further comprising reviewing said proposed client response message  
15 to create said client response message.

40. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at  
least one client, each operating a computer at a corresponding client address  
20 on said network, and a service profiler accessing said network with at least  
one service profiler address on said network, as recited in claim 39;

wherein at least one of said service extenders is an administrator.

41. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at  
least one client, each operating a computer at a corresponding client address  
on said network, and a service profiler accessing said network with at least  
one service profiler address on said network, as recited in claim 39;

30 wherein at least one of said service extenders is a service provider  
assistant.

42. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address  
5 on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein using said third service message interface on further comprises:

generating a copied proposed client response message with an  
10 appended service extender billing data from said service extender-viewable client service query message and said first service extender response; and

sending said copied proposed client response message sent with an appended service extender billing data to said service-flow engine address; and

15 wherein said service profiler process further comprises:

receiving said copied proposed client response message with said appended service extender billing data;

processing said received copied proposed client response message with

20 said appended service extender billing data, to create a processed, received copied proposed client response message with said appended service extender billing data; and

generating a service extender log entry in said service profile of said client from said processed, received copied client response message with  
25 said appended service extender billing data.

43. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at  
30 least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein generating said client response message to said client address in using said second service message interface further comprises:

generating an embedded service recommendation;

5 inserting said embedded service recommendation in said client response message;

generating a service provider service recommendation message from said embedded service recommendation;

10 sending said service provider service recommendation message to said service-flow engine;

said service profiler process performed by said service-flow engine further comprising:

integrating a service order further comprising:

receiving said service provider service recommendation message;

15 processing said received service provider service recommendation message to create a

processed, received service provider service recommendation message.

20 44. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least  
25 one service profiler address on said network, as recited in claim 43;

wherein said network further involves at least one supplier, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding supplier address on said network;

30 wherein generating said client response message to said client address in using said second service message interface further comprises:

maintaining a list of said suppliers each with said corresponding supplier address; and

integrating a service order further comprising:

receiving a client order message;

5 processing said client service recommendation message to create a processed, received client service recommendation message;

generating a supplier service order message from said processed, received

service provider service recommendation message and said processed, received client service recommendation message and said list of said suppliers; and

sending said supplier service order message to one of said suppliers at said corresponding address; and

using said first message interface on said client operated computer at said corresponding client address further comprises:

15 responding to said client response message using said first messaging interface further comprising:

generating a client service recommendation message from said embedded

20 service recommendation; and

sending said client service recommendation message to said service-flow engine.

45. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 43;

wherein at least one of said service extenders is a service assistant;

30 wherein generating said proposed client response message using said third service message interface by said service assistant further comprises

generating a proposed embedded service recommendation refill in said

proposed client response message;

reviewing said proposed client response message using said second message interface by said first service provider further comprises reviewing said proposed embedded service recommendation refill further comprising at least one of the collection containing;

approving said proposed embedded service recommendation refill;

revising said proposed embedded service recommendation refill;

deleting said proposed embedded service recommendation refill; and

generating a second embedded service recommendation.

46. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein said third message interface is implemented as a computer program residing in computer readable media accessible by said service extender operating said computer.

47. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 35;

wherein said service profiler process further comprises generating a billing report from said service profile of said client.

48. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address

on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 47;

wherein said network further involves a billing system accessing said network at a billing system address on said network; and

5 wherein said service-flow engine process further comprises sending said billing report from said service profile of said client to said billing system address; and

further comprising a billing process performed by said billing system further comprising:

10 receiving said billing report for said client sent from said service-flow engine

process; and

generating a bill for said client from said received billing report.

49. A method supporting messaging upon a network implementing a  
15 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 48;

20 wherein generating said bill for said client from said received billing report further comprises at least one of the collection comprising:

generating a personal bill for said client; and

generating at least one insurance bills for said client to a corresponding insurance provider.

25 50. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least  
30 one service profiler address on said network, as recited in claim 49, wherein

said corresponding insurance provider includes the United States Government.

51. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 49, wherein said corresponding insurance provider includes a commercial insurance provider.

52. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 35;

wherein said network involves at least two service providers including a second service provider;

wherein responding to said service-provider-viewable client service query message using said second message interface by said first service provider further comprises

generating a first-service-provider-second opinion request message;

sending said first-service-provider-second opinion request message to said

second service provider at said corresponding service provider address;

further comprising using said second message interface by said second service provider operating said computer at said corresponding service provider address further comprises;

receiving said first-service-provider-second opinion request message at said second

service provider corresponding service provider address;  
processing said received first-service-provider-second opinion request  
message, to  
create a processed, received first-service-provider-second opinion request;  
5 displaying said processed, received first-service-provider-second  
opinion  
request;  
responding to said displayed processed, received first-service-provider  
second opinion request to create a second opinion response;  
10 generating a second opinion message from said second opinion  
response;  
and  
sending said second opinion message to said first service provider at  
said  
15 corresponding service provider address.

53. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at  
20 least one client, each operating a computer at a corresponding client address  
on said network, and a service profiler accessing said network with at least  
one service profiler address on said network, as recited in claim 35;

wherein using said second message interface further comprises  
maintaining a collection of client response templates, further comprising  
25 creating one of said client response templates of said client response  
template collection;

editing one of said client response templates of said client response  
template collection; and

deleting one of said client response templates of said client response  
30 template collection; and

wherein responding to said client service query message using said second message interface further comprises

invoking one of said client response template in conjunction with said processed, received client service query message; and

5        responding to said invoked client response template and said processed, received client service query message to create said first-service-provider response.

54.    A method supporting messaging upon a network implementing a  
10    messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

15        wherein using said first message interface further comprises maintaining a collection of client problem templates, further comprising receiving a client problem template from said service profiler; processing said received client problem template to create a processed,

20    received client problem template; and

adding said processed, received client problem template to said collection of client problem templates; and

25        wherein generating an educated query message using said first message interface further comprises

invoking one of said client problem template; and

responding to said invoked client problem template to generate said educated query message; and

30        wherein performing said service-flow engine processes further comprises

generating a client problem template from said service profile of said client;

sending said generated client problem template to said client.

55. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address  
5 on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

wherein performing said service profiler process further comprises maintaining a routing table comprised of at least one routing directive to said  
10 first service provider;

wherein sending said client service query message to a first service provider with said corresponding service provider address further comprises:

examining said routing table based upon said client service query message to find a first of said routing directives to said first service provider  
15 compatible with said client service query message; and

finding said first routing directive to said first service provider compatible with said client service query message.

56. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at  
20 least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 55;

wherein maintaining a routing table comprised of at least one routing  
25 directive to said first service provider comprises

extracting from said service profile one of said clients a client routing extract;

and integrating into the routing table said client routing extract.

57. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
30

computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 55;

5 wherein maintaining a routing table comprised of at least one routing directive to said first service provider comprises

extracting from said service profile of at least two of said clients a client routing pattern;

and integrating into the routing table said client routing pattern.

10 58. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least  
15 one service profiler address on said network, as recited in claim 34, wherein said messaging protocol supports email.

59. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at  
20 least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 58, wherein said messaging protocol supports TCPIP.

60. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 59, wherein  
30 said messaging protocol supports the World Wide Web.

61. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address  
5 on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34, wherein said second message interface is implemented as a computer program residing on a computer readable medium accessible by said service provider operated computer.

10 62. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address  
15 on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34, wherein said first message interface is implemented as a computer program residing on a computer readable medium accessible by said client operated computer.

63. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
20 computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

wherein said service profiler resides on at least one server capable of  
25 accessing said network to receive and send messages; and

wherein said service-flow engine process is implemented as a program system wherein the various stated operations of said process are implemented as component program which may be concurrently operating.

64. A method supporting messaging upon a network implementing a  
30 messaging protocol involving at least one service provider, each operating a

computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 63, wherein  
5 said service-flow engine resides on exactly one server capable of accessing said network to receive and send messages.

65. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
10 computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 64;

wherein said service profiler resides on a first server and a second  
15 server coupled to said first server by a second network implementing a second messaging protocol;

wherein said first server capable of accessing said network to receive and send messages and maintaining a firewall to filter all messages received from said network providing at least one of said filtered, received messages  
20 from said first network to be received by said second server upon said second network; and

wherein said second server performs at least one of the stated operations of said service-flow engine process.

25 66. A computer program residing on a computer readable medium accessible by a client operated computer capable of receiving a client message with an embedded service recommendation and sending messages to a service-flow engine including

code for receiving said client message with said embedded service  
30 recommendation;

code for displaying said received client message with said embedded service recommendation;

code for responding to said client message with said embedded service recommendation further comprising: code for generating a client service recommendation message from said embedded service recommendation; and

5 code for sending said client service recommendation message to said service-flow engine.

67. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient  
10 operated computer and further communicating with at least one physician operated computer comprising;

code for receiving an educated query message from a first of said patients via said patient operated computer and generating a patient message log entry in a medical profile of said first patient; and

15 code for receiving a patient response message from a first of said physicians based upon said educated query message from said first patient and generating a physician response log entry in said medical profile of said first patient.

68. A computer program residing on a computer readable medium  
20 accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 67 further comprising;

code for generating a first patient medical query message based upon  
25 received said educated query message from said first patient and sending said first patient medical query message to said first physician.

69. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient

operated computer and further communicating with at least one physician operated computer, as recited in claim 68;

wherein code for generating a first patient medical query message based upon said received educated query message from said first patient and  
5 sending said first patient medical query message to said first physician further comprises

code for determining said first physician based upon said received educated query message from said first patient.

70. A computer program residing on a computer readable medium  
10 accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 69, further comprises

code for determining if said received patient response message  
15 contains an embedded prescription;

code for receiving a patient prescription order message from said first patient; and

code for generating a prescription order message based upon said received patient prescription order message and said received patient  
20 response message and for sending said prescription order message to a first pharmacy

whenever said received patient response message contains said embedded prescription; and

whenever said received patient prescription order message is  
25 compatible with said embedded prescription contained in said received patient response message; and

whenever said received patient prescription order message authorizes sending said prescription order message to said first pharmacy.

71. A computer program residing on a computer readable medium  
30 accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient

operated computer and further communicating with at least one physician operated computer, as recited in claim 70;

wherein said network further communicates with at least one physician extender operated computer; and

5 further comprising code for generating a second patient medical query message based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders operated computer.

72. A computer program residing on a computer readable medium  
10 accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 71;

wherein code for generating a second patient medical query message  
15 based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders further comprises

code for determining said first physician extender based upon said  
received  
20 educated query message from said first patient.

73. A computer program residing on a computer readable medium  
accessible by a workflow engine computer system communicating with a  
network, said network further communicating with at least one patient  
operated computer and further communicating with at least one physician  
25 operated computer, as recited in claim 71;

further comprising code for receiving a proposed first patient response  
message from said first physician extender via said physician extender  
operated computer and generating a proposed first response log entry from  
said received proposed first patient response message in said medical profile  
30 of said first patient.

74. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 71;

wherein code for generating a second patient medical query message based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders

further comprises code for determining a routing chain comprised of at least one successor physician extender of a physician extender routing collection comprising each of said physician extenders and embedding said routing chain into said second patient medical query message; and

wherein said proposed patient response is routed from said first physician extender to each said successor physician extender belonging to said routing chain until each said successor physician extender has responded to said proposed patient response; and

wherein after each successor physician extender has responded to said proposed patient response to create a collectively proposed patient response message, said collectively patient response message is routed to said first physician.

75. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 70, further comprising;

code for generating a routing tree comprised of at least one routing arrow based upon said received educated query, each of said routing arrows contains a source and a destination belonging to a tree routing collection comprised of at least each of said physicians, and each of said routing arrows connecting to form a chain containing a final destination of said first physician; and

code for generating a source patient query message for each said source of each said routing arrow of said routing tree containing said chain of said routing arrow and sending said source patient query message to said source of said routing arrow of said routing tree.

5 76. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 75;

10 further comprising code for receiving a partial patient response message from each said source of each said routing arrow and generating a partial patient response log entry in said medical profile of said first patient.

77. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a  
15 network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer comprising;

code for receiving an educated query message from a first of said clients via said client operated computer and generating a client message log  
20 entry in a medical profile of said first client; and

code for receiving a client response message from a first of said service providers based upon said educated query message from said first client and generating a service provider response log entry in said medical profile of said first client.

25 78. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 77 further comprising;

code for generating a first client medical query message based upon received said educated query message from said first client and sending said first client medical query message to said first service provider.

79. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 78;

wherein code for generating a first client medical query message based upon said received educated query message from said first client and sending said first client medical query message to said first service provider further comprises

code for determining said first service provider based upon said received educated query message from said first client.

80. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 79, further comprises;

code for determining if said received client response message contains an embedded prescription;

code for receiving a client prescription order message from said first client; and

code for generating a prescription order message based upon said received client prescription order message and said received client response message and for sending said prescription order message to a first pharmacy

whenever said received client response message contains said embedded prescription; and

whenever said received client prescription order message is compatible with said embedded prescription contained in said received client response message; and

whenever said received client prescription order message authorizes sending said prescription order message to said first pharmacy.

81. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 80;

wherein said network further communicates with at least one service extender operated computer; and

10 further comprising code for generating a second client medical query message based upon said received educated query message from said first client and sending said second client medical query message to a first of said service extenders operated computer.

82. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 81;

wherein code for generating a second client medical query message based upon said received educated query message from said first client and sending said second client medical query message to a first of said service extenders further comprises

code for determining said first service extender based upon said received educated query message from said first client.

25 83. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 81;

further comprising code for receiving a proposed first client response message from said first service extender via said service extender operated computer and generating a proposed first response log entry from said received proposed first client response message in said medical profile of said first client.

84. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 81;

wherein code for generating a second client medical query message based upon said received educated query message from said first client and sending said second client medical query message to a first of said service extenders

further comprises code for determining a routing chain comprised of at least one successor service extender of a service extender routing collection comprising each of said service extenders and embedding said routing chain into said second client medical query message; and

wherein said proposed client response is routed from said first service extender to each said successor service extender belonging to said routing chain until each said successor service extender has responded to said proposed client response; and

wherein after each successor service extender has responded to said proposed client response to create a collectively proposed client response message, said collectively client response message is routed to said first service provider.

85. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 80, further comprising;

code for generating a routing tree comprised of at least one routing arrow based upon said received educated query, each of said routing arrows contains a source and a destination belonging to a tree routing collection comprised of at least each of said service providers, and each of said routing  
5 arrows connecting to form a chain containing a final destination of said first service provider; and

code for generating a source client query message for each said source of each said routing arrow of said routing tree containing said chain of said routing arrow and sending said source client query message to said  
10 source of said routing arrow of said routing tree.

86. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider  
15 operated computer, as recited in claim 85;

further comprising code for receiving a partial client response message from each said source of each said routing arrow and generating a partial client response log entry in said medical profile of said first client.

1/86

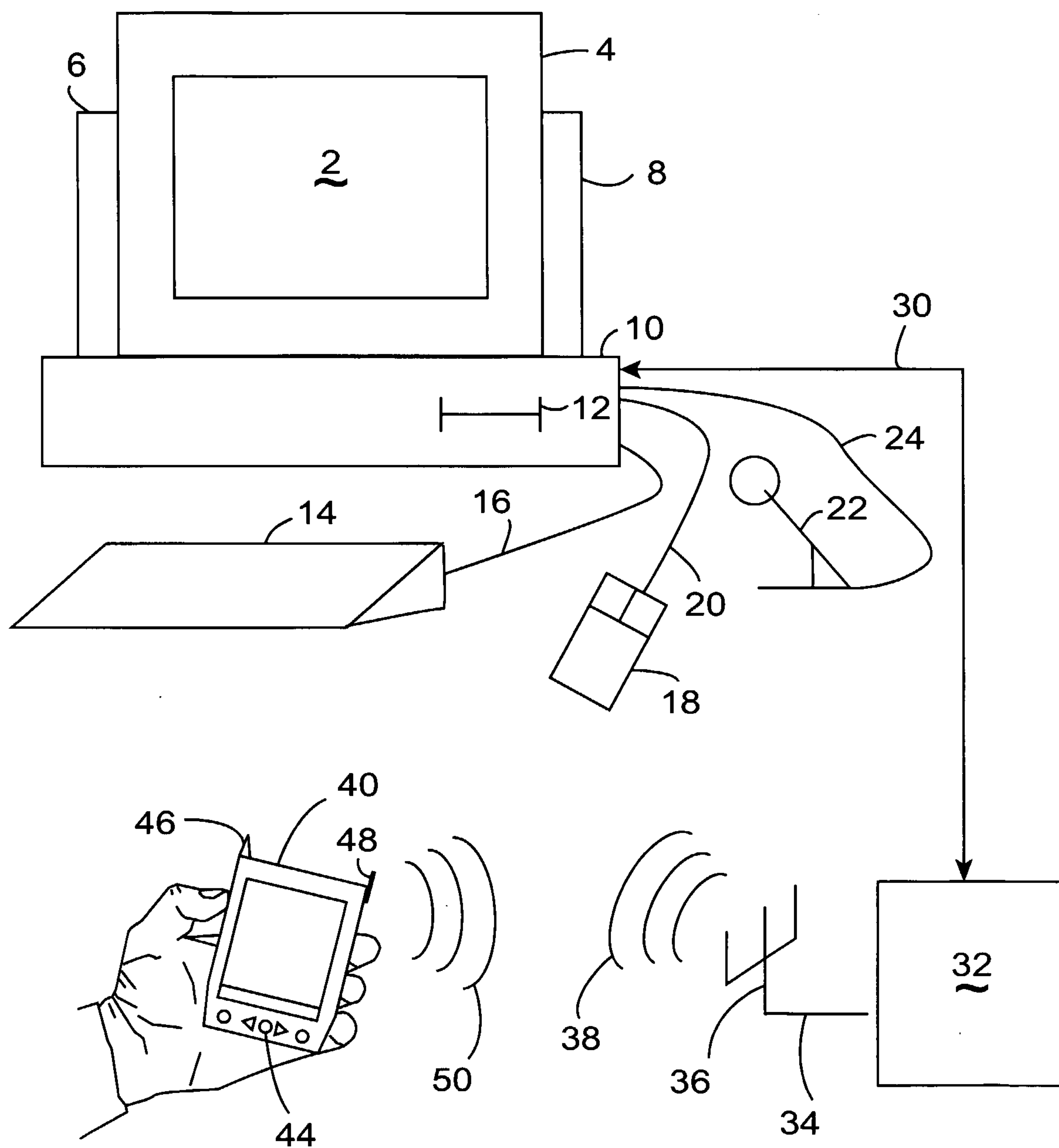


Fig. 1  
Prior Art

2/86

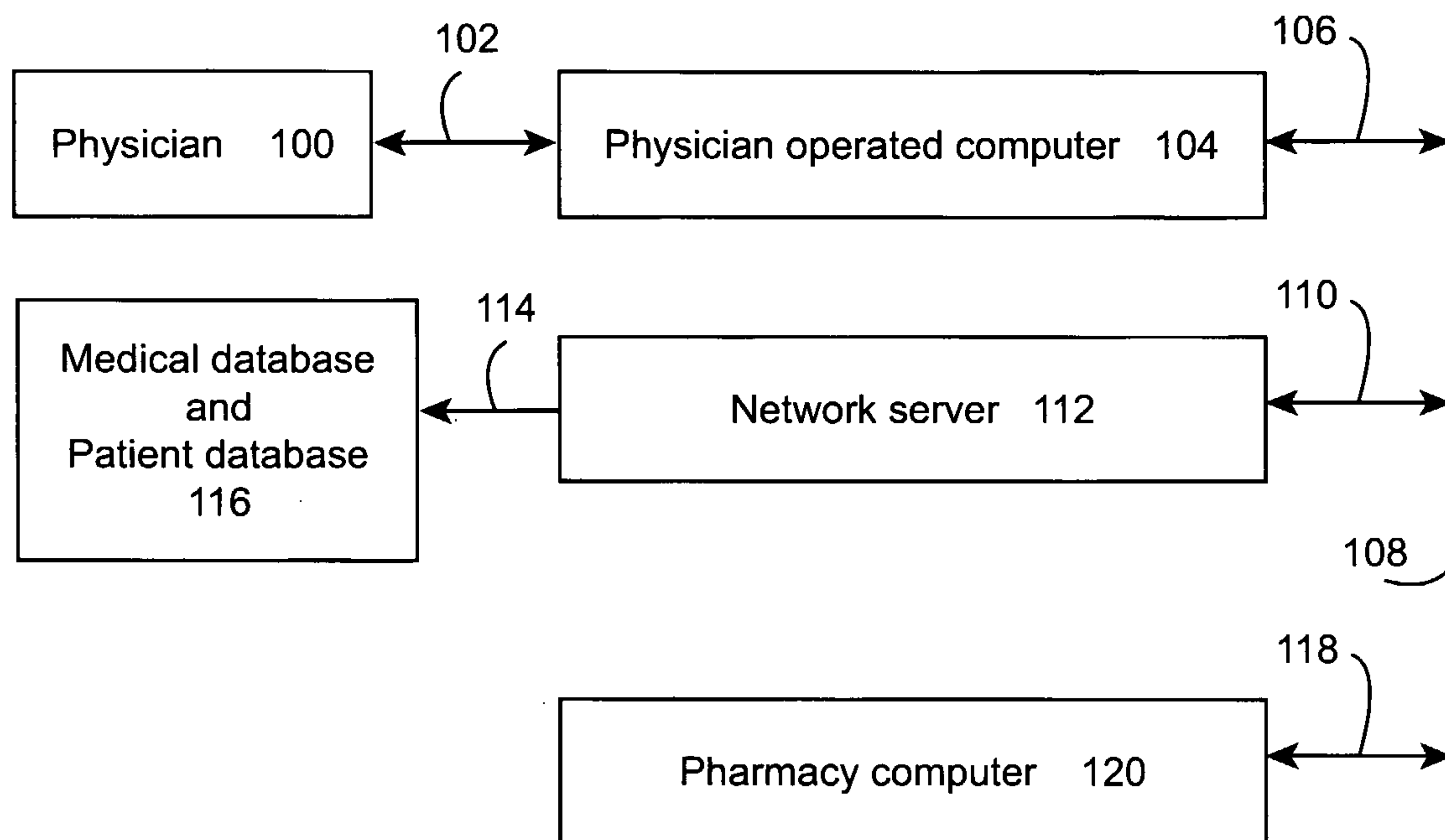


Fig. 2  
Prior Art

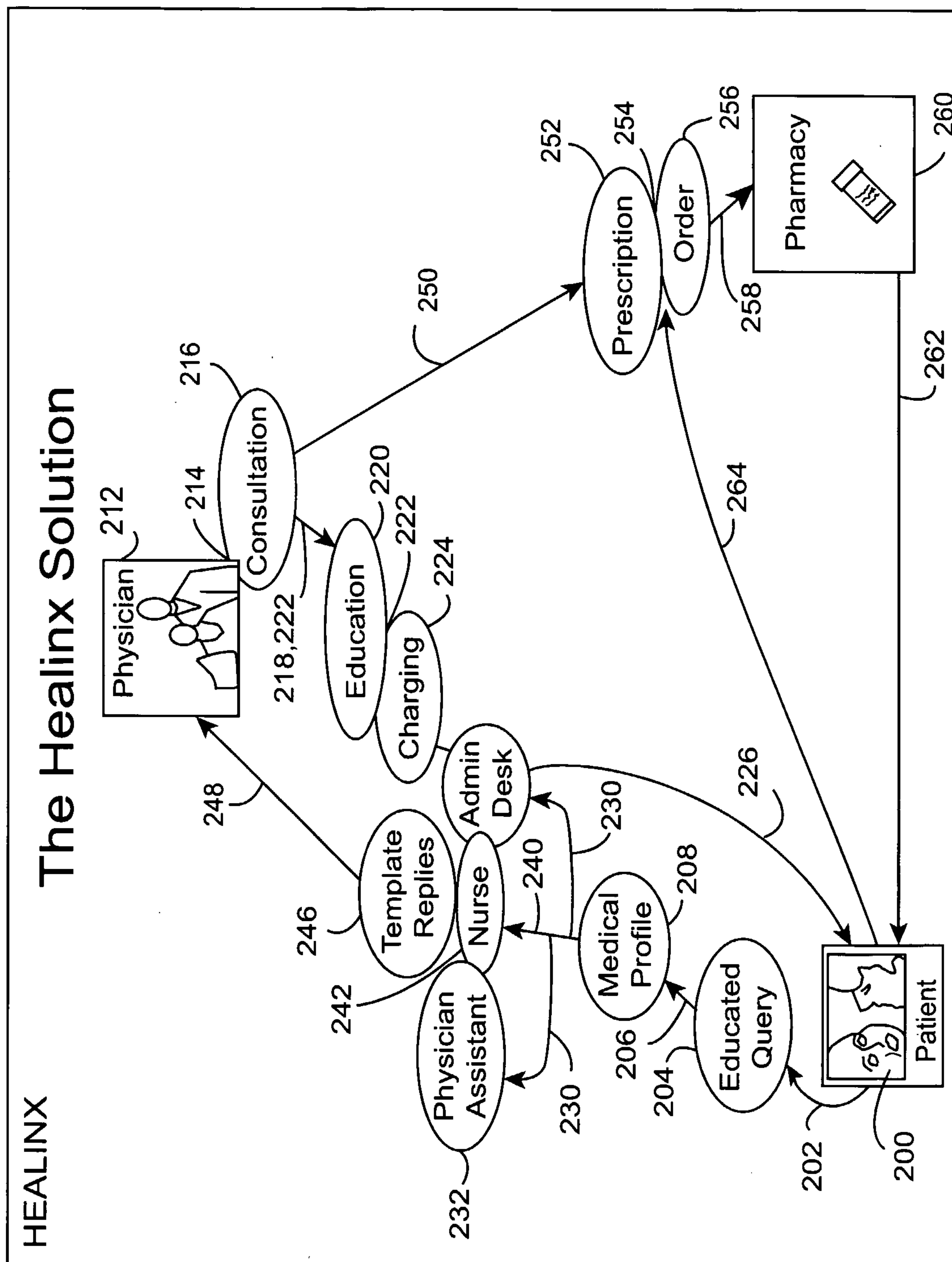


**Fig. 3A**

4/86

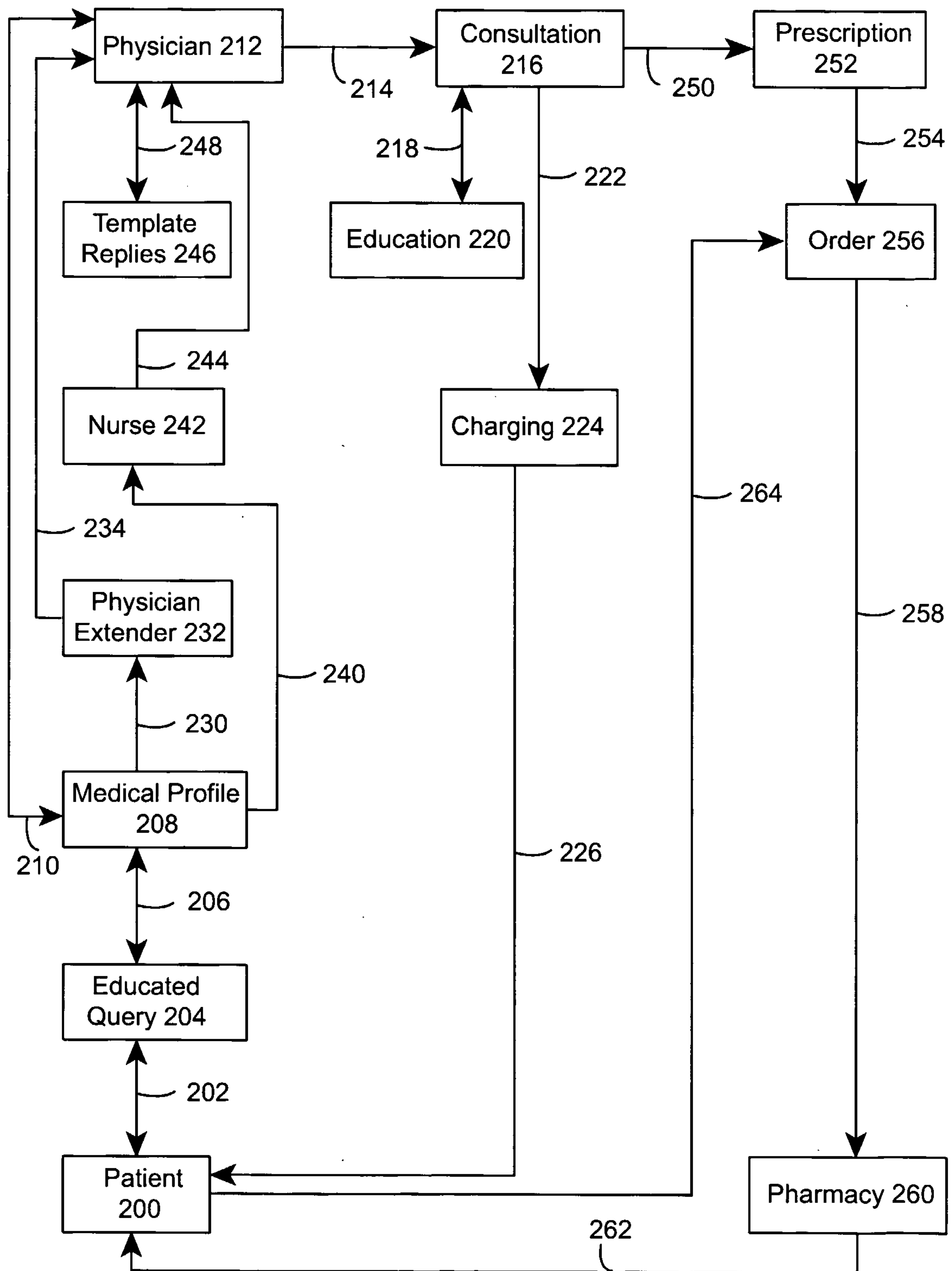


Fig. 3B

5/86

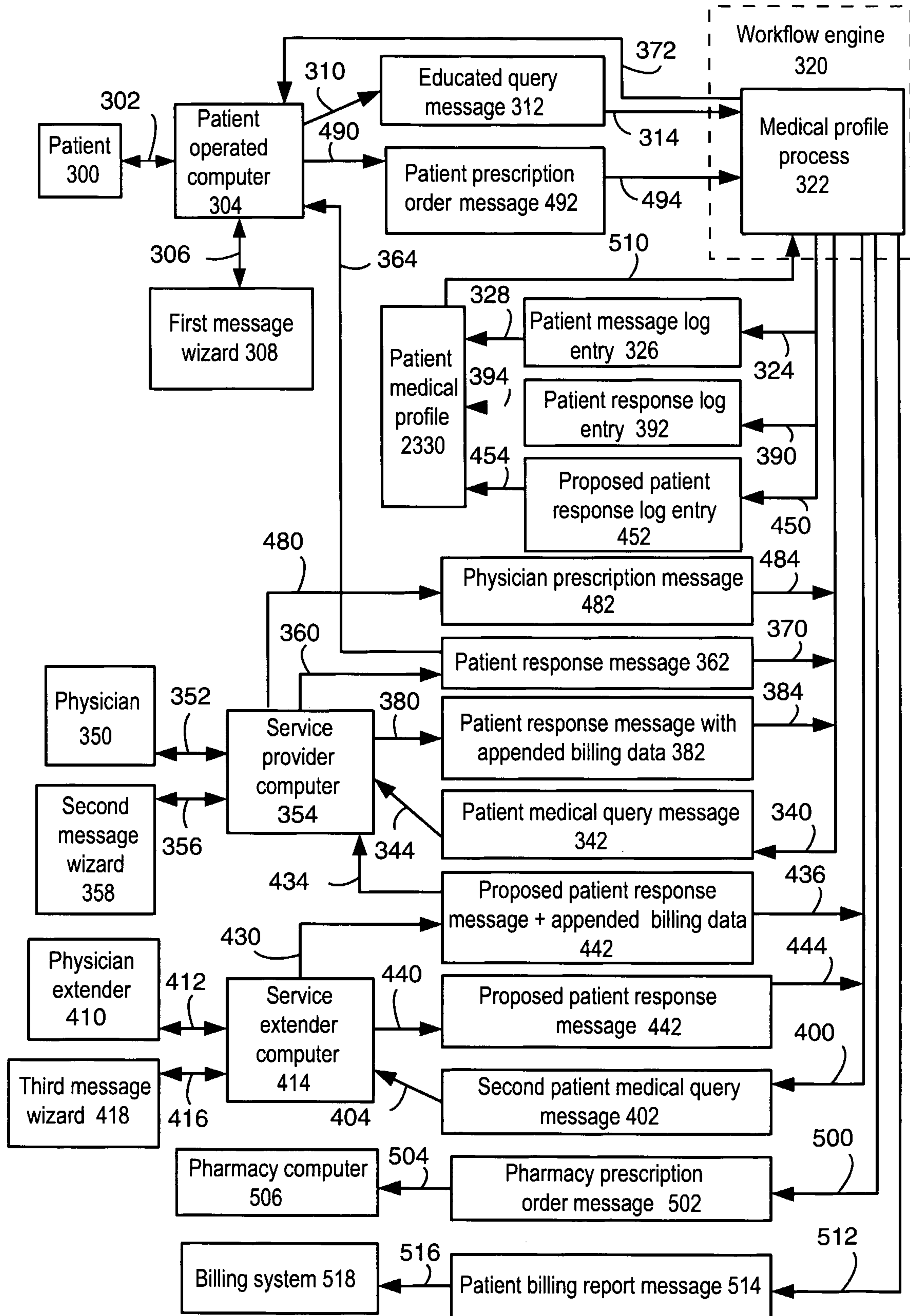


Fig. 4

6/86

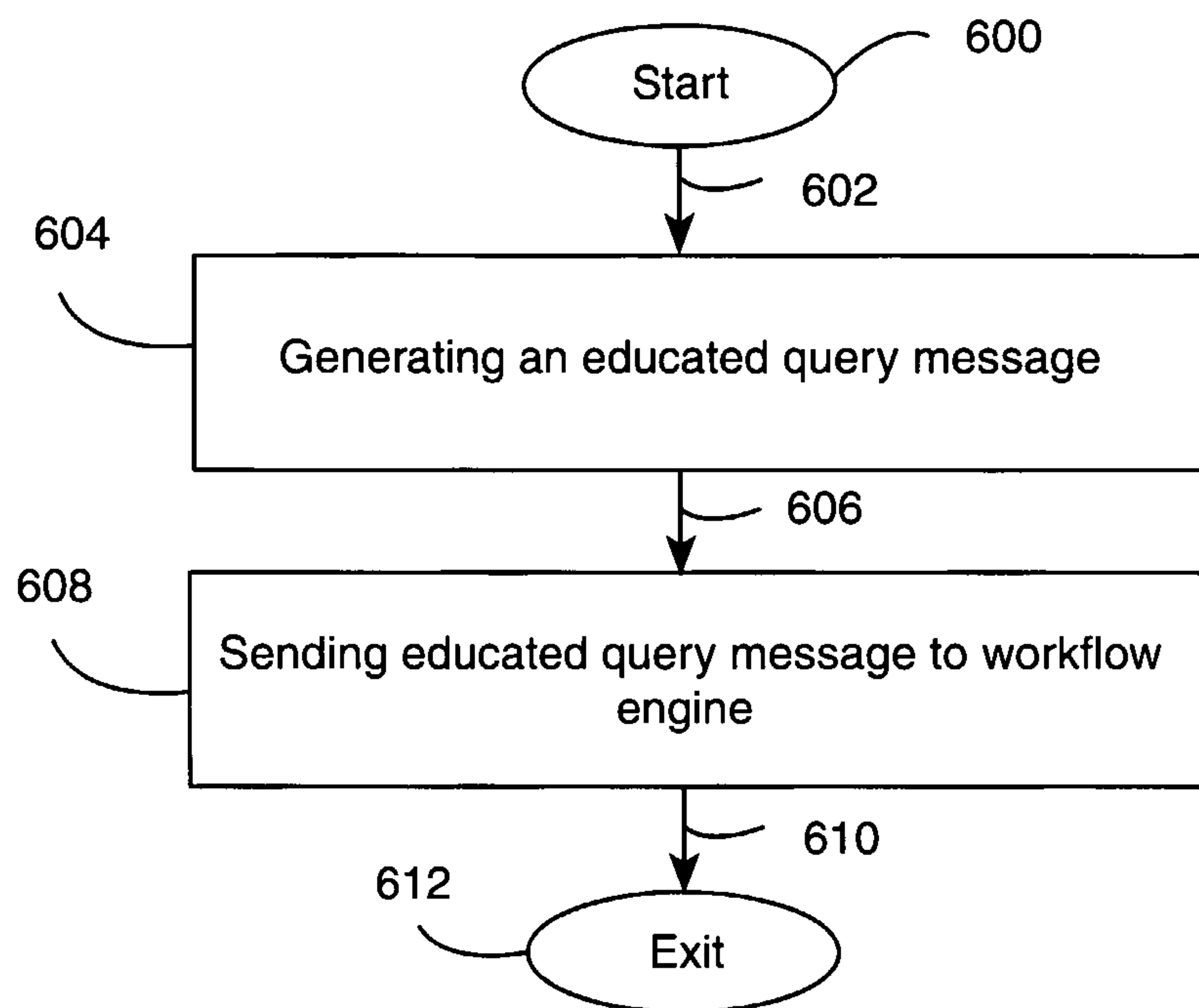


Fig. 5

7/86

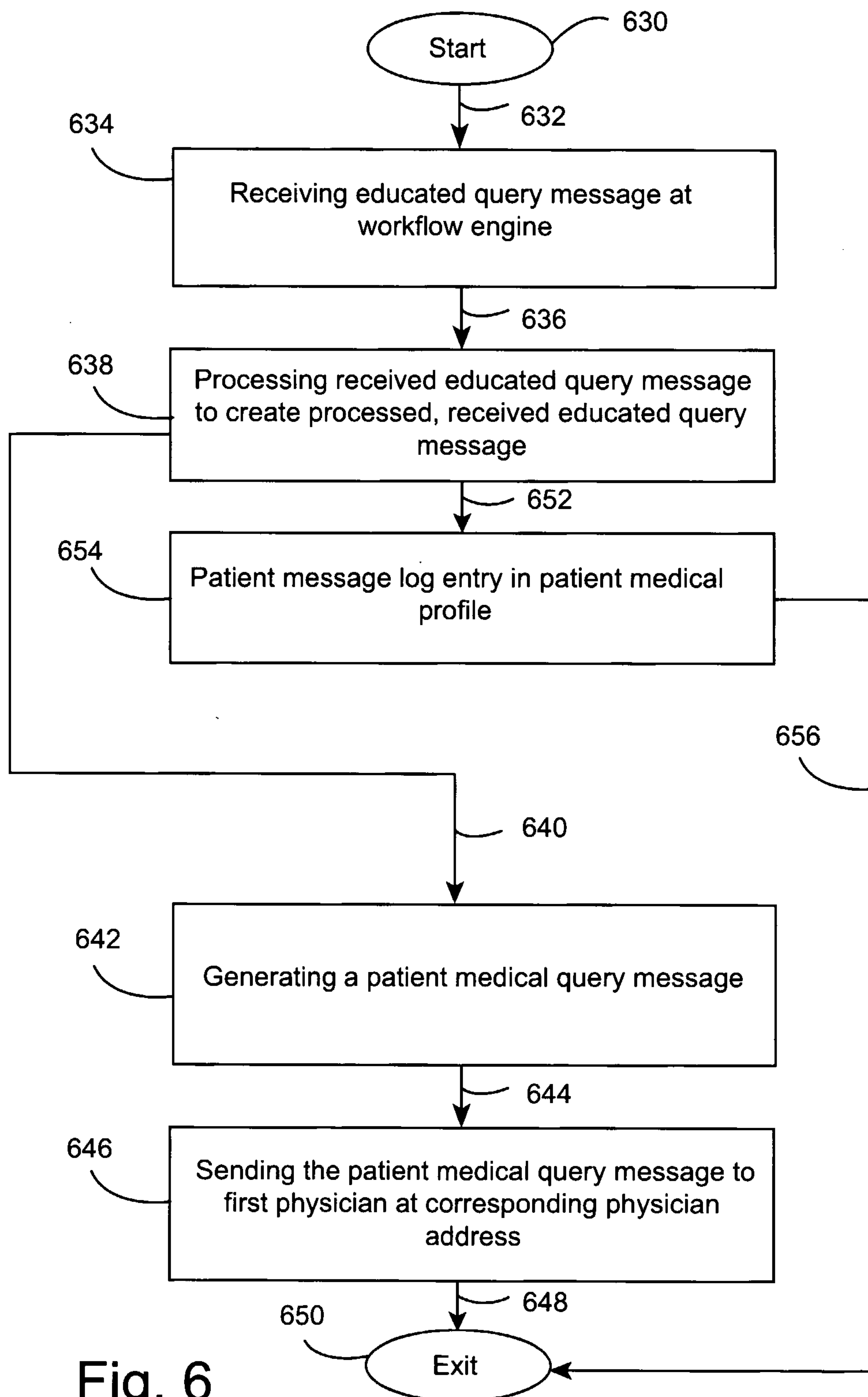


Fig. 6

8/86

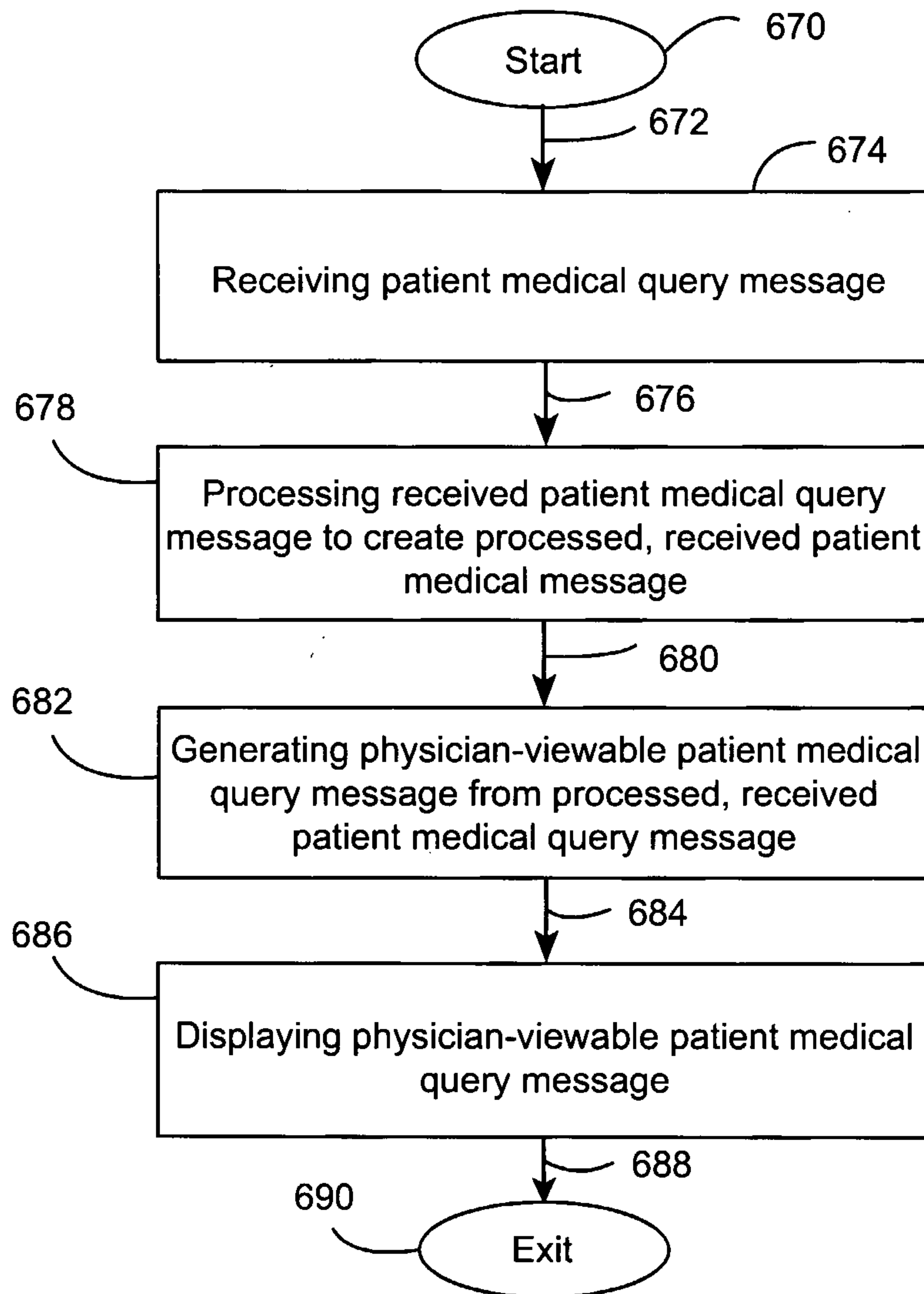


Fig. 7

9/86

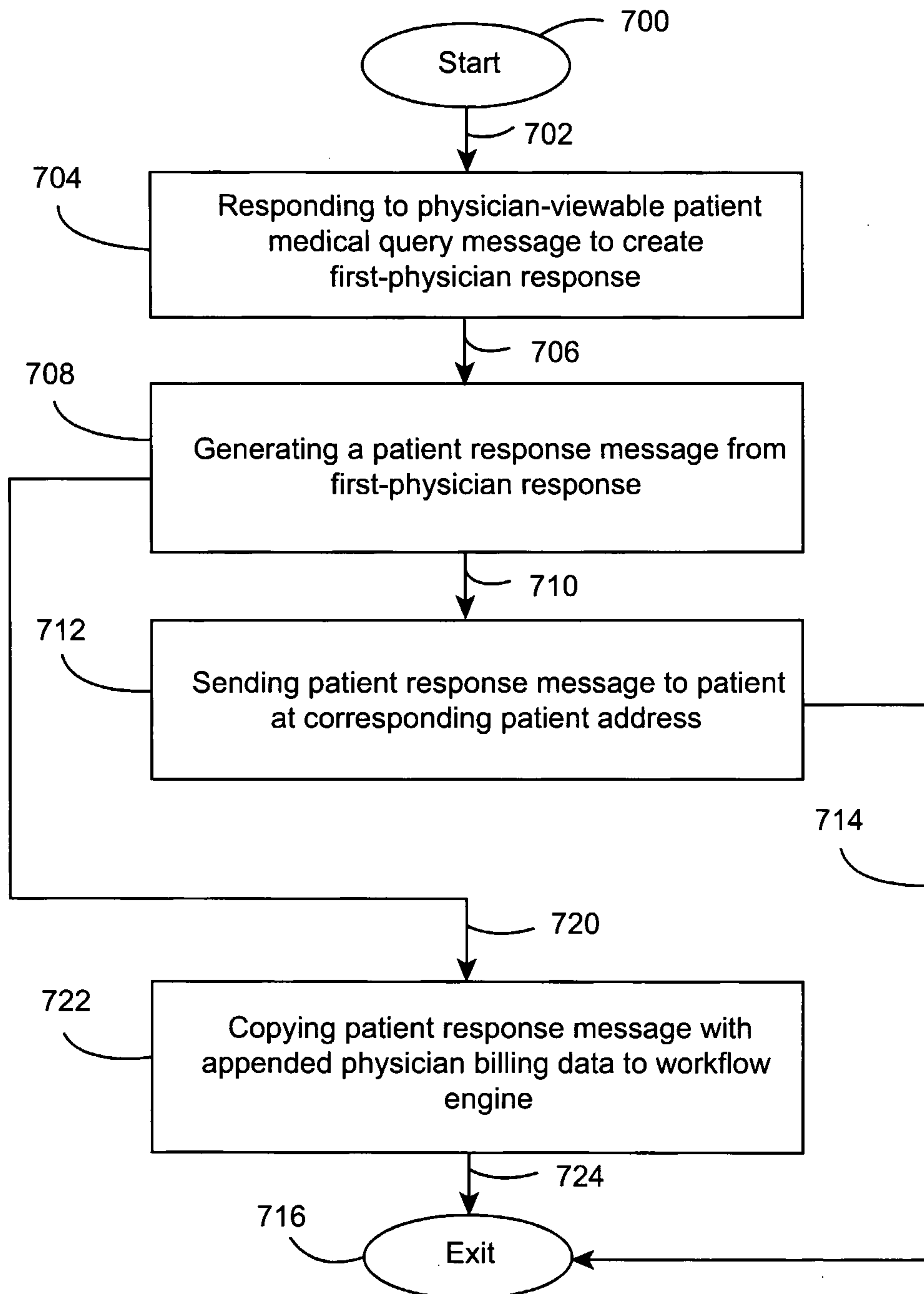


Fig. 8

10/86

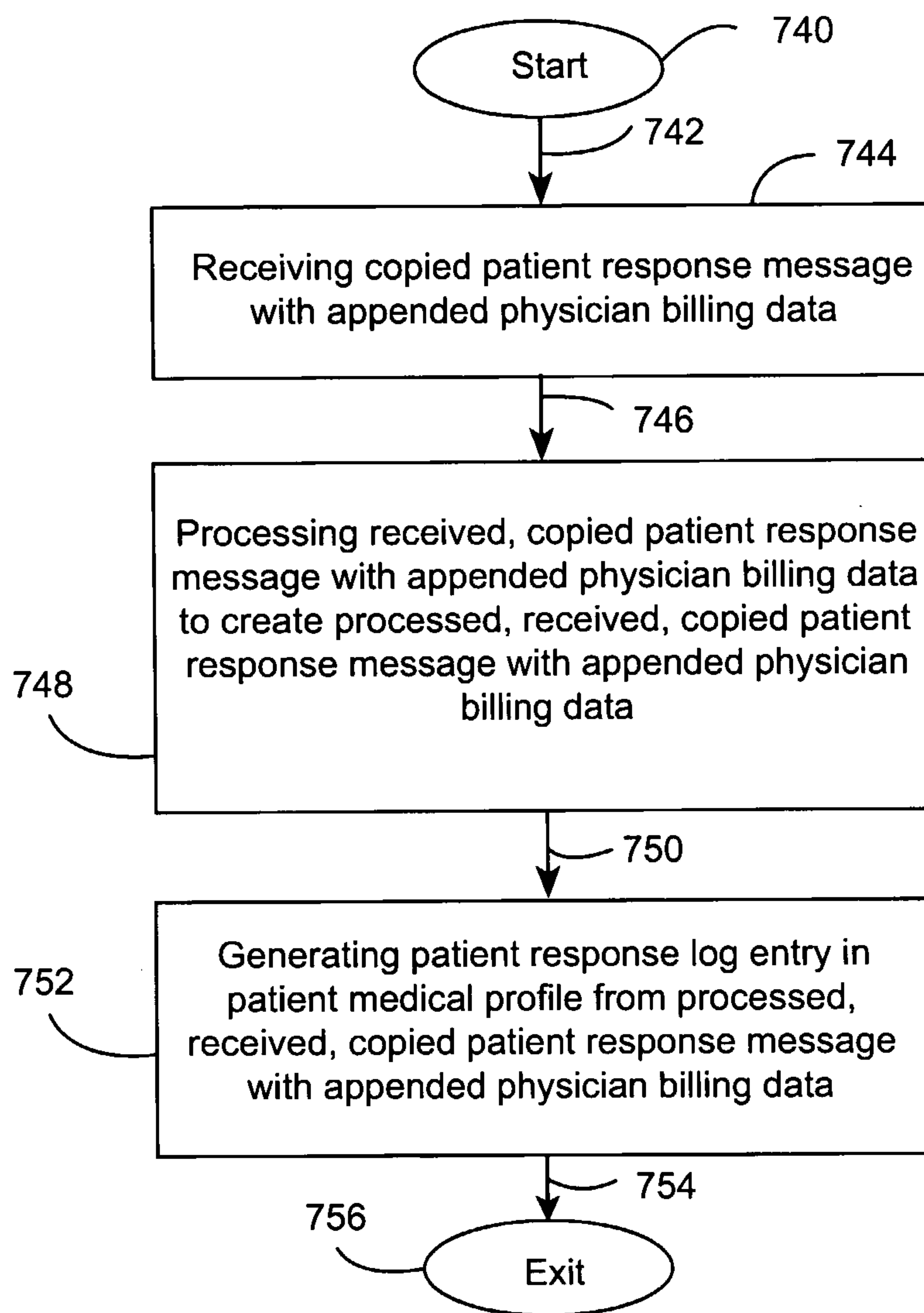


Fig. 9

11/86

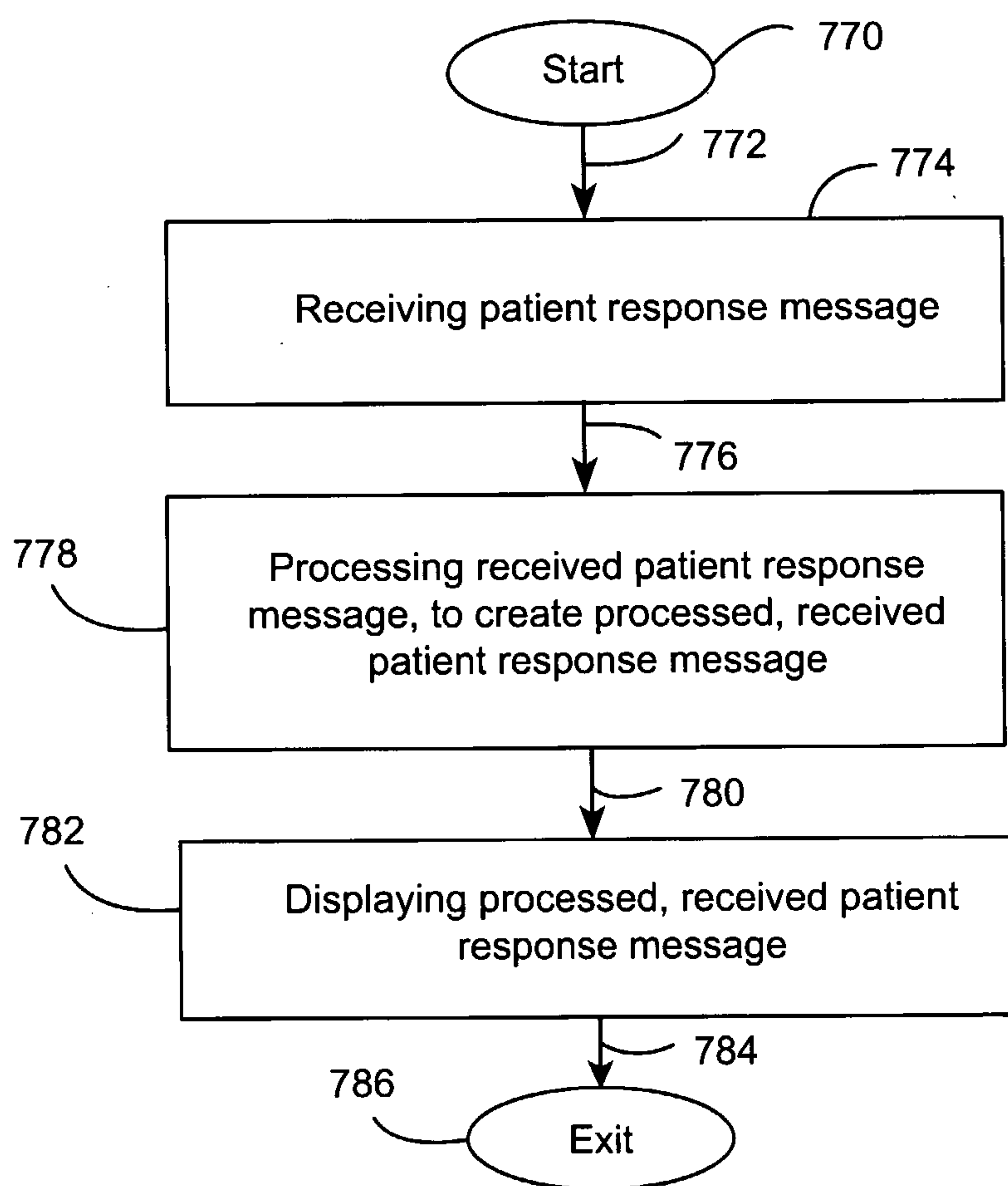


Fig. 10

12/86

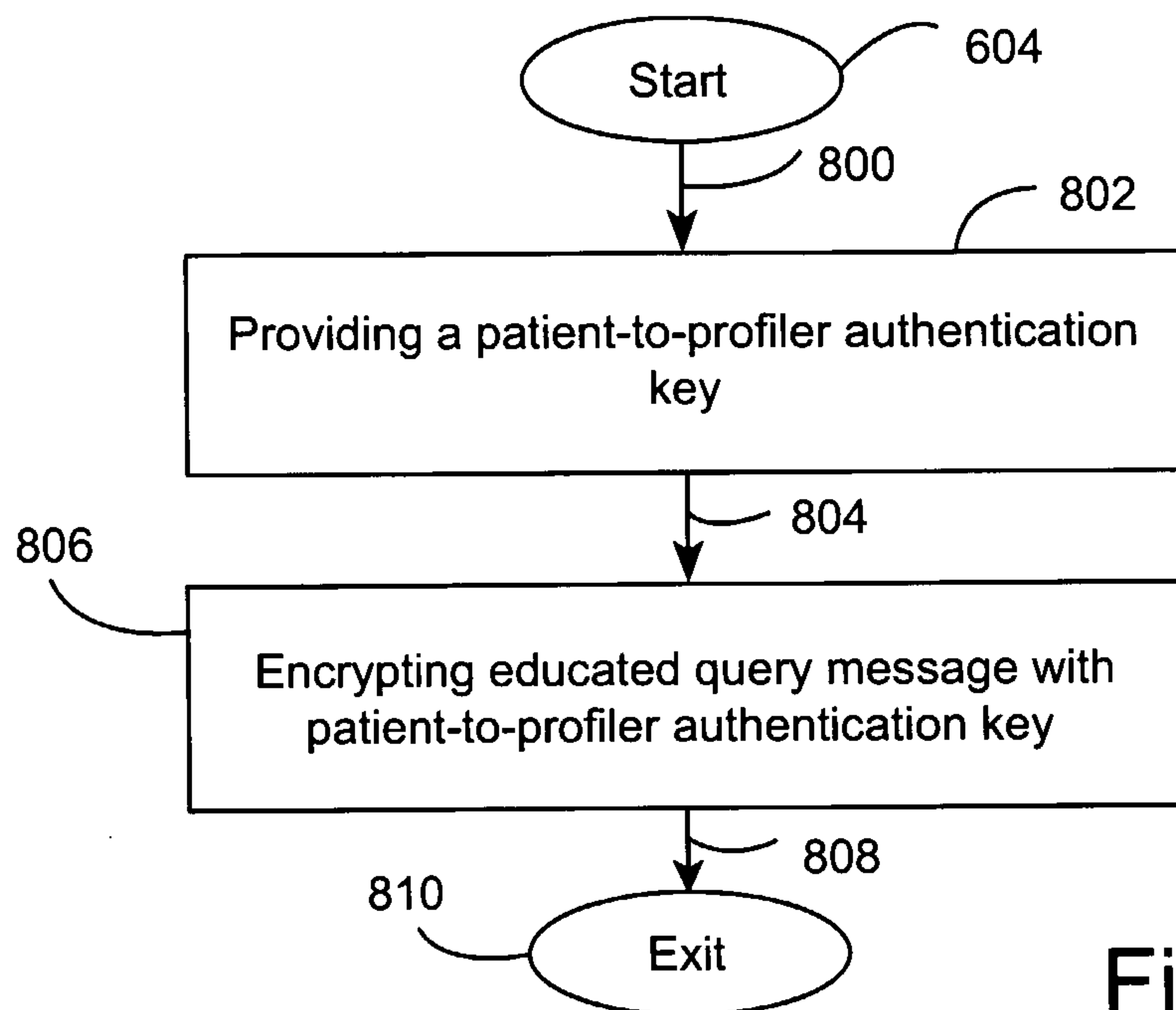


Fig. 11

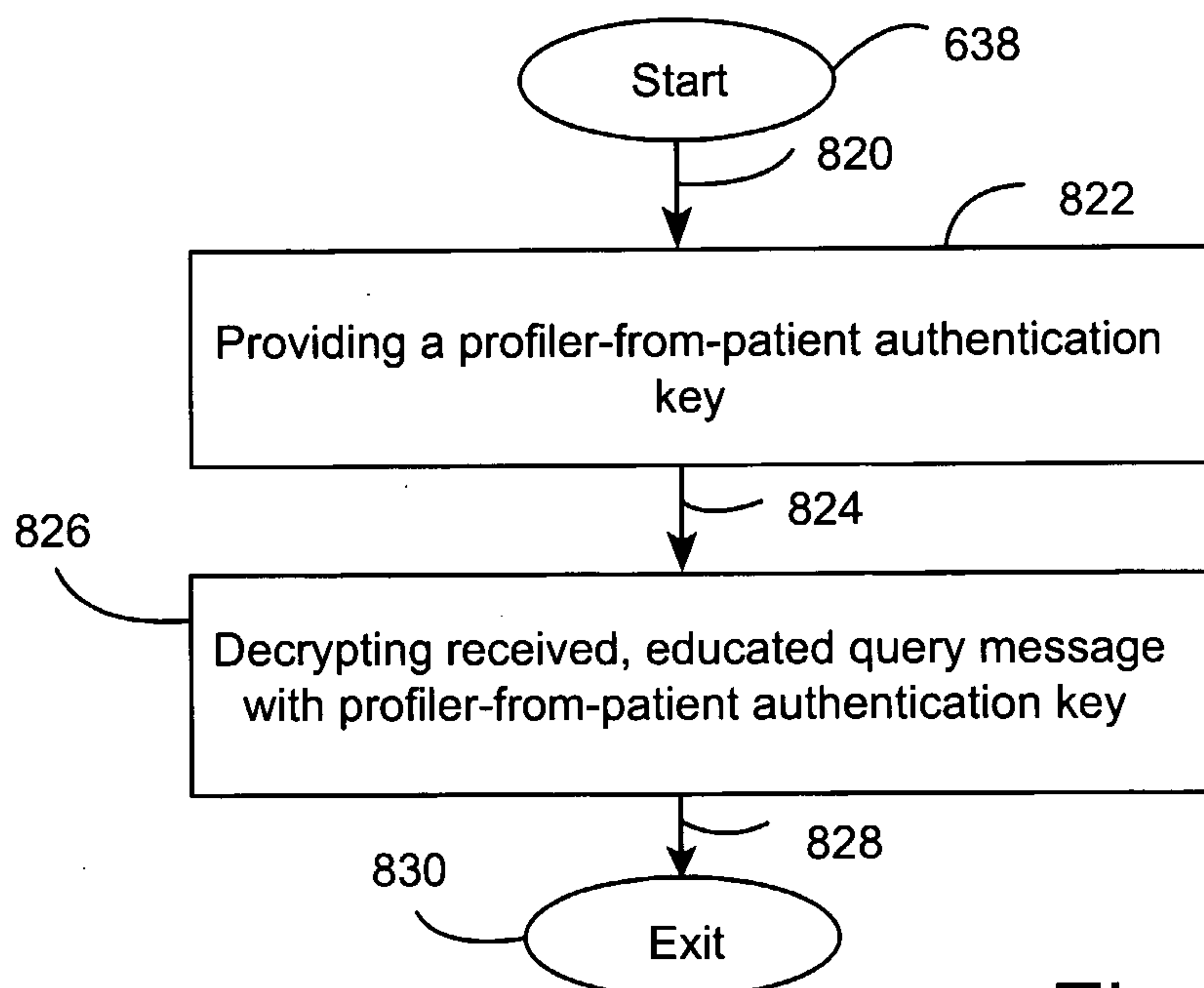


Fig. 12

13/86

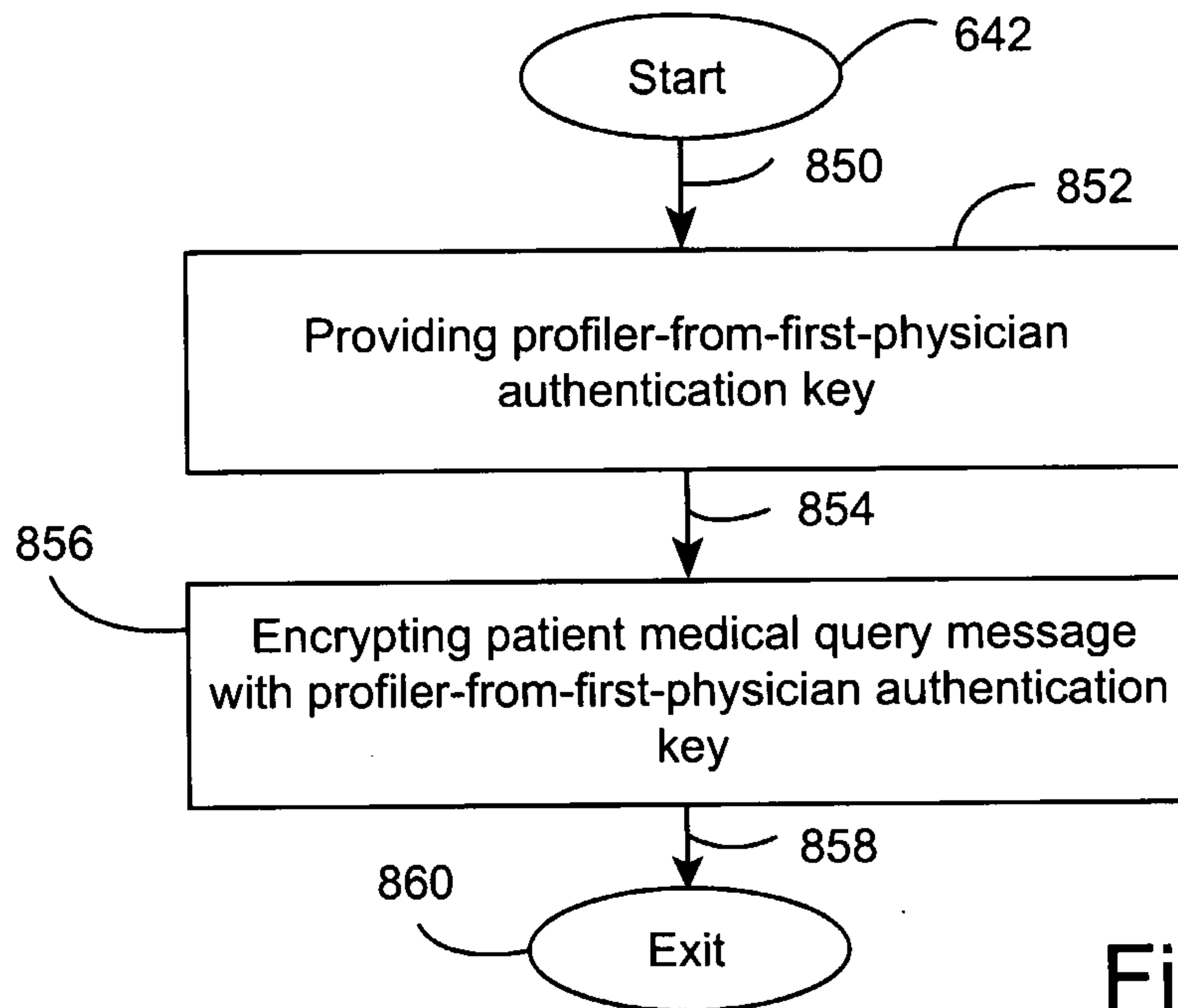


Fig. 13

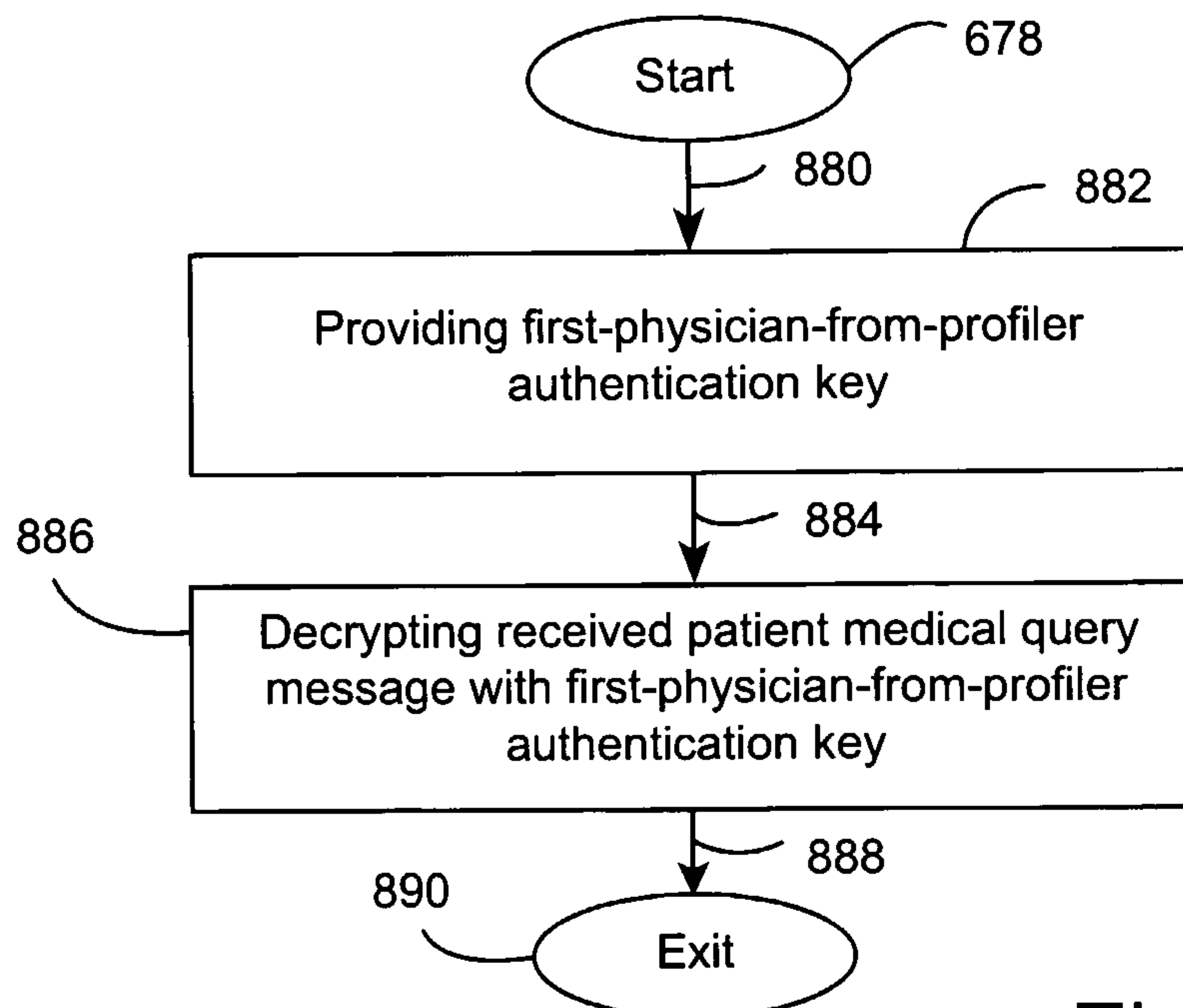


Fig. 14

14/86

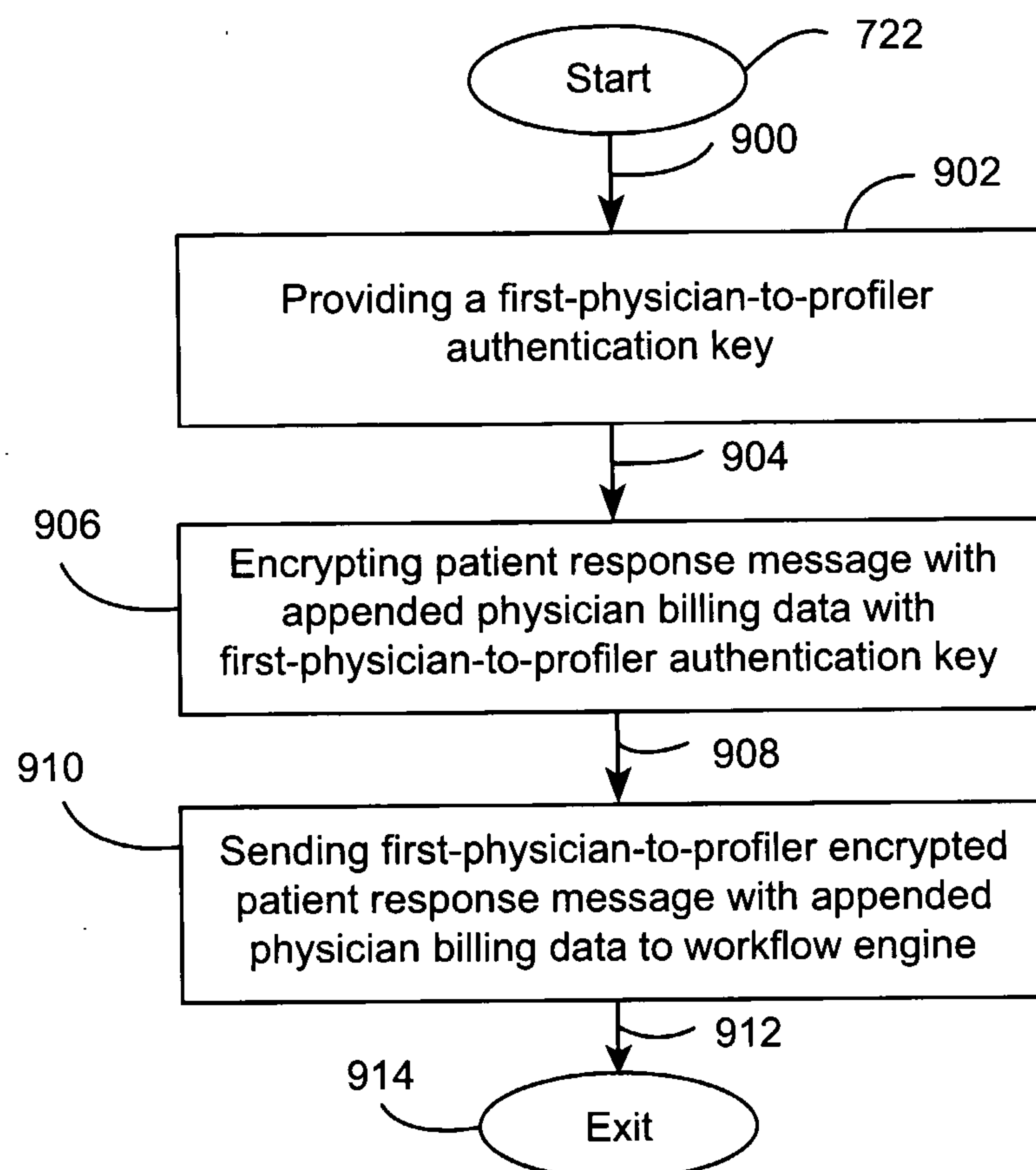


Fig. 15

15/86

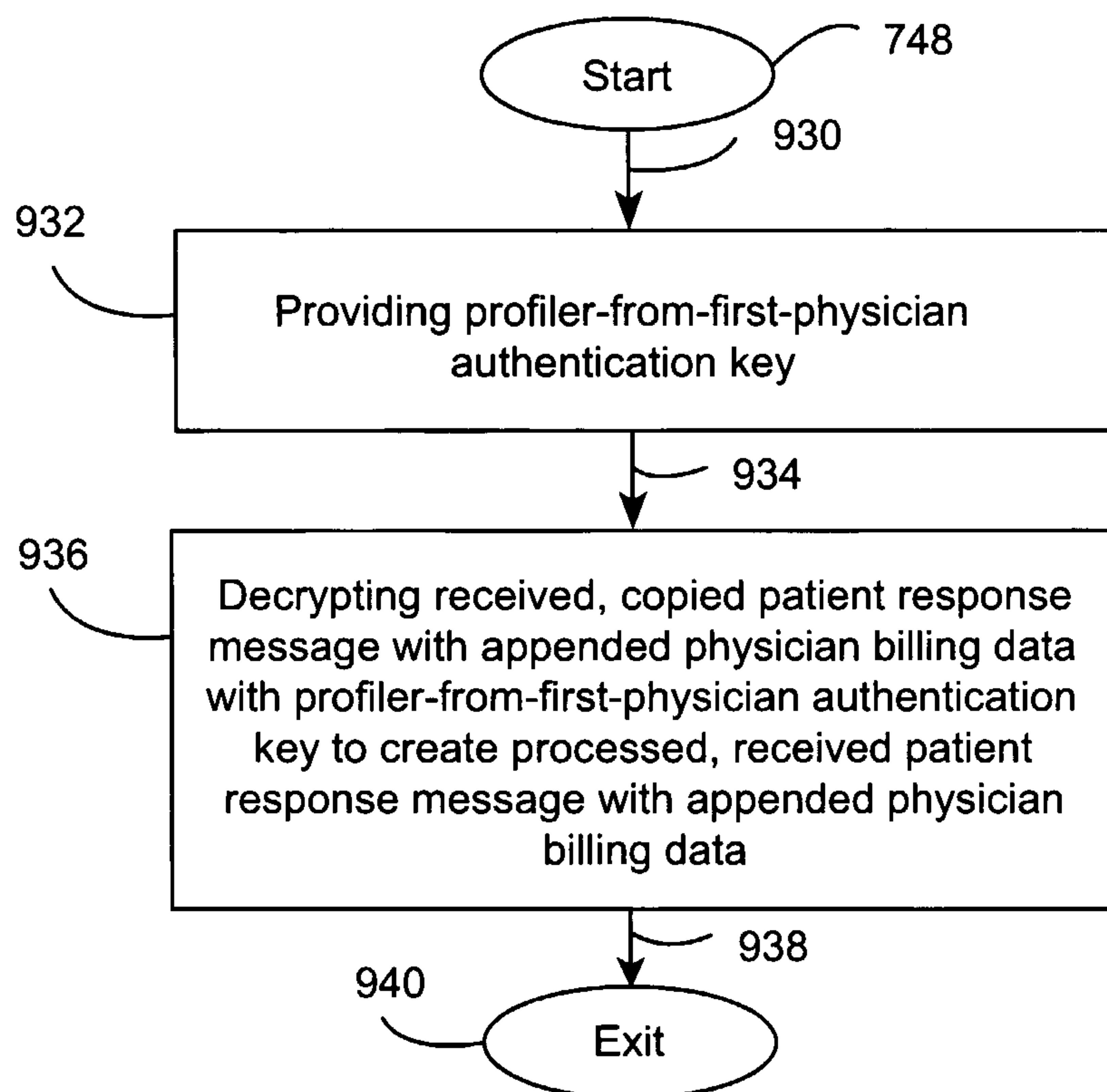


Fig. 16

16/86

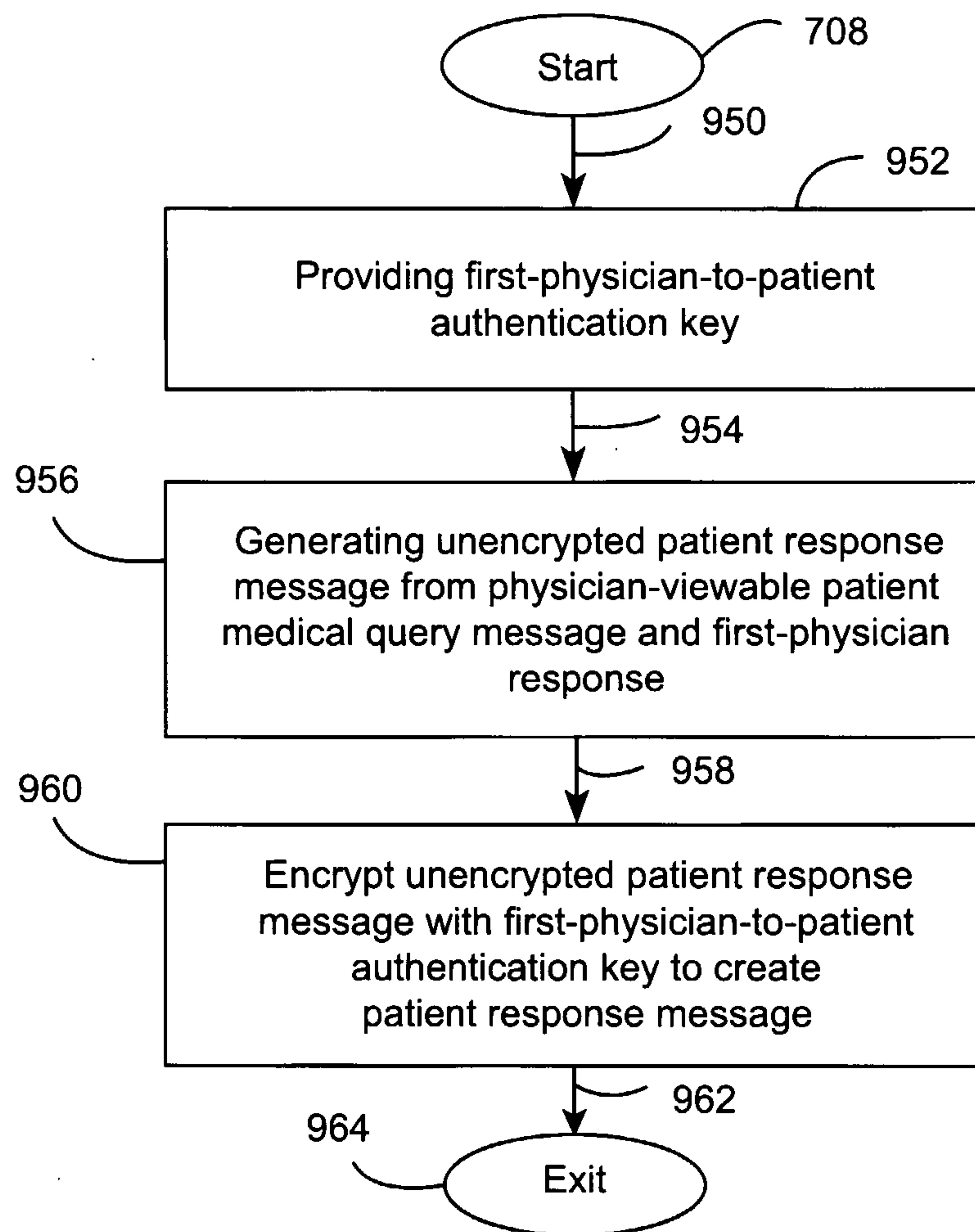


Fig. 17

17/86

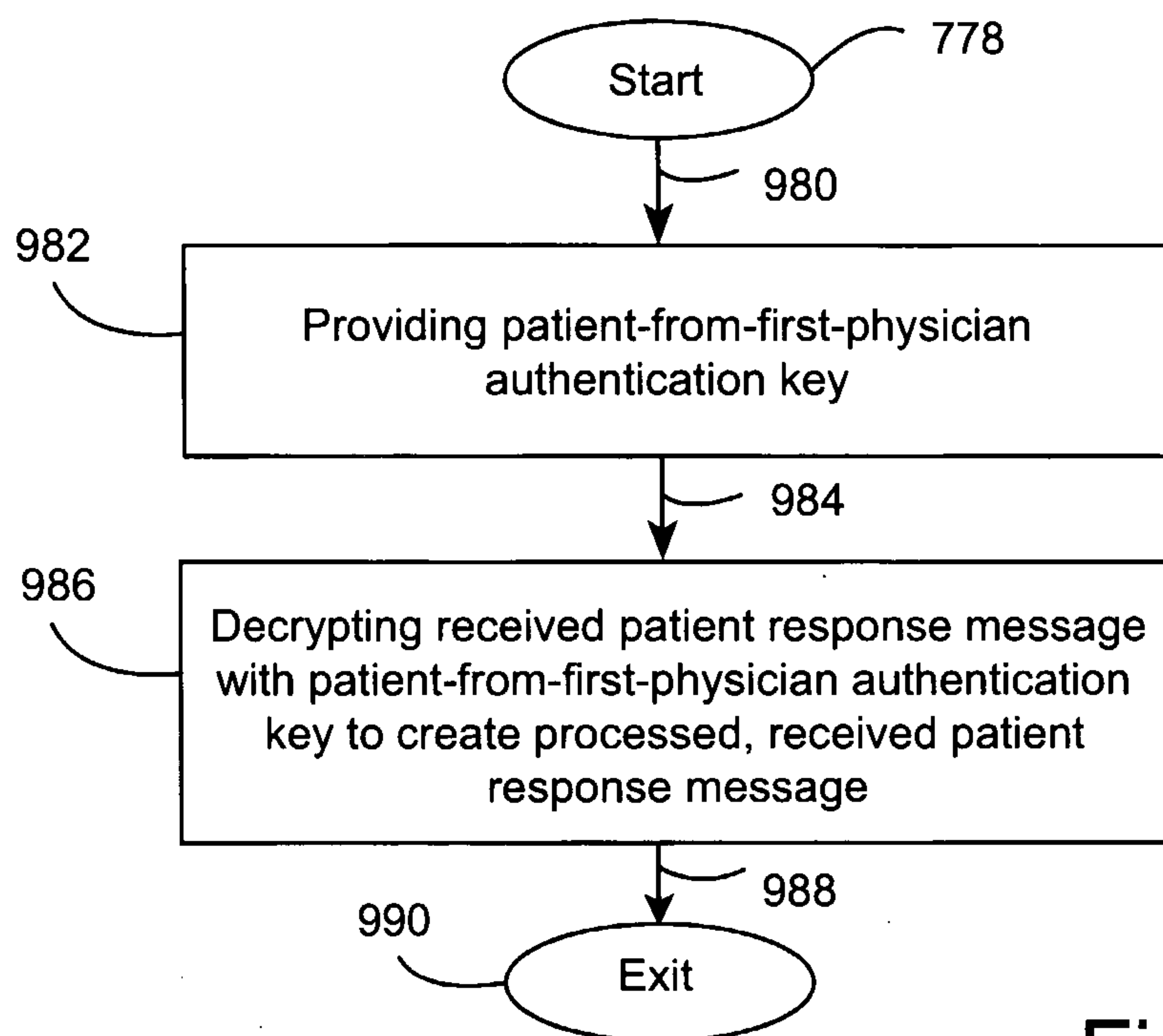


Fig. 18

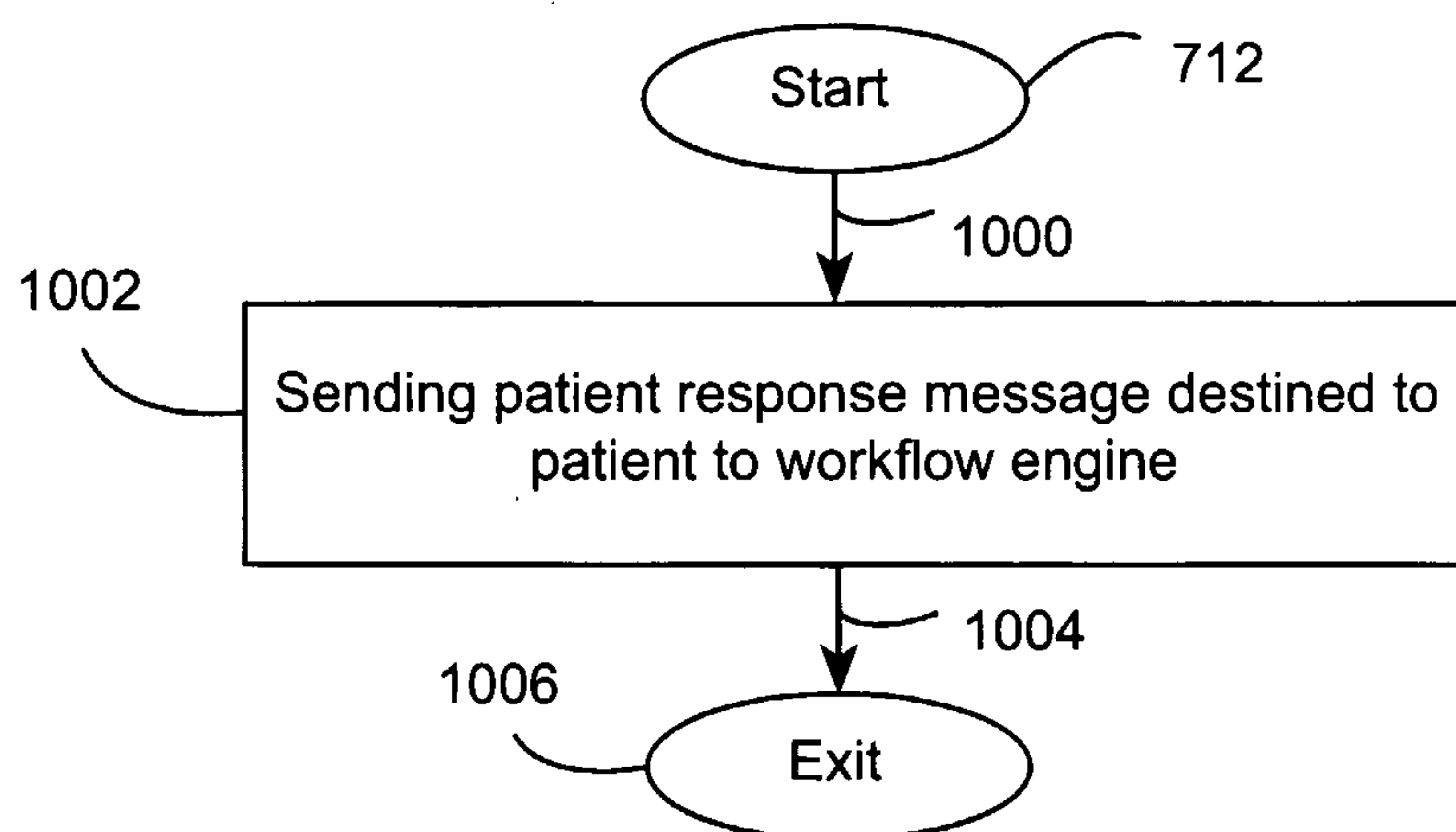


Fig. 19

18/86

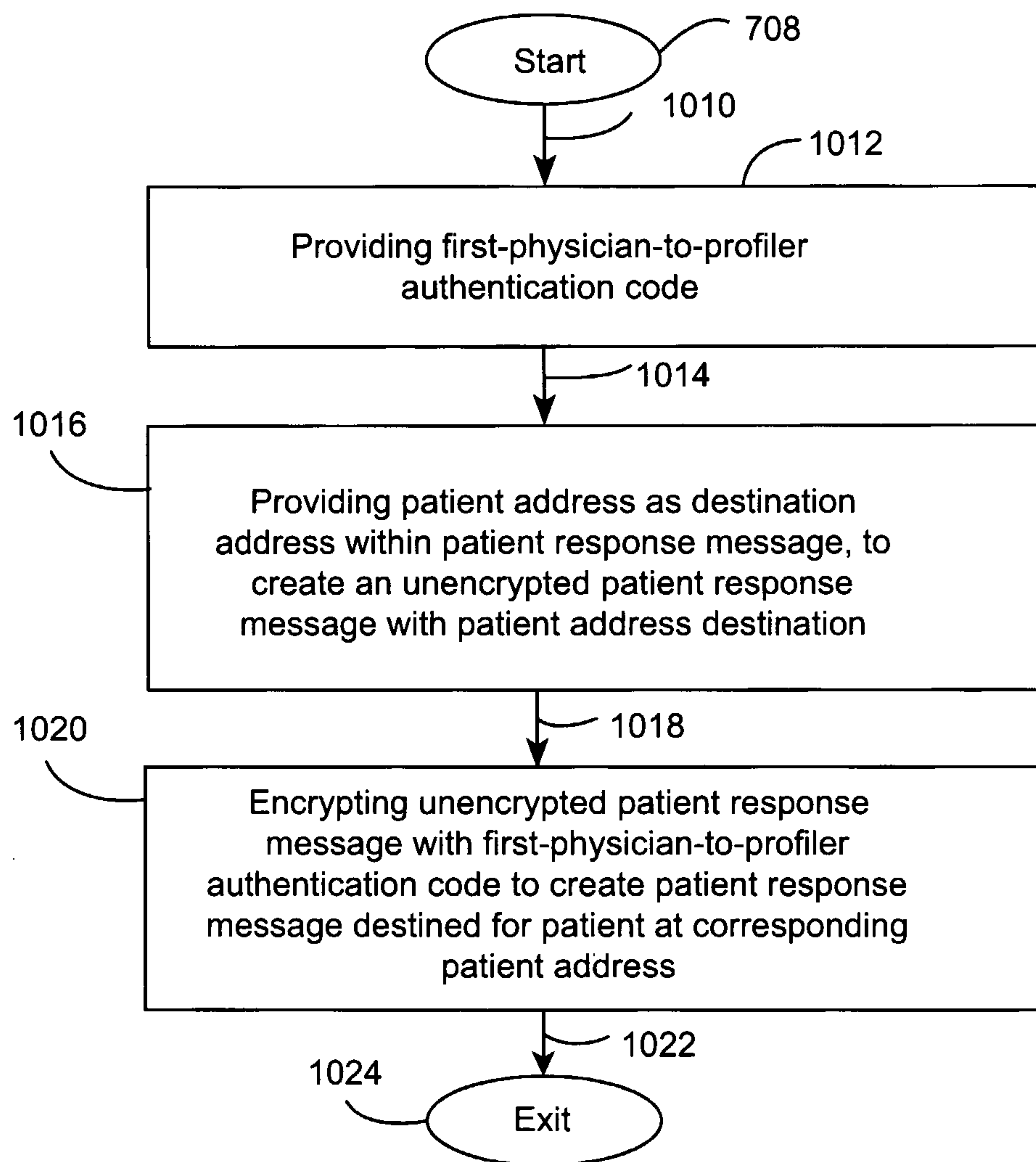


Fig. 20

19/86

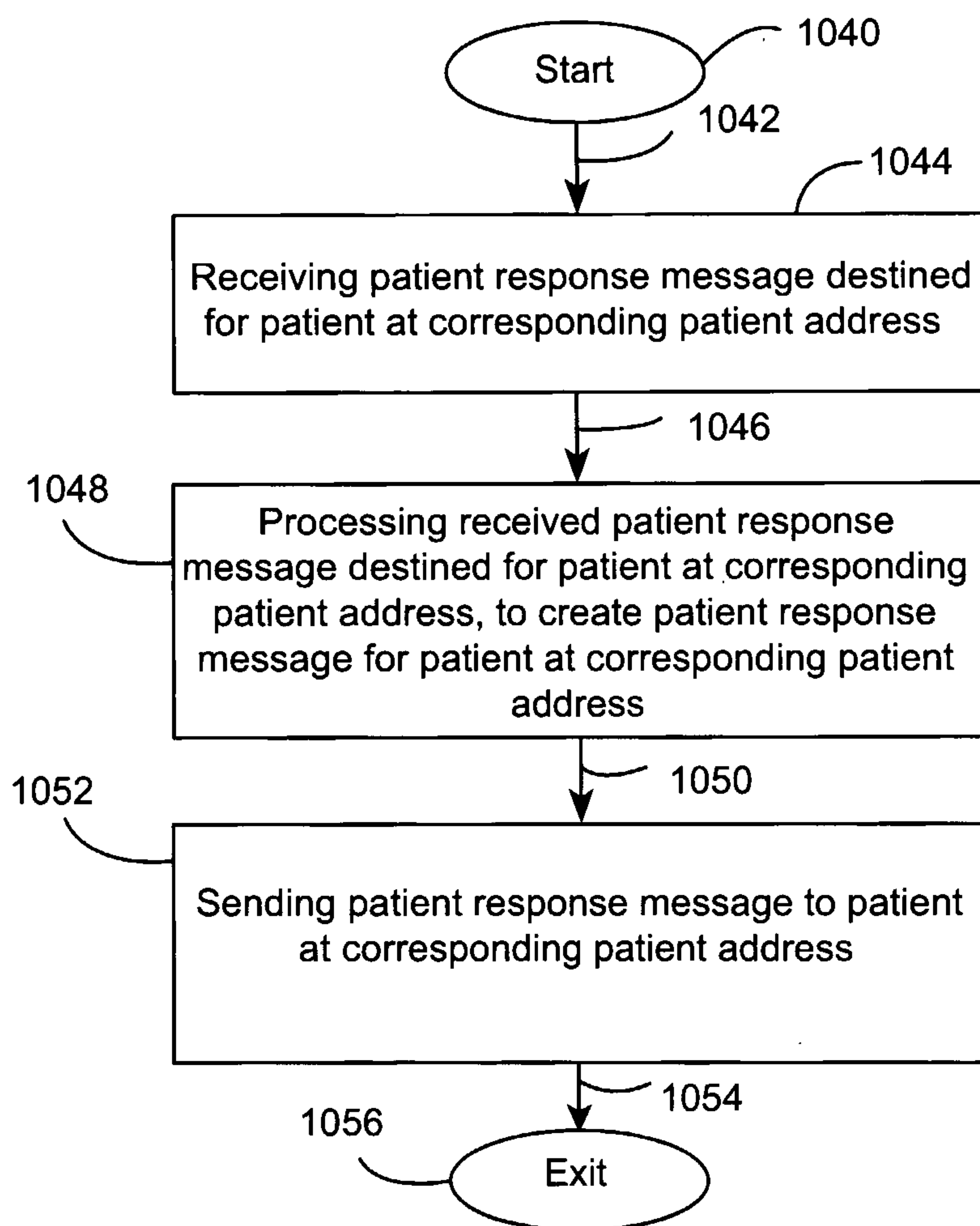


Fig. 21

20/86

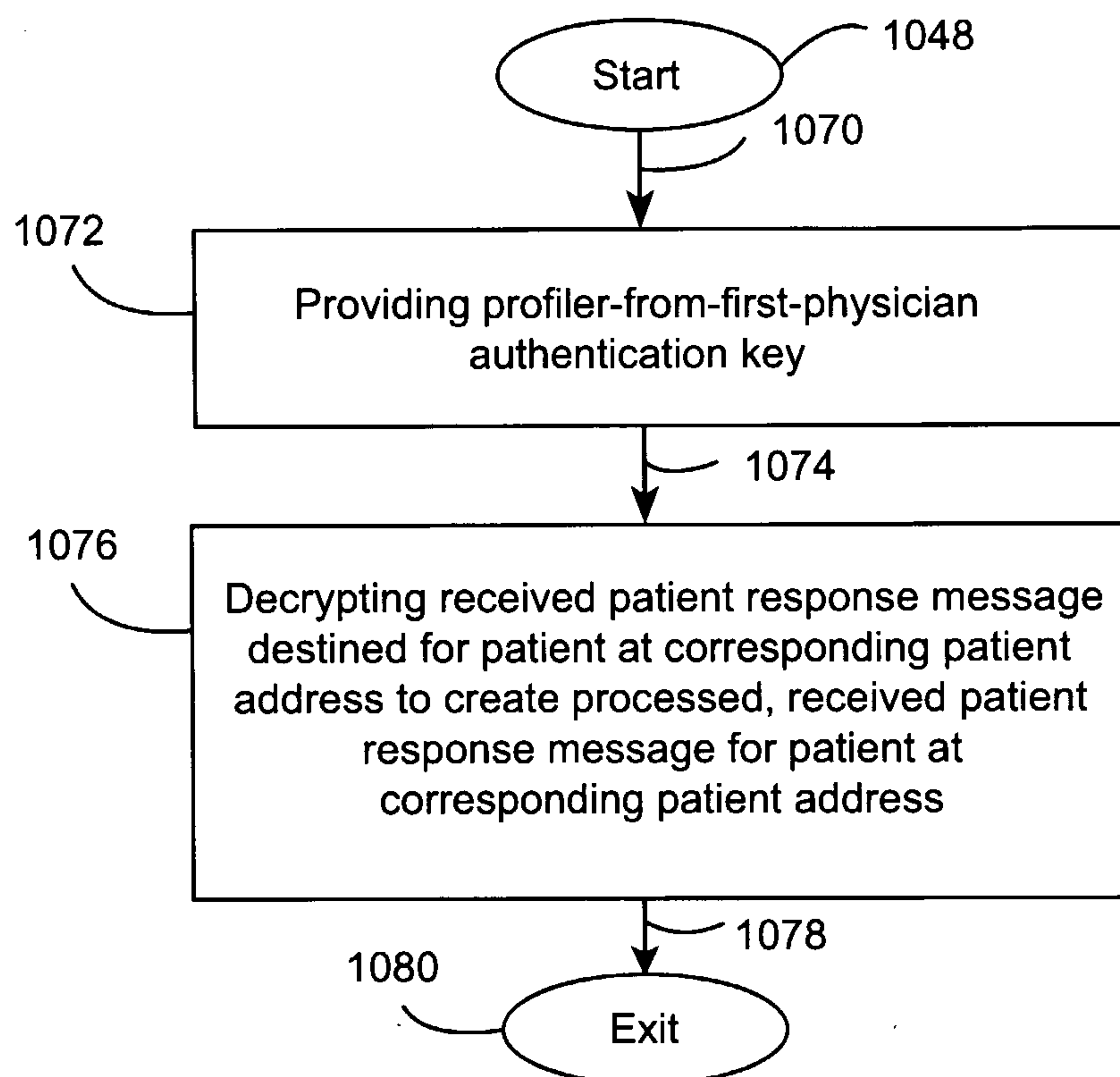


Fig. 22

21/86

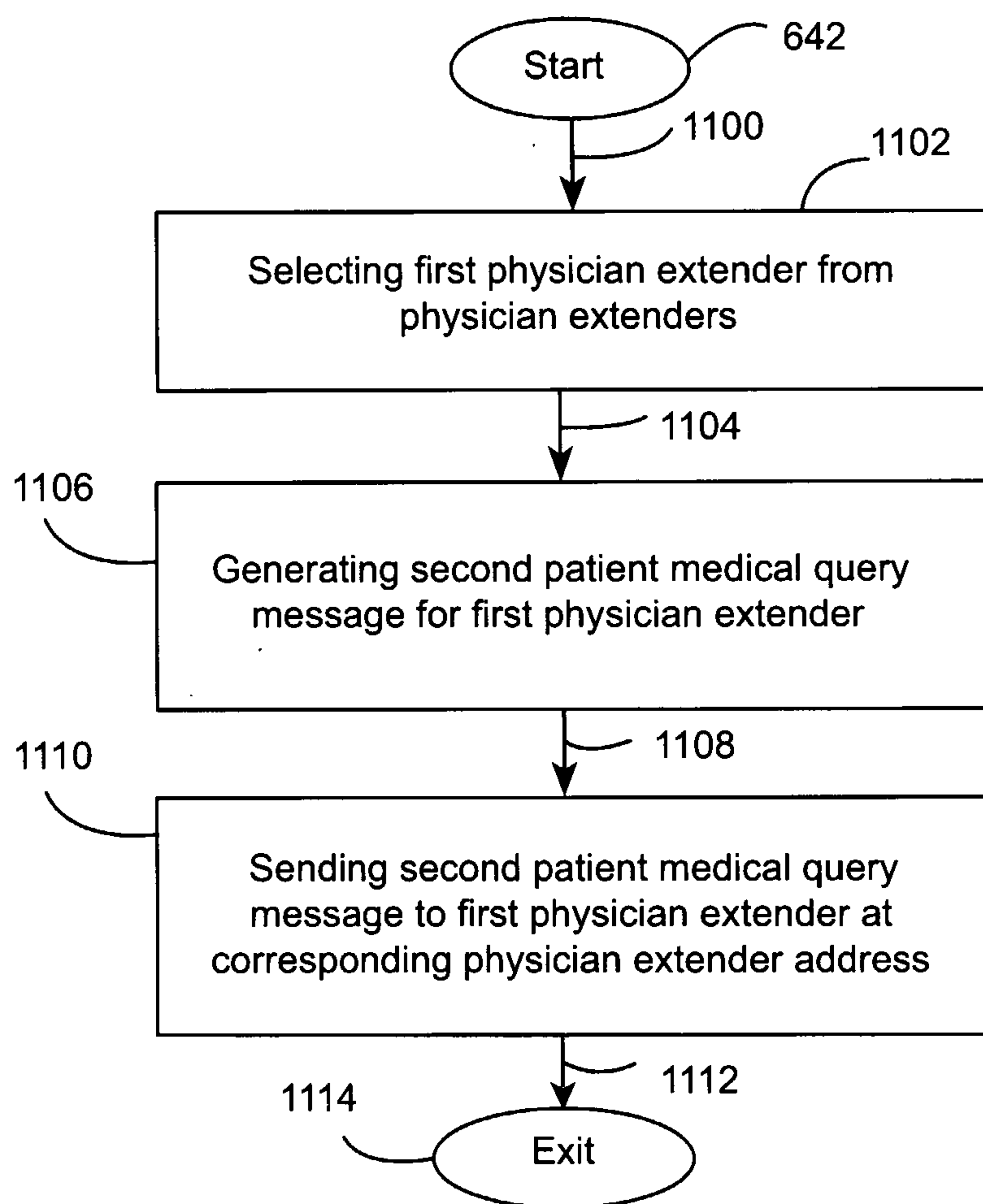


Fig. 23

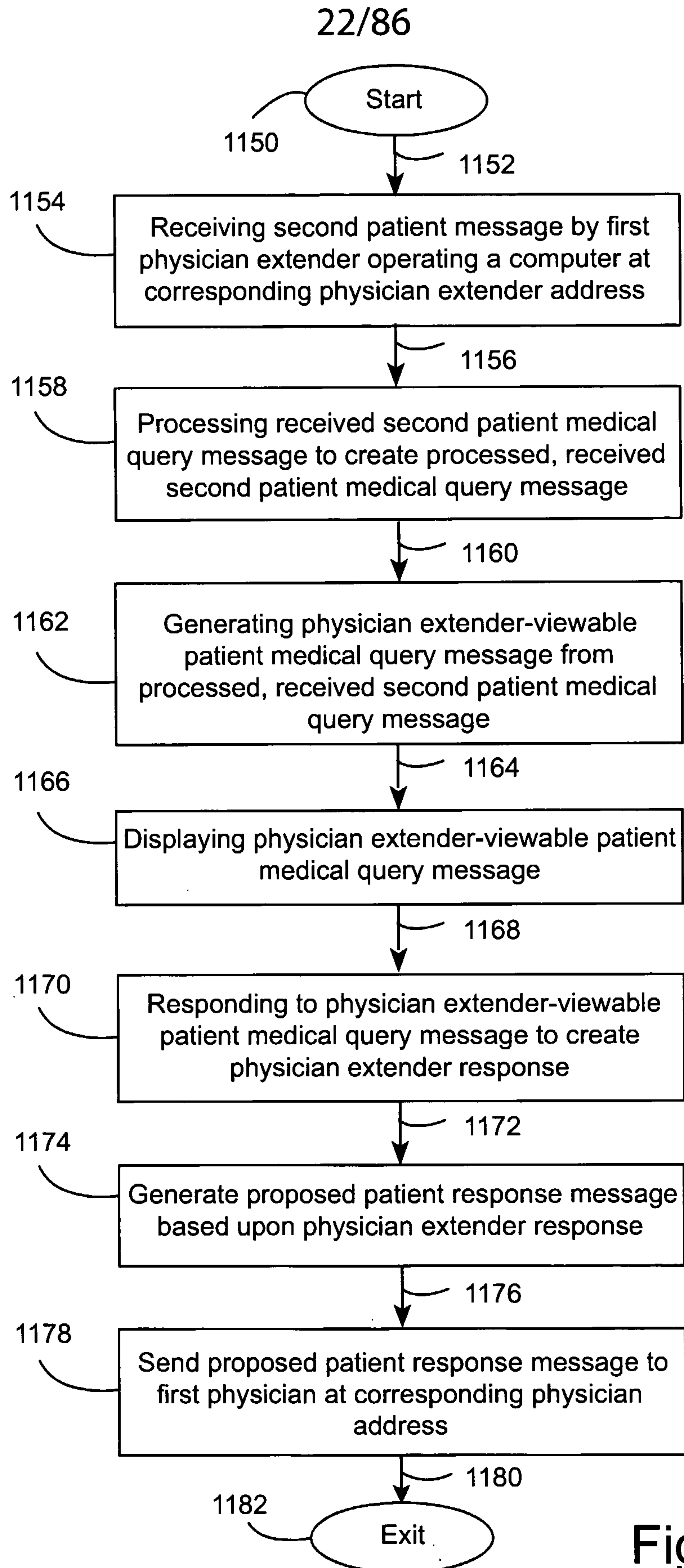


Fig. 24

23/86

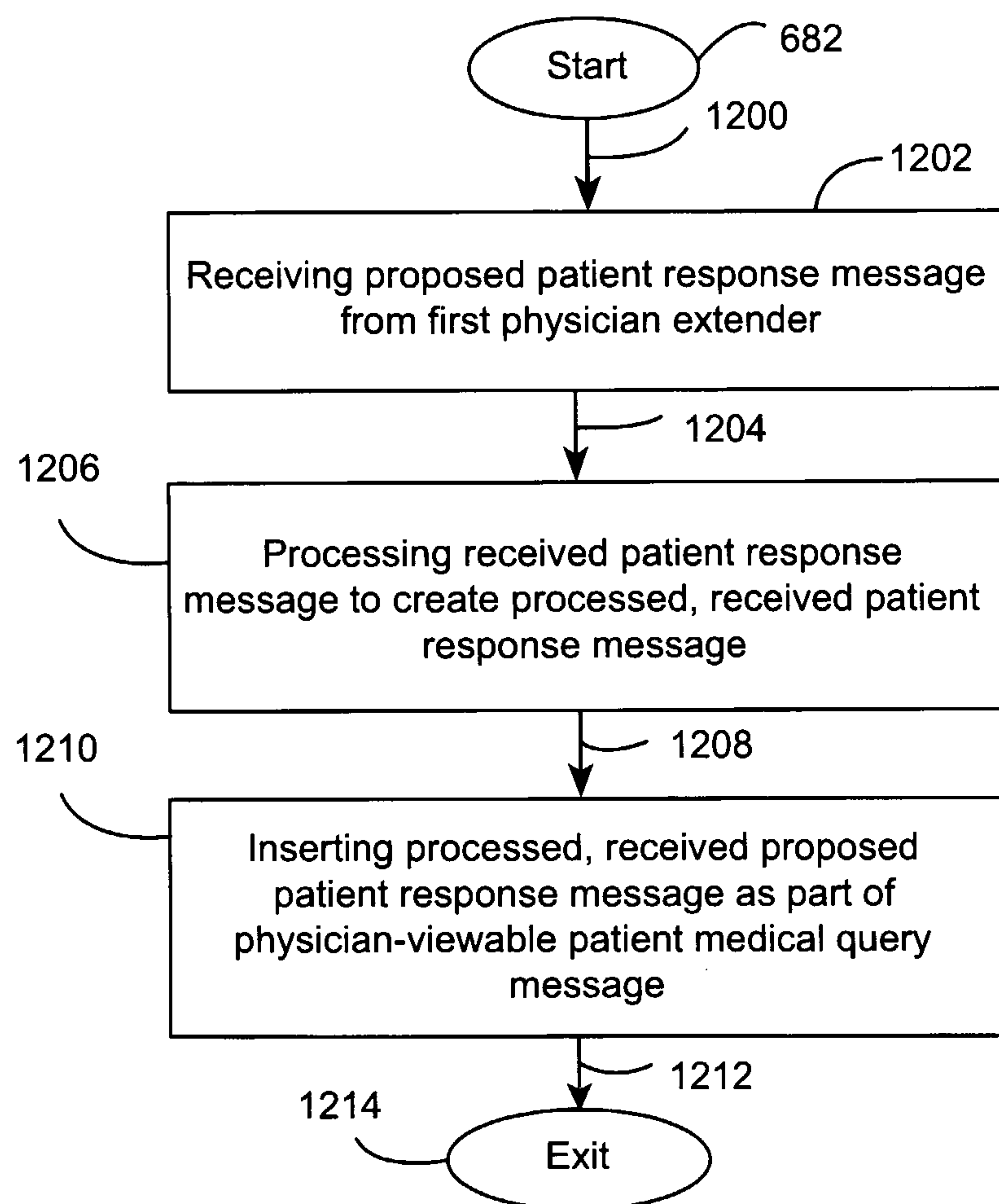


Fig. 25

24/86

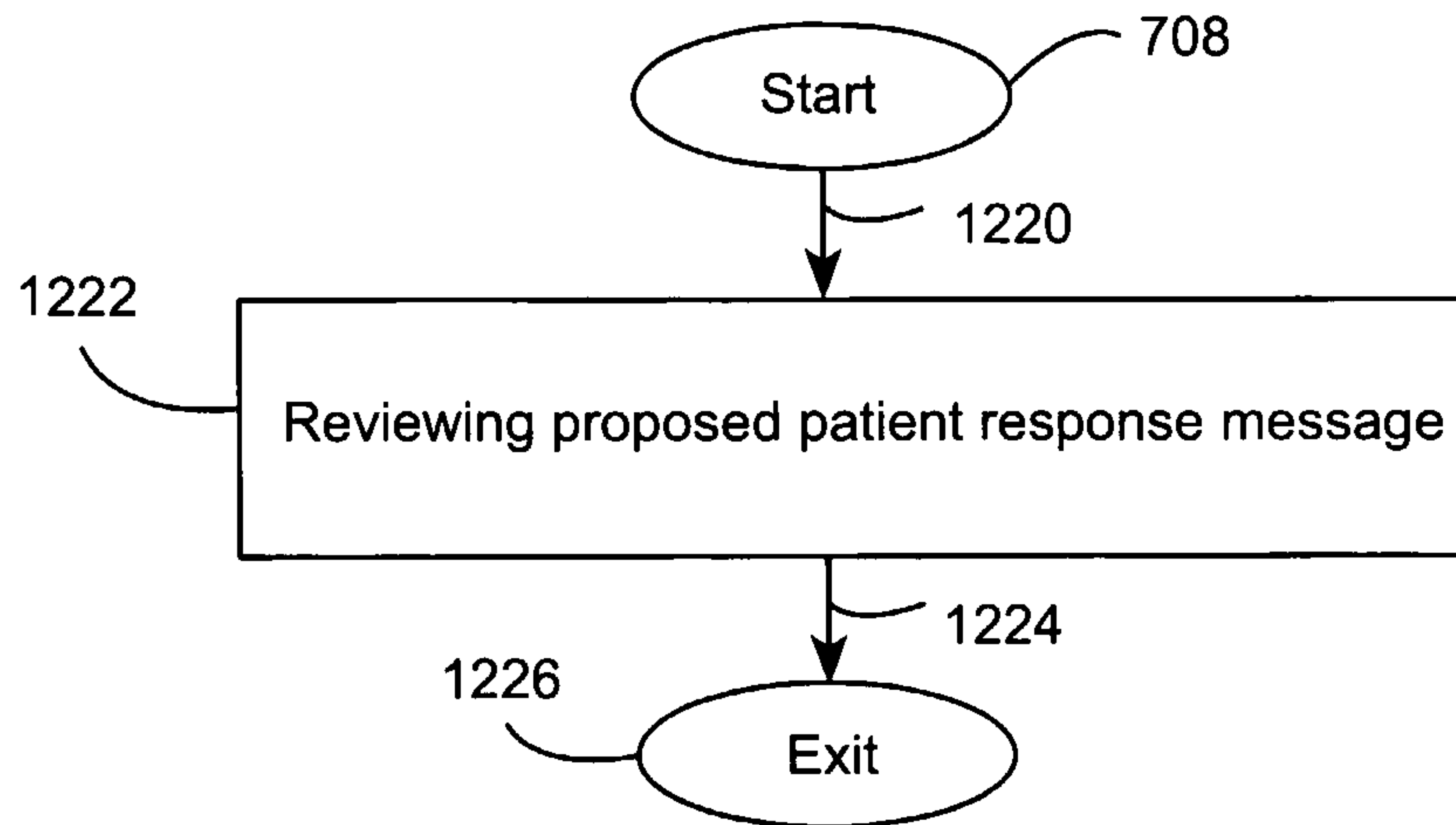


Fig. 26

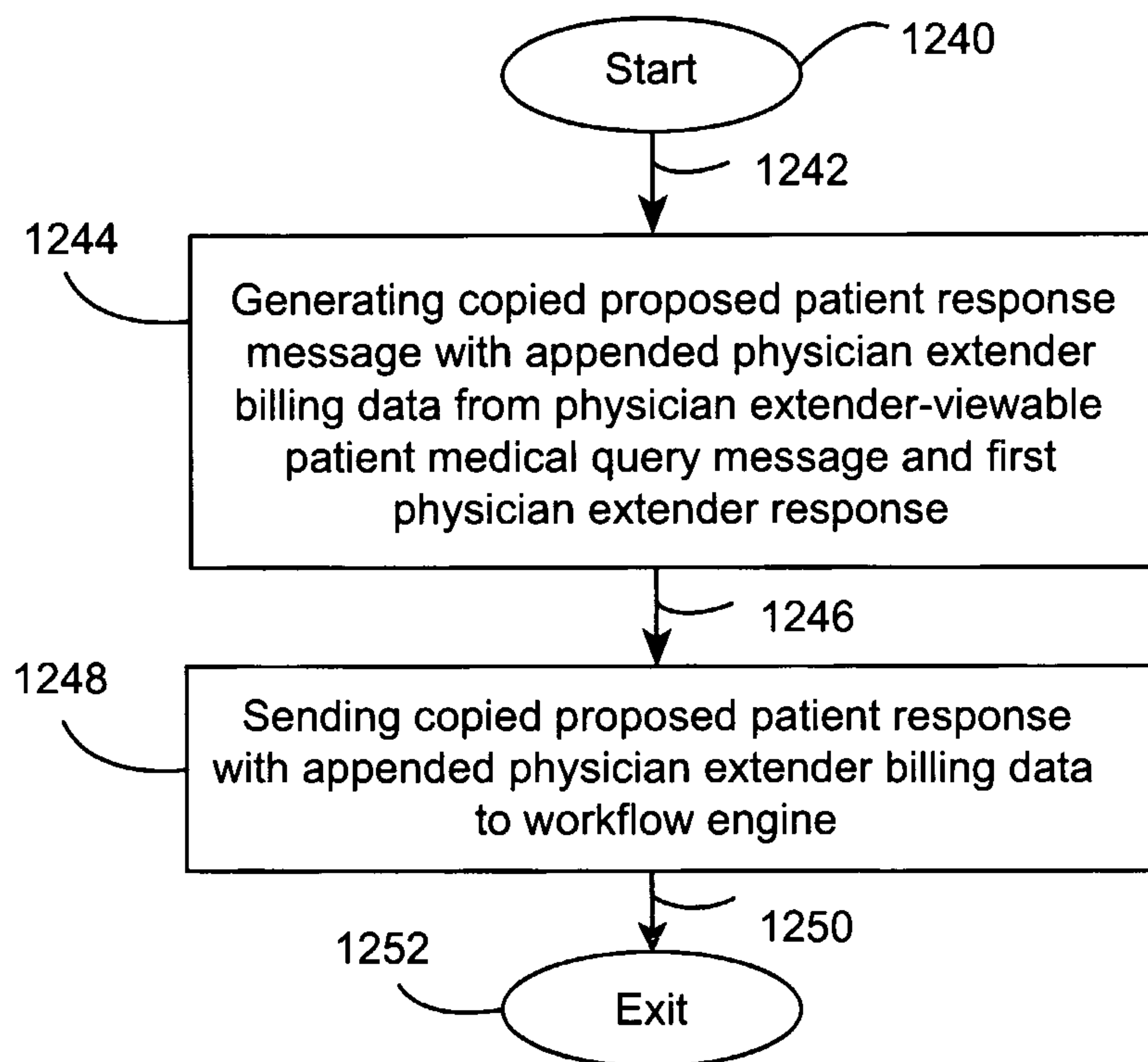


Fig. 27

25/86

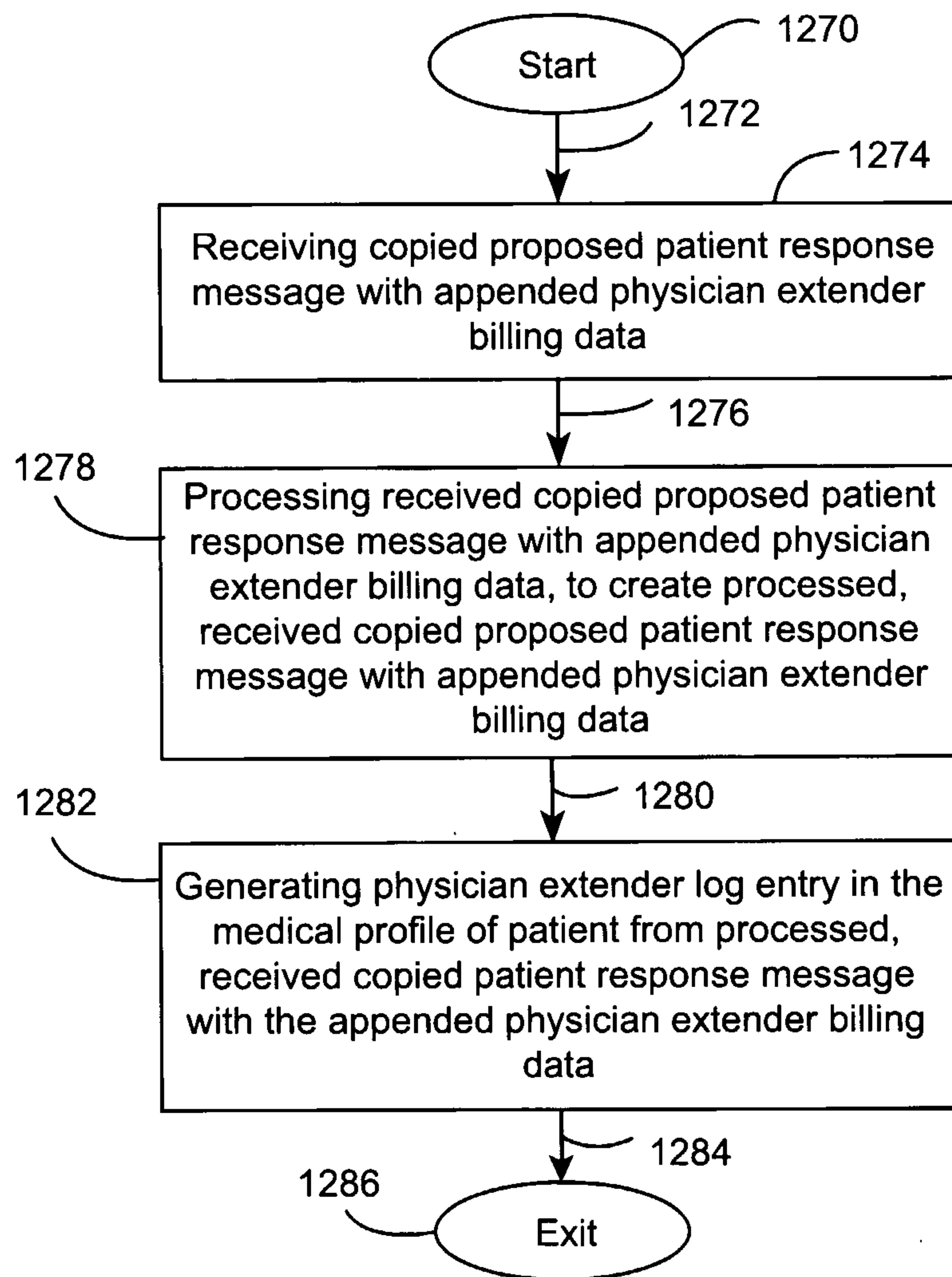


Fig. 28

26/86

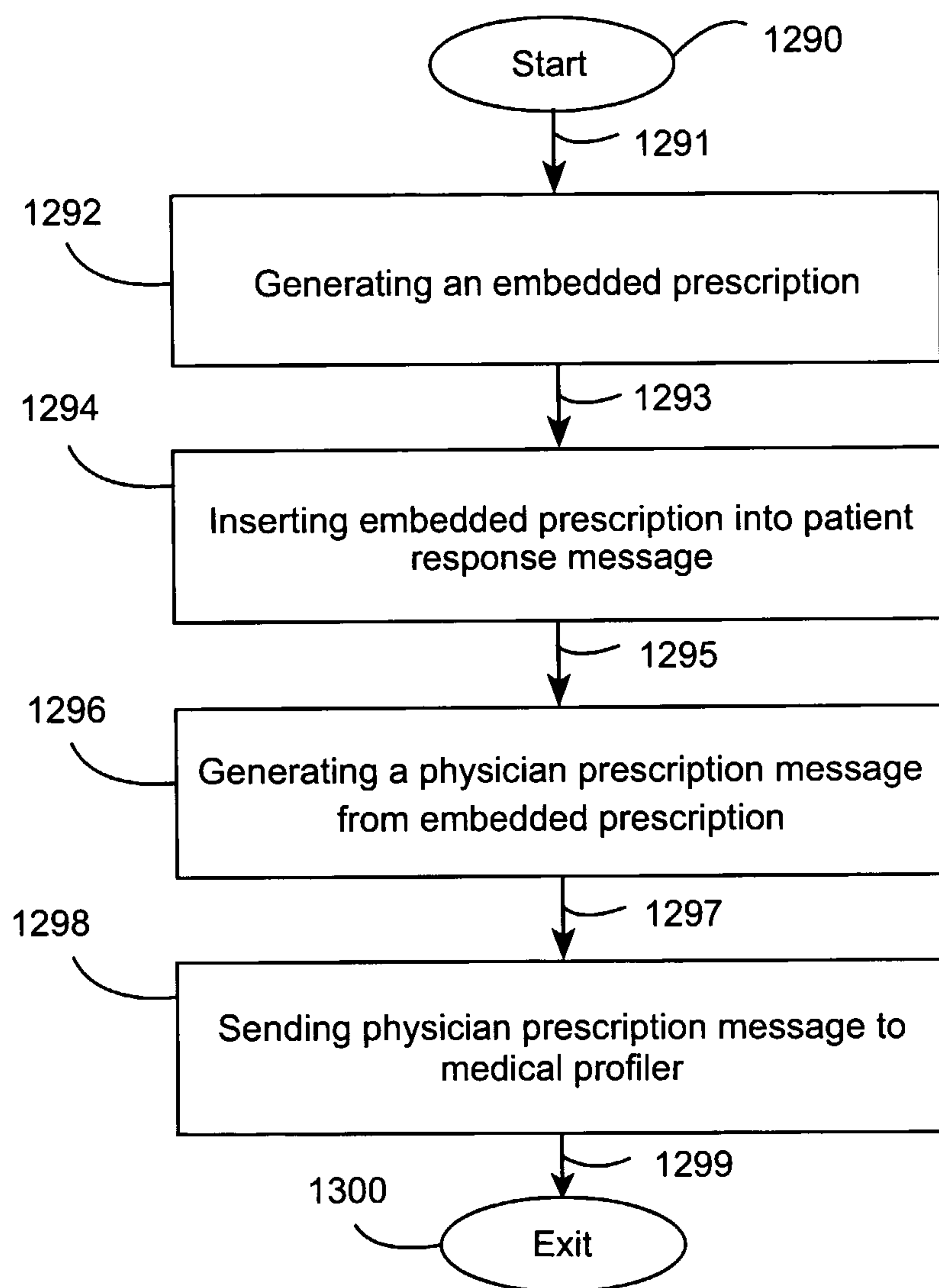


Fig. 29

27/86

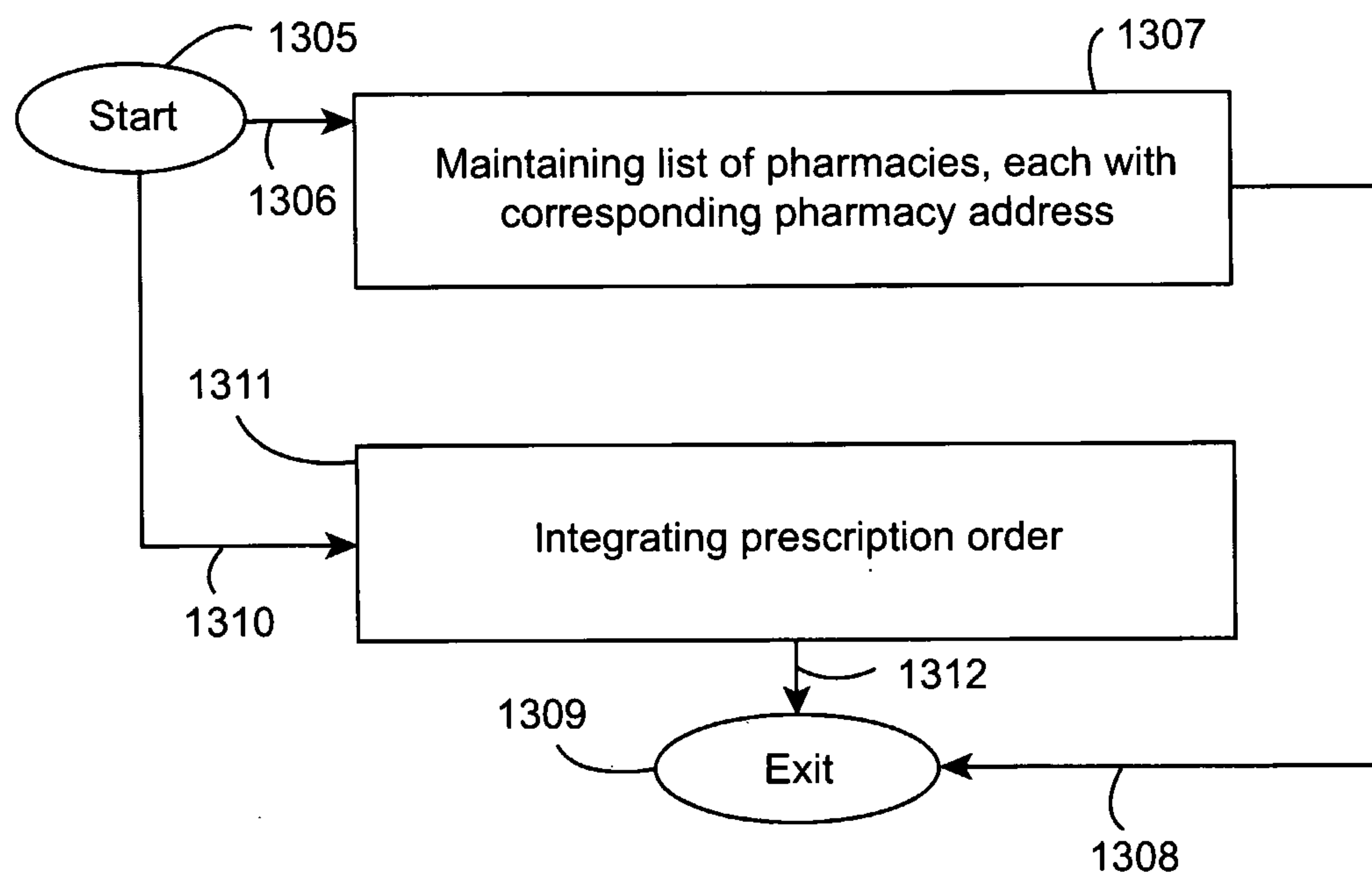


Fig. 30

28/86

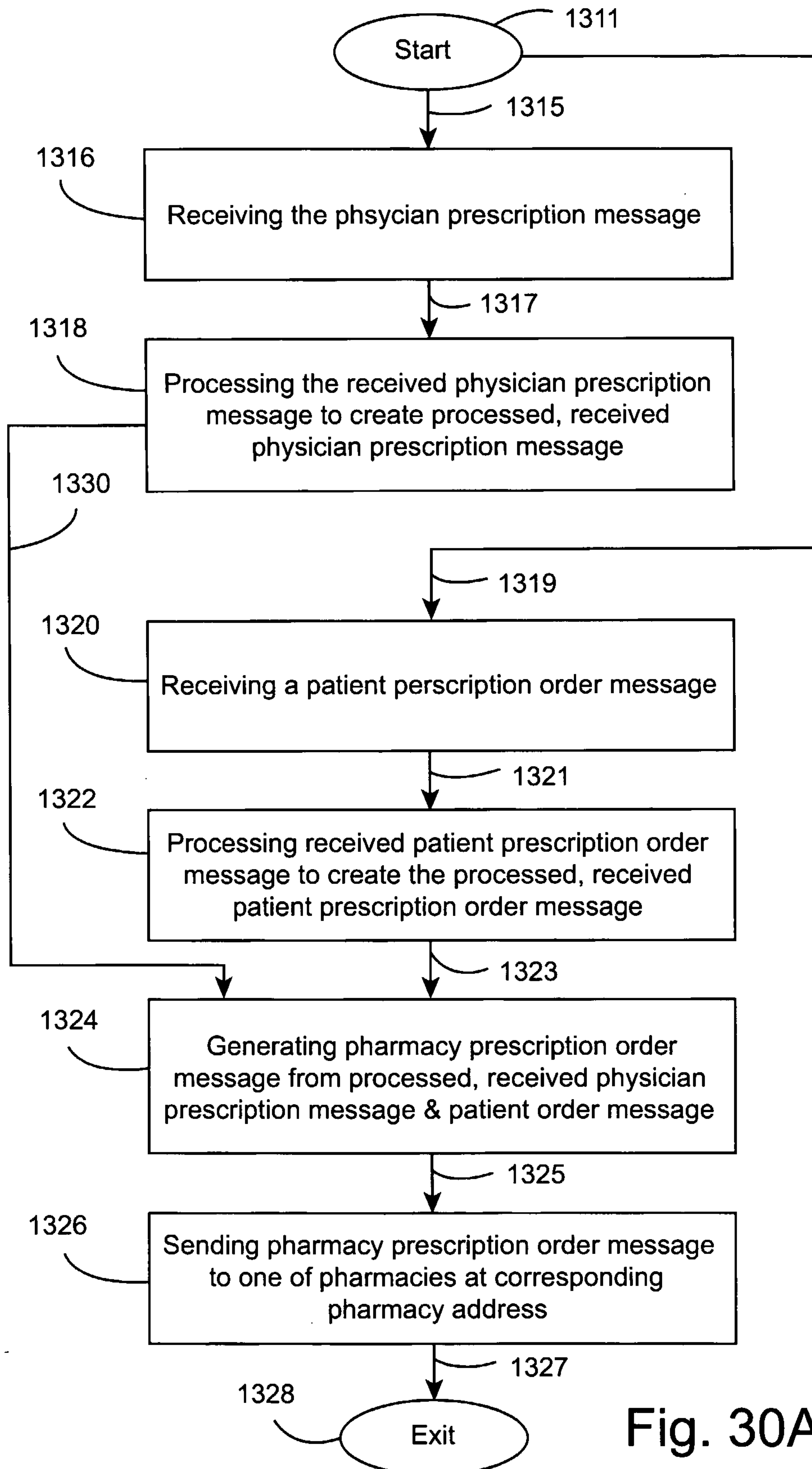


Fig. 30A

29/86

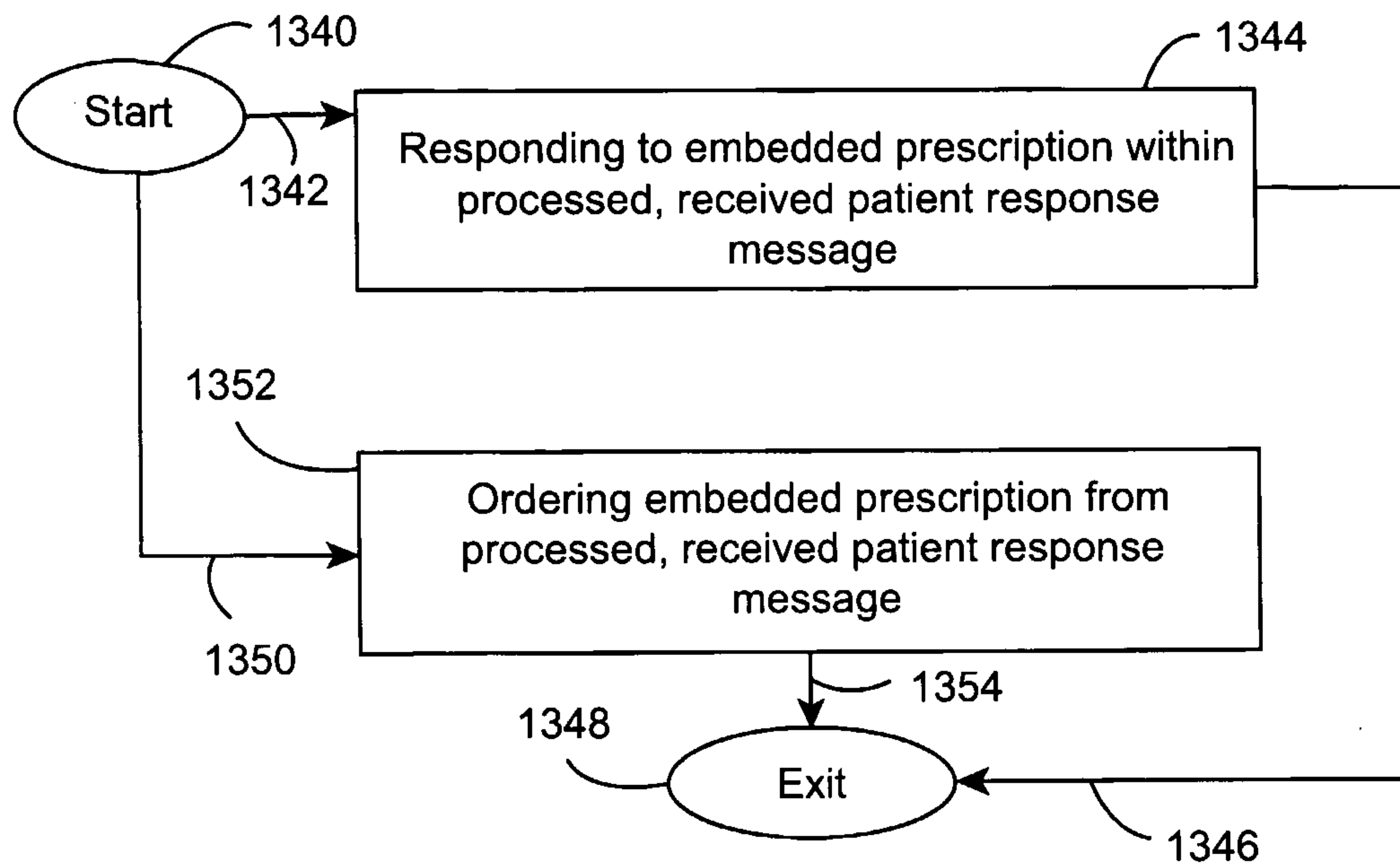


Fig. 31

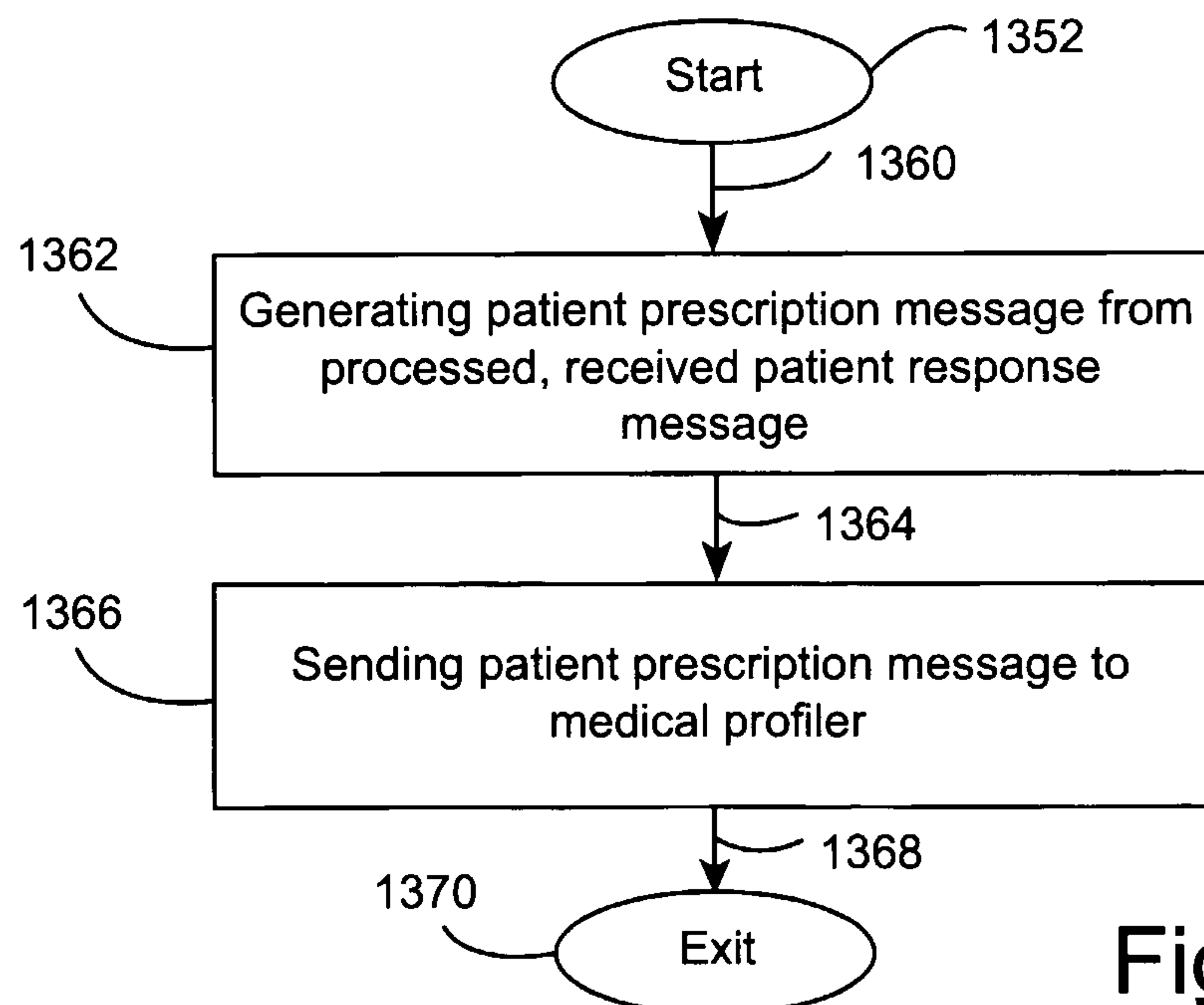


Fig. 32

30/86

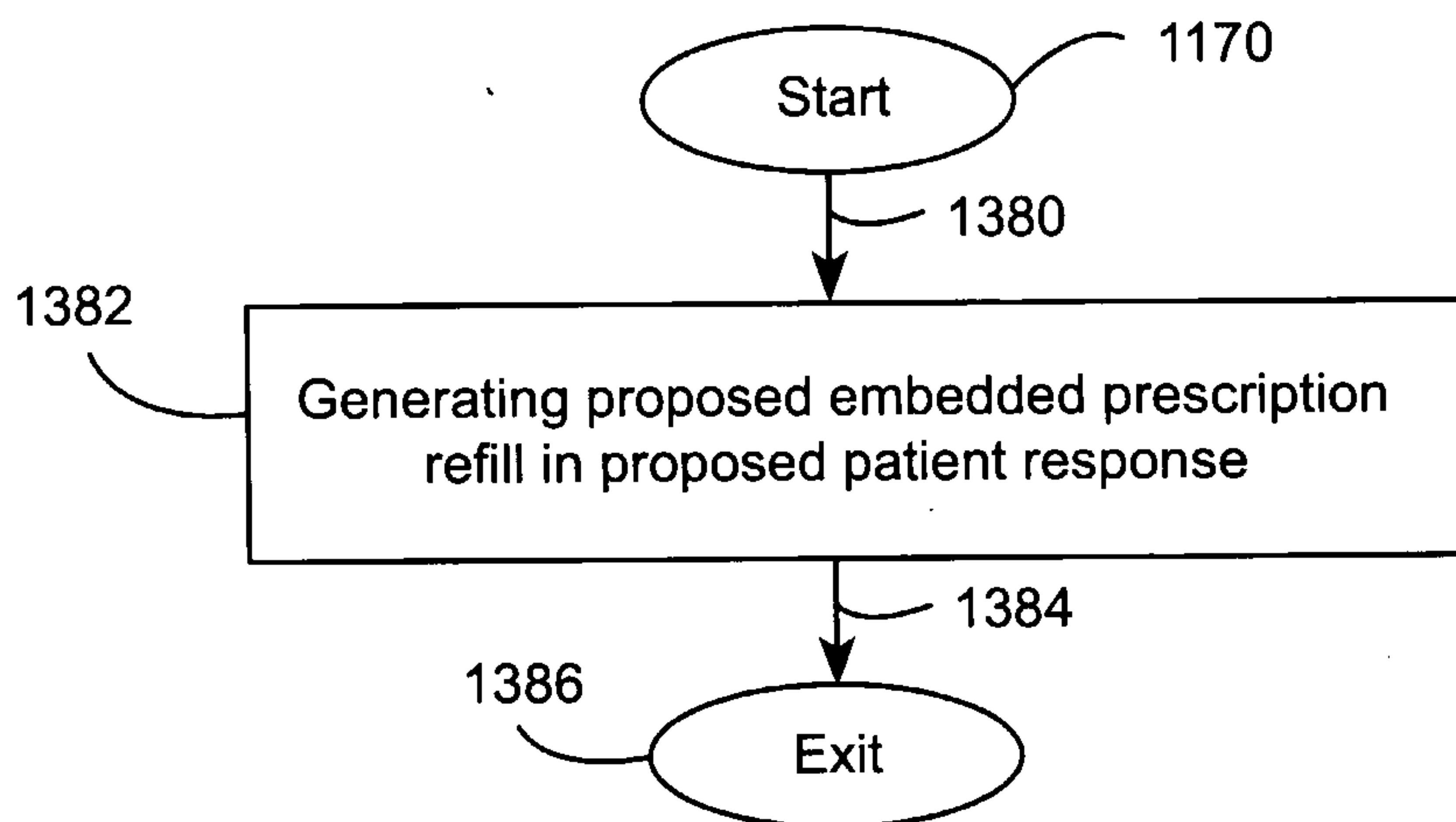


Fig. 33

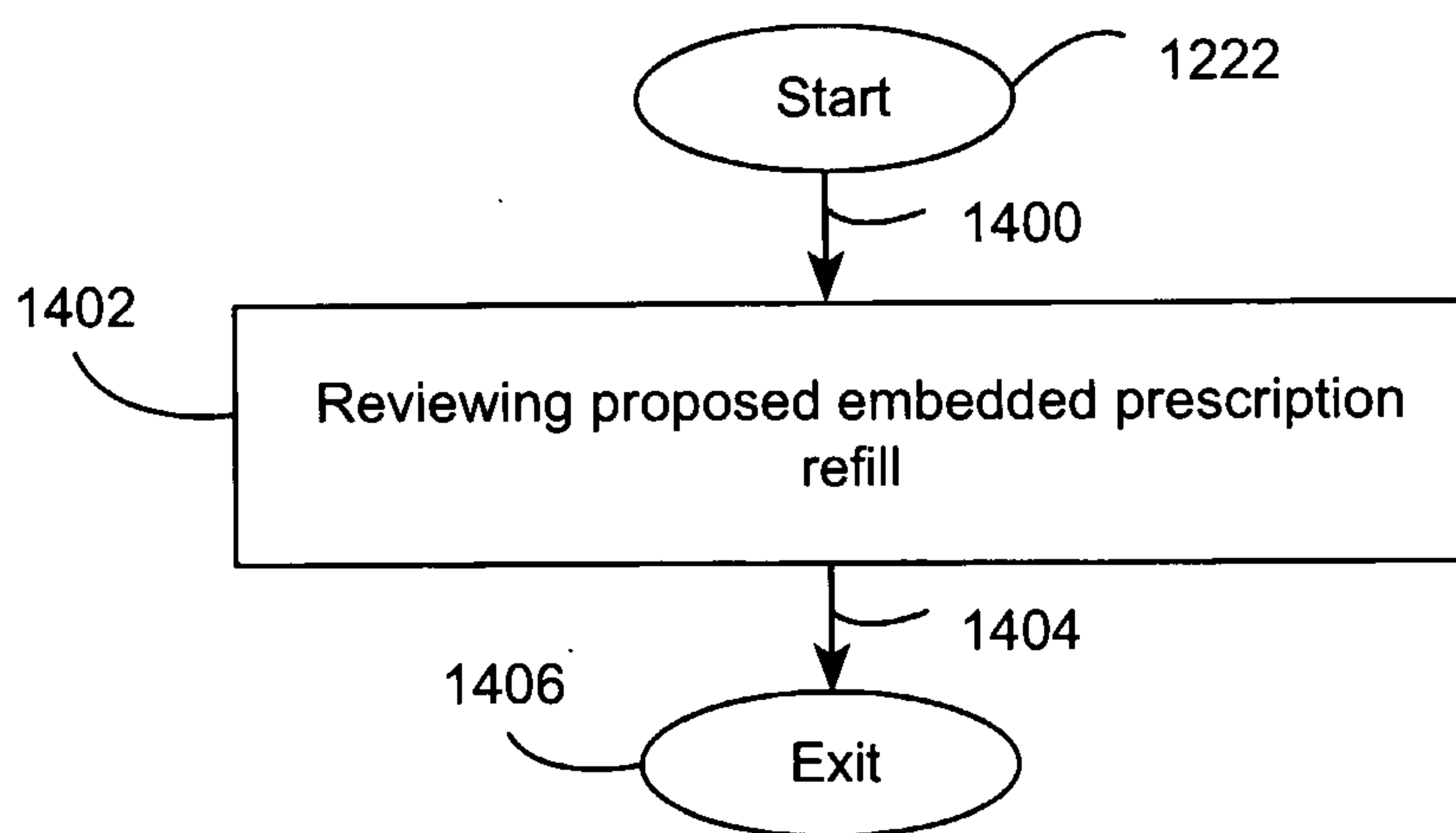


Fig. 34

31/86

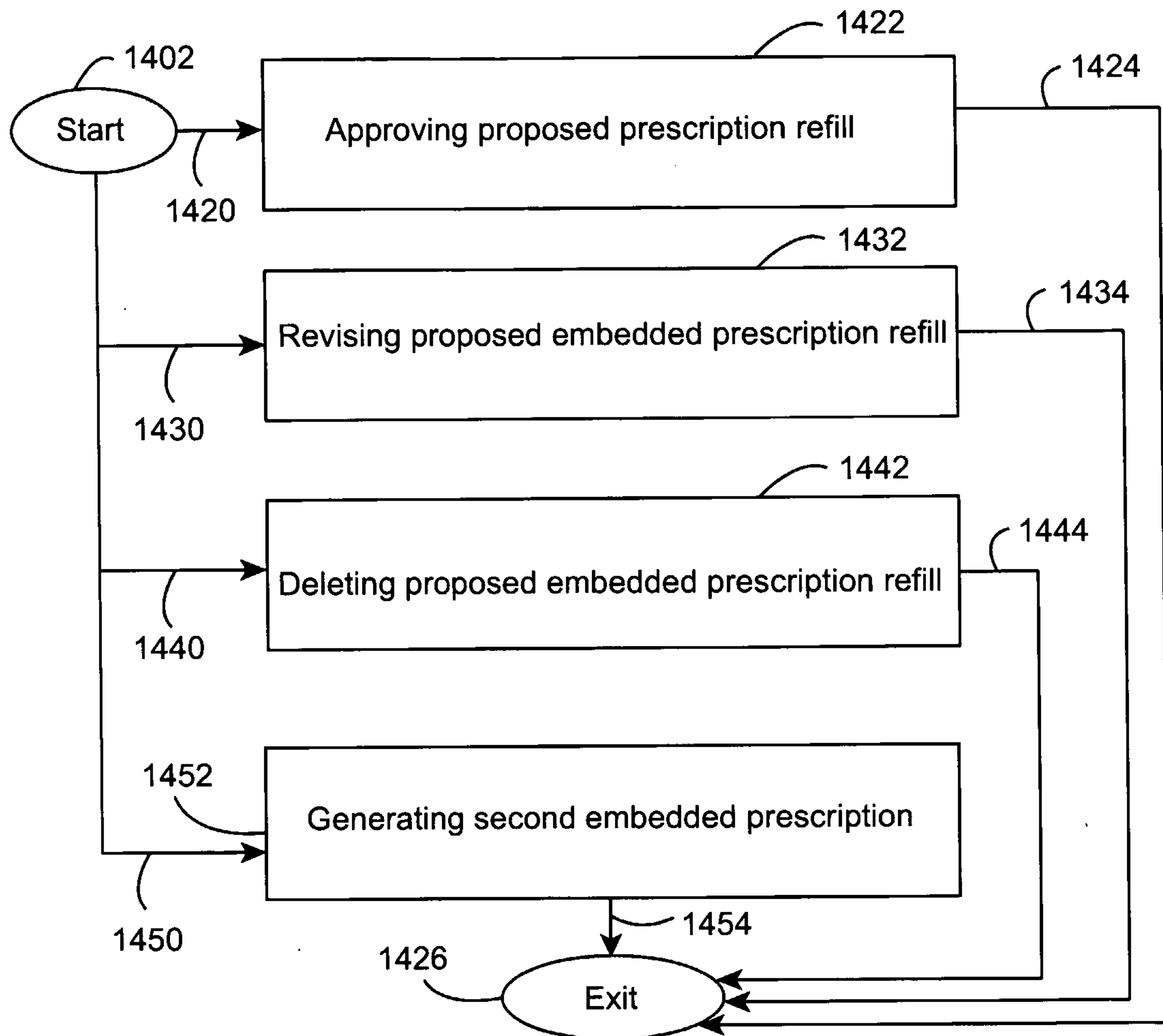


Fig. 35

32/86

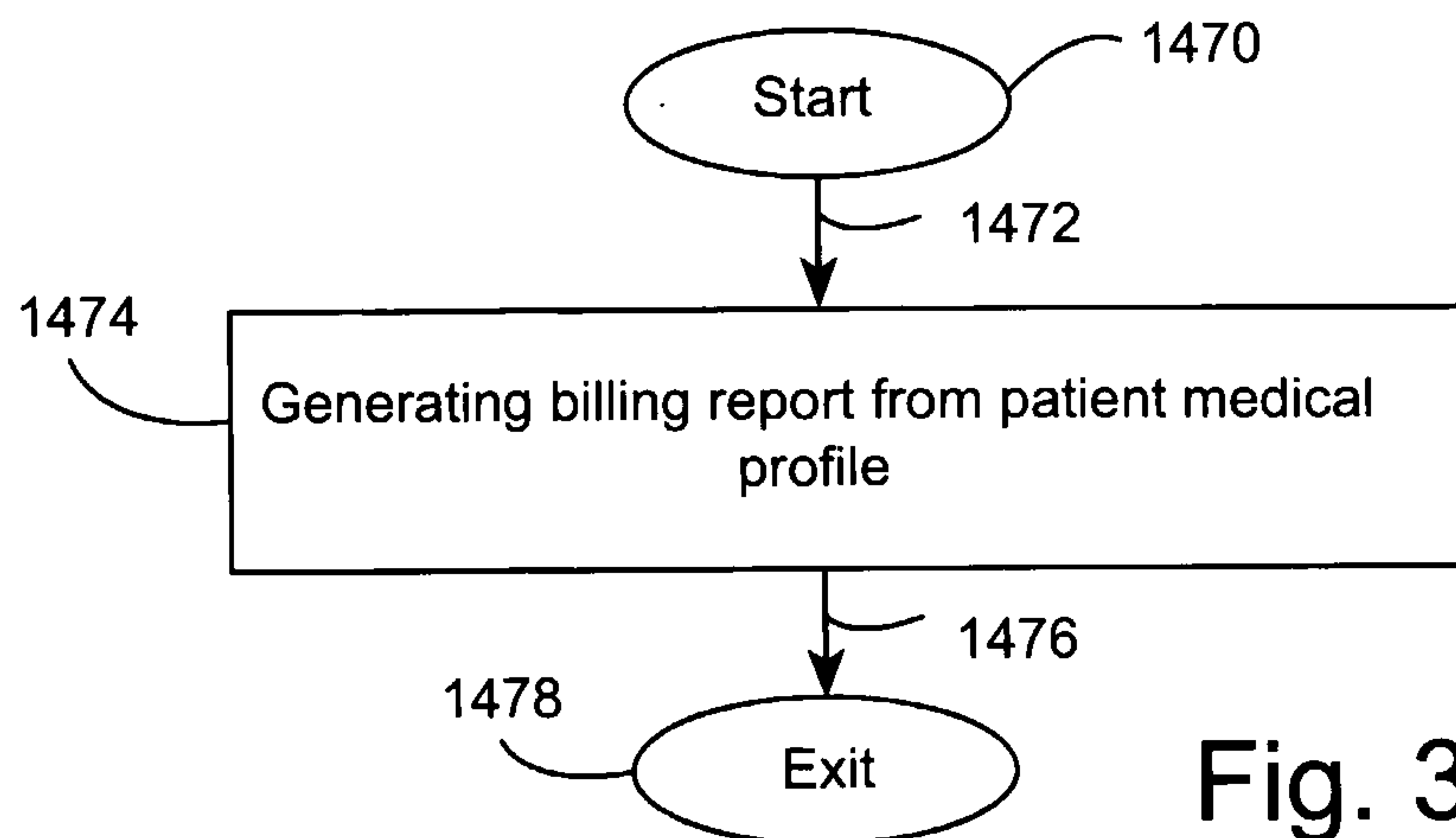


Fig. 36

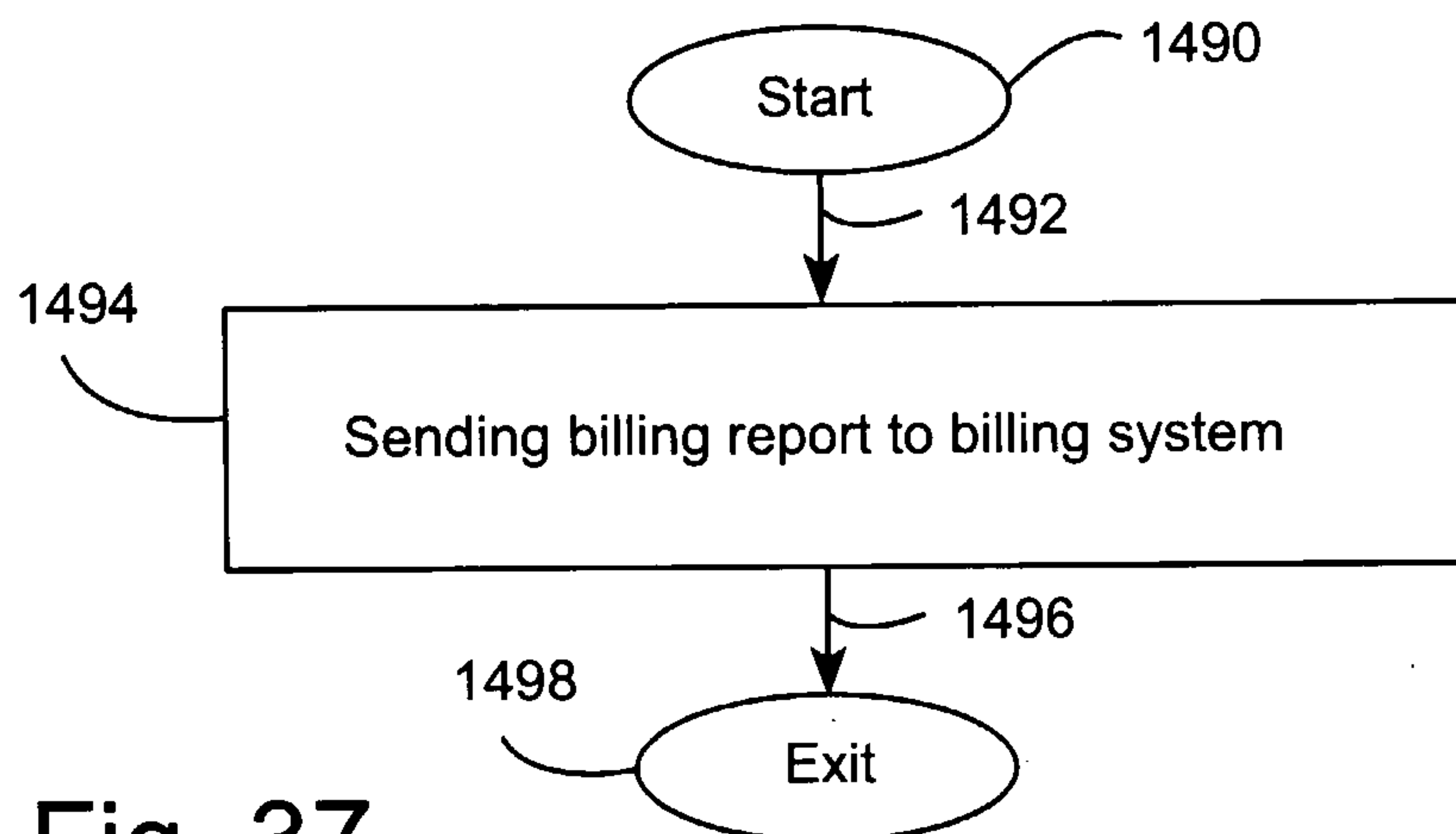


Fig. 37

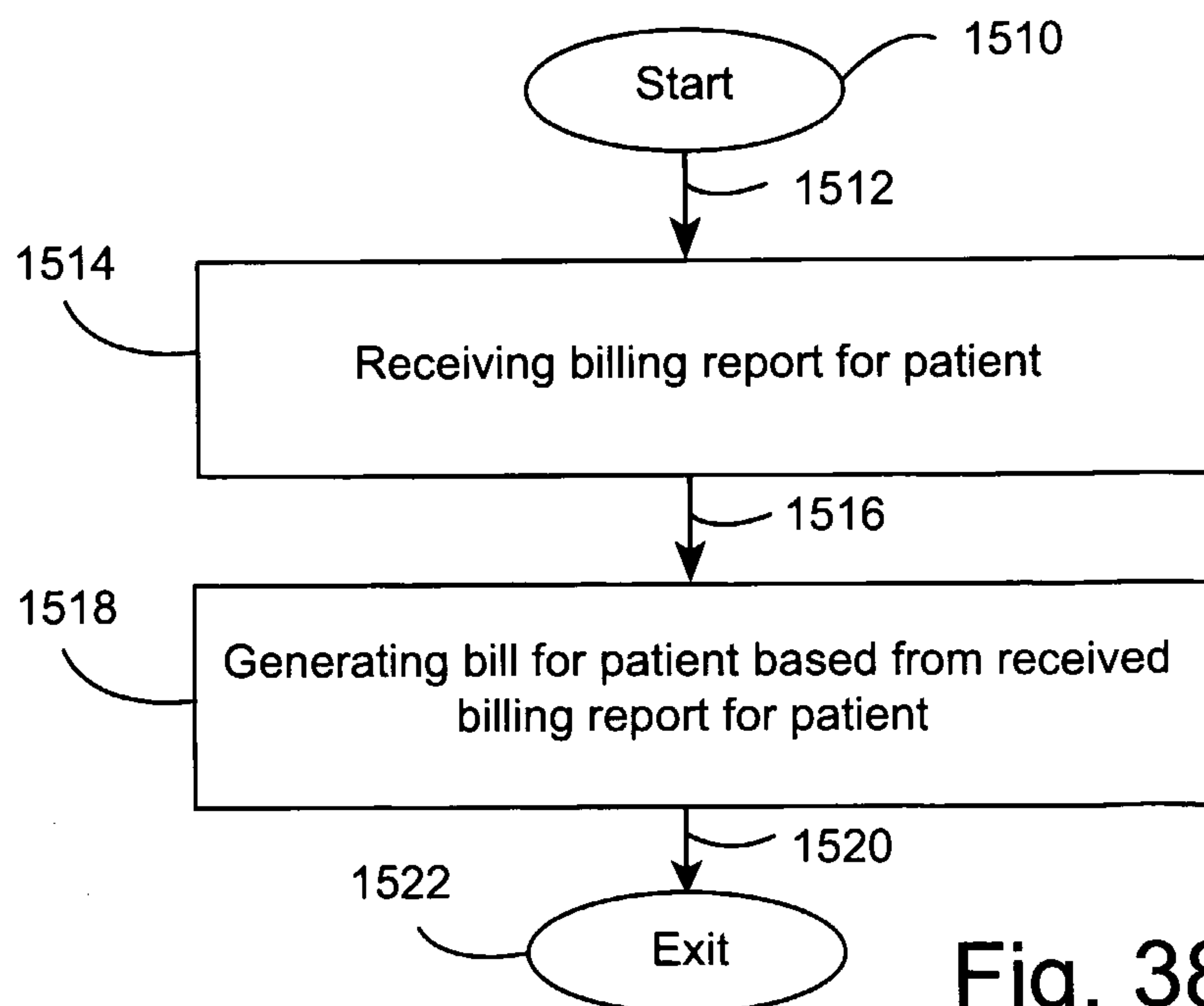


Fig. 38

33/86

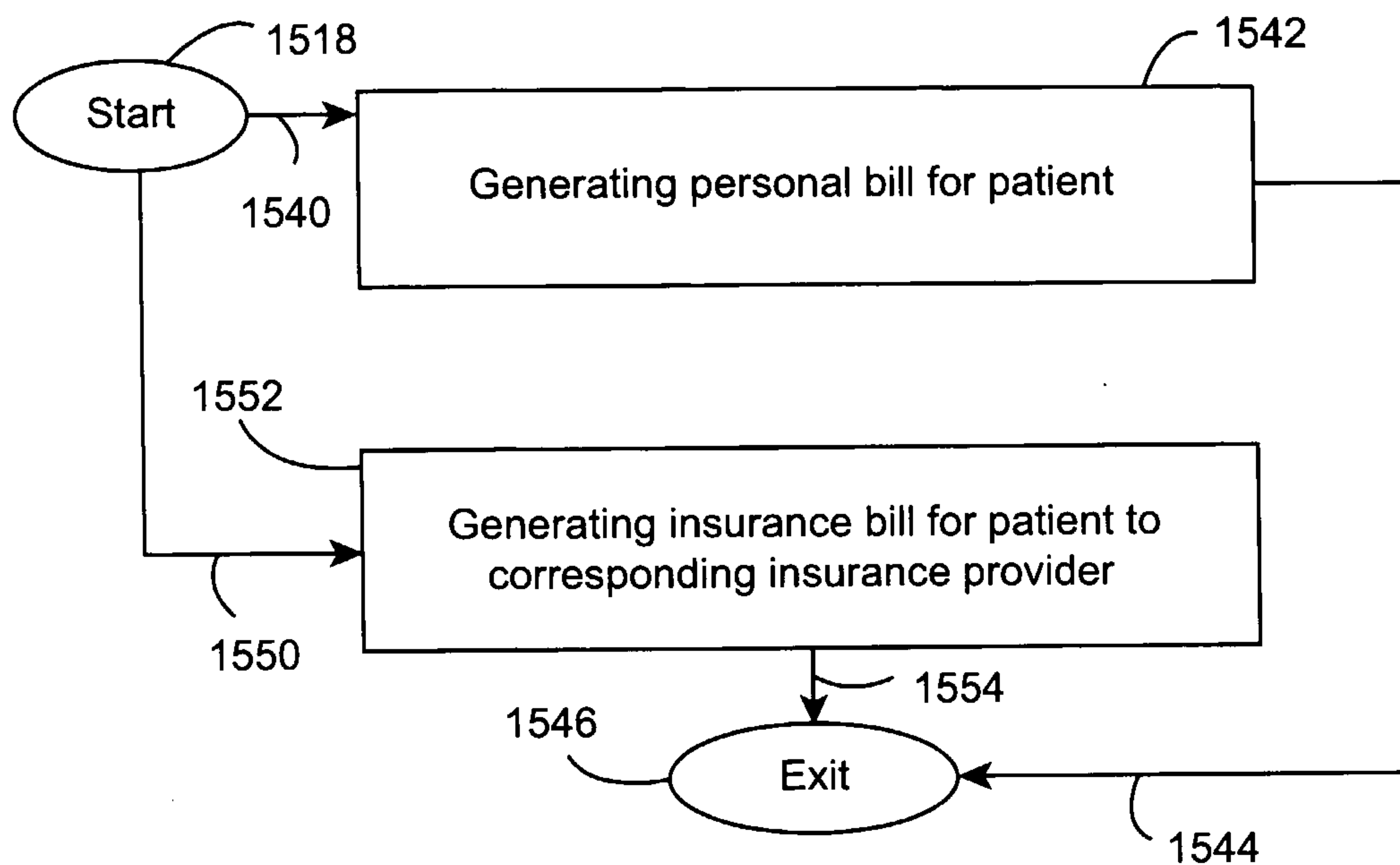


Fig. 39

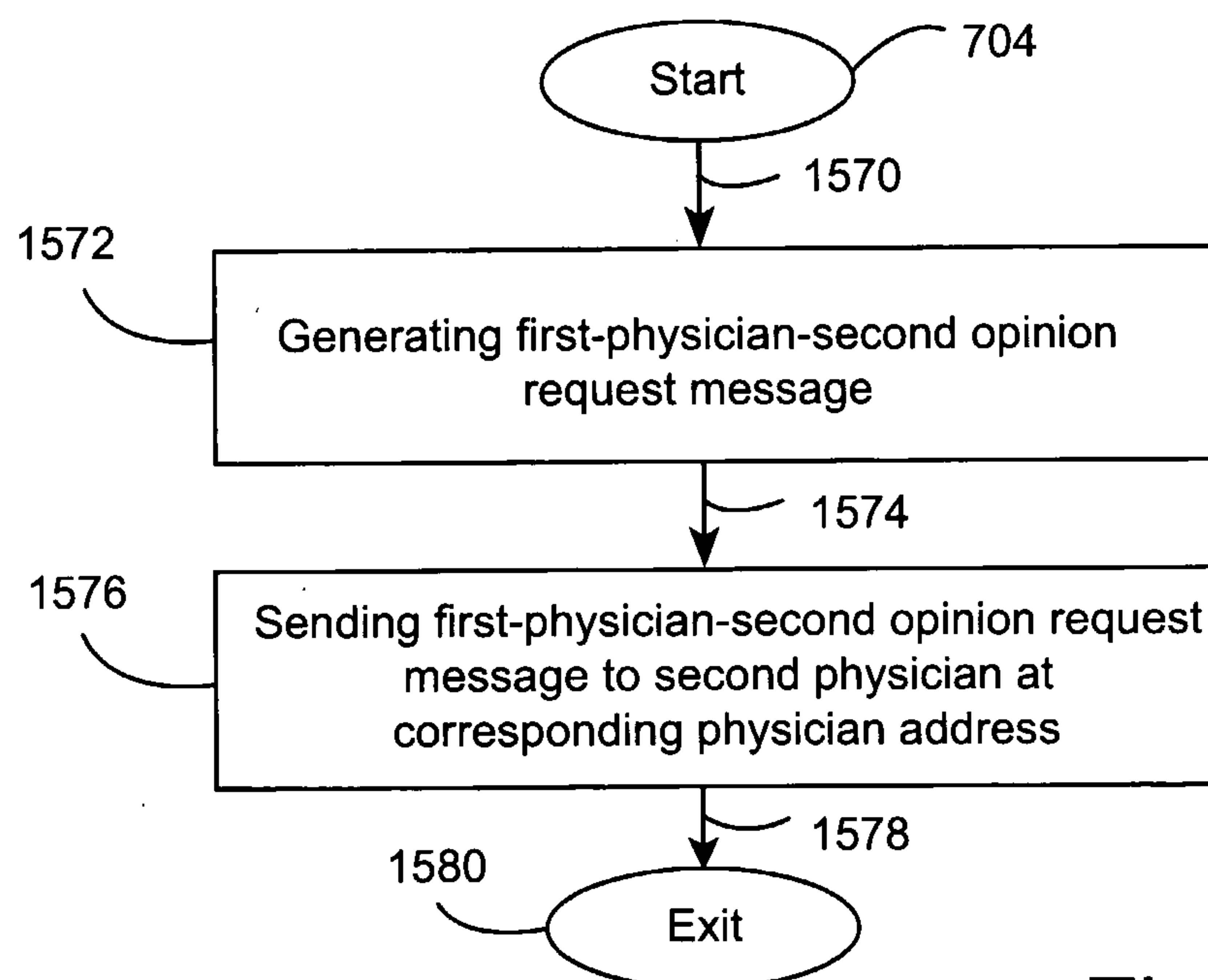


Fig. 40

34/86

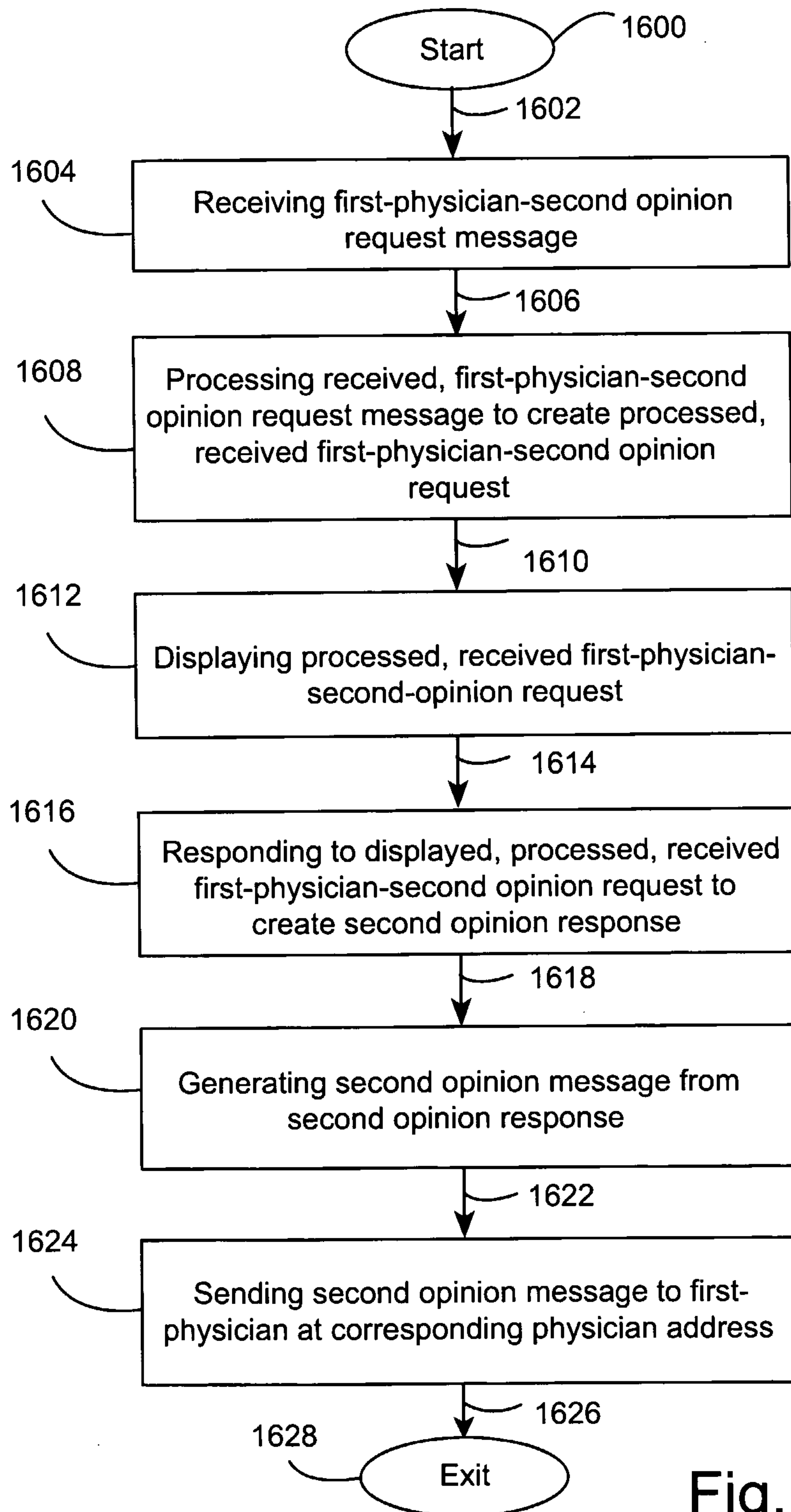


Fig. 41

35/86

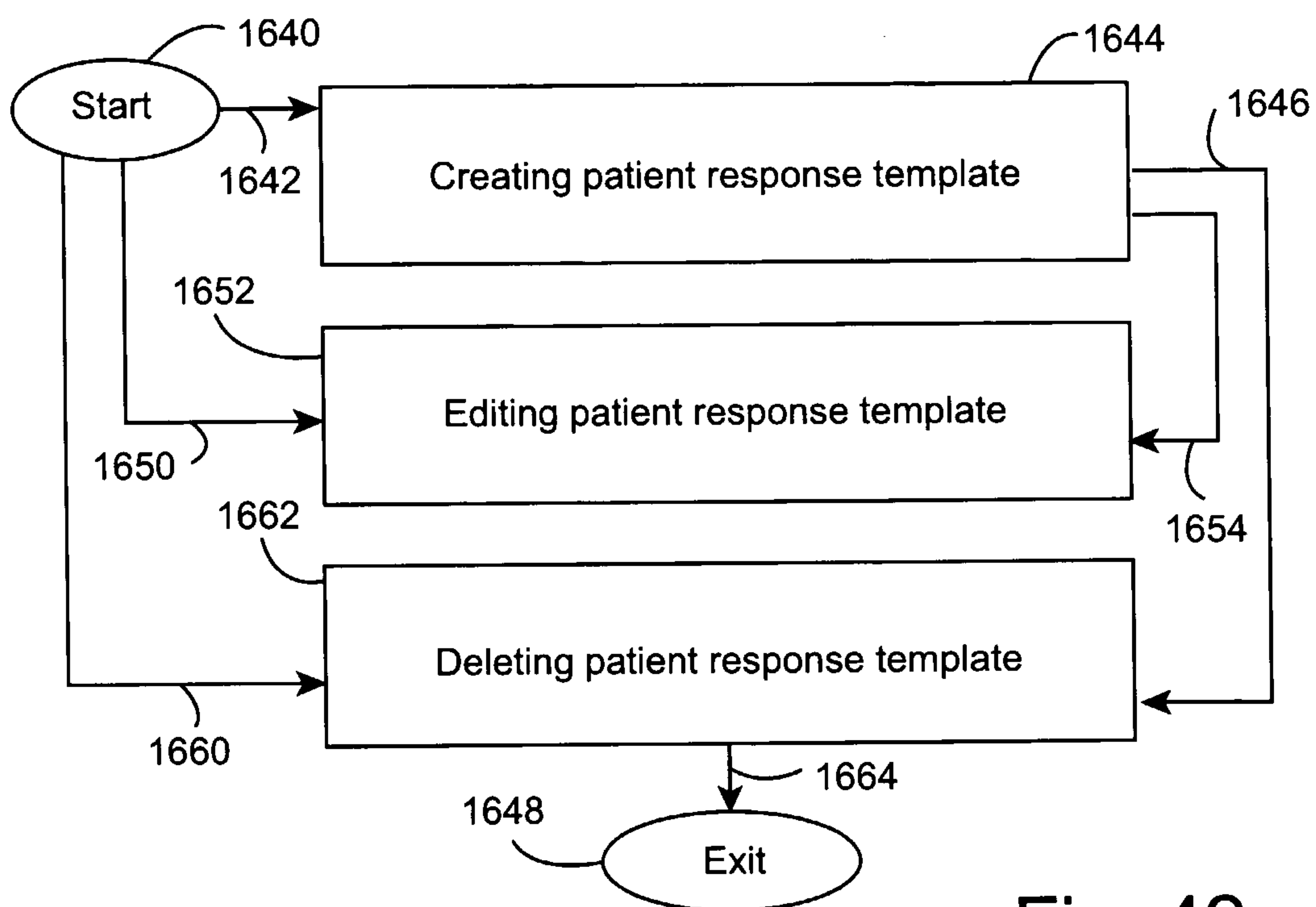


Fig. 42

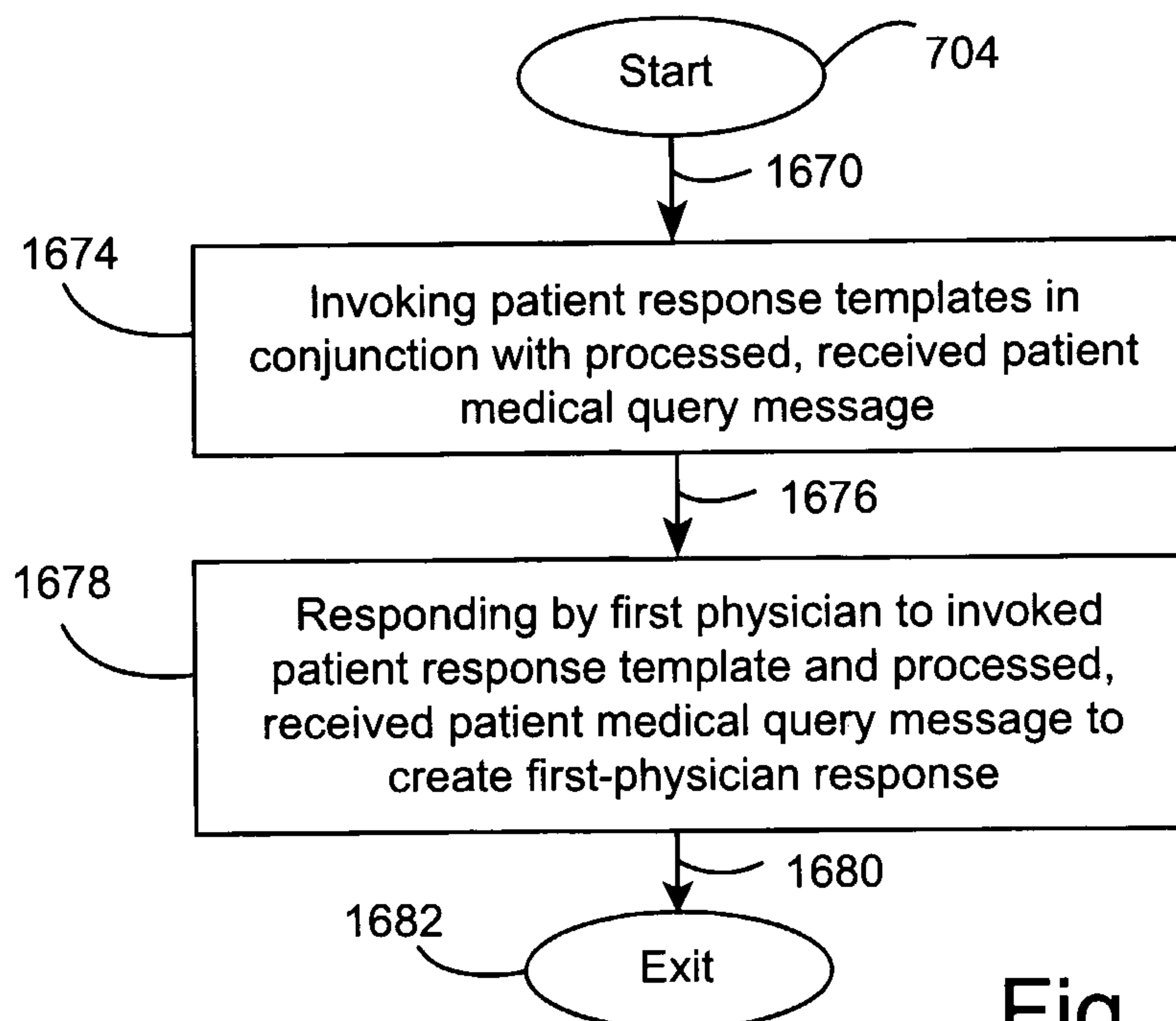


Fig. 43

36/86

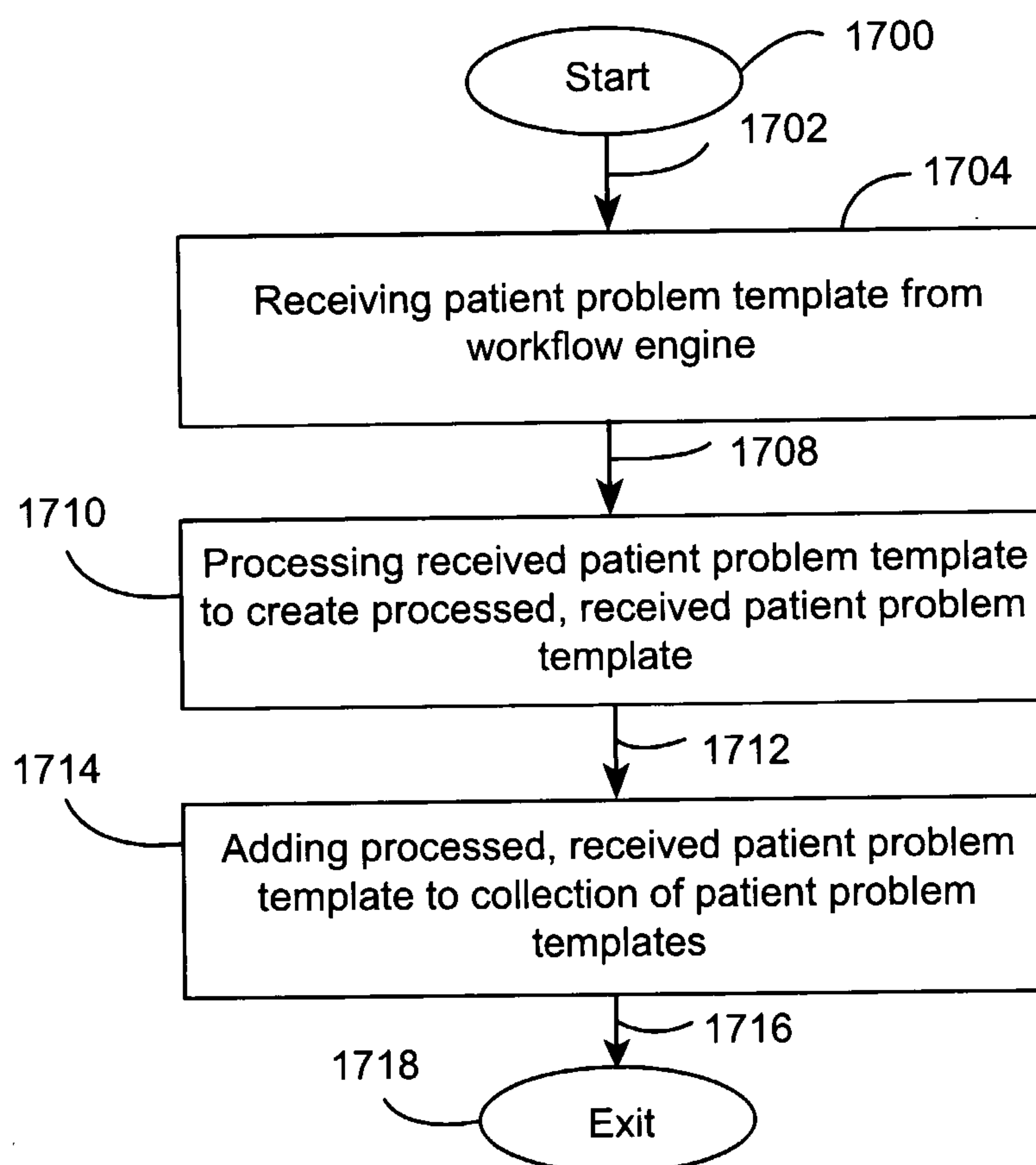
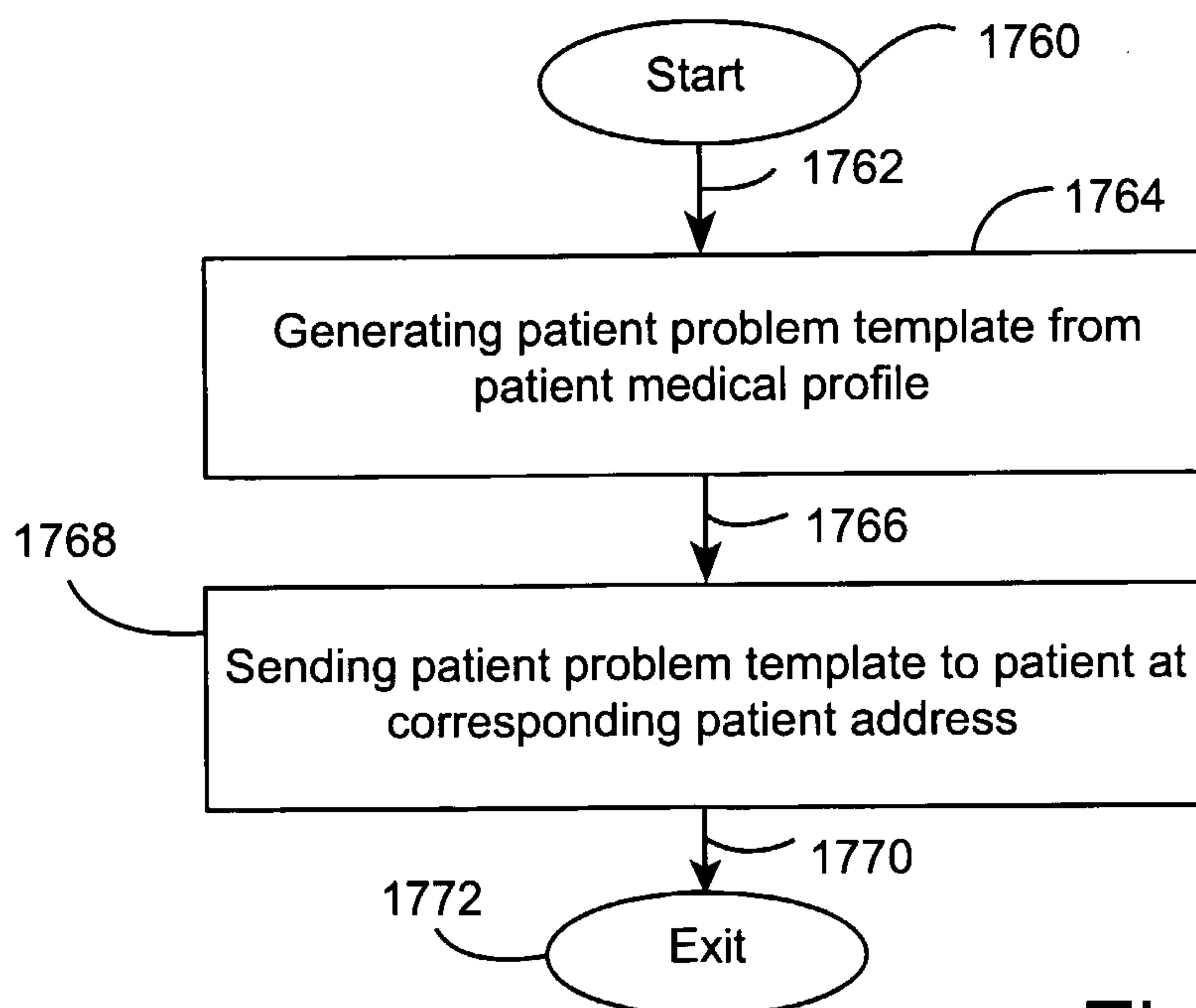
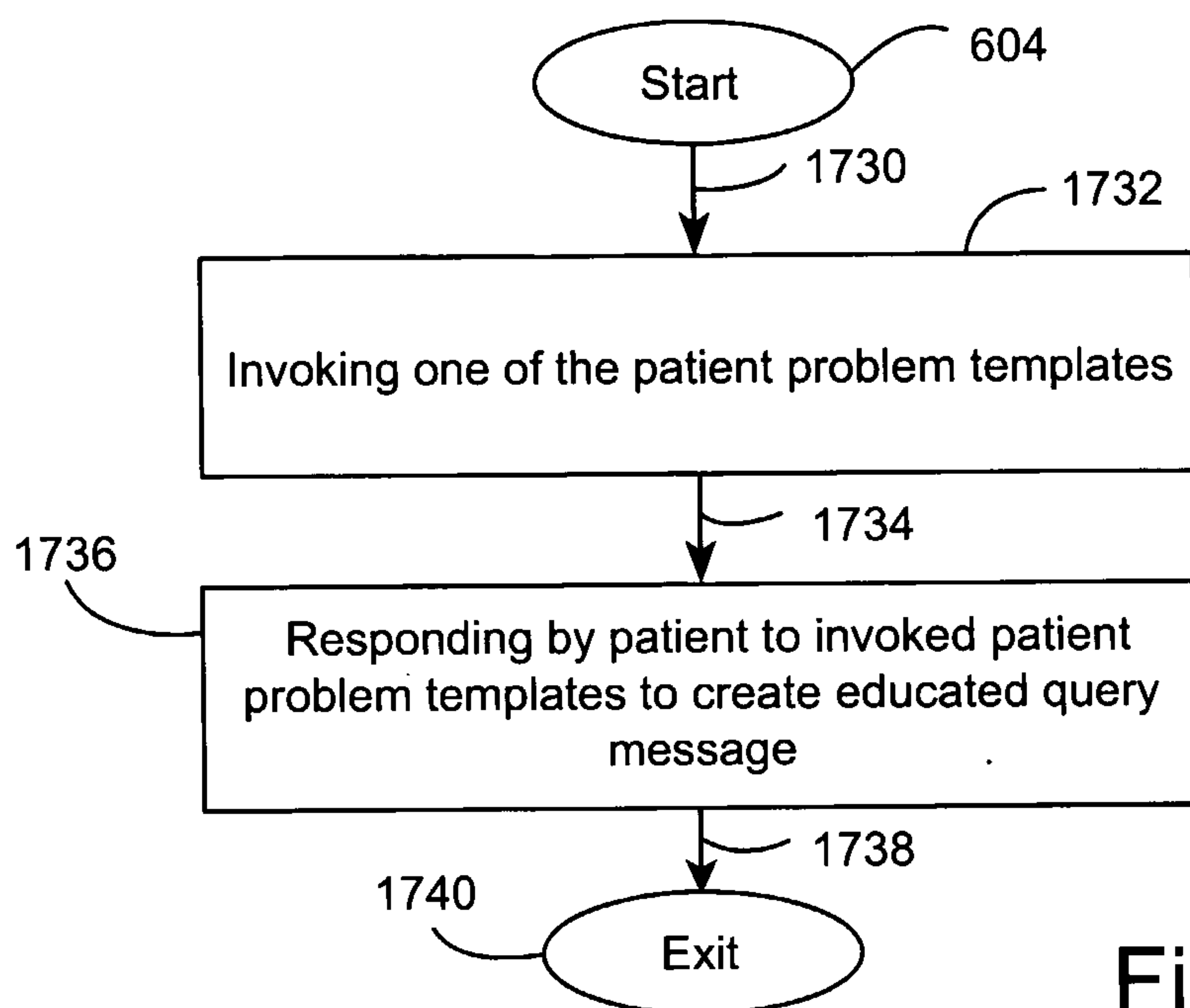


Fig. 44

37/86



38/86

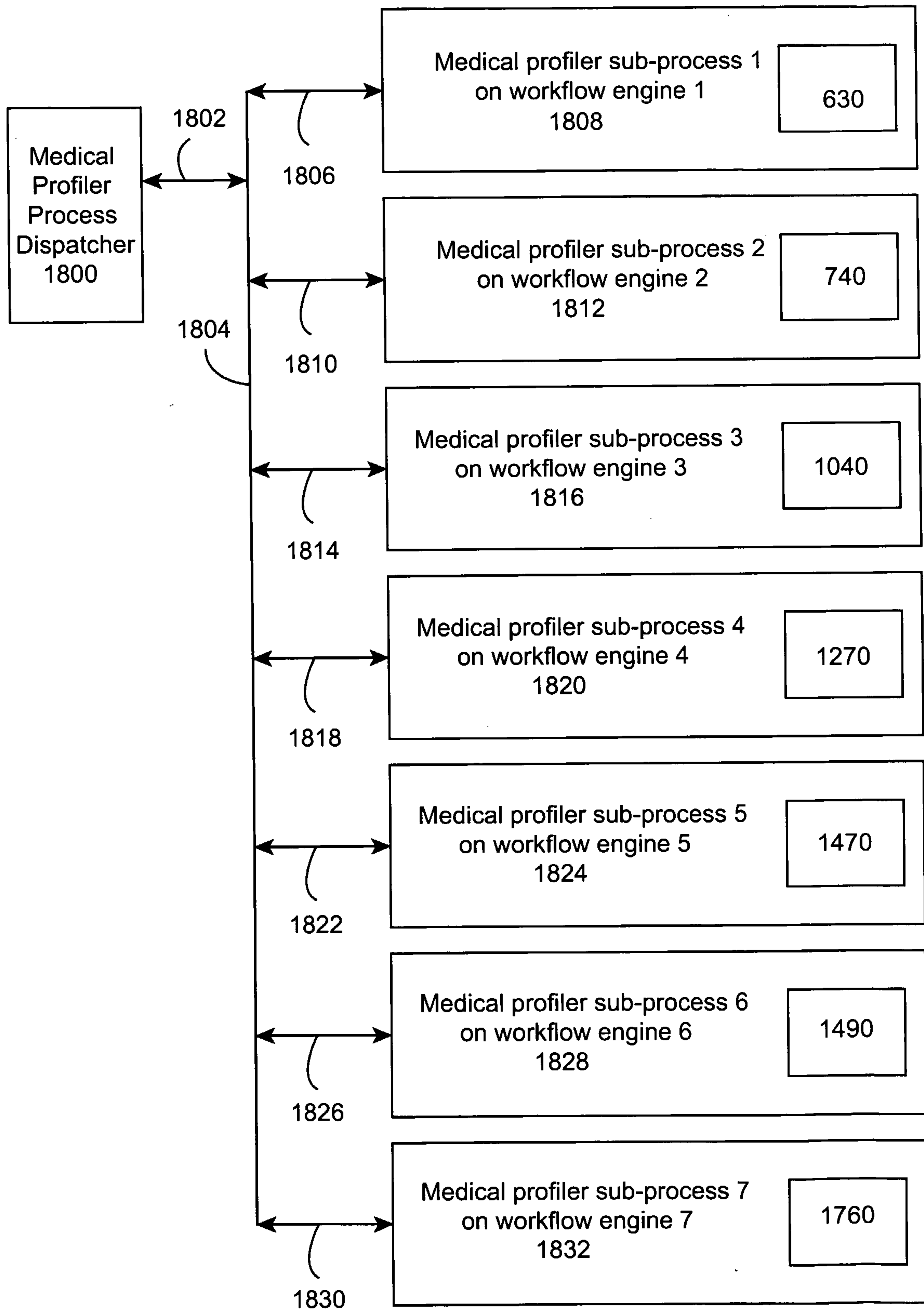


Fig. 47

39/86

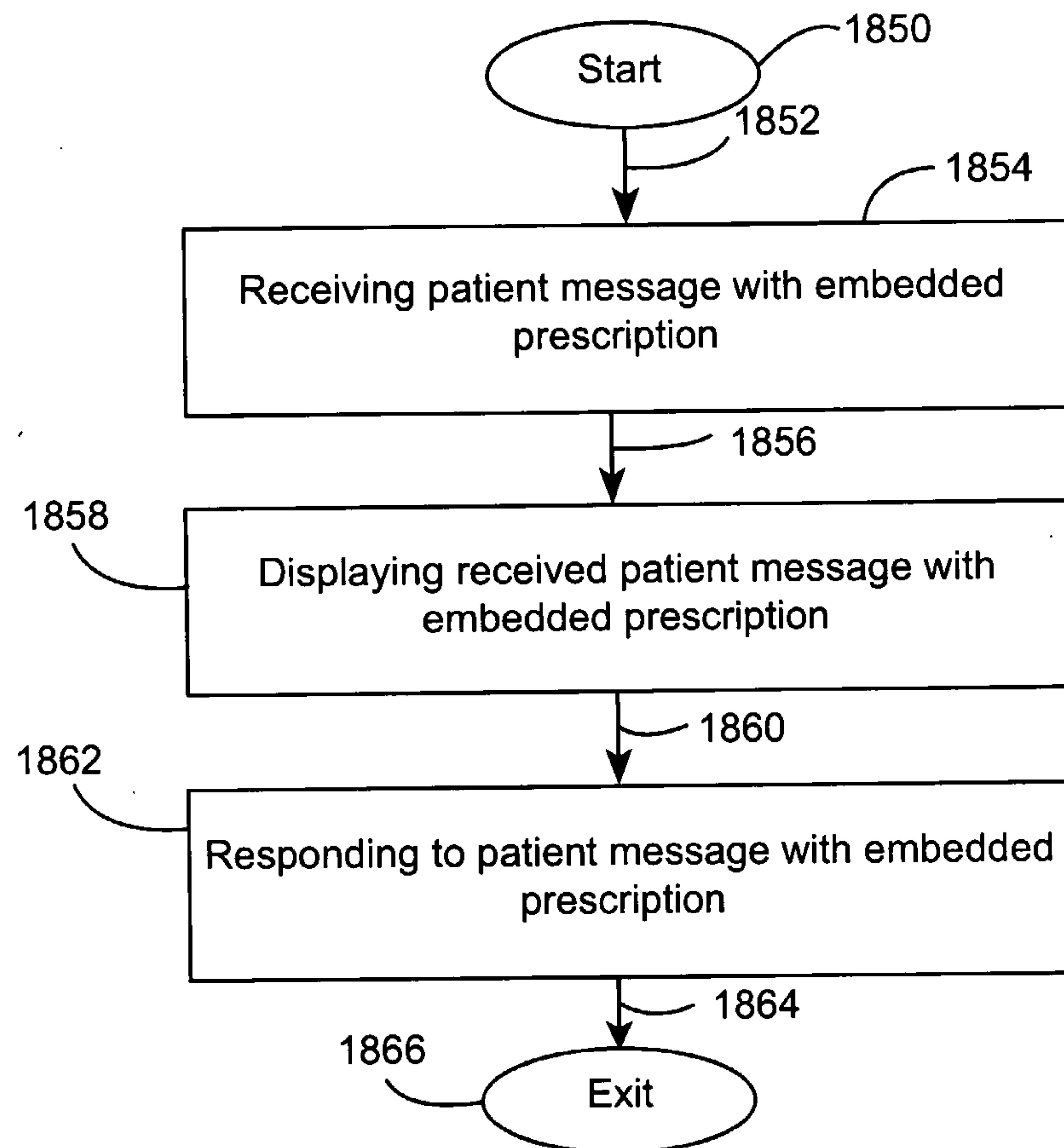


Fig. 48

40/86

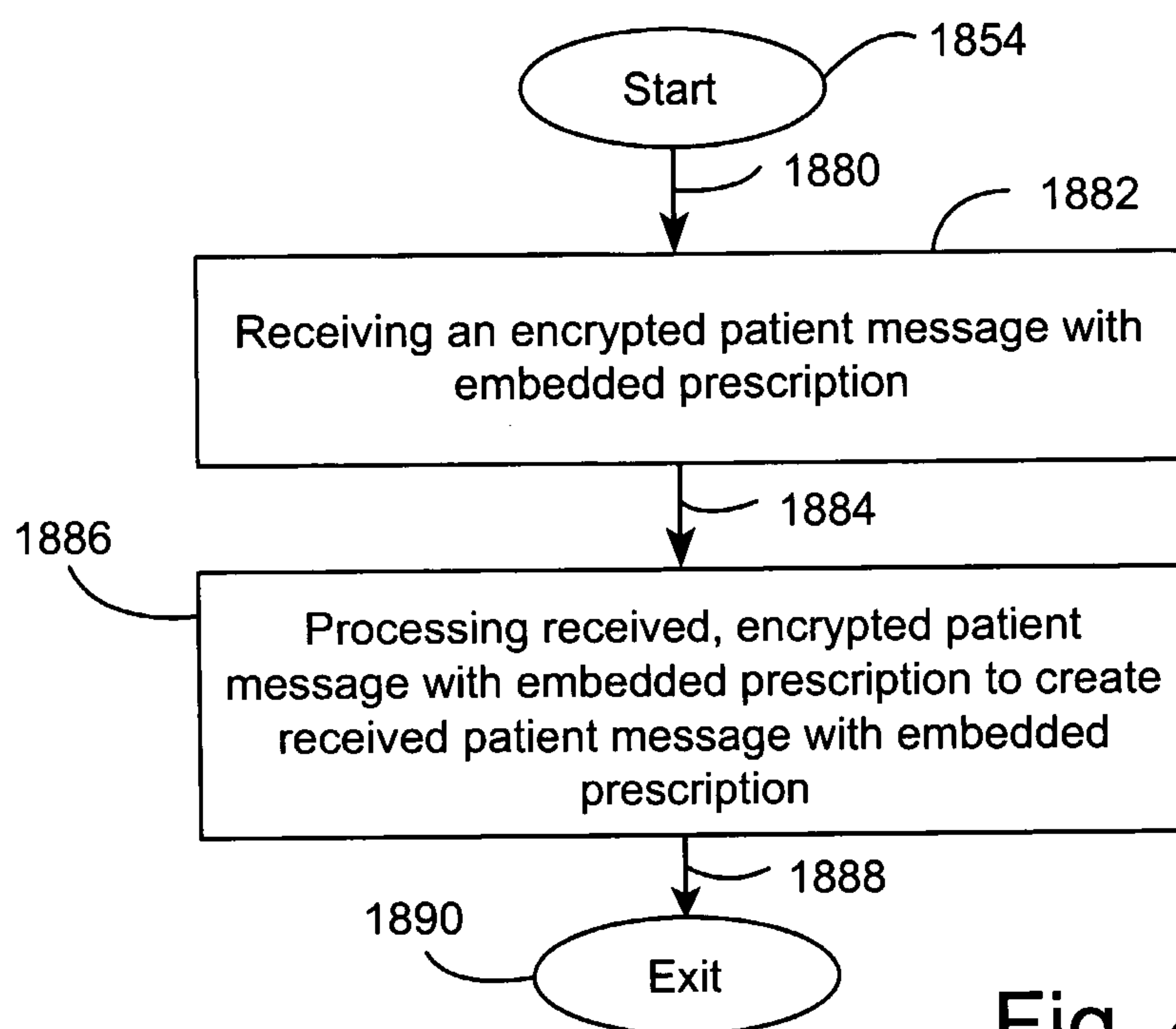


Fig. 49

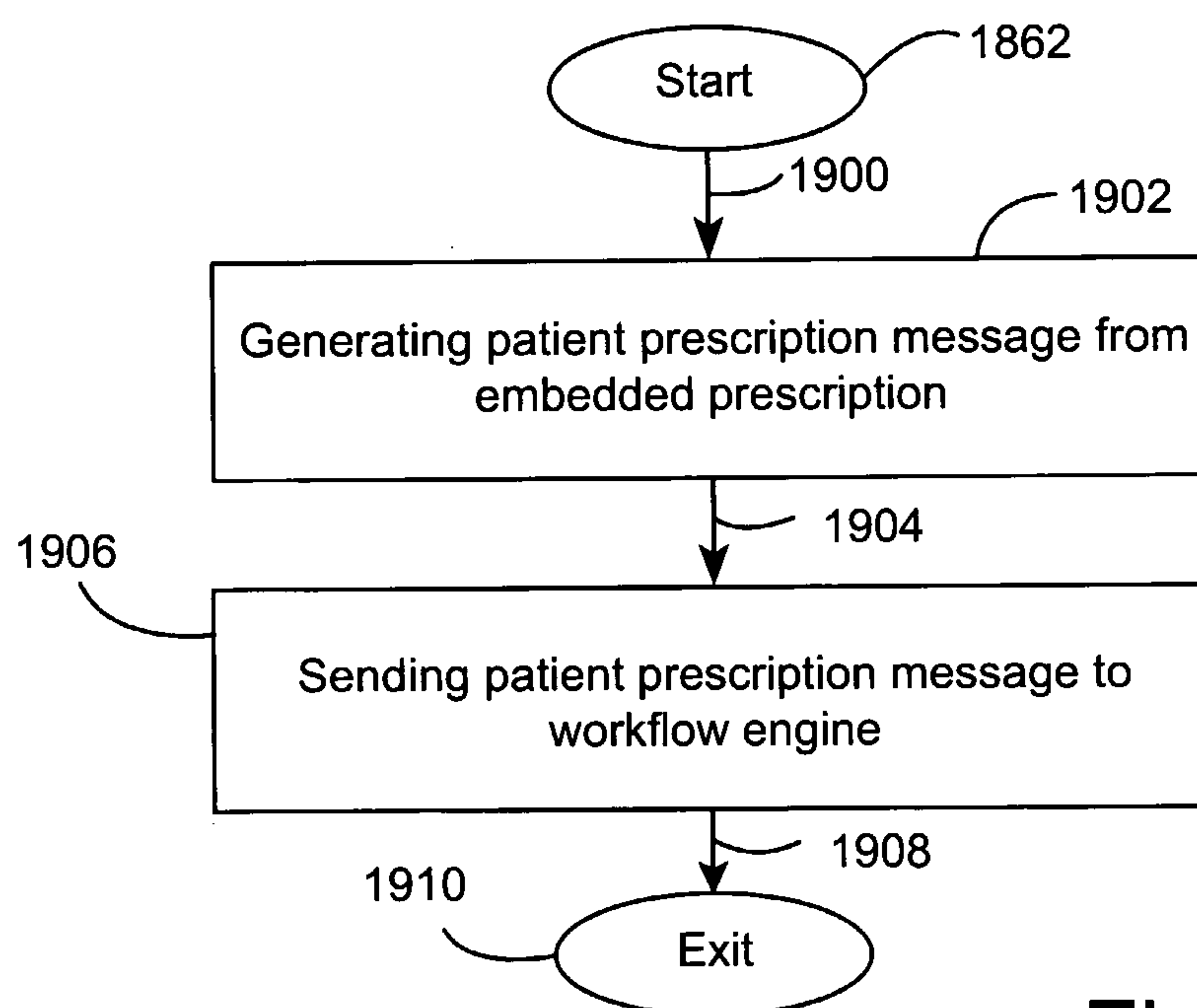


Fig. 50

41/86

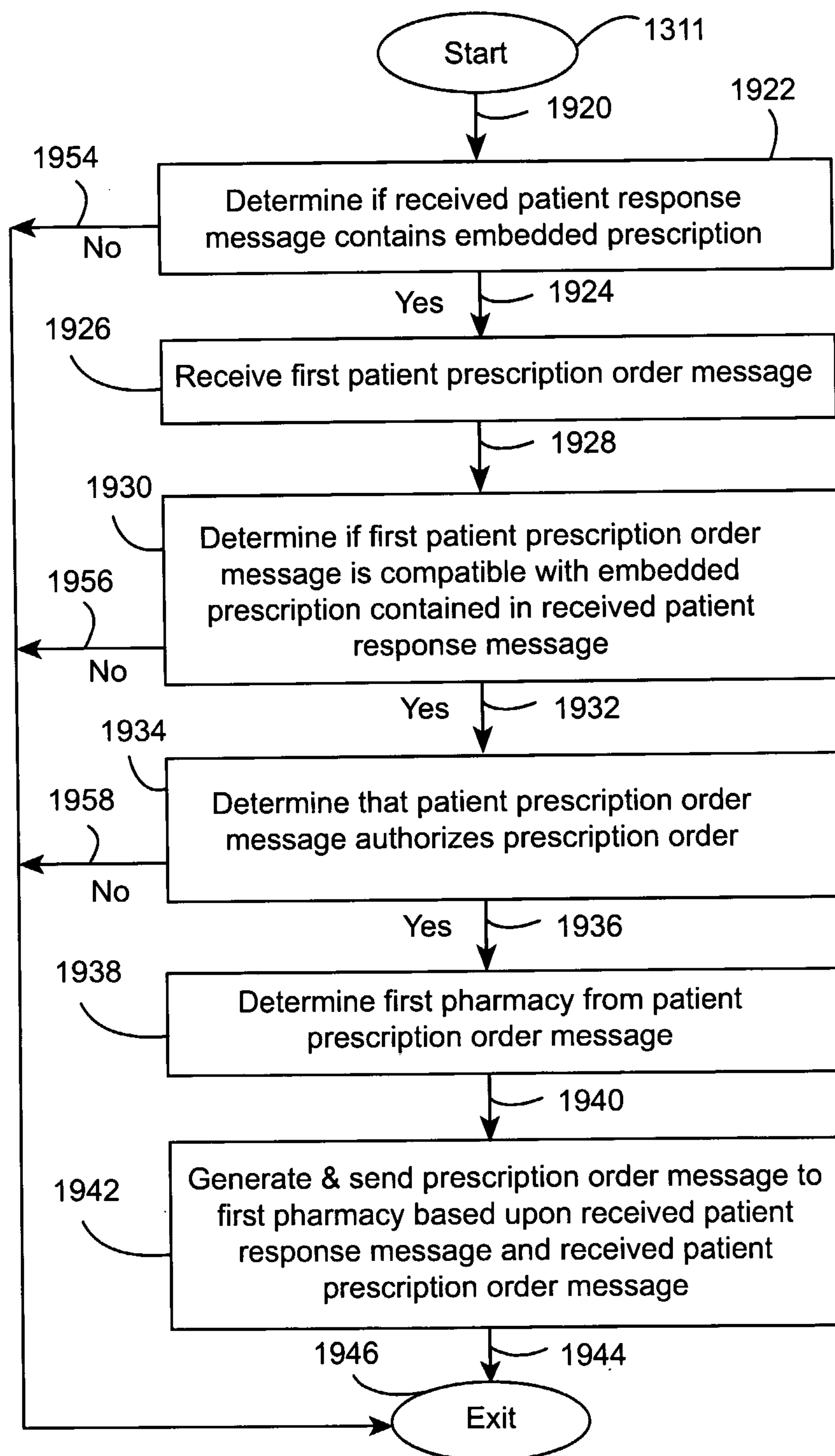
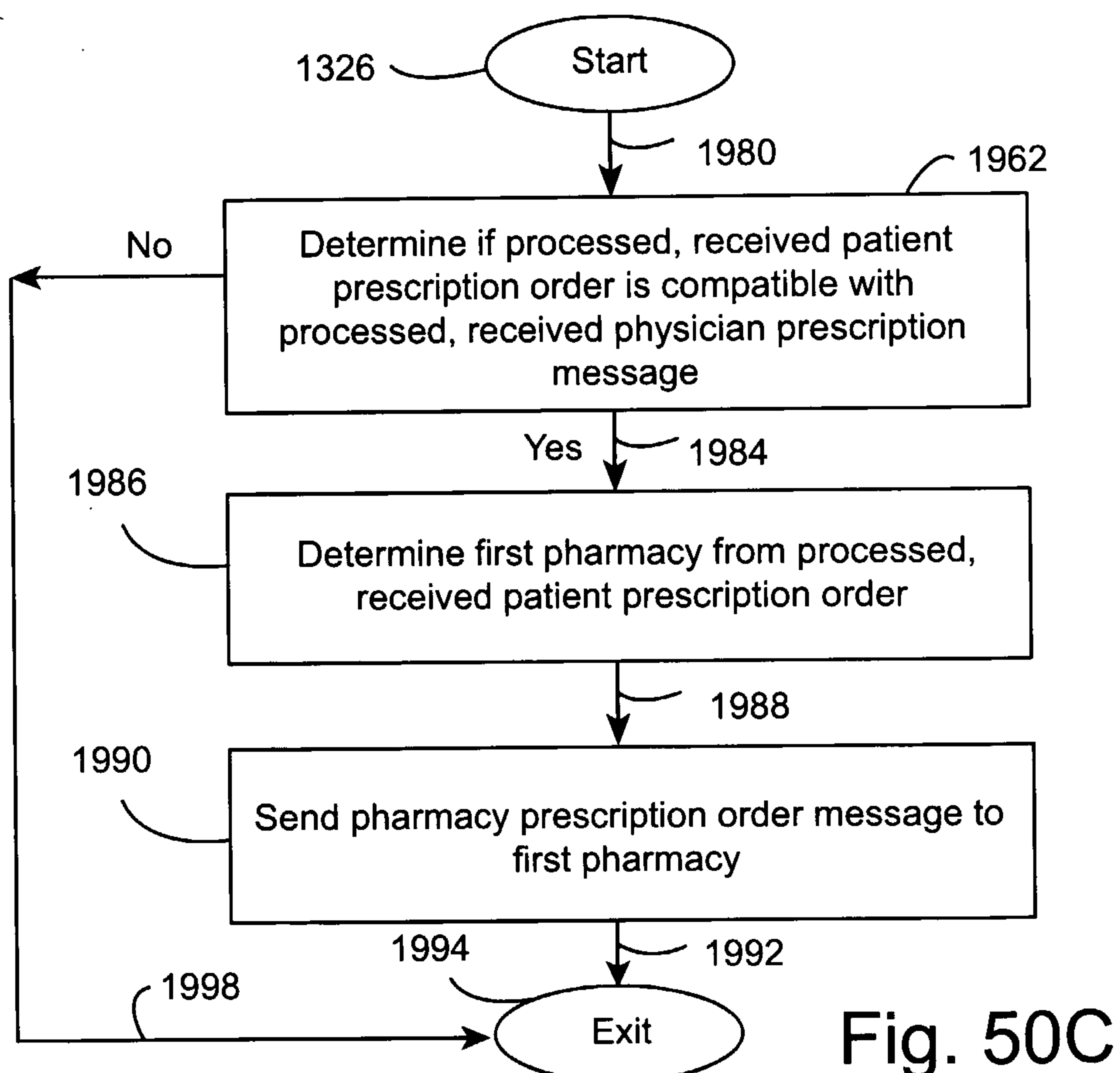
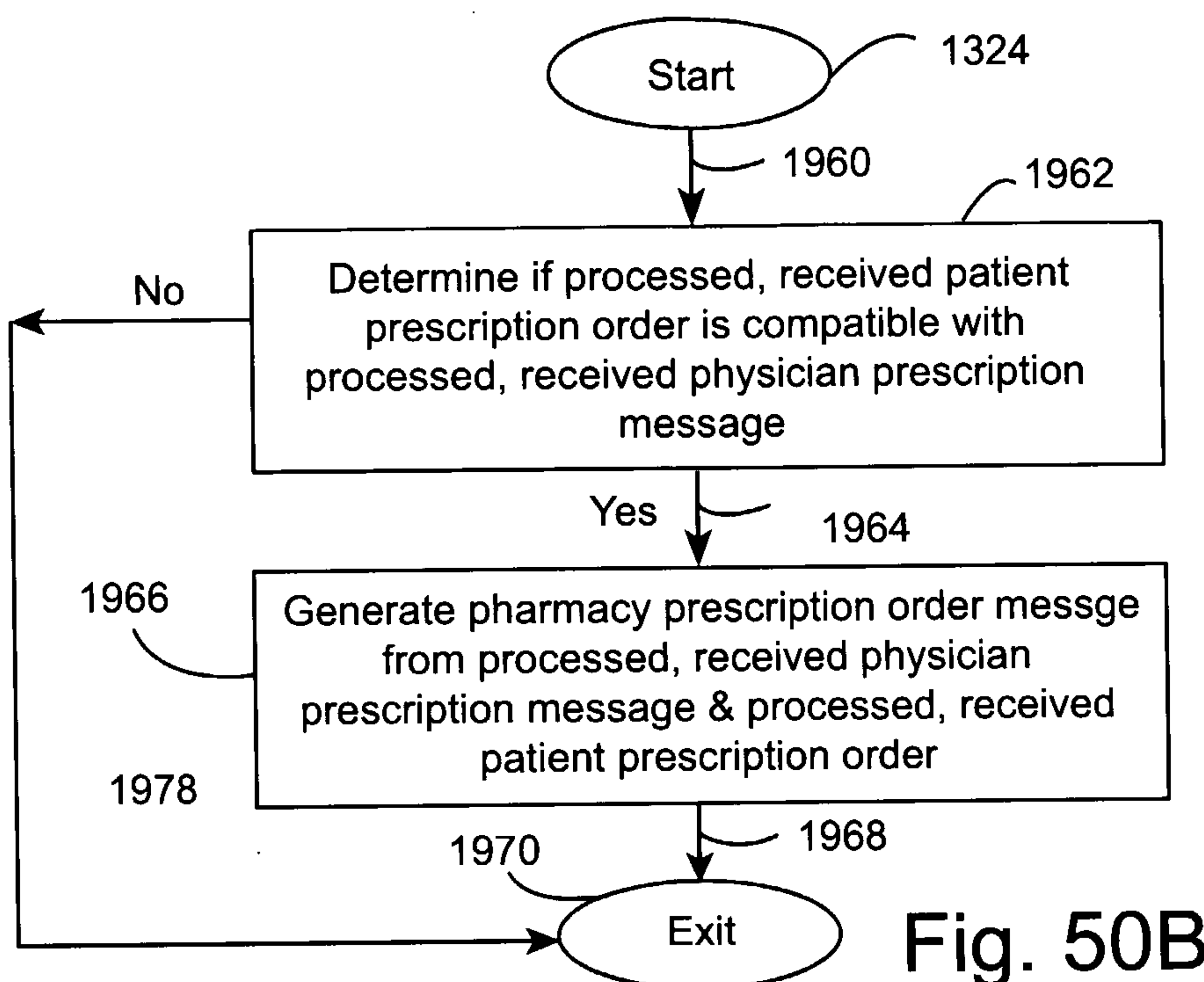


Fig. 50A

42/86



43/86

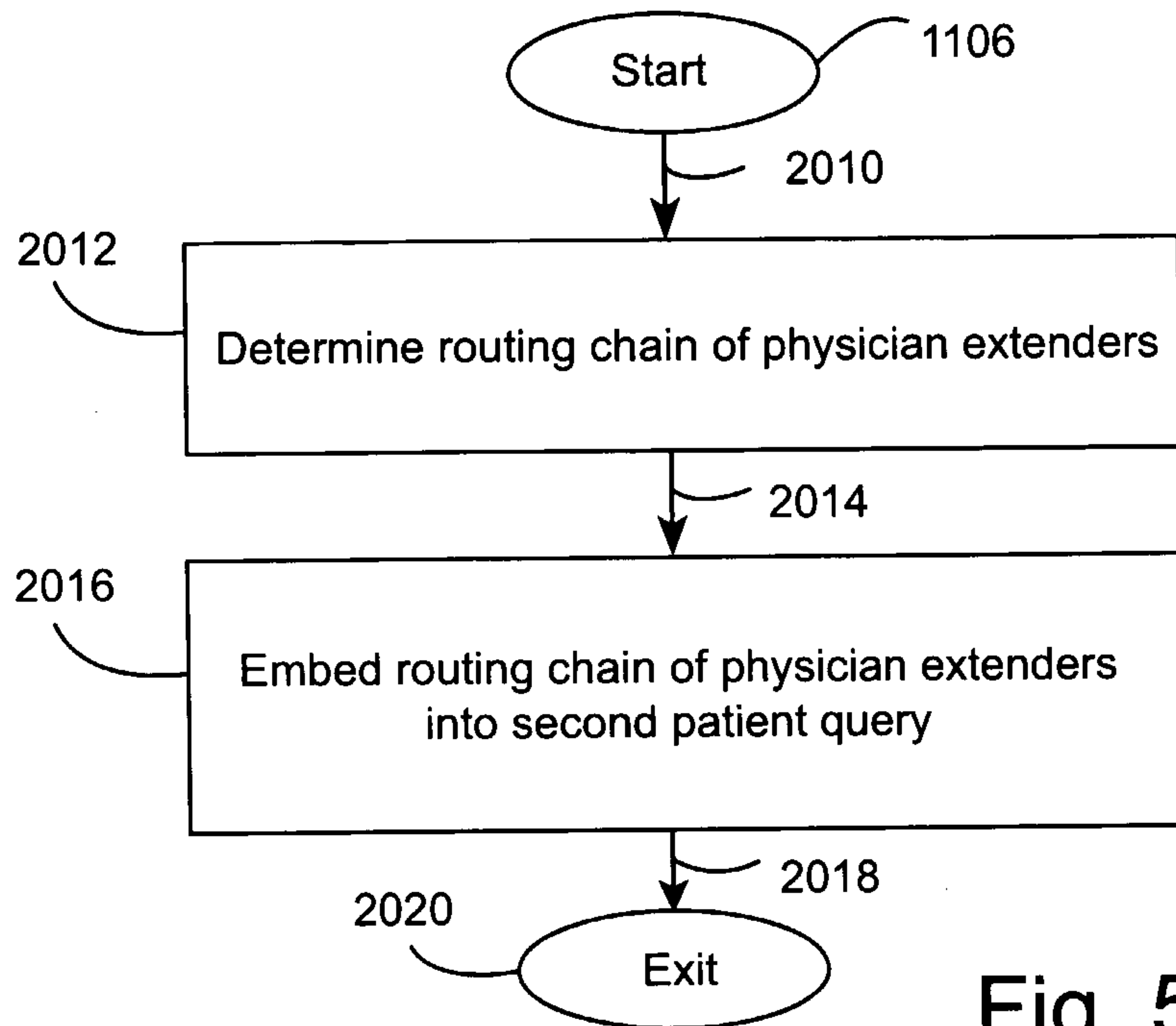


Fig. 50D

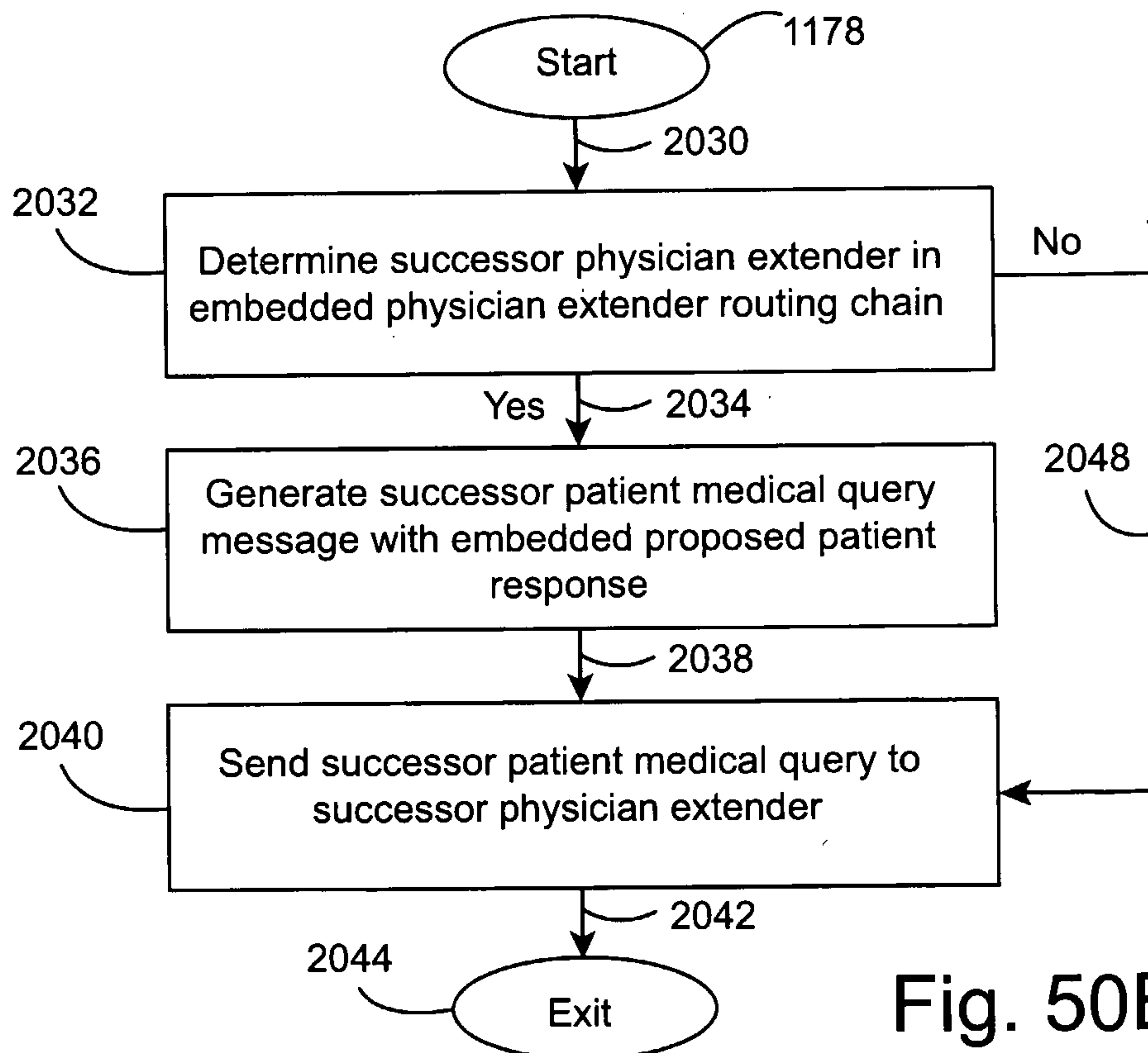


Fig. 50E

44/86

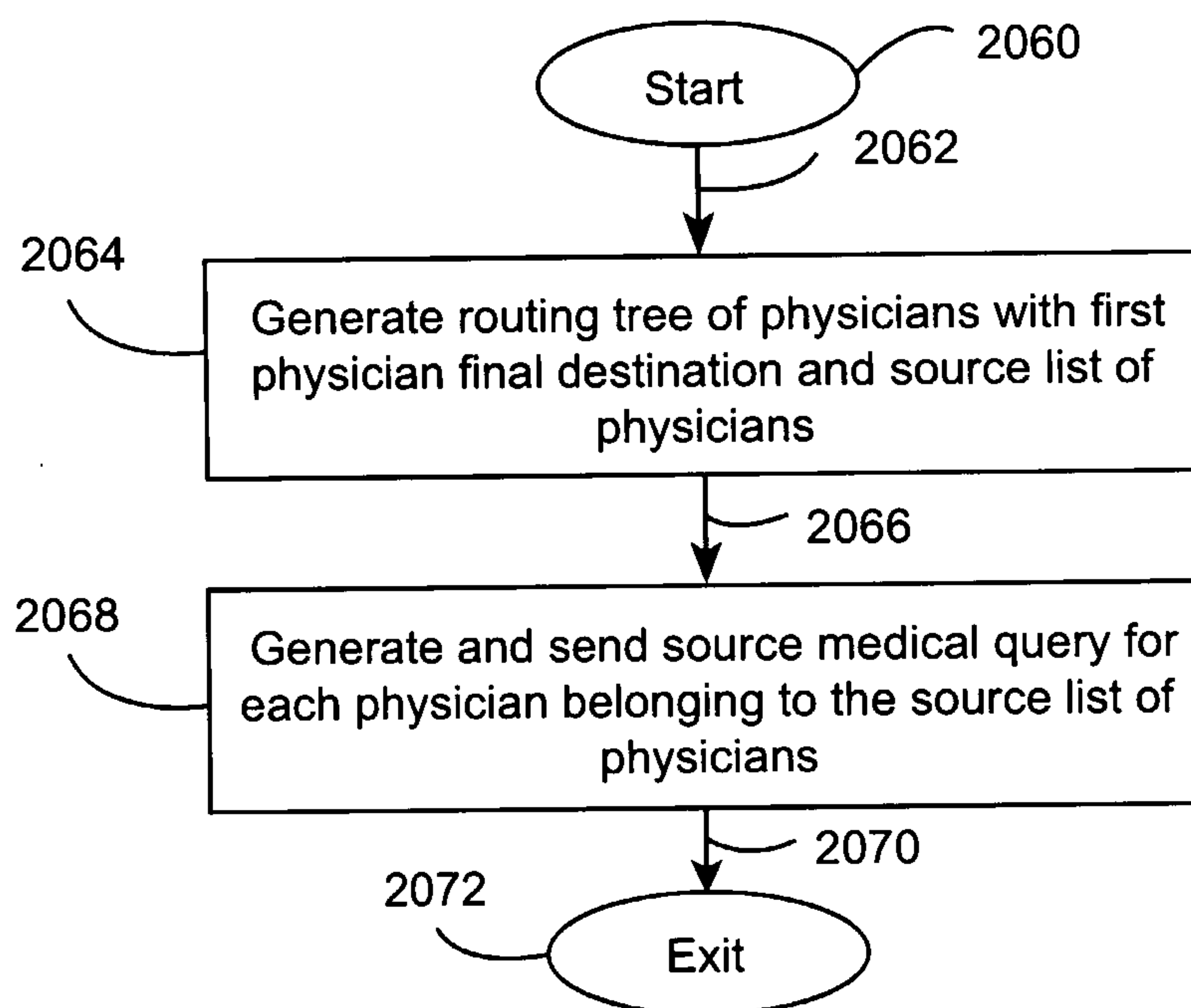


Fig. 50F

45/86

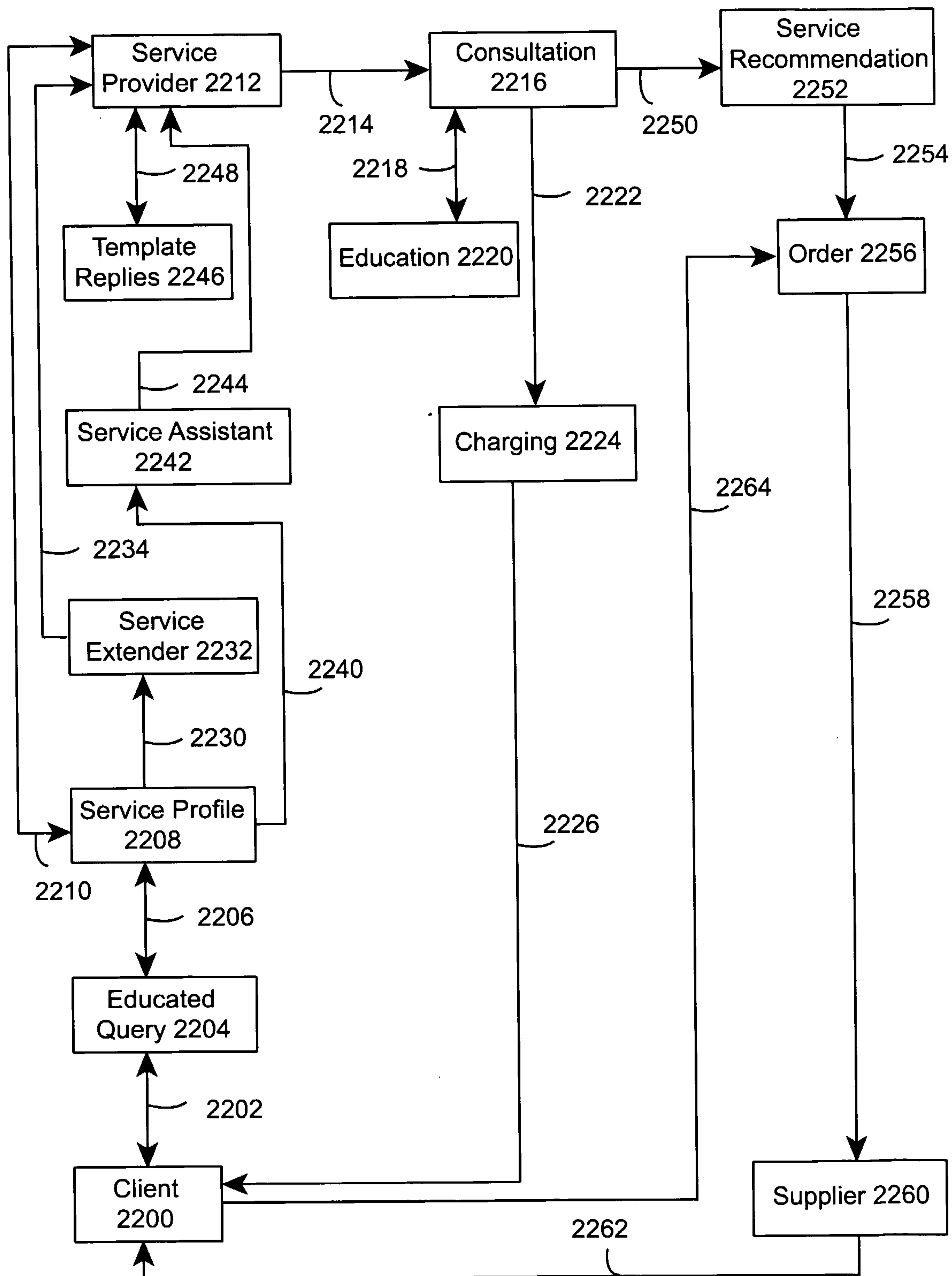


Fig. 51

46/86

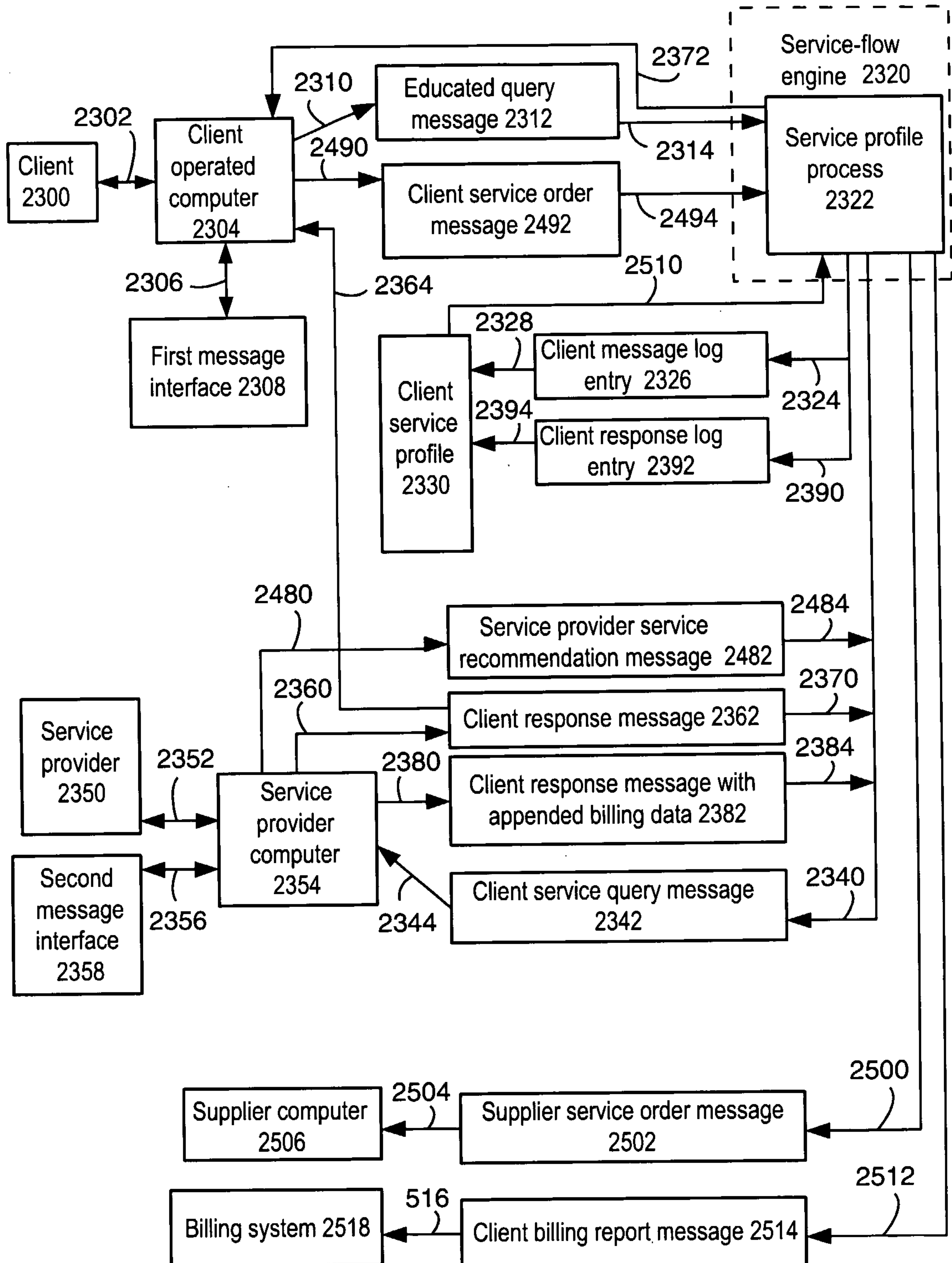


Fig. 52

47/86

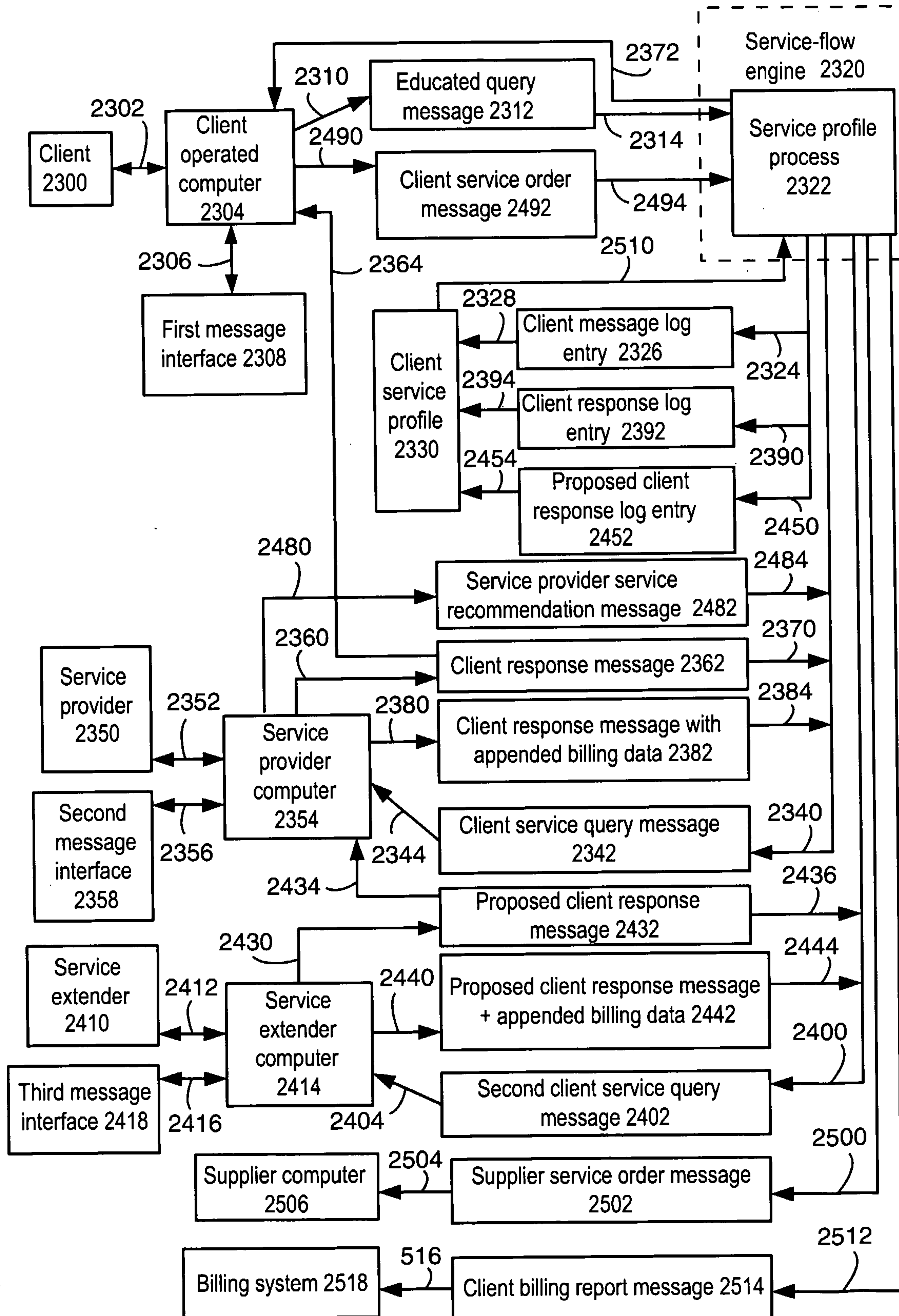


Fig. 52A

48/86

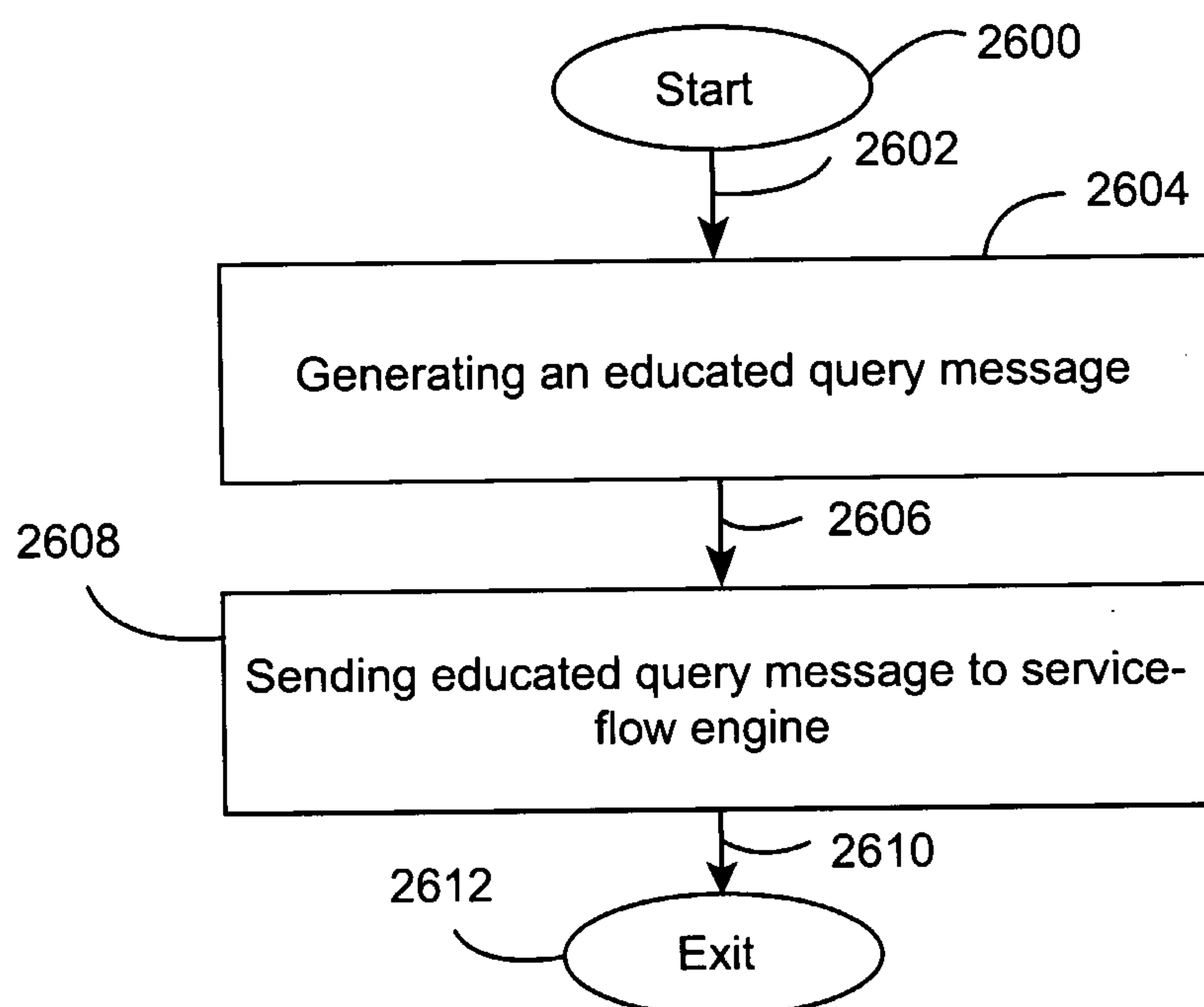


Fig. 53

49/86

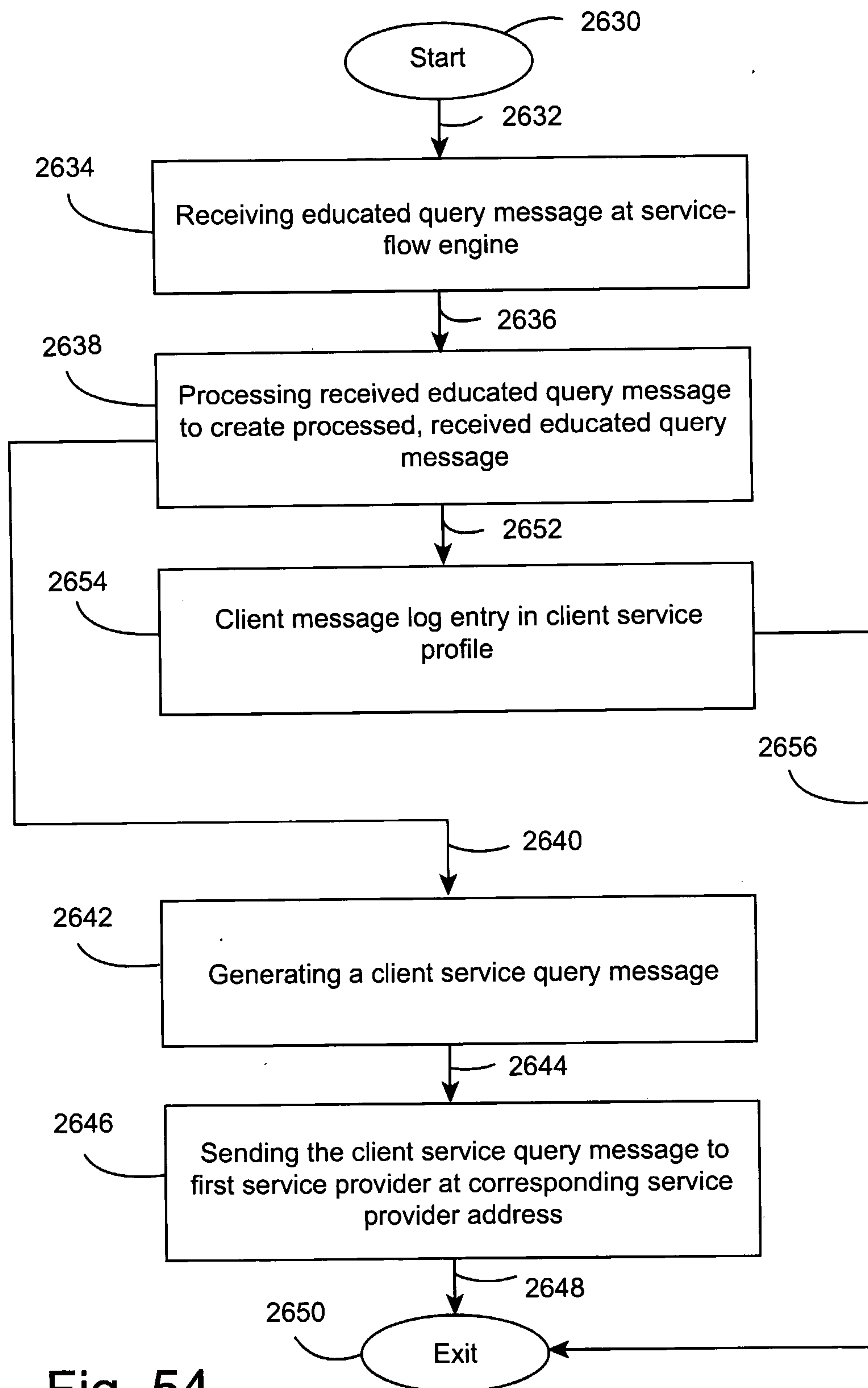


Fig. 54

50/86

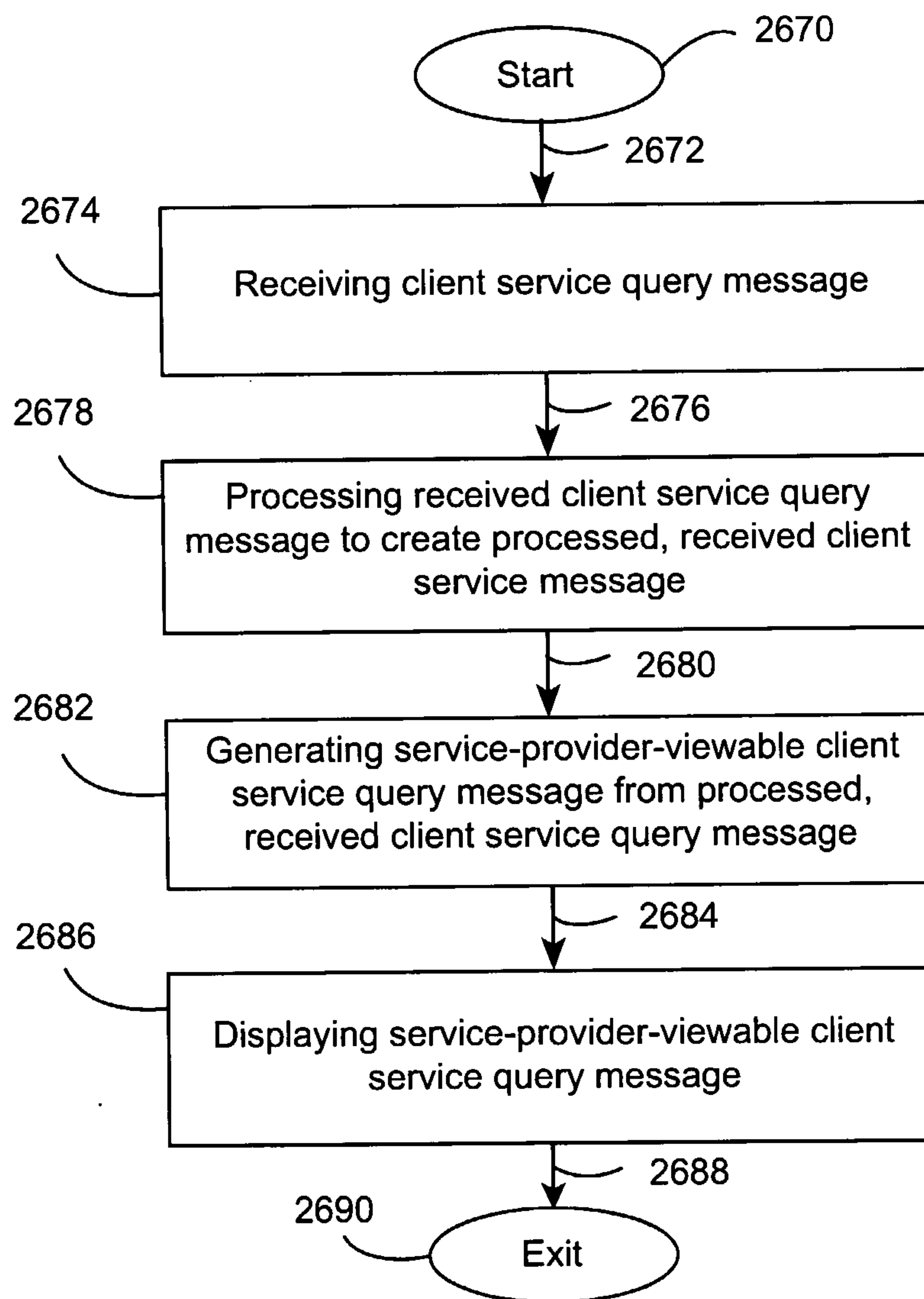


Fig. 55

51/86

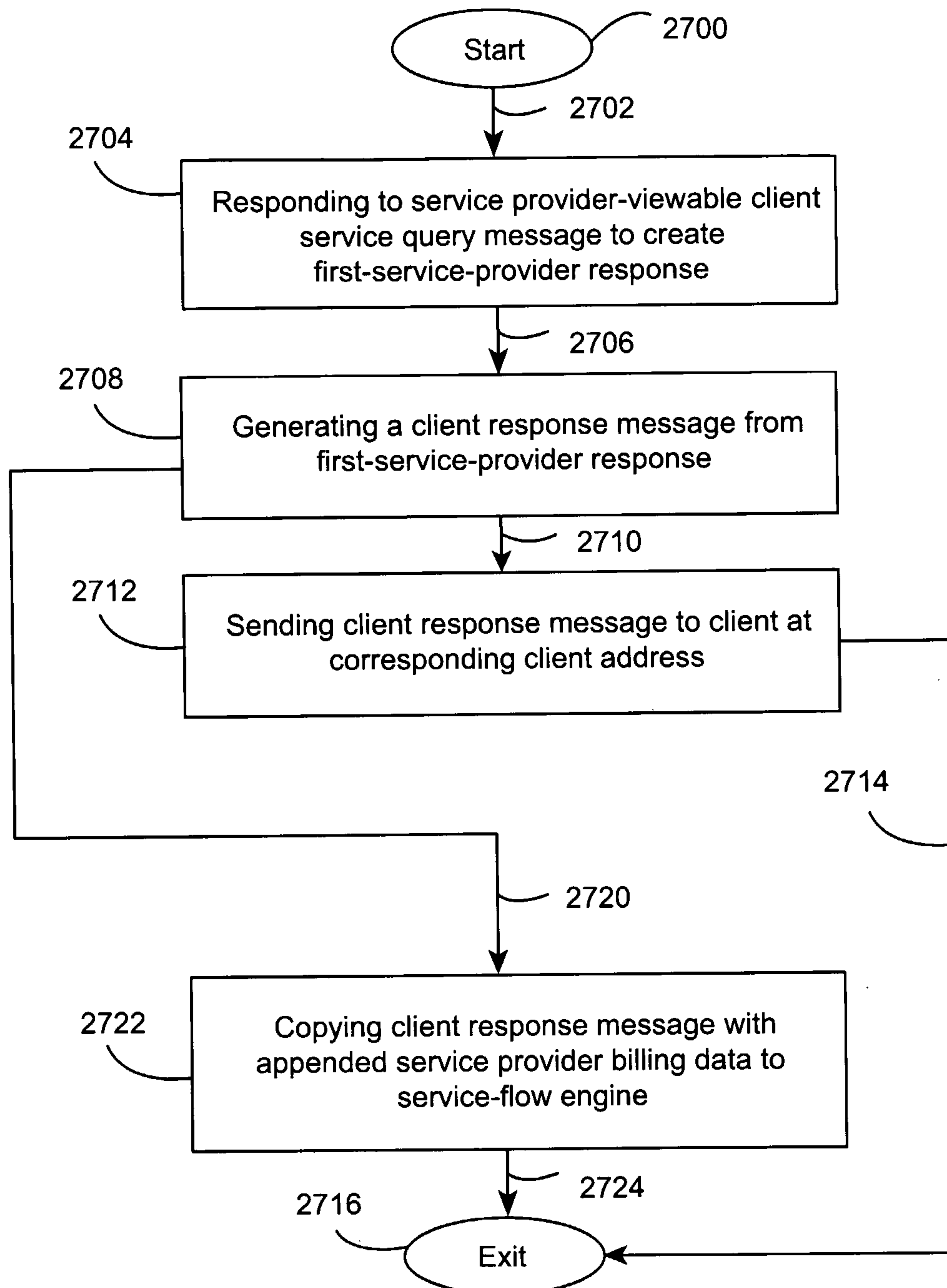


Fig. 56

52/86

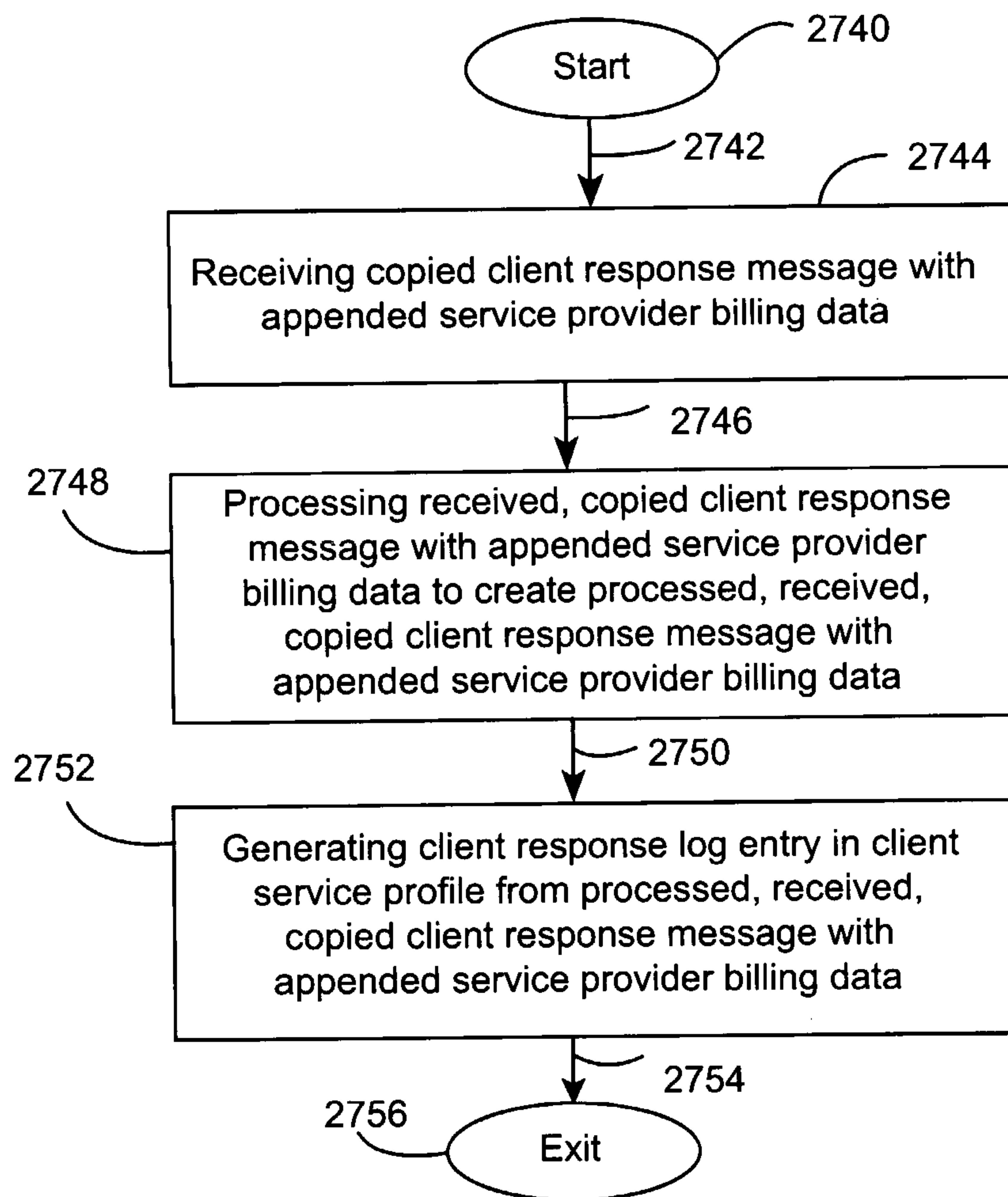


Fig. 57

53/86

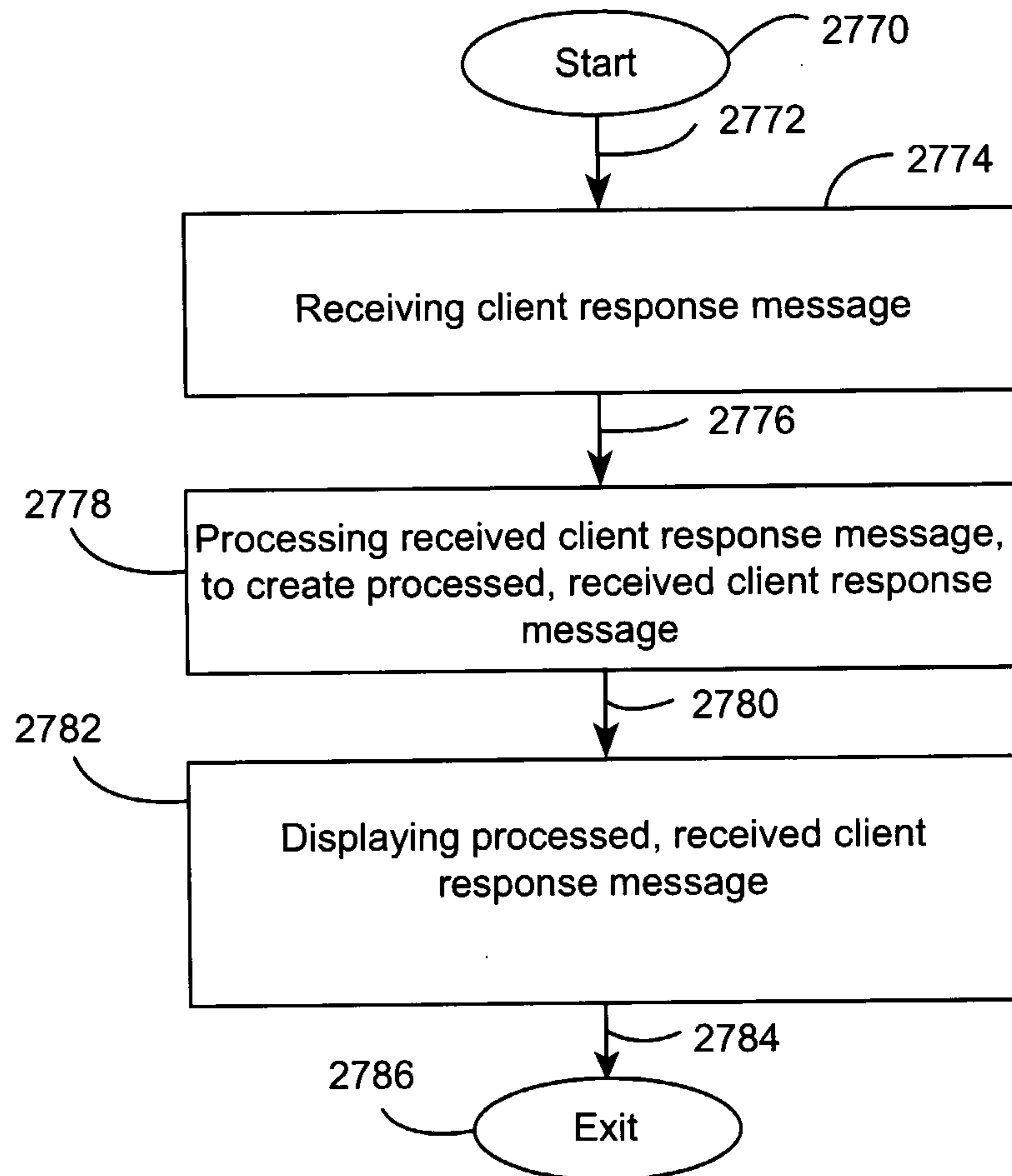


Fig. 58

54/86

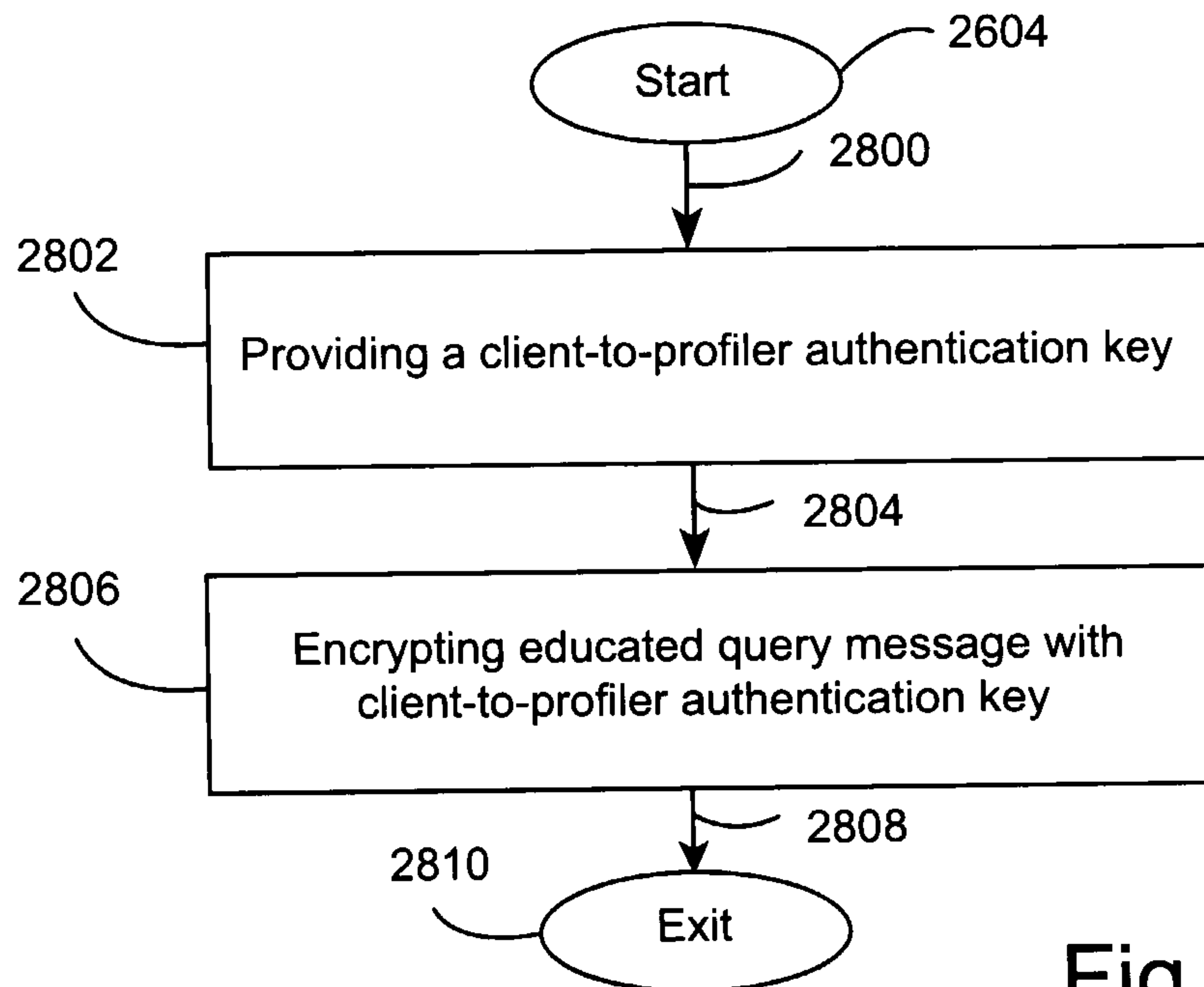


Fig. 59

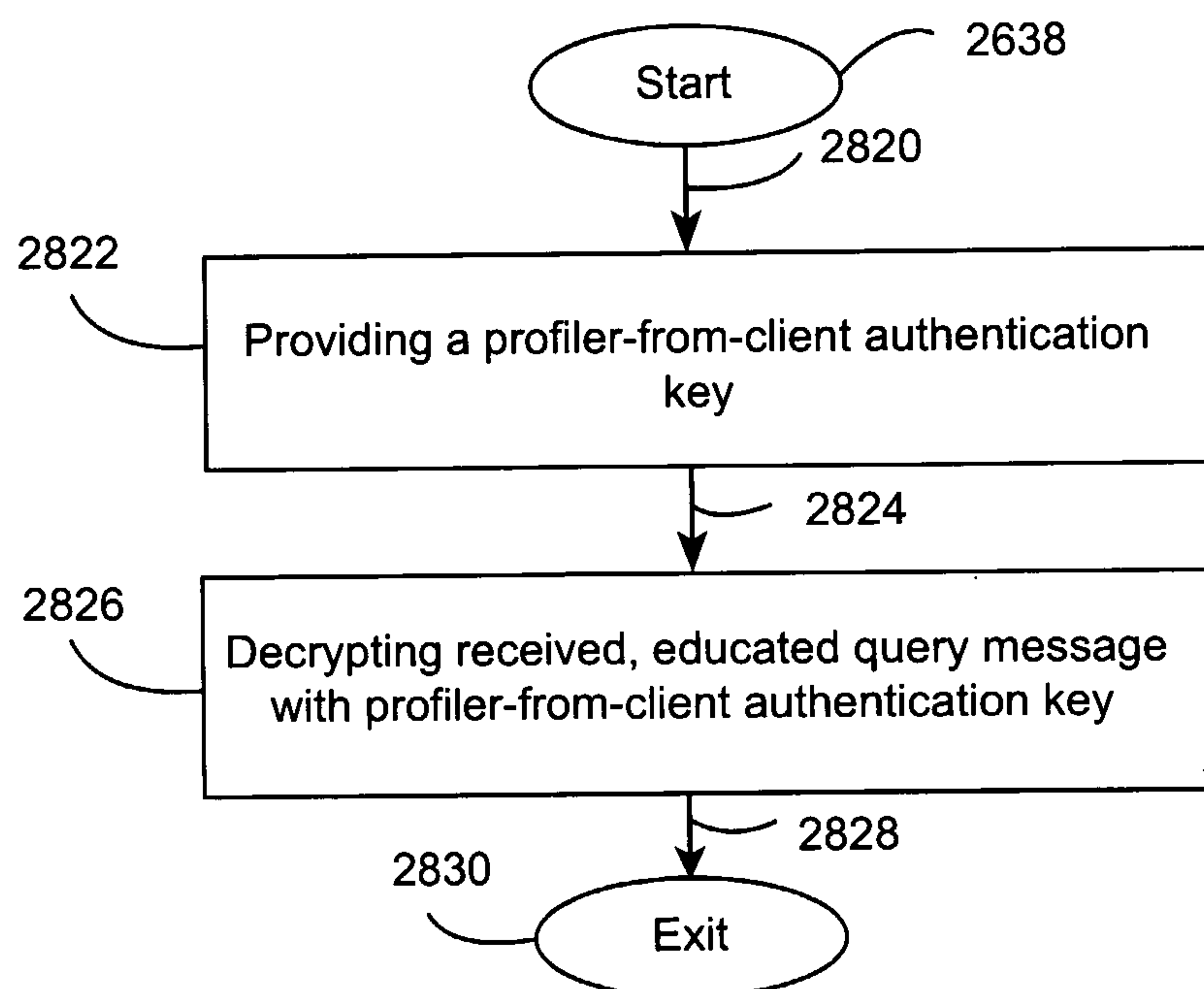


Fig. 60

55/86

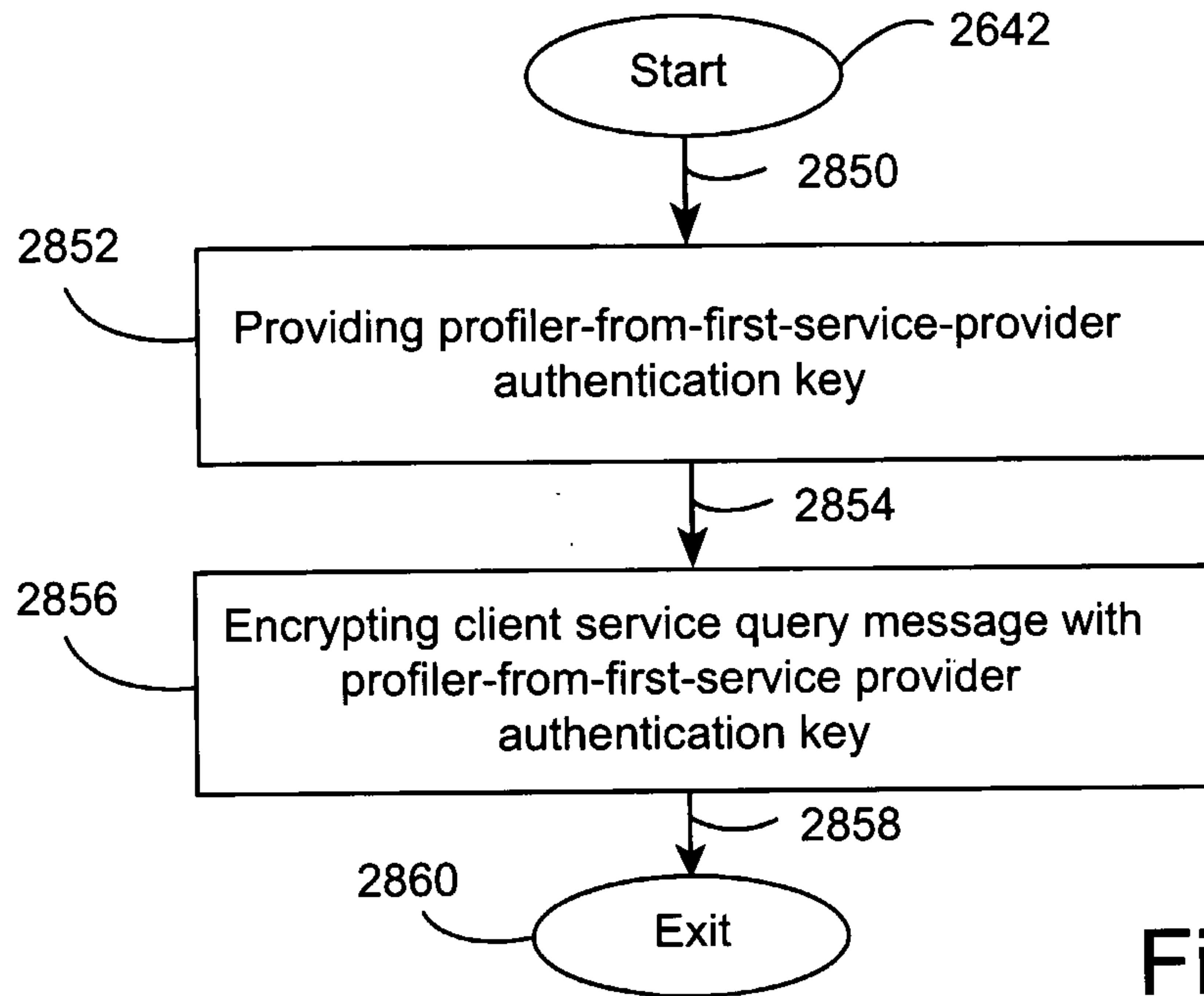


Fig. 61

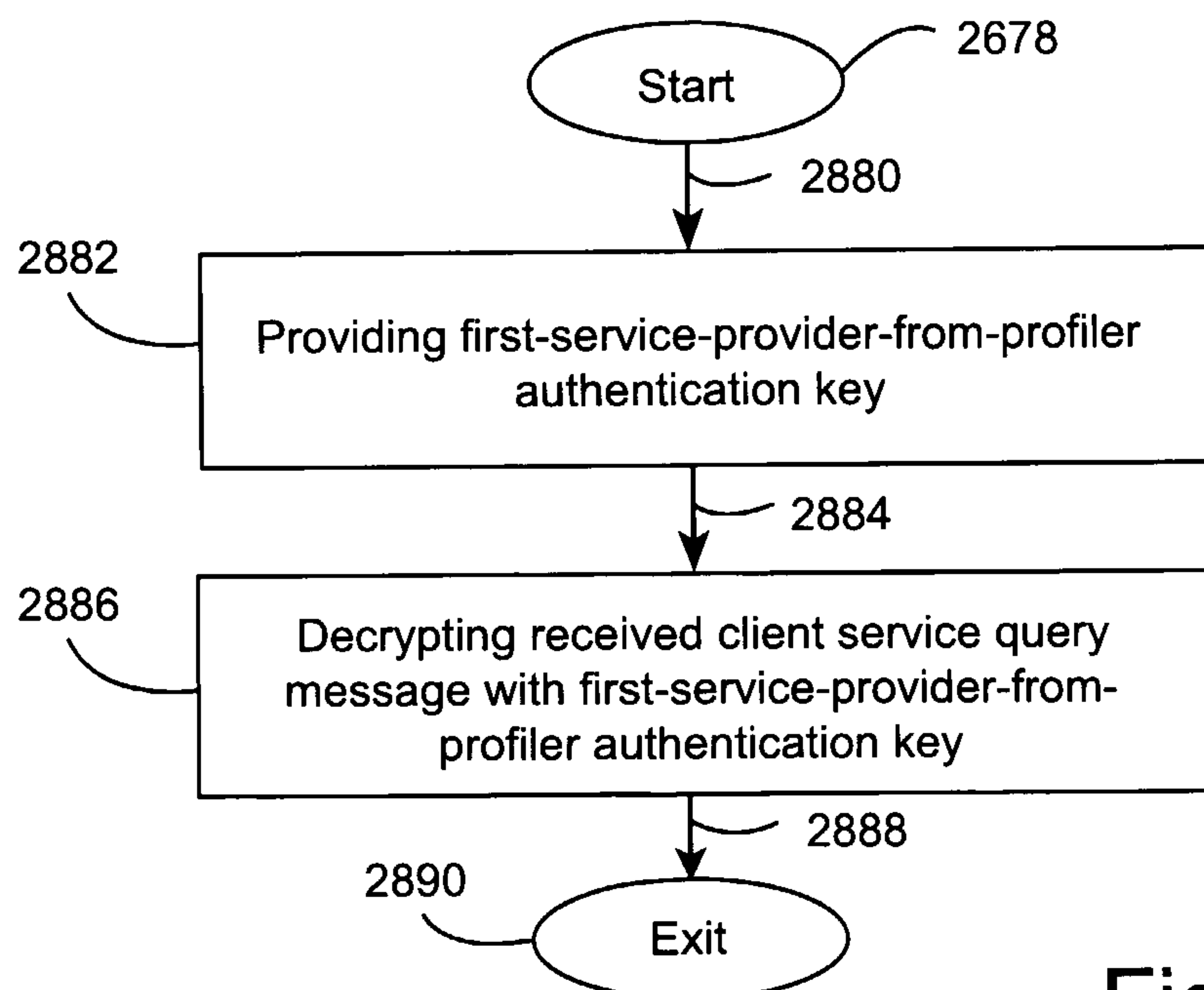


Fig. 62

56/86

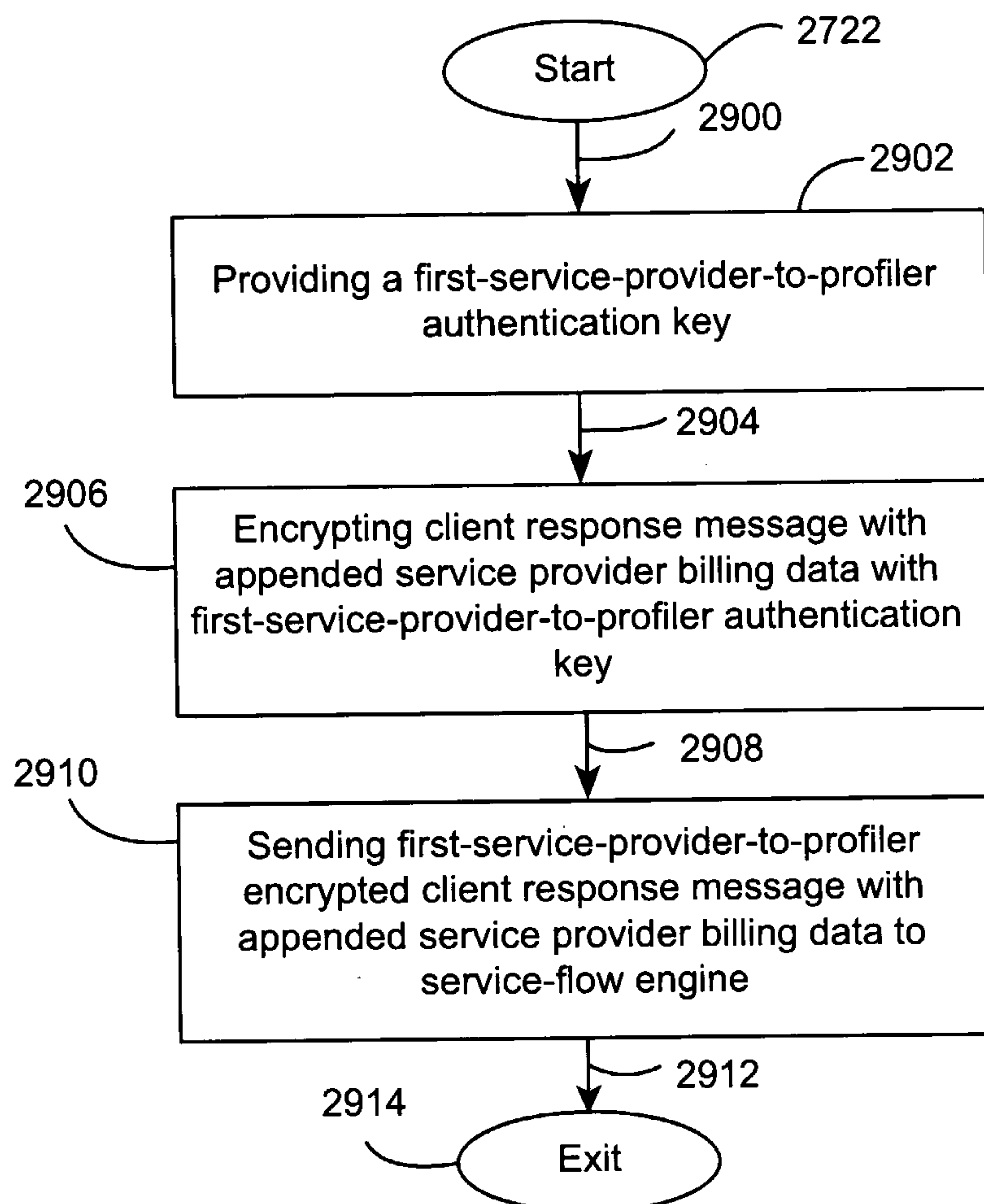


Fig. 63

57/86

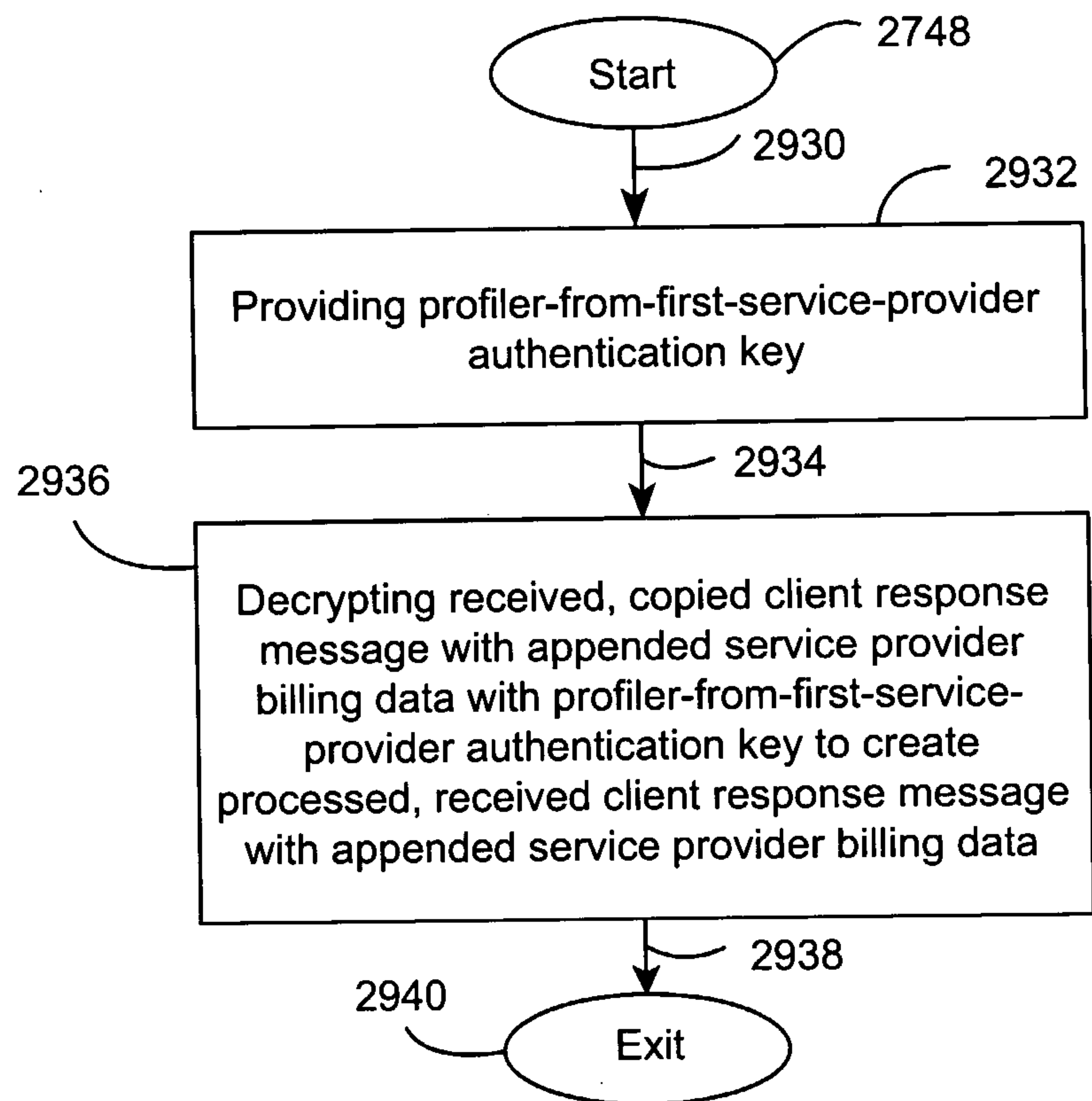


Fig. 64

58/86

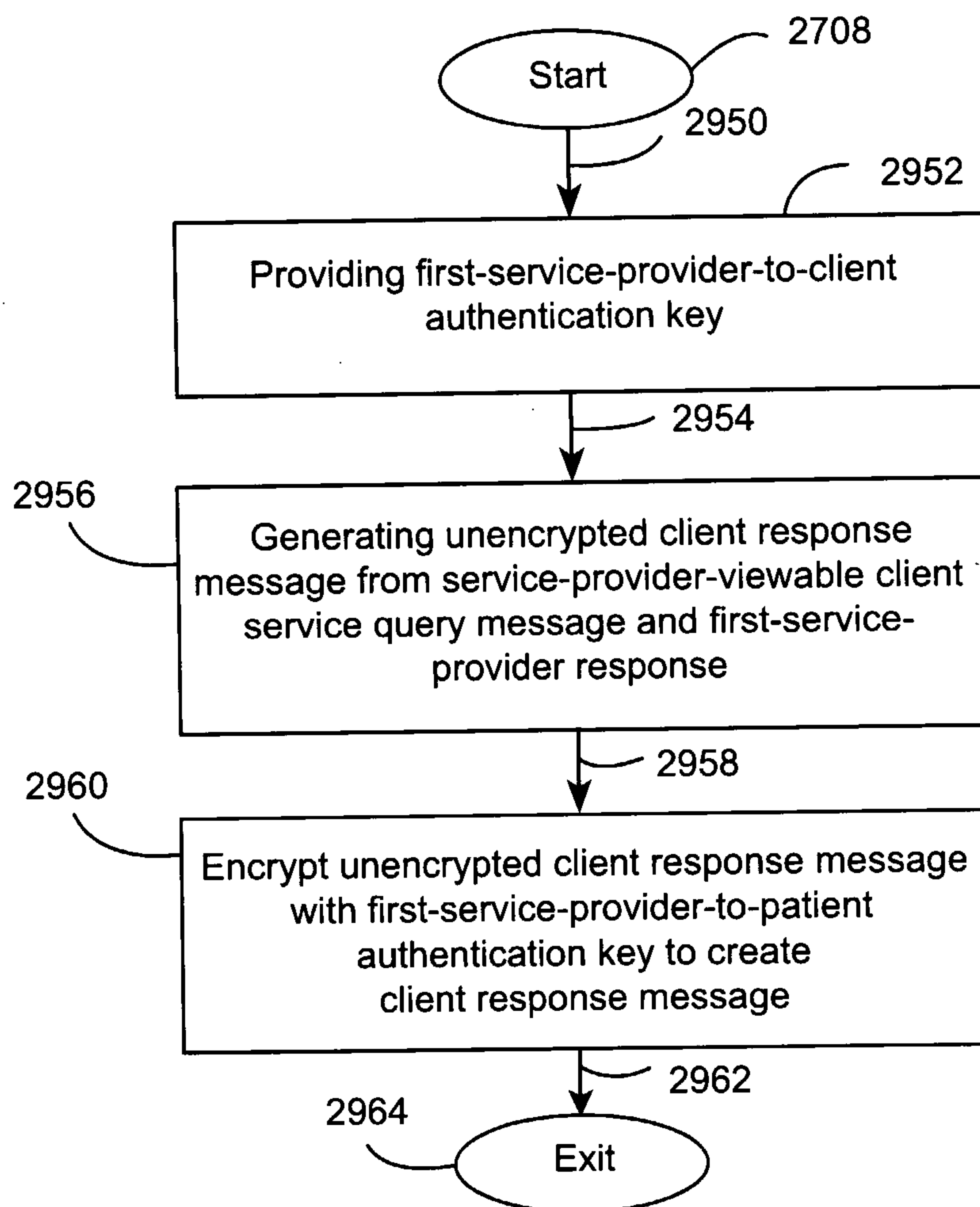


Fig. 65

59/86

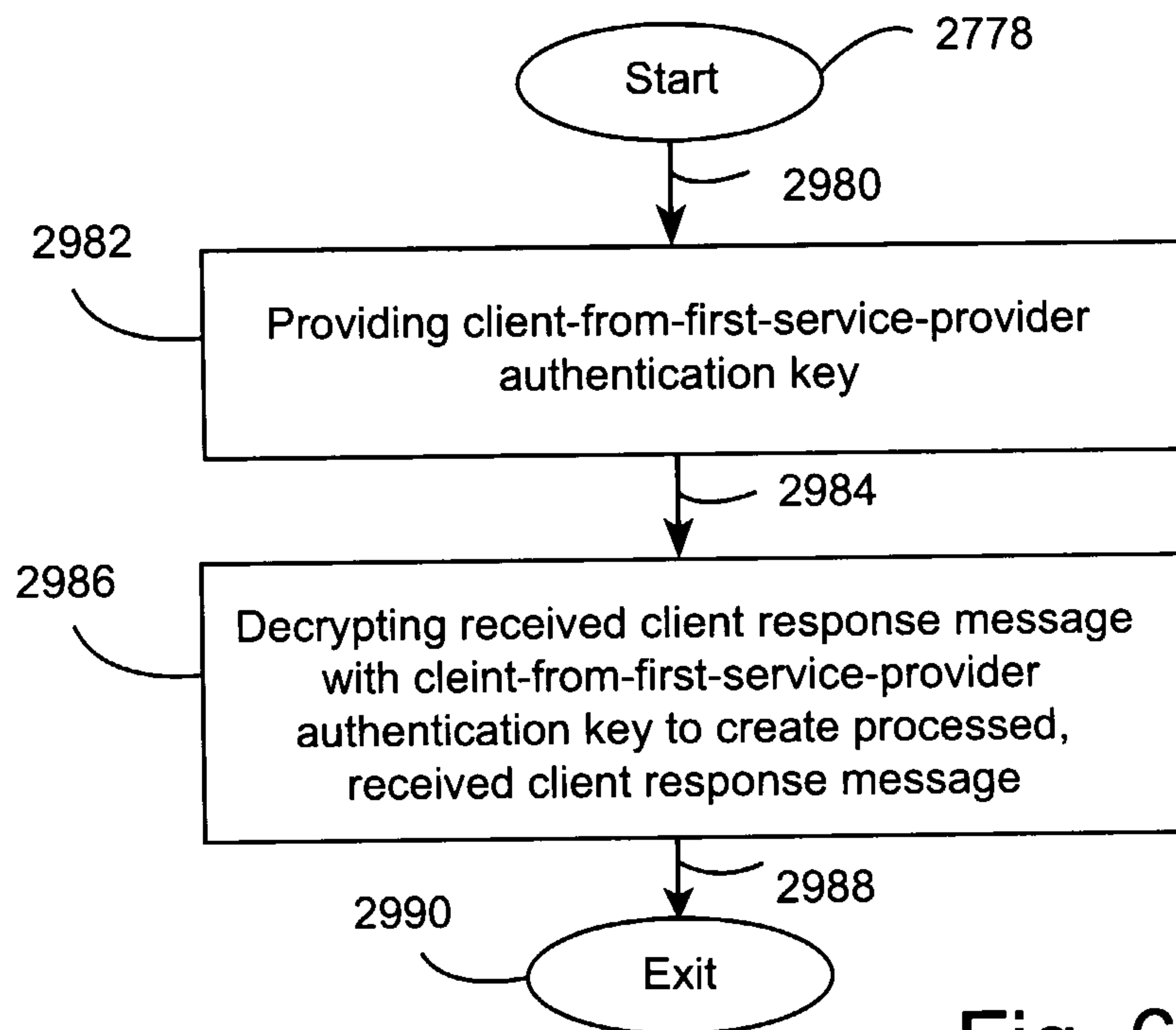


Fig. 66

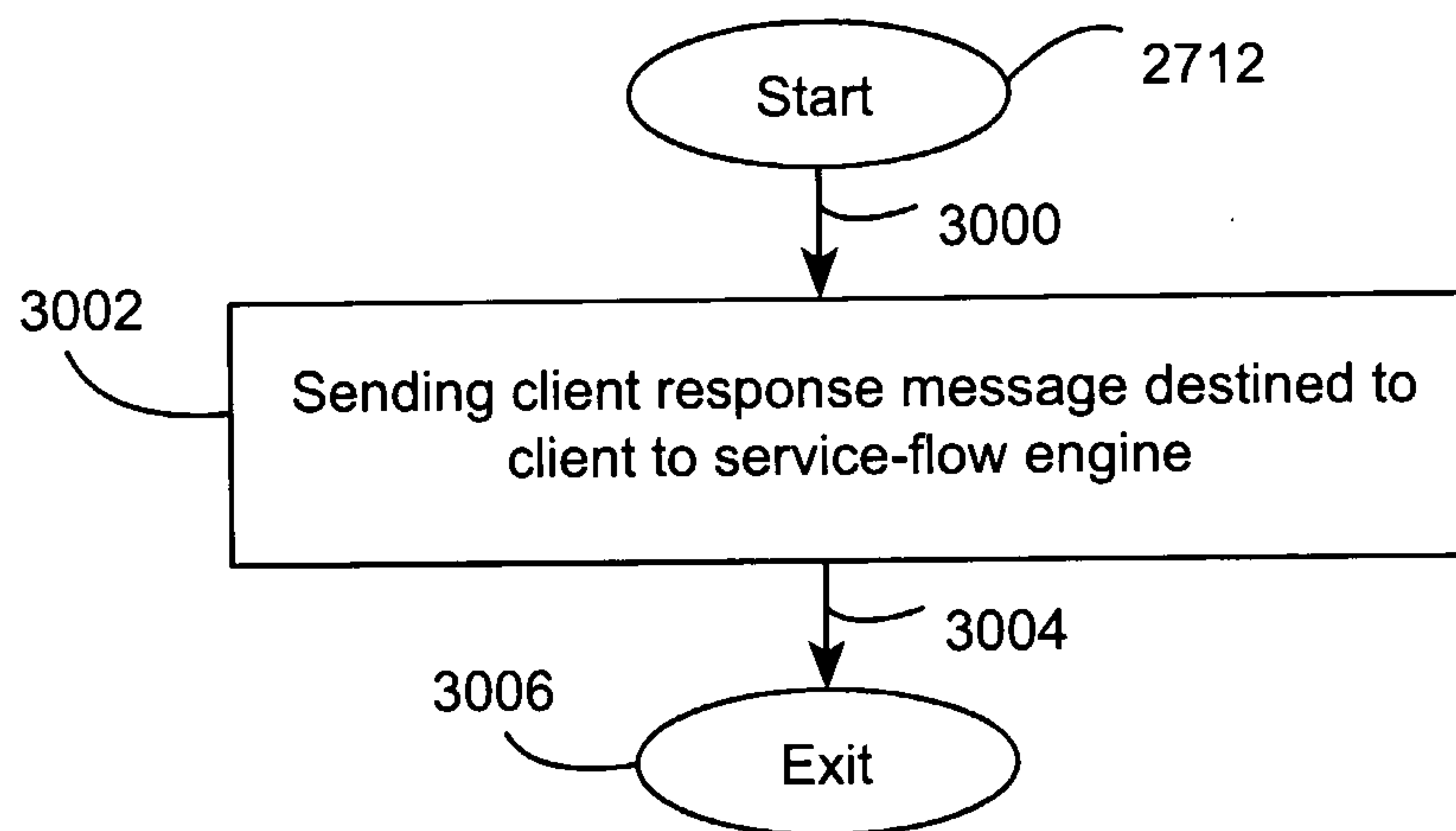


Fig. 67

60/86

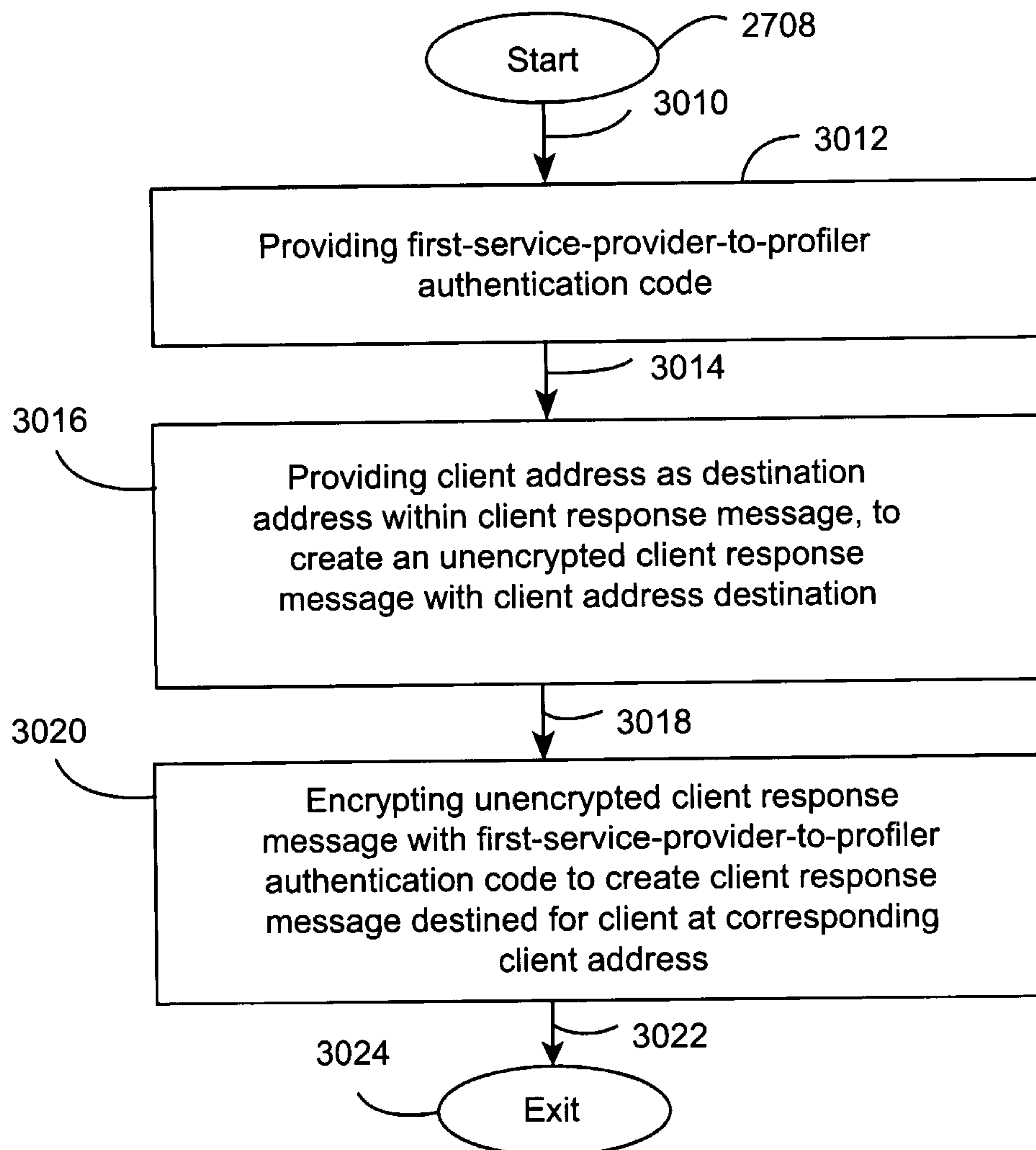


Fig. 68

61/86

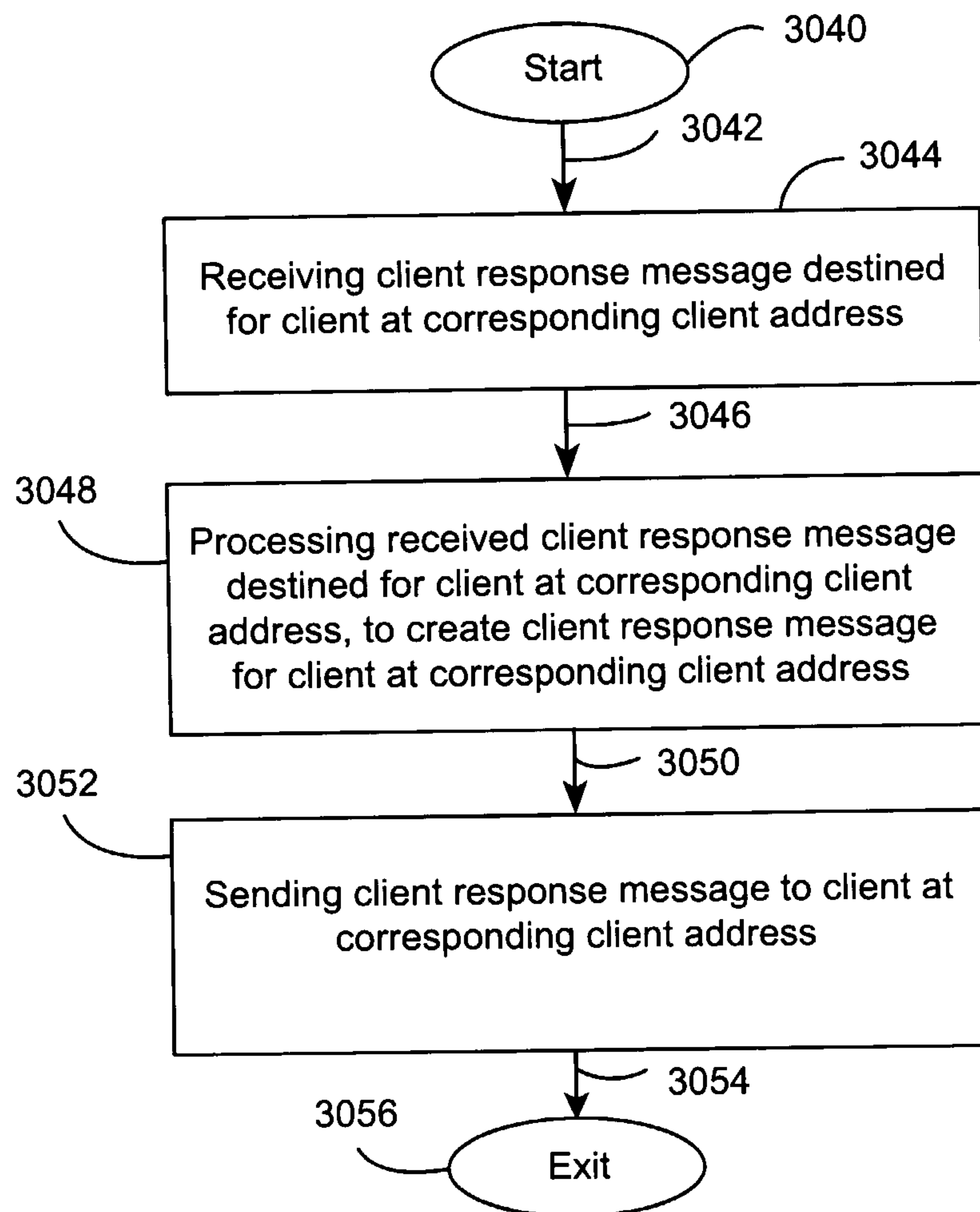


Fig. 69

62/86

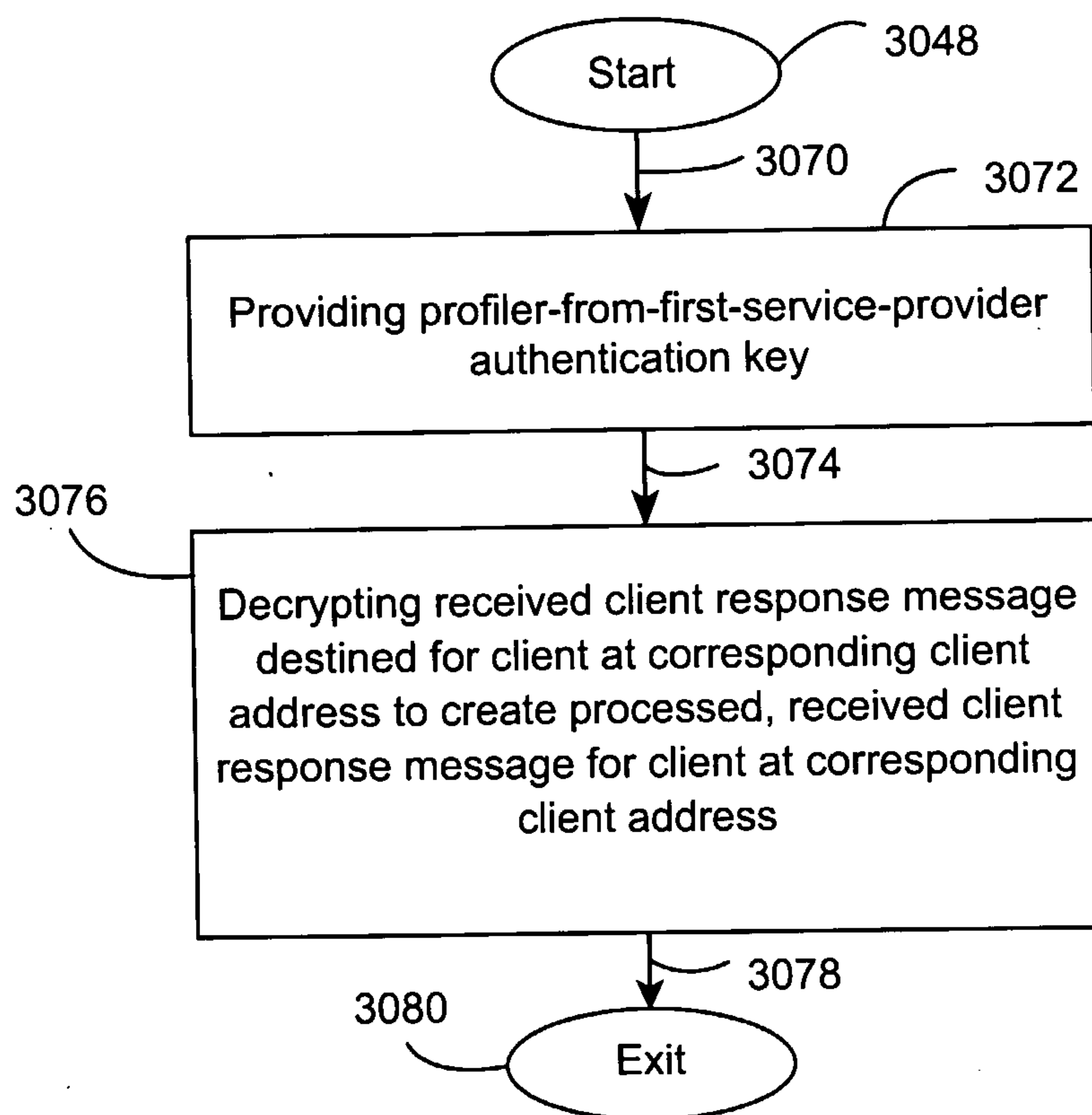


Fig. 70

63/86

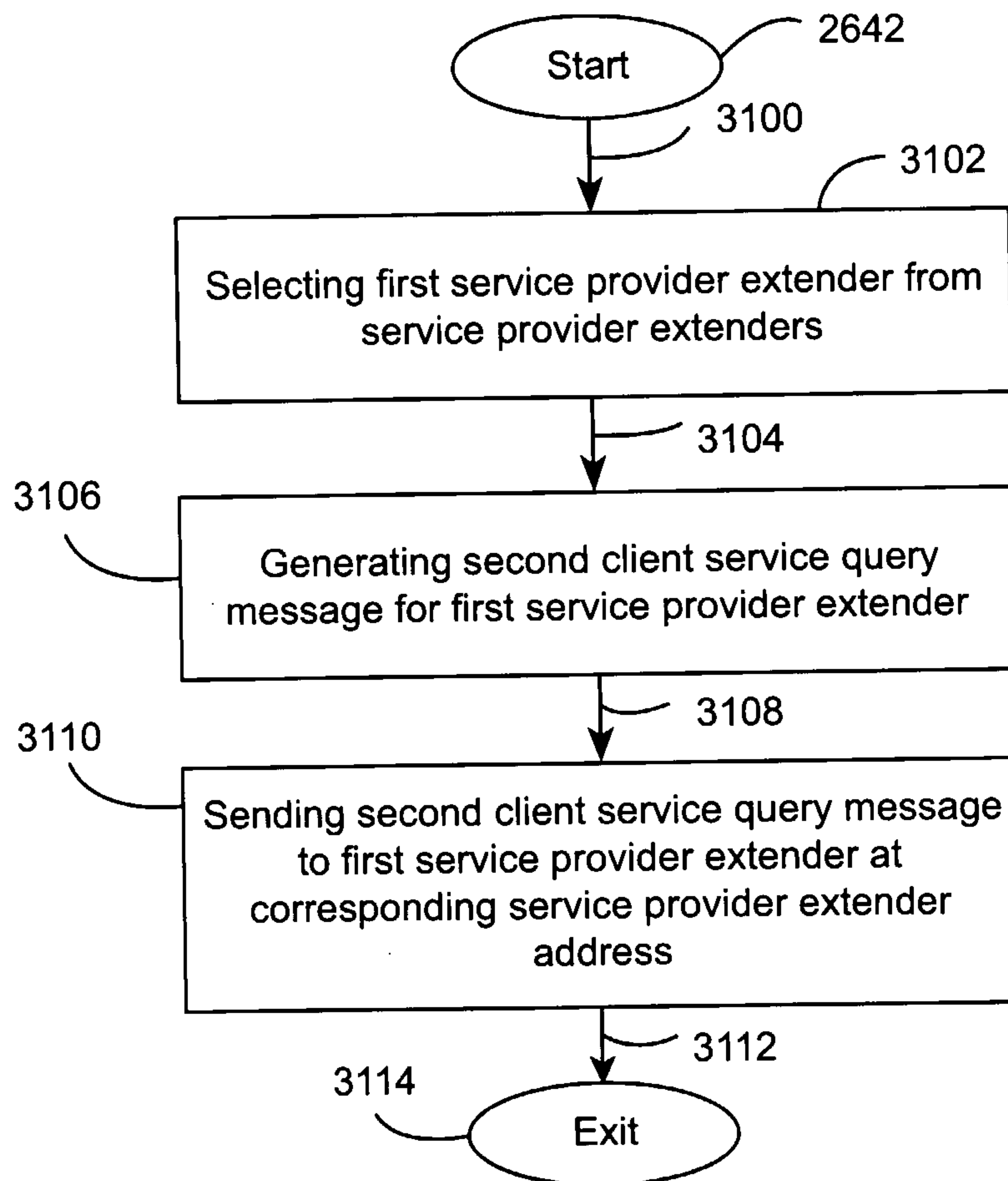


Fig. 71

64/86

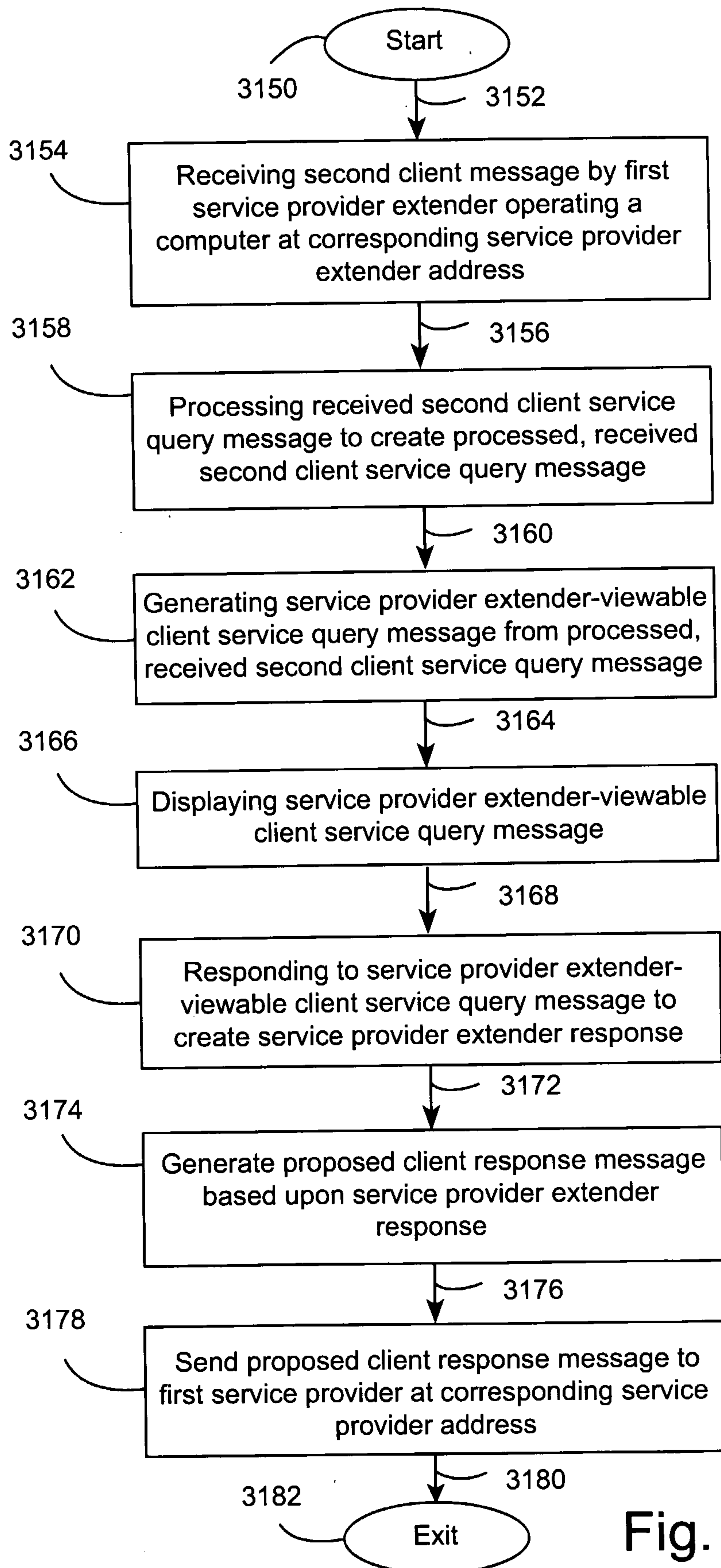


Fig. 72

65/86

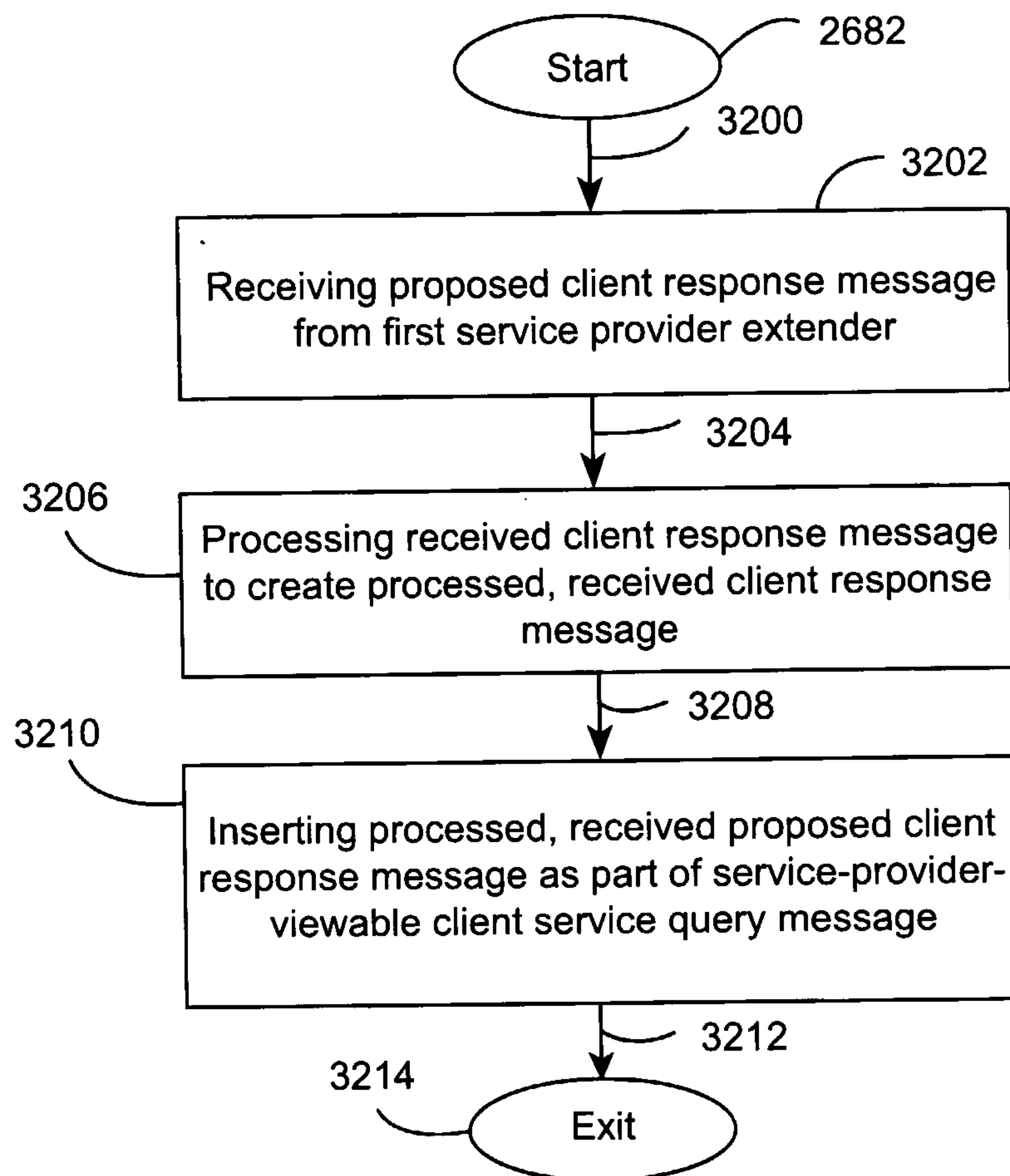


Fig. 73

66/86

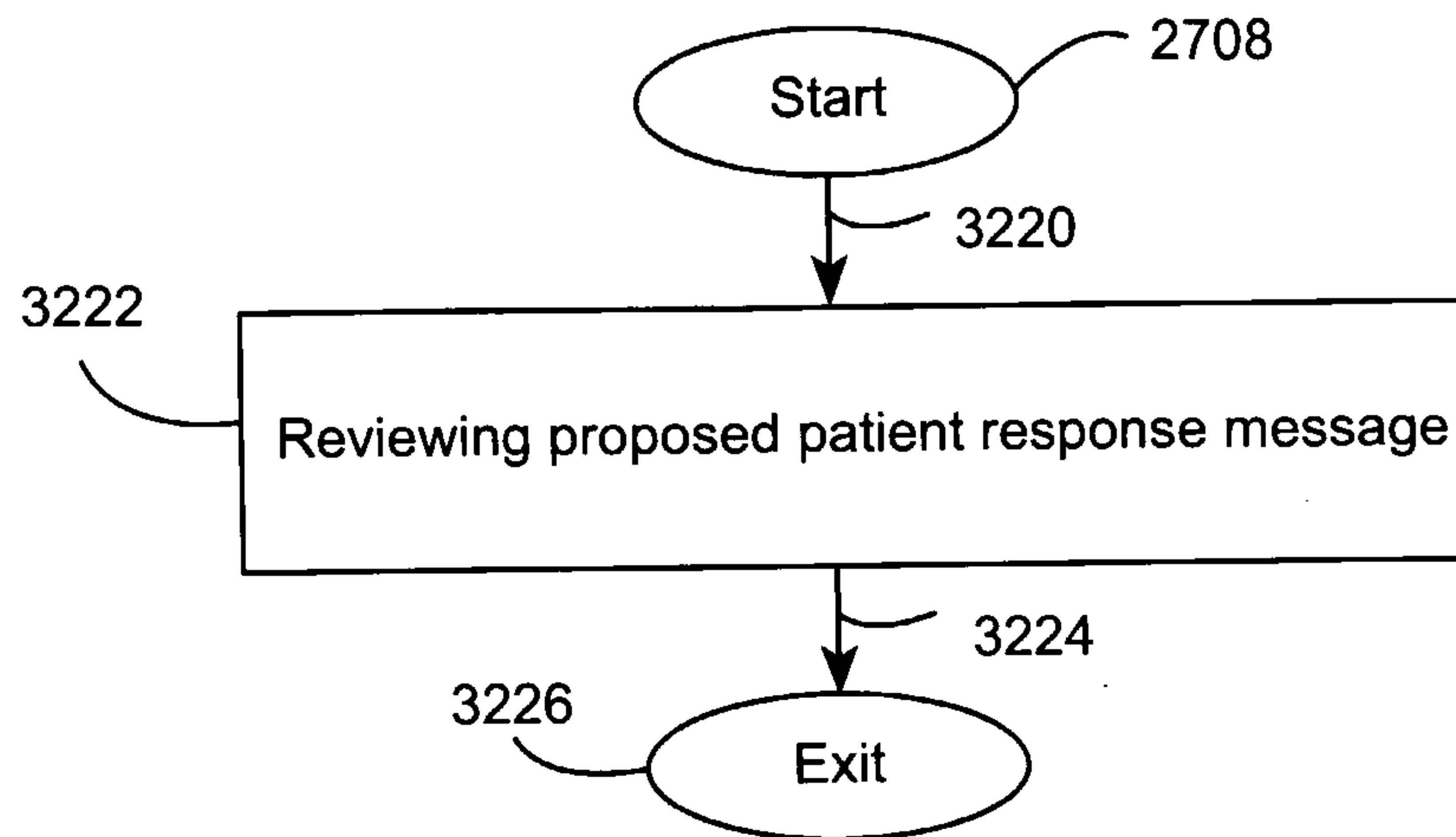


Fig. 74

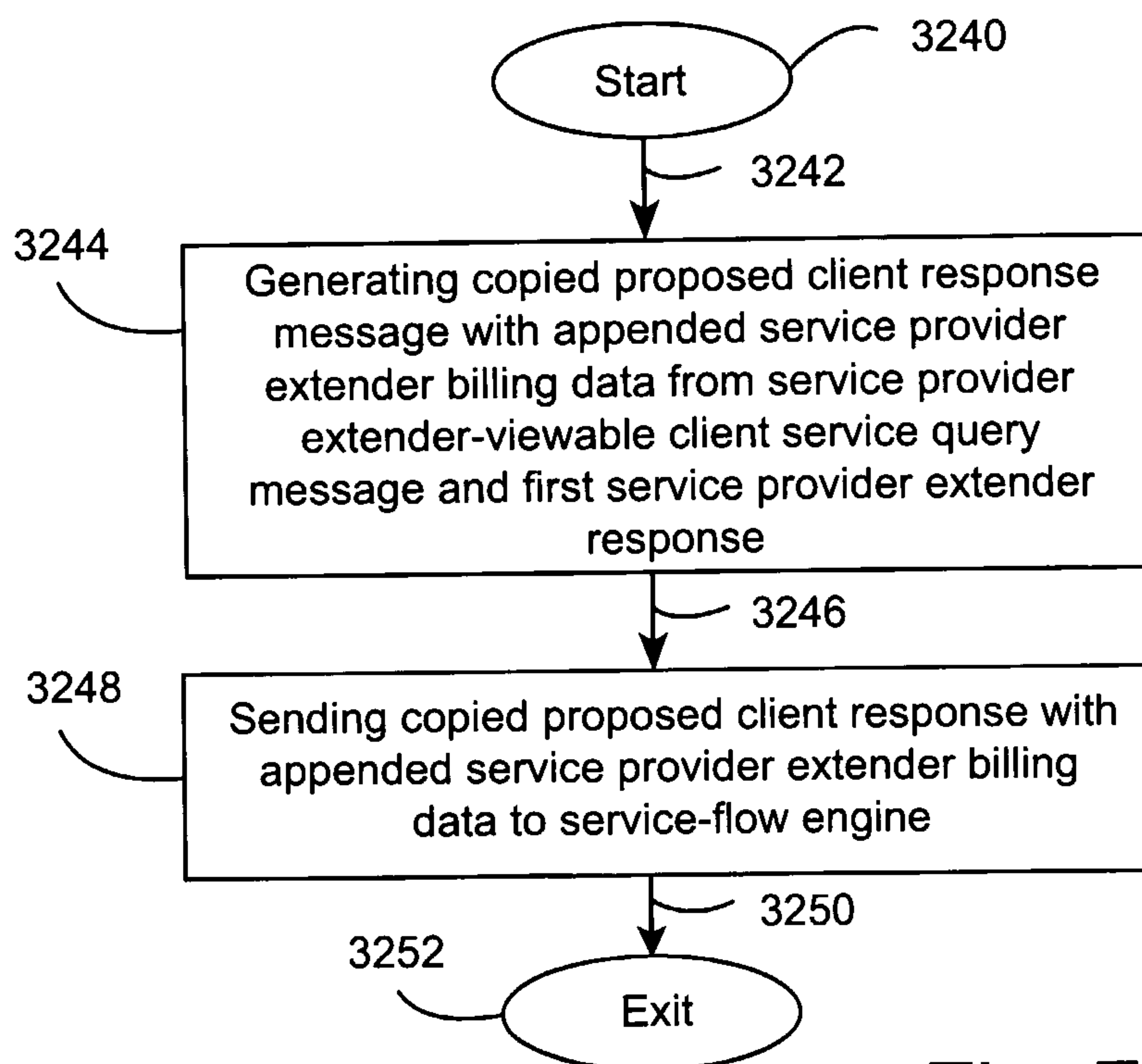


Fig. 75

67/86

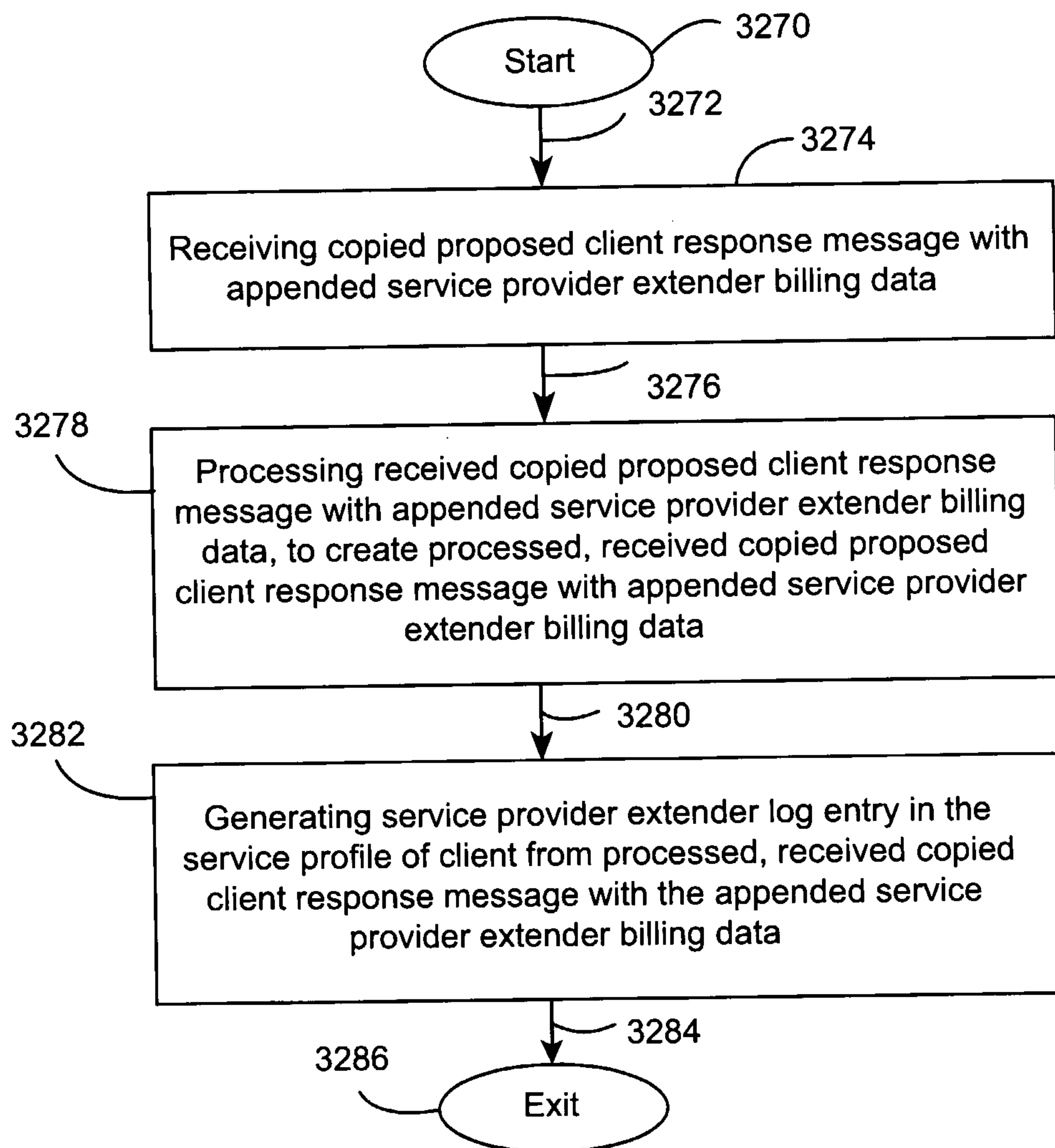


Fig. 76

68/86

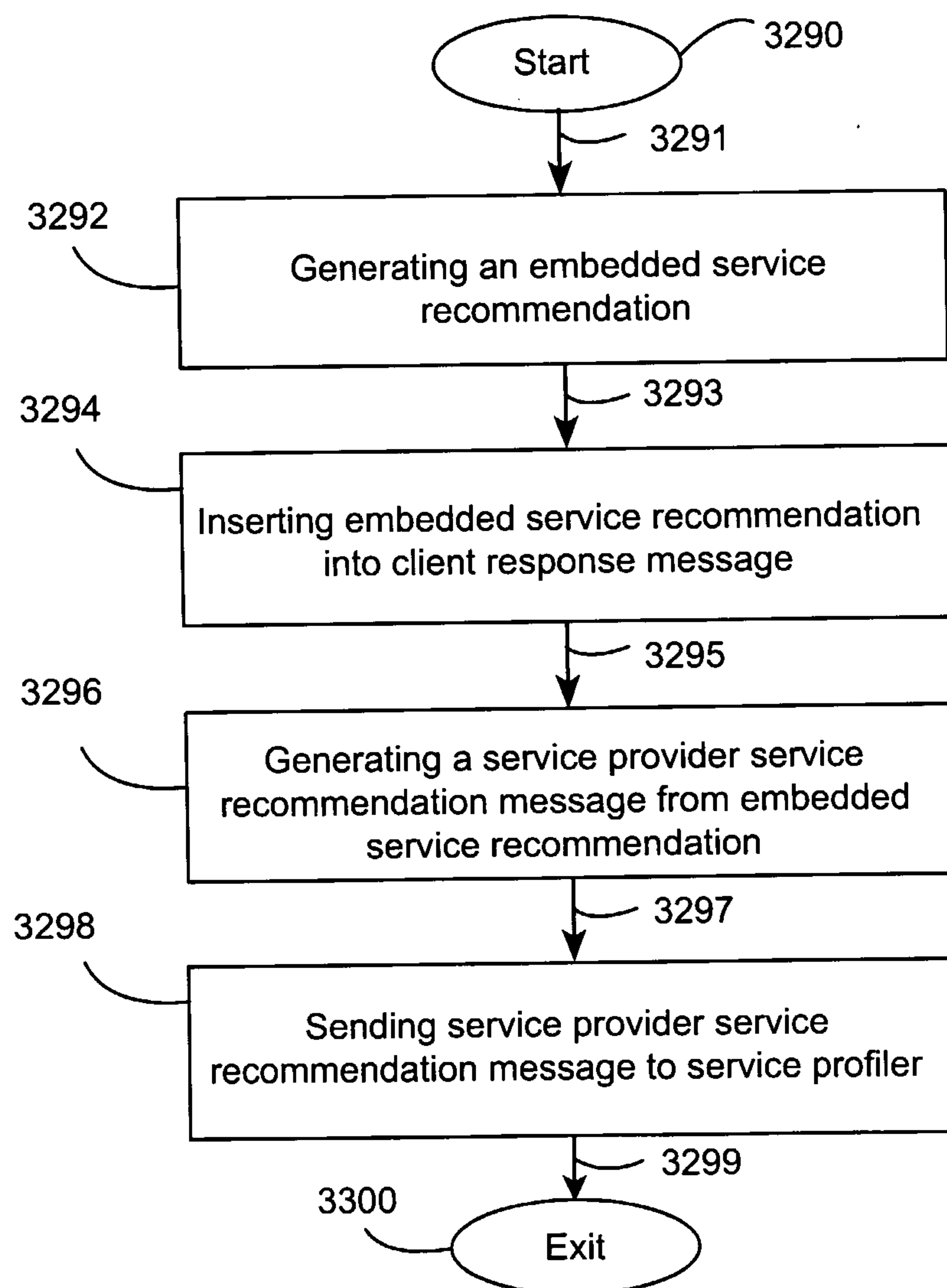


Fig. 77

69/86

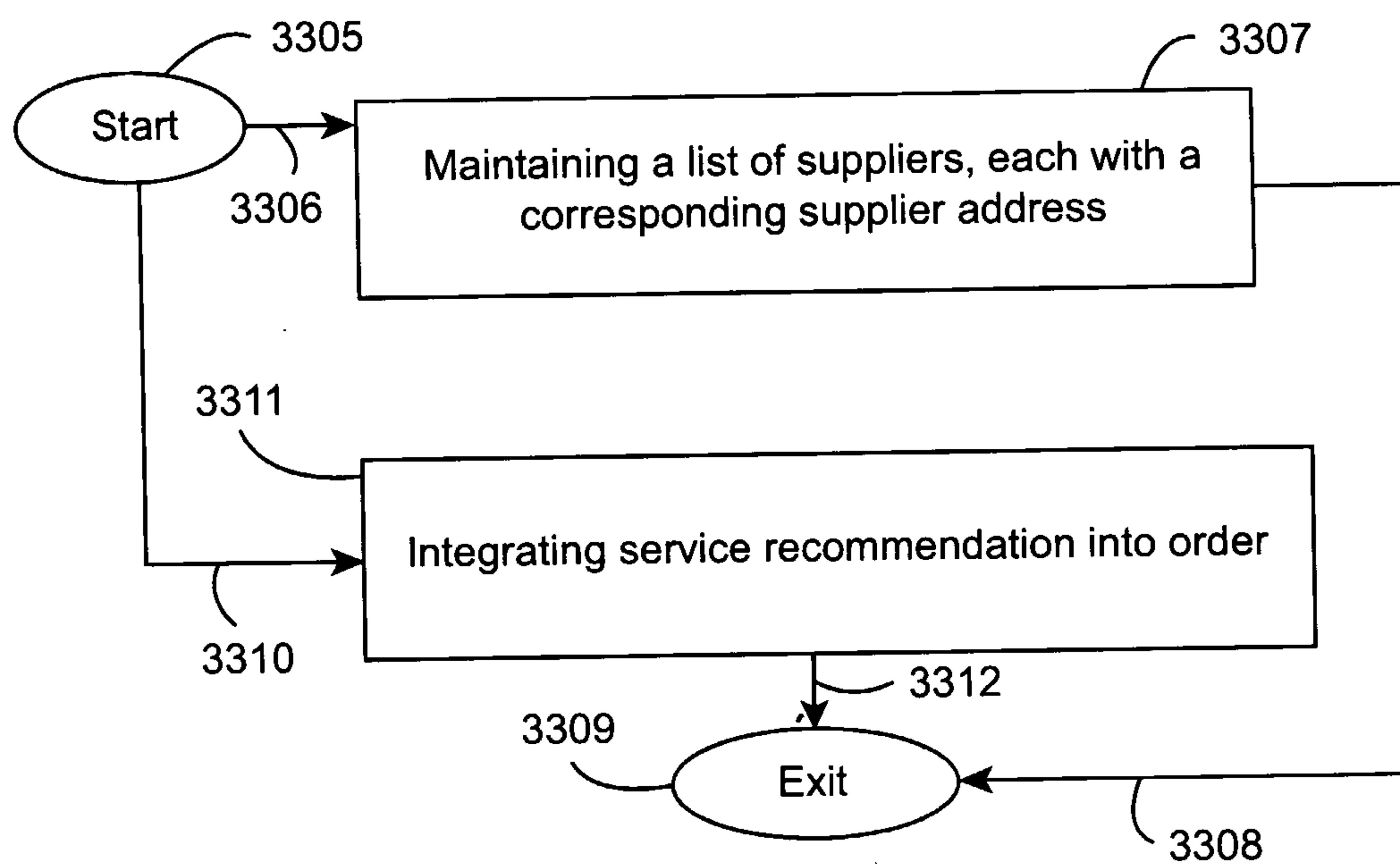


Fig. 78

70/86

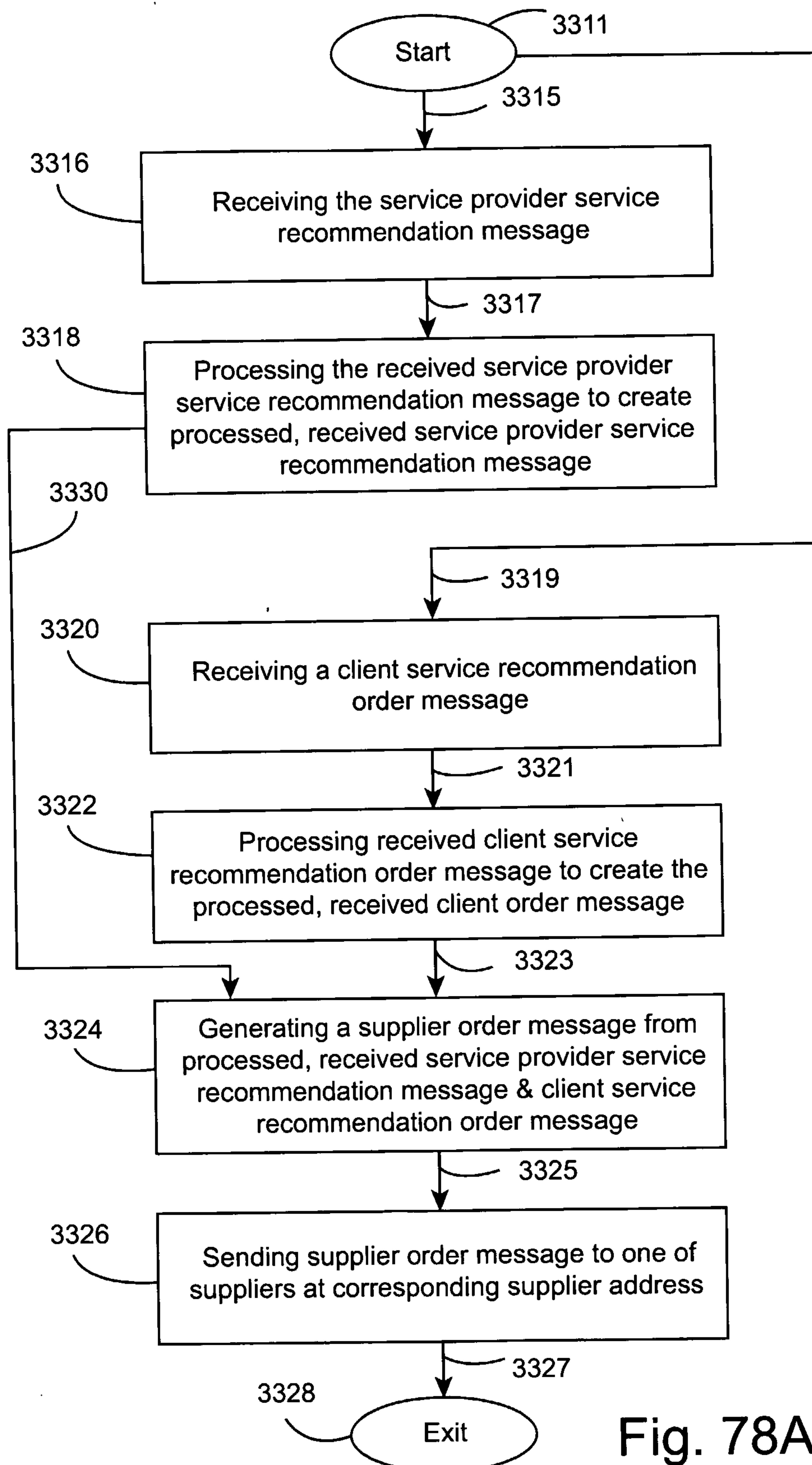


Fig. 78A

71/86

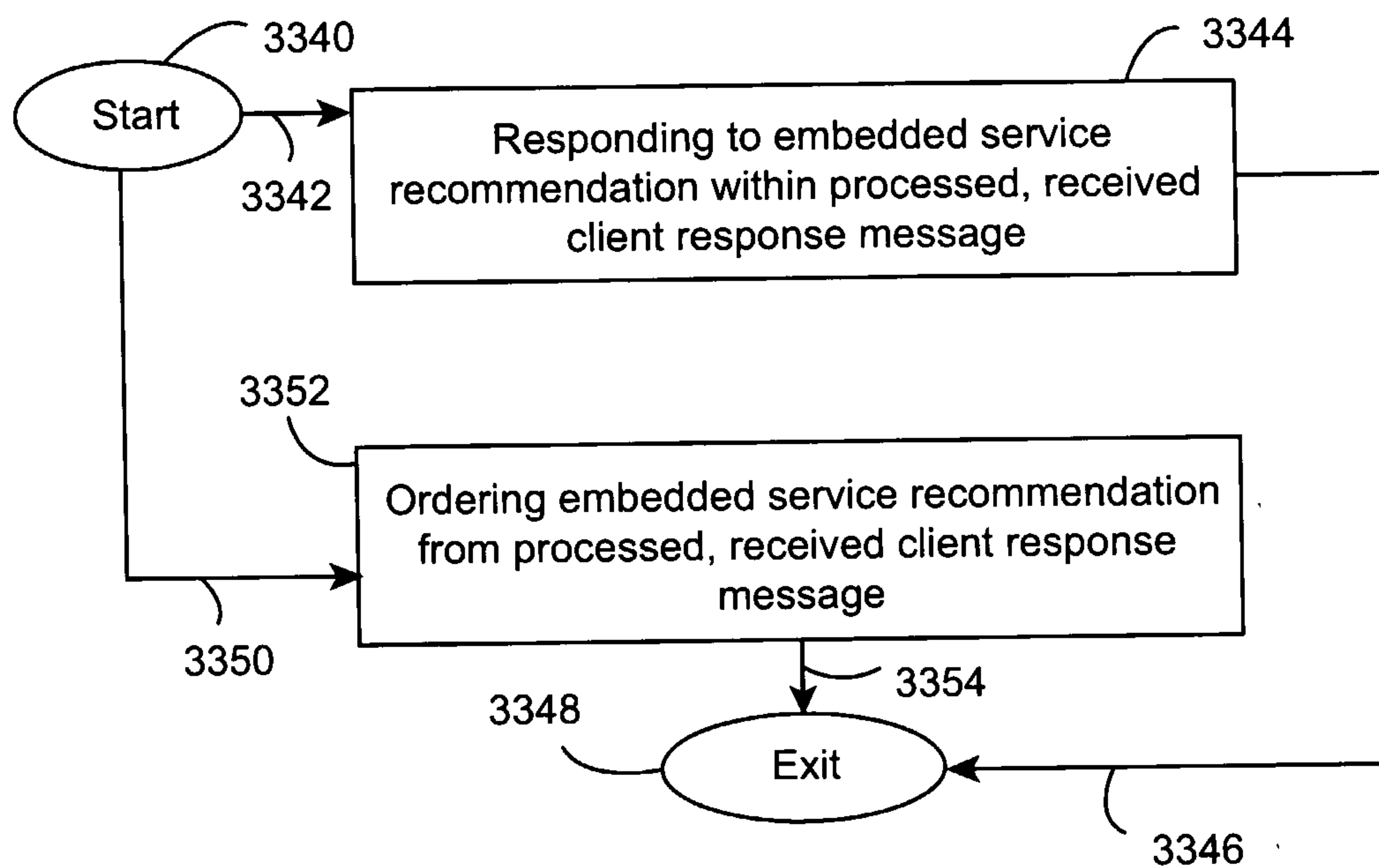


Fig. 79

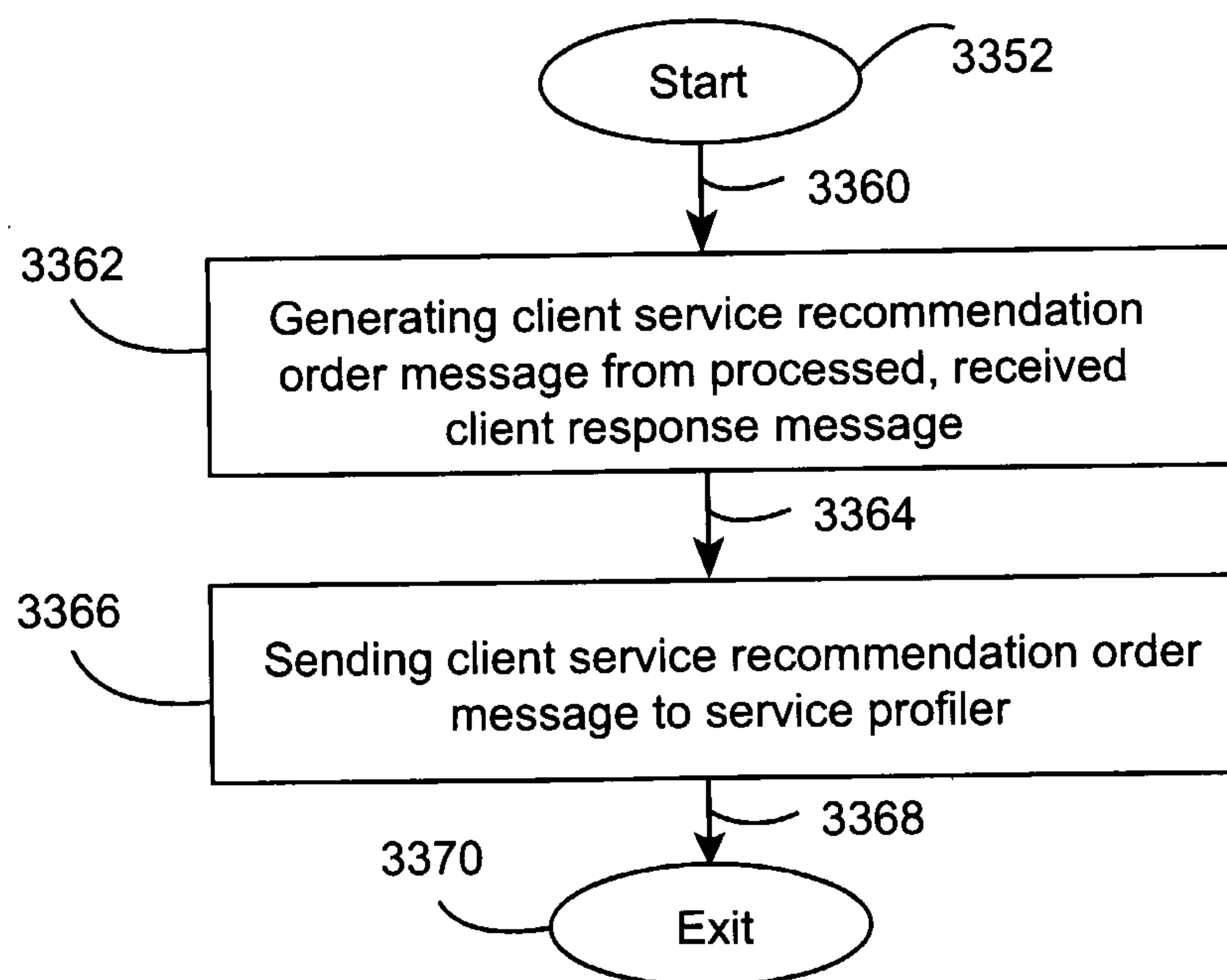


Fig. 80

72/86

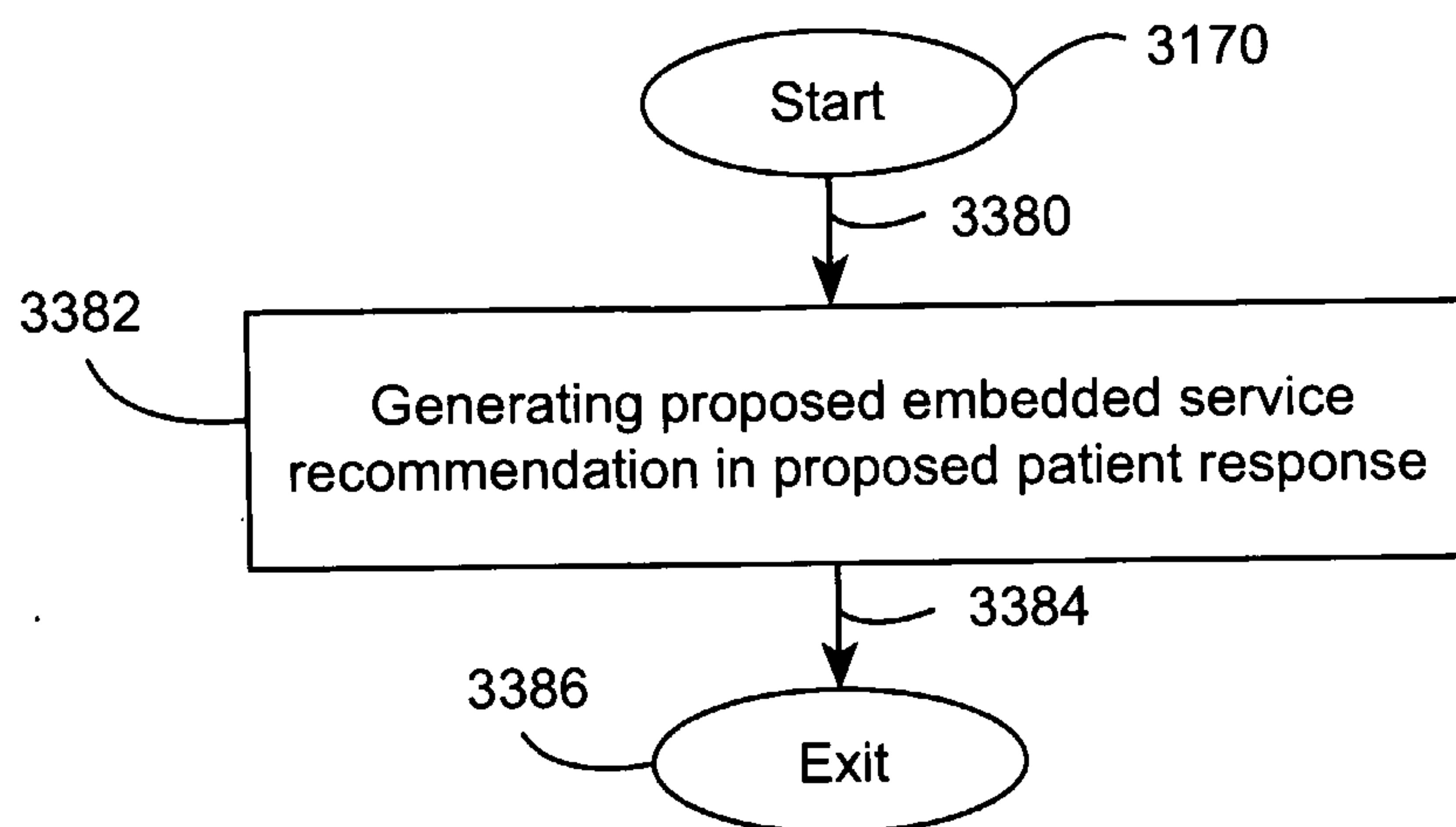


Fig. 81

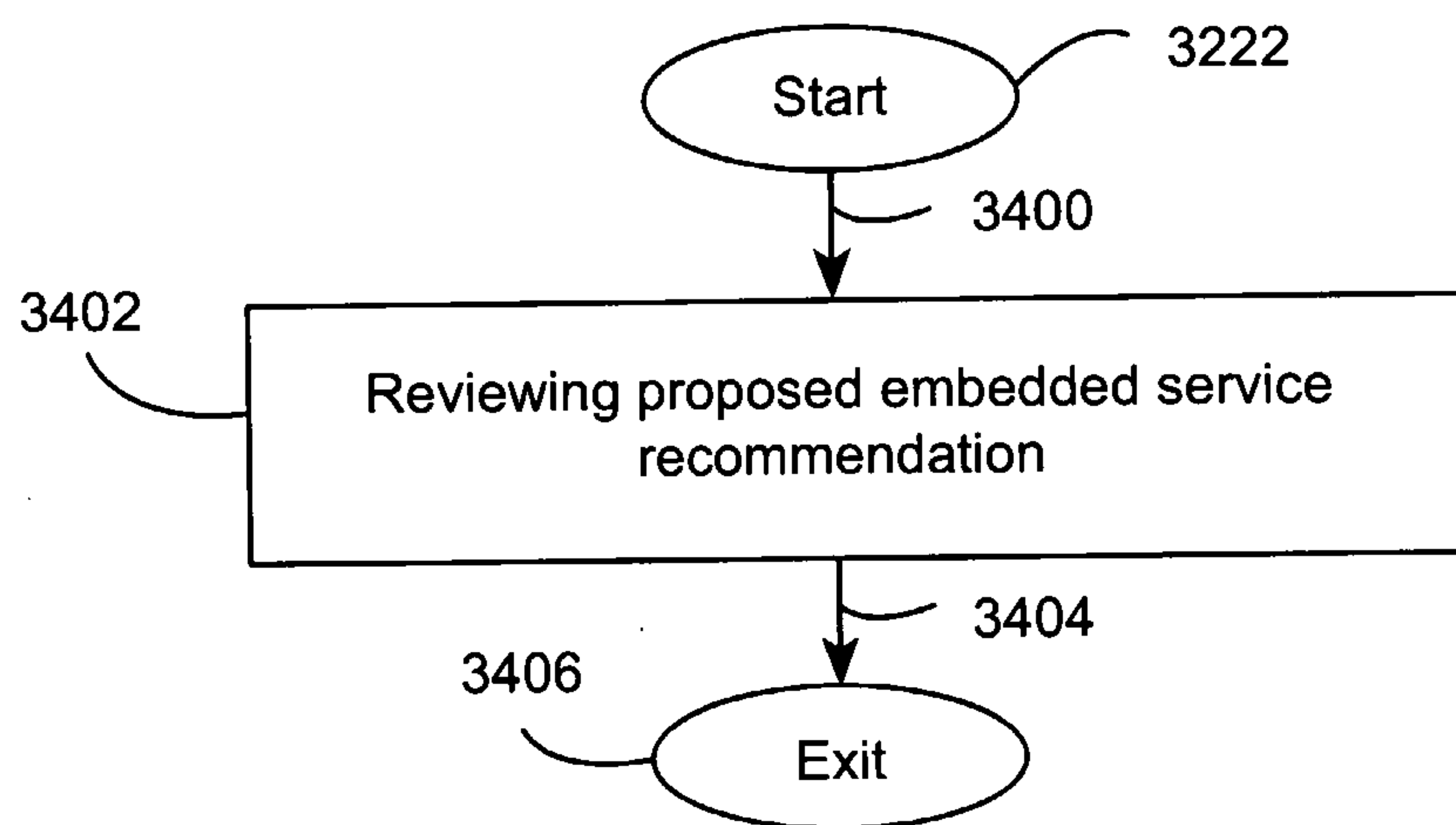


Fig. 82

73/86

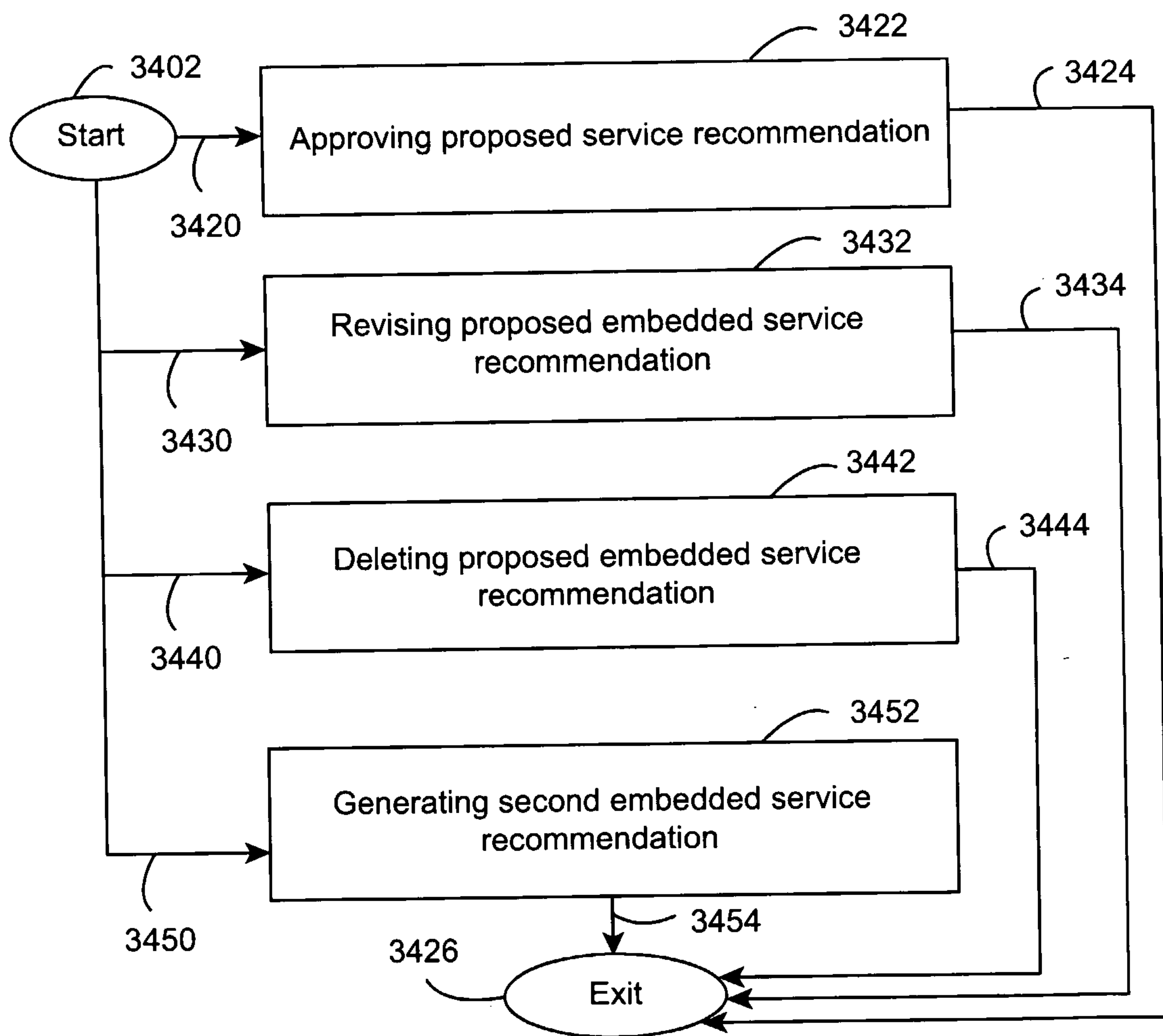
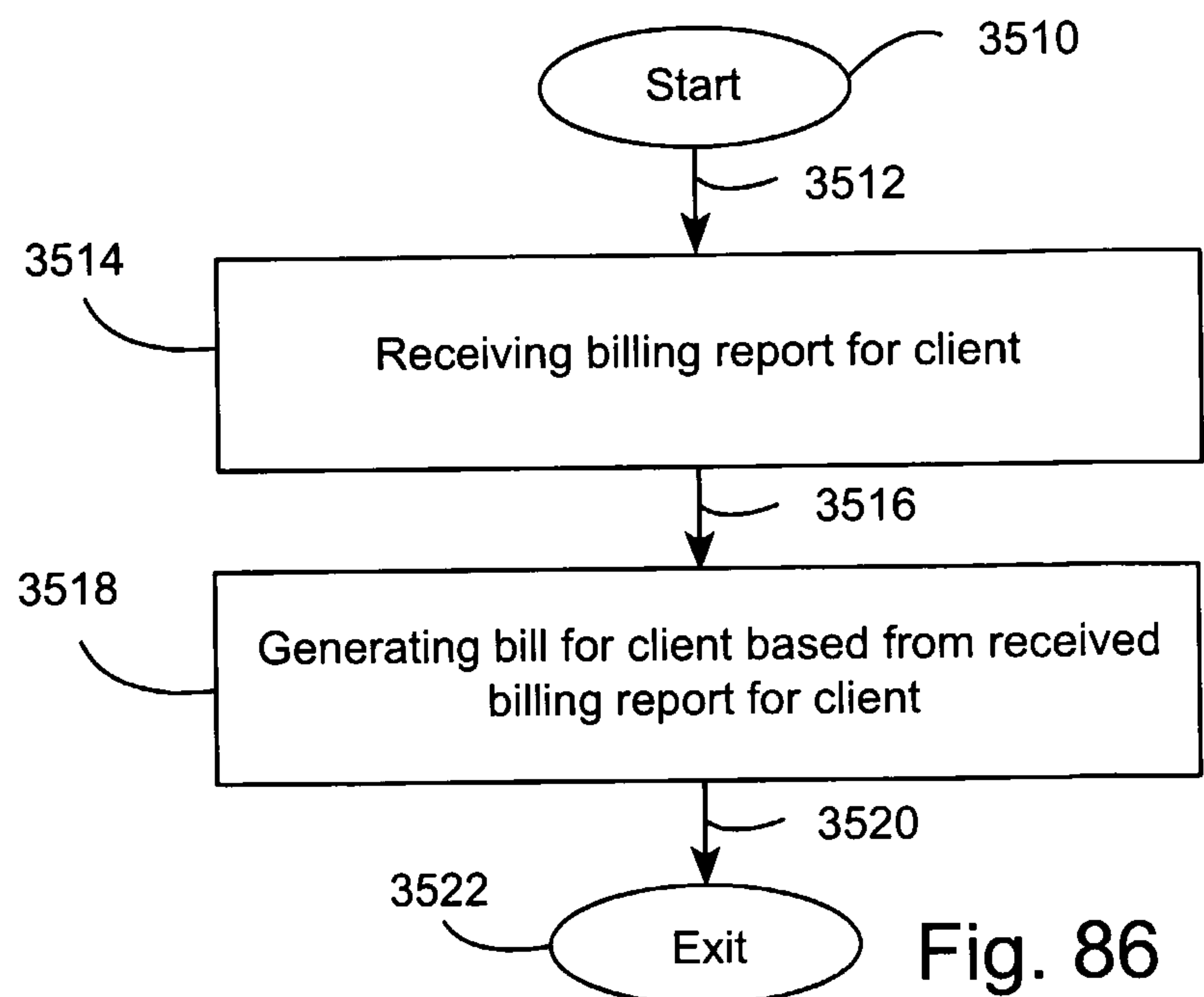
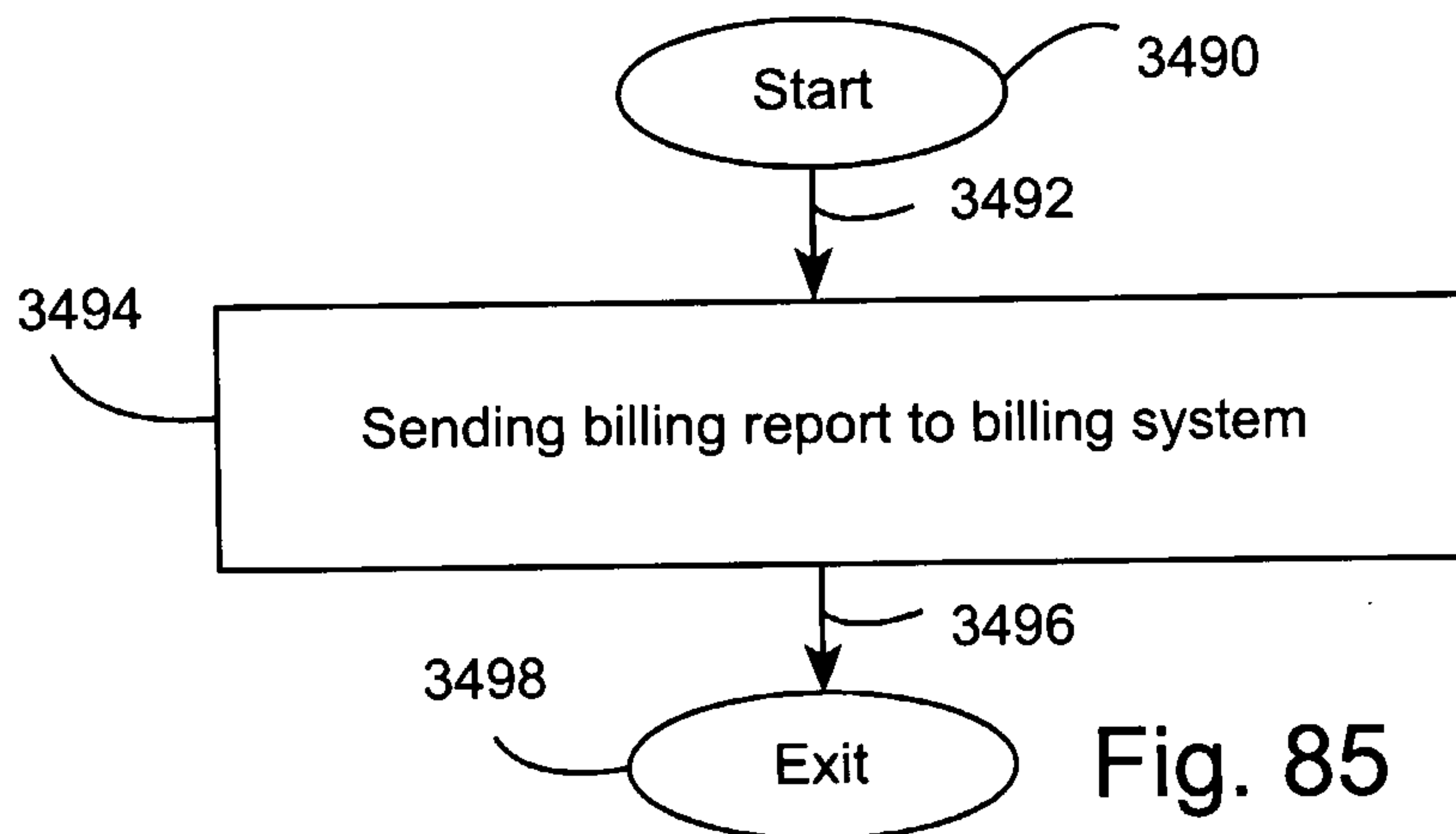
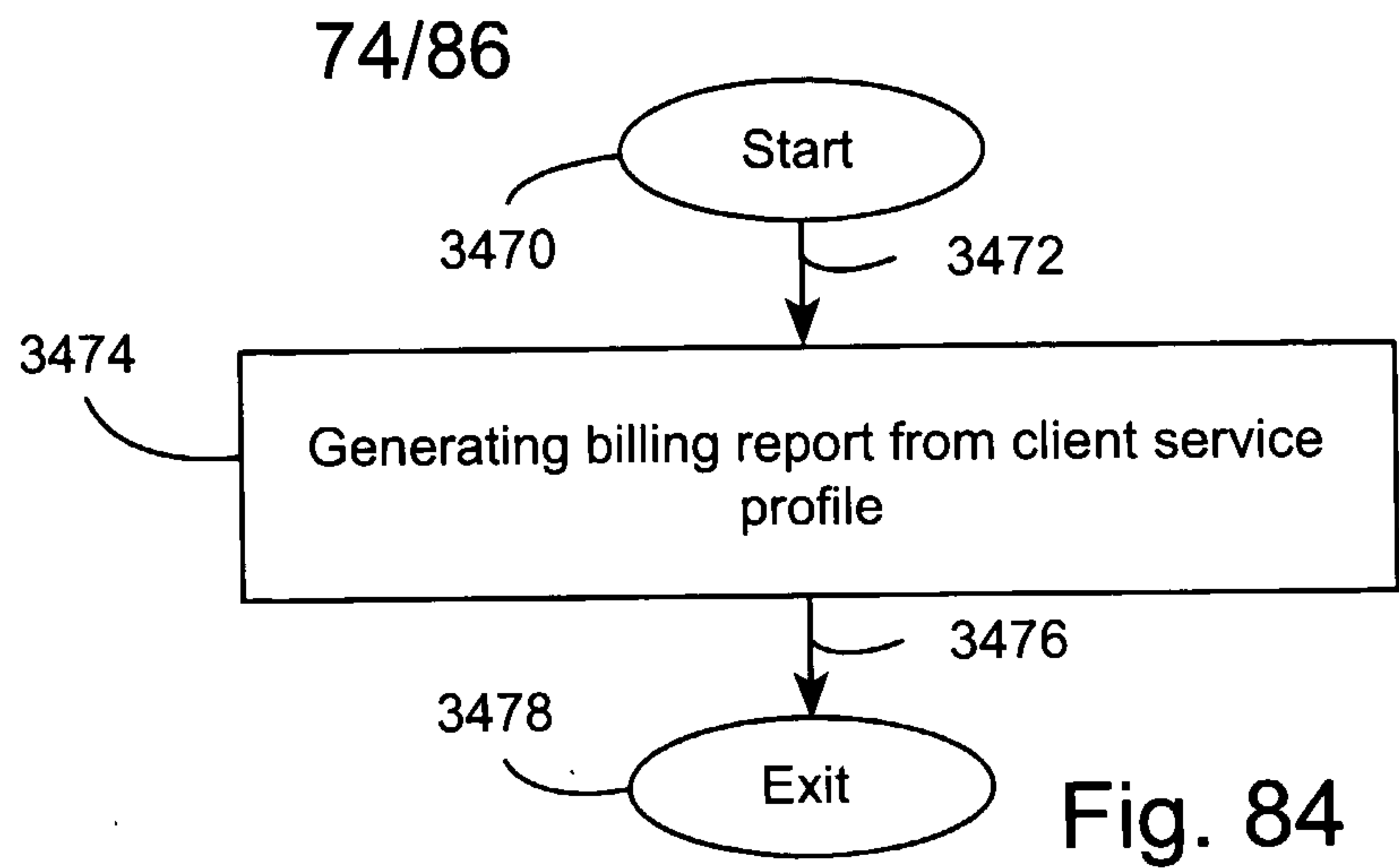


Fig. 83



75/86

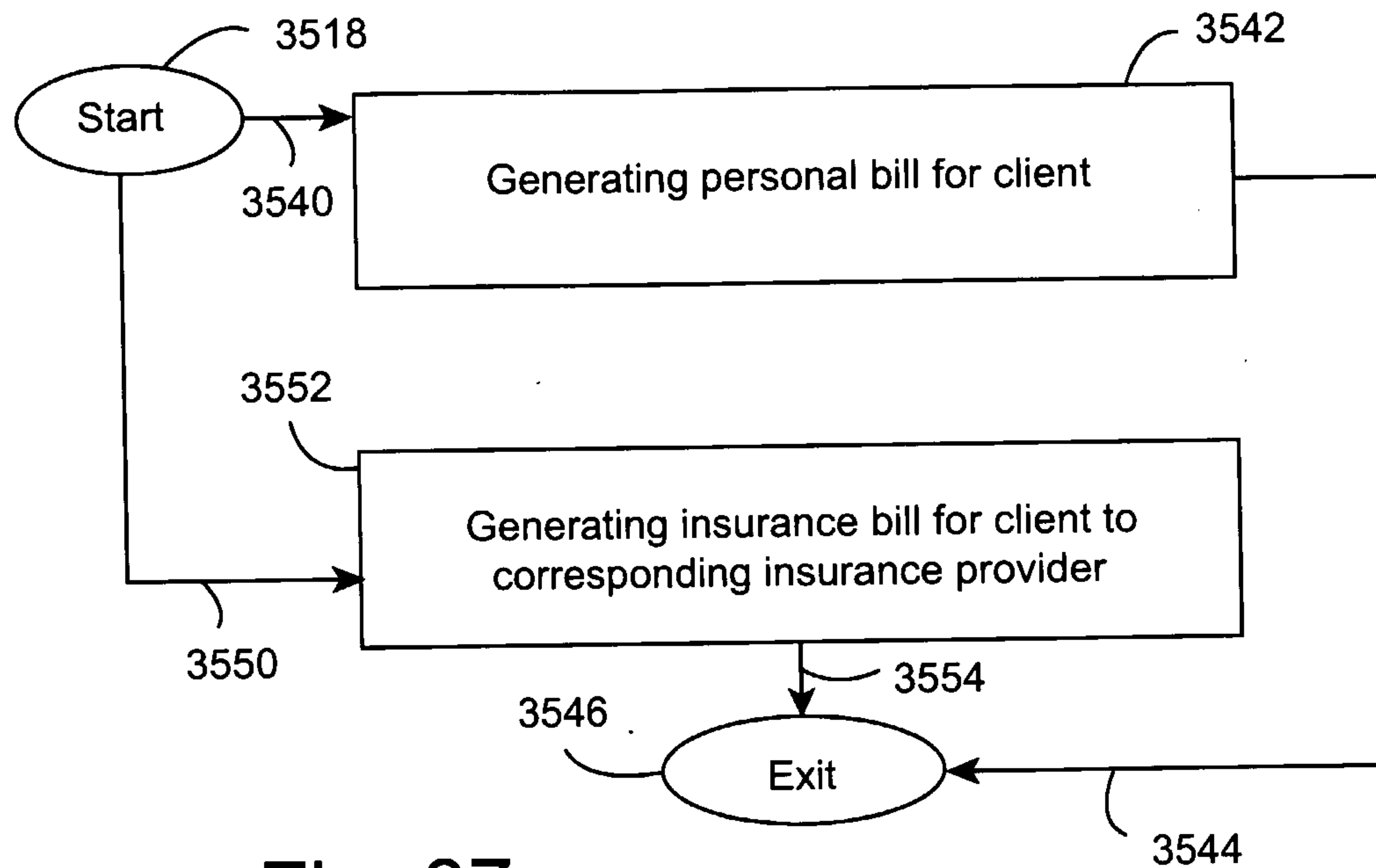


Fig. 87

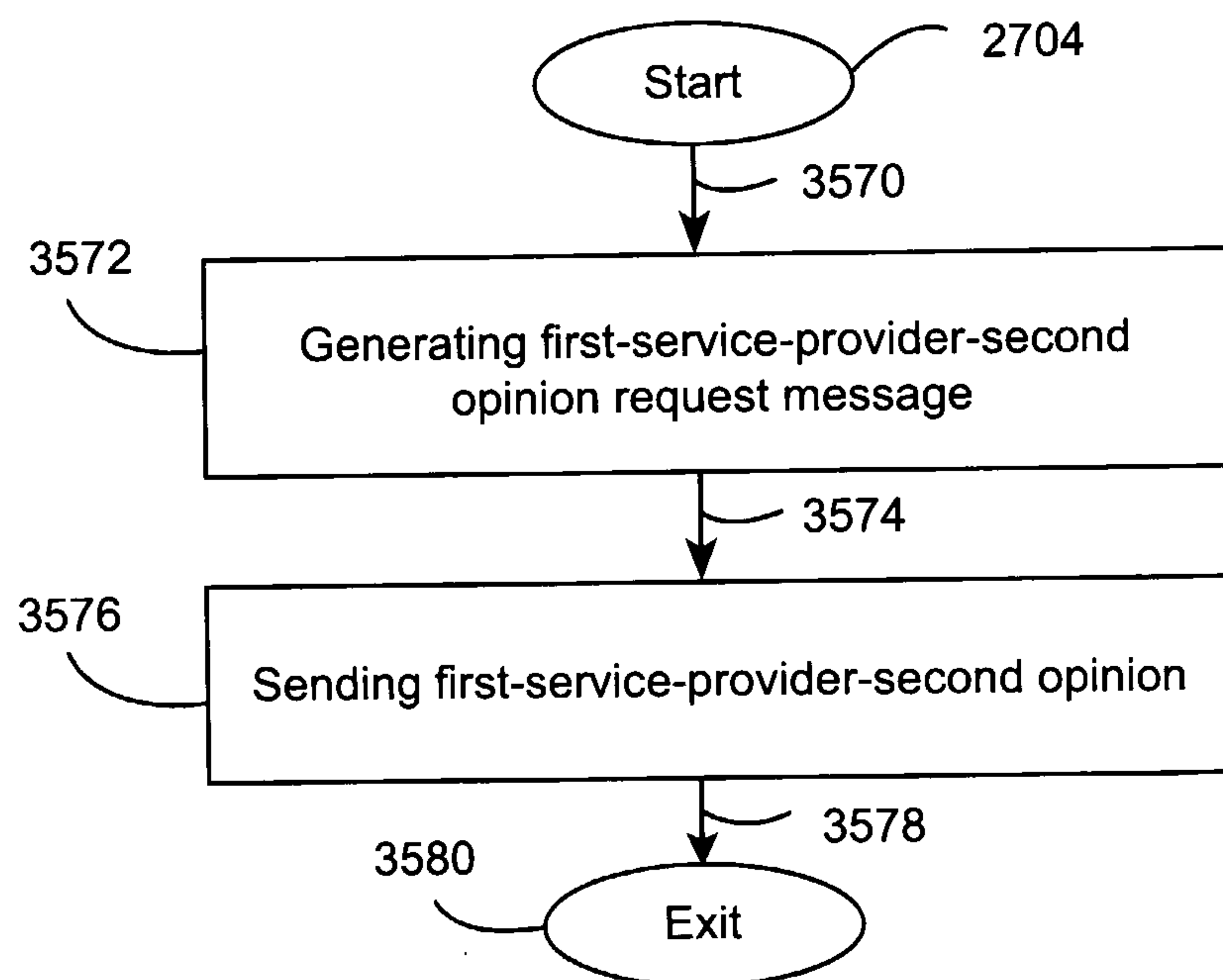


Fig. 88

76/86

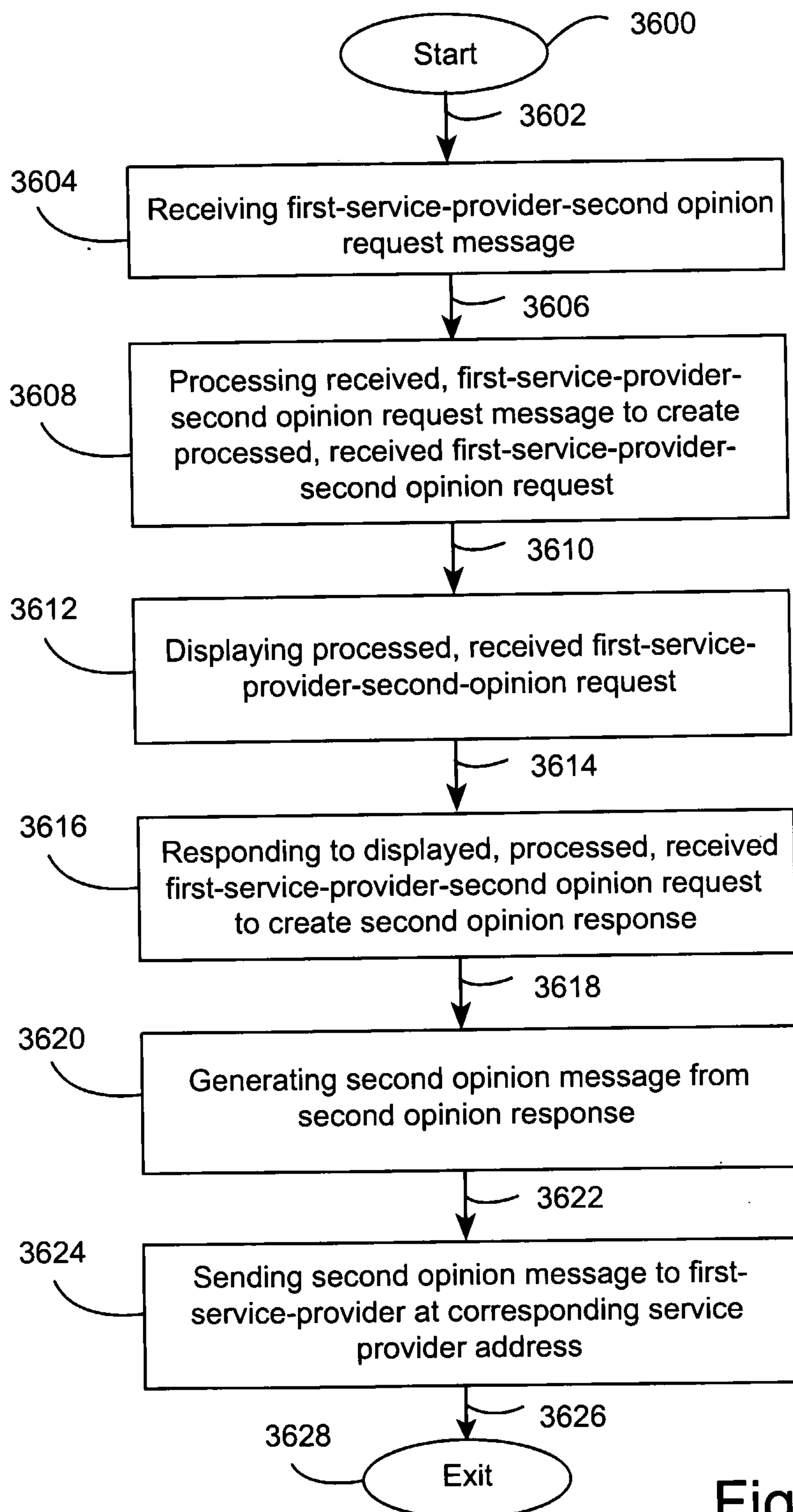


Fig. 89

77/86

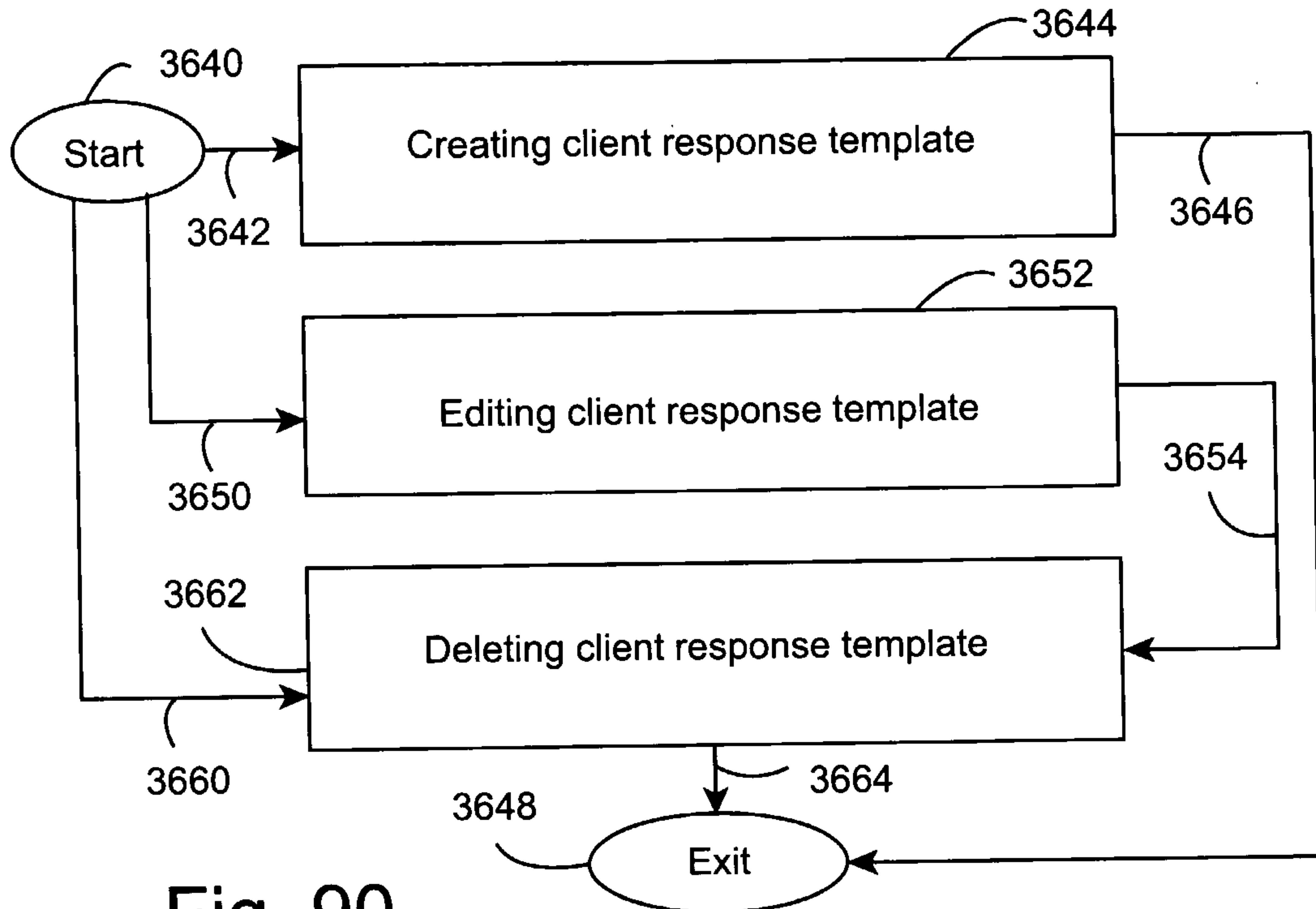


Fig. 90

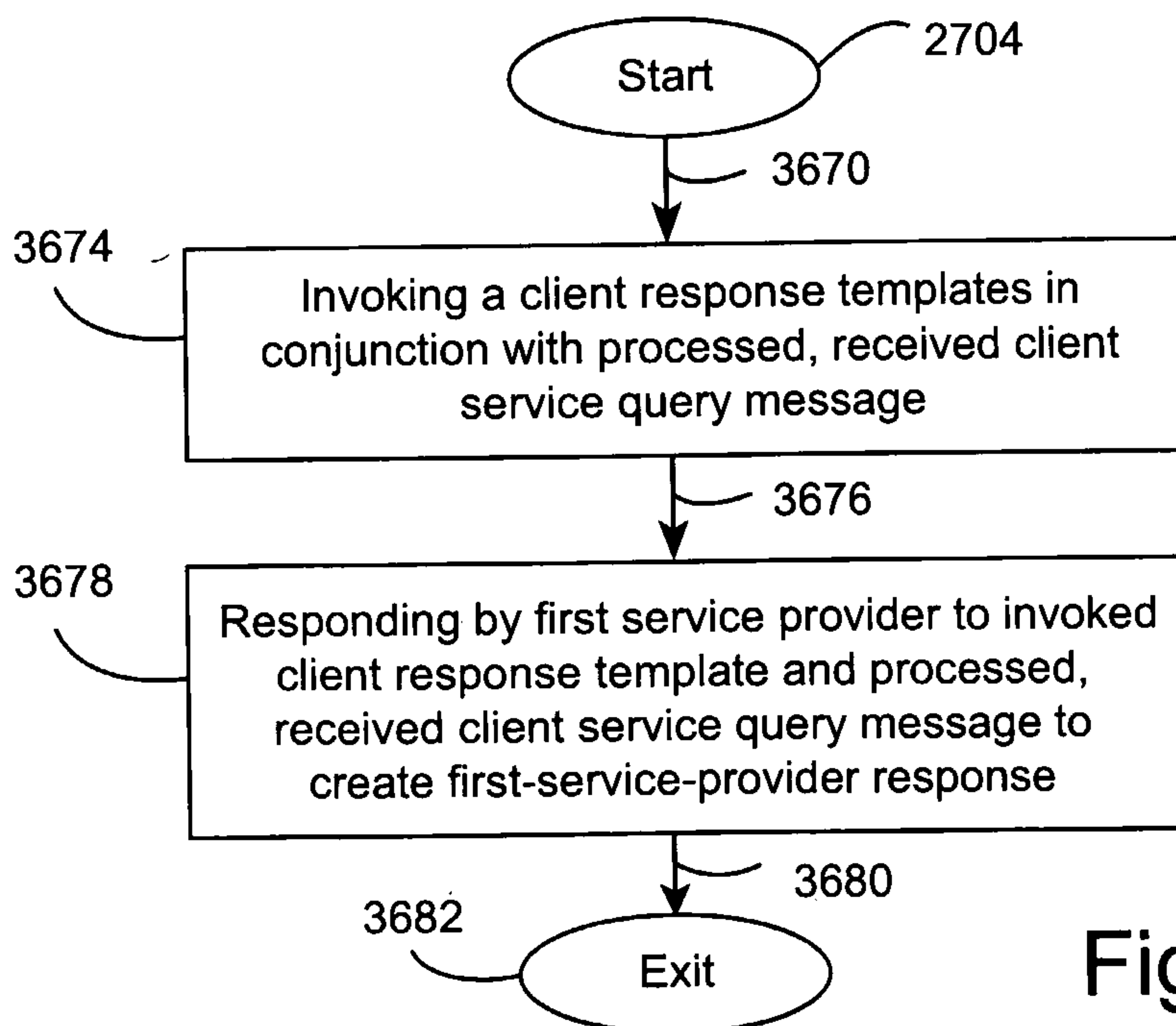


Fig. 91

78/86

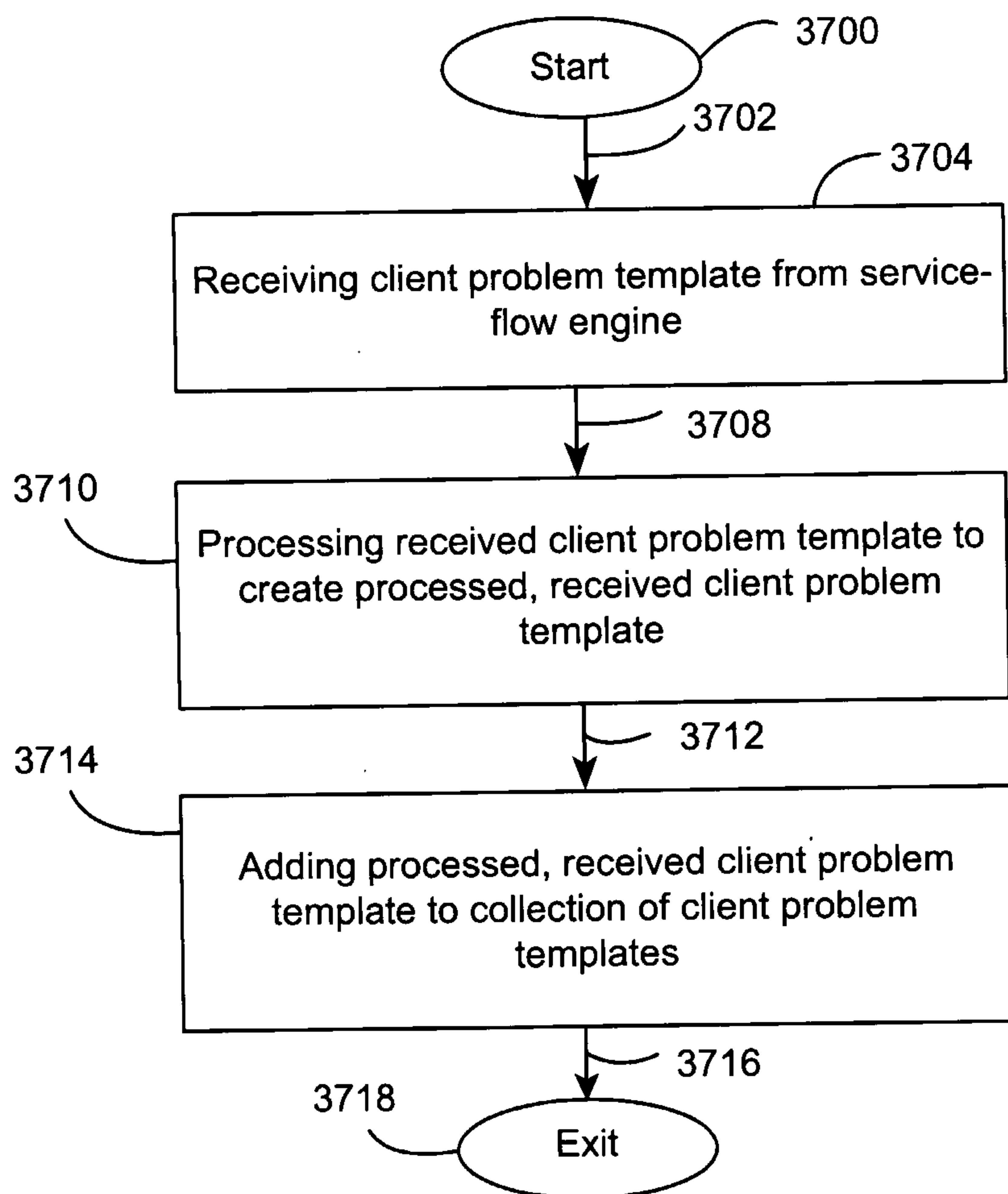
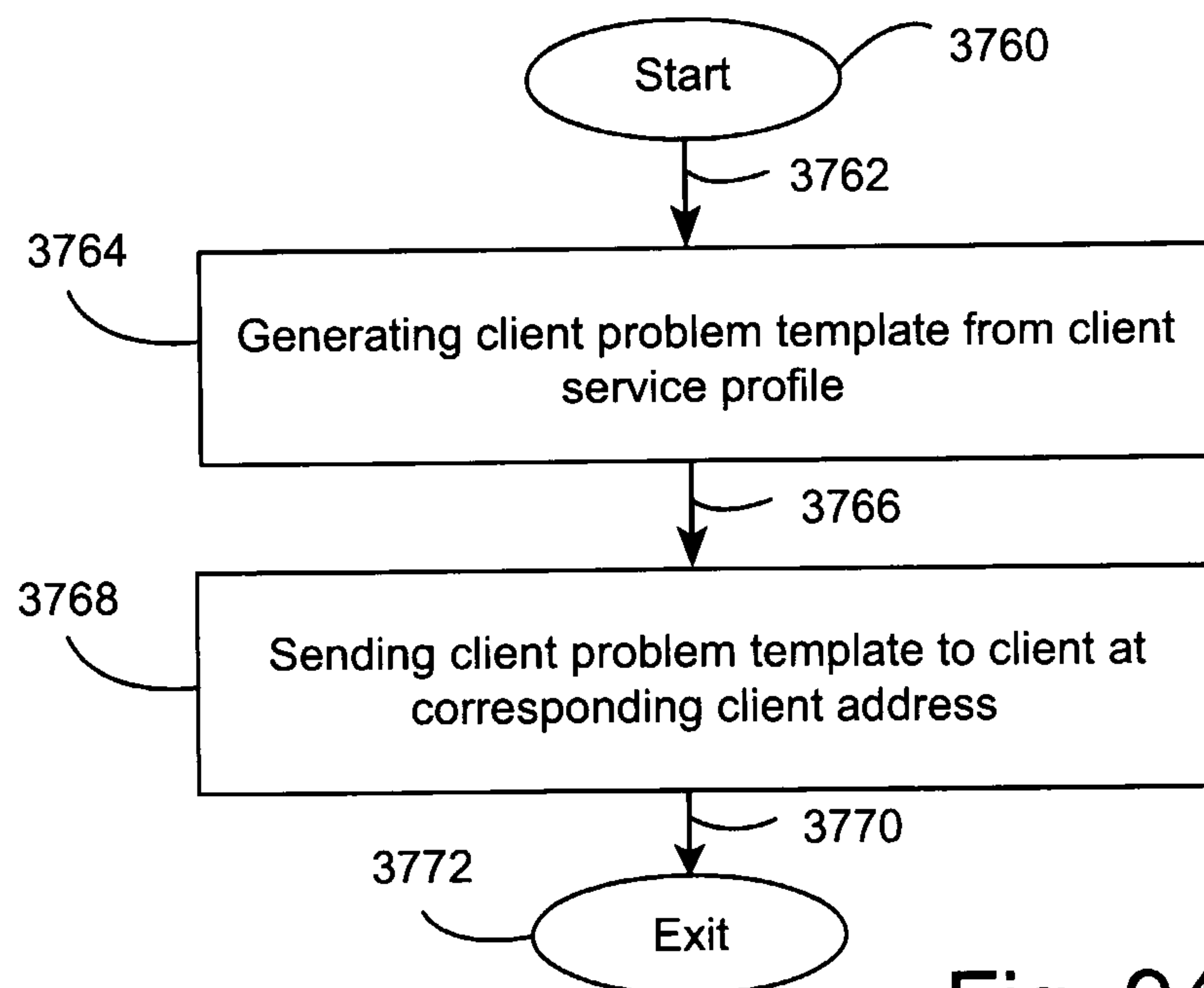
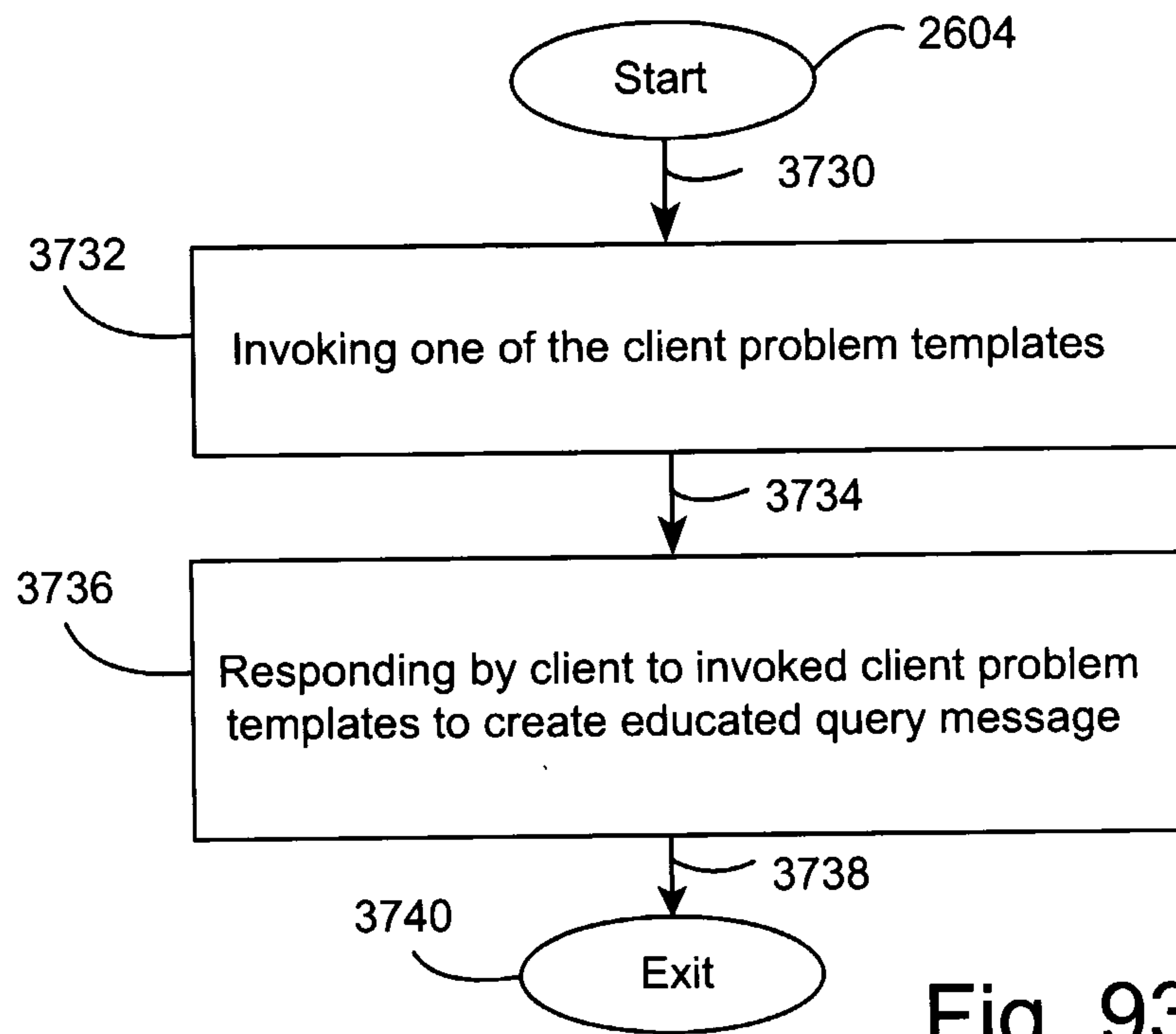


Fig. 92

79/86



80/86

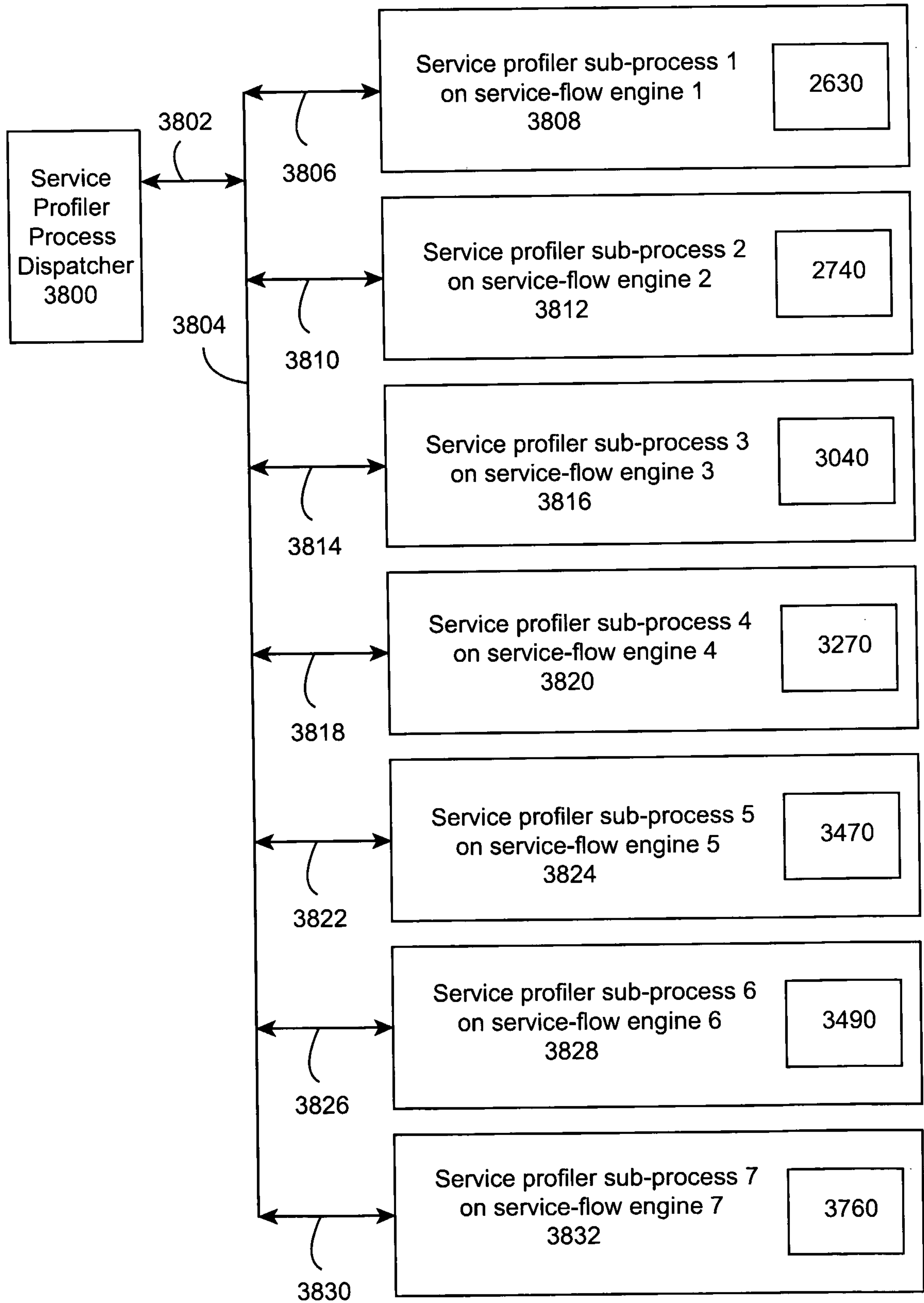


Fig. 95

81/86

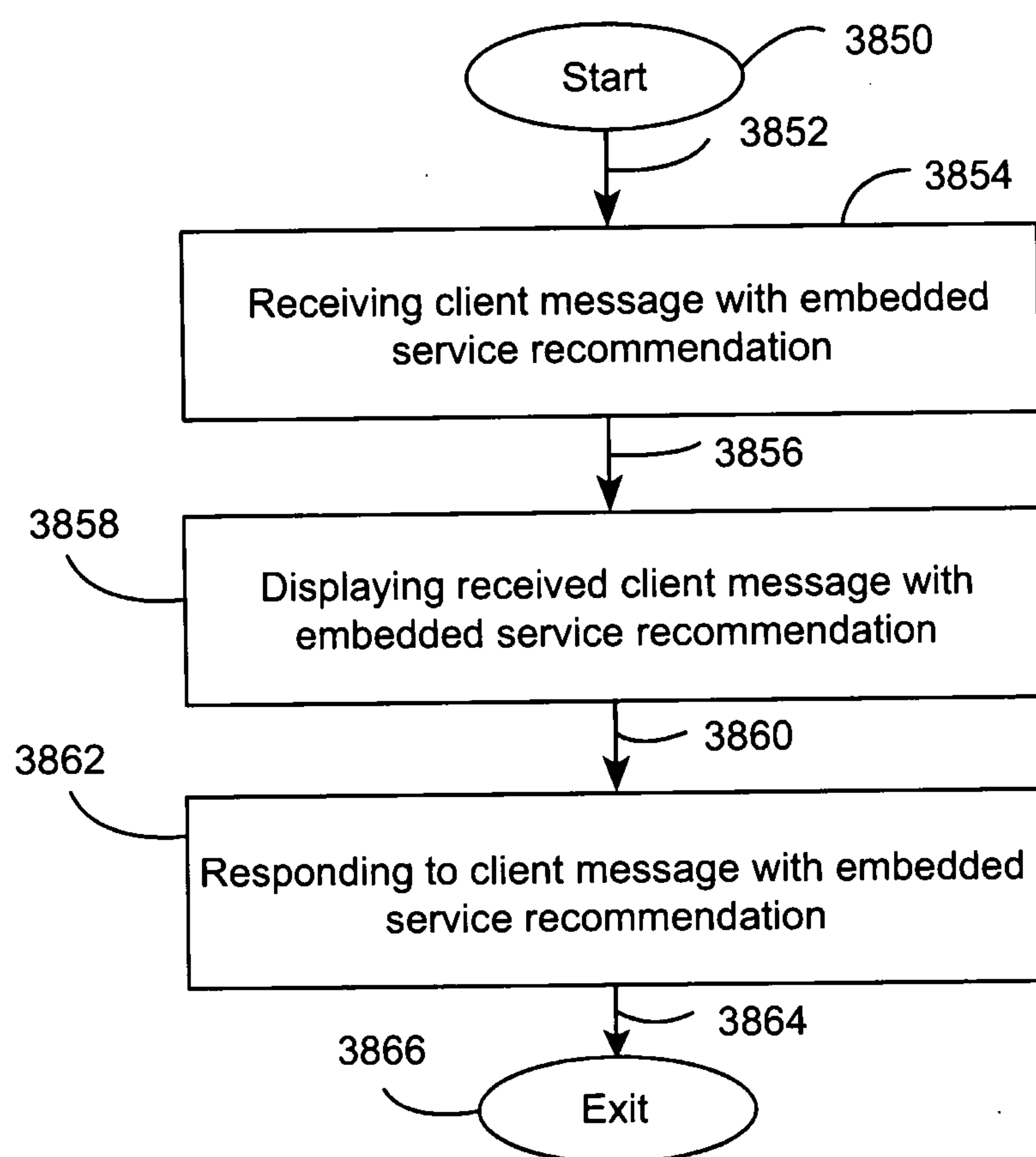


Fig. 96

82/86

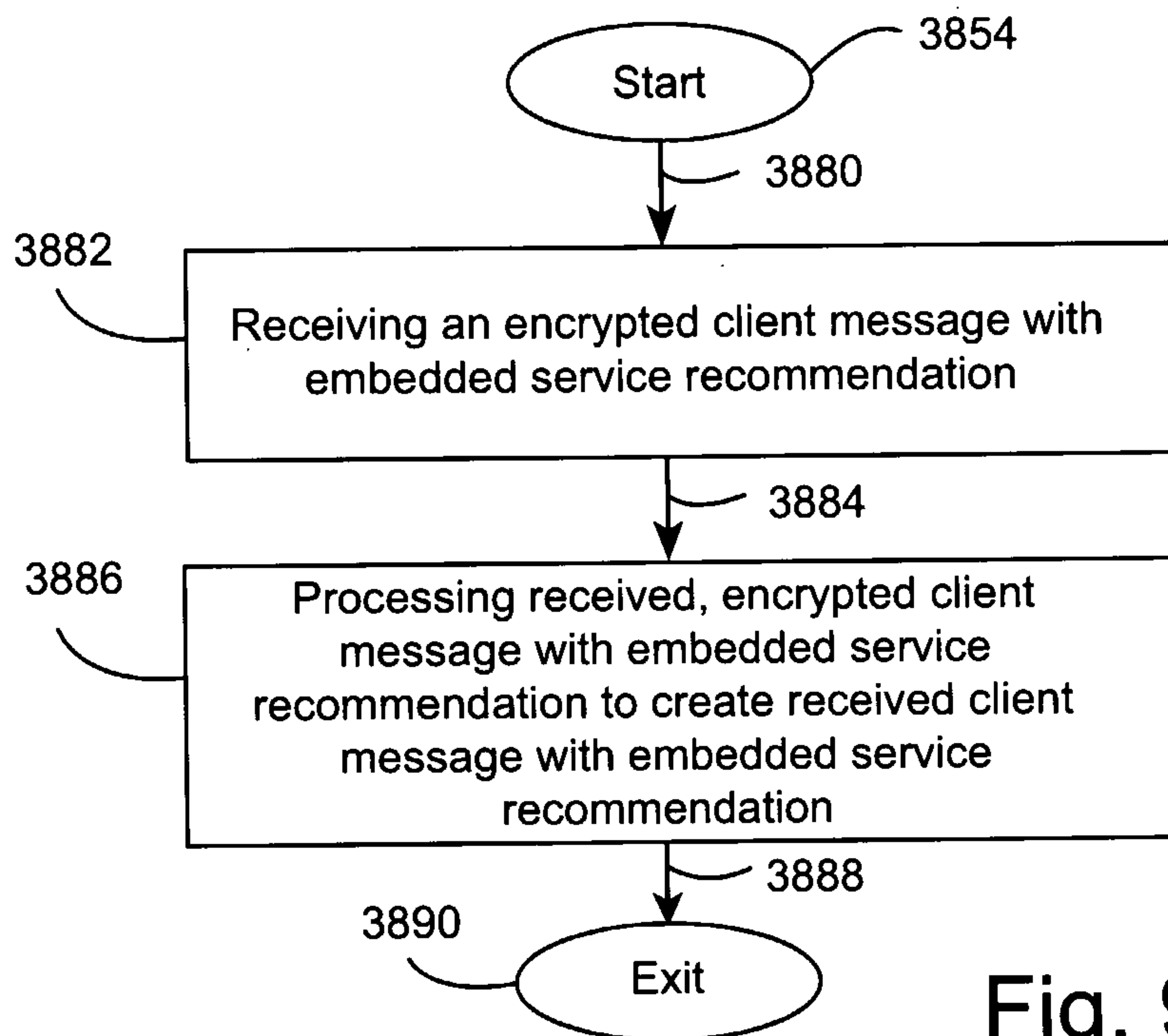


Fig. 97

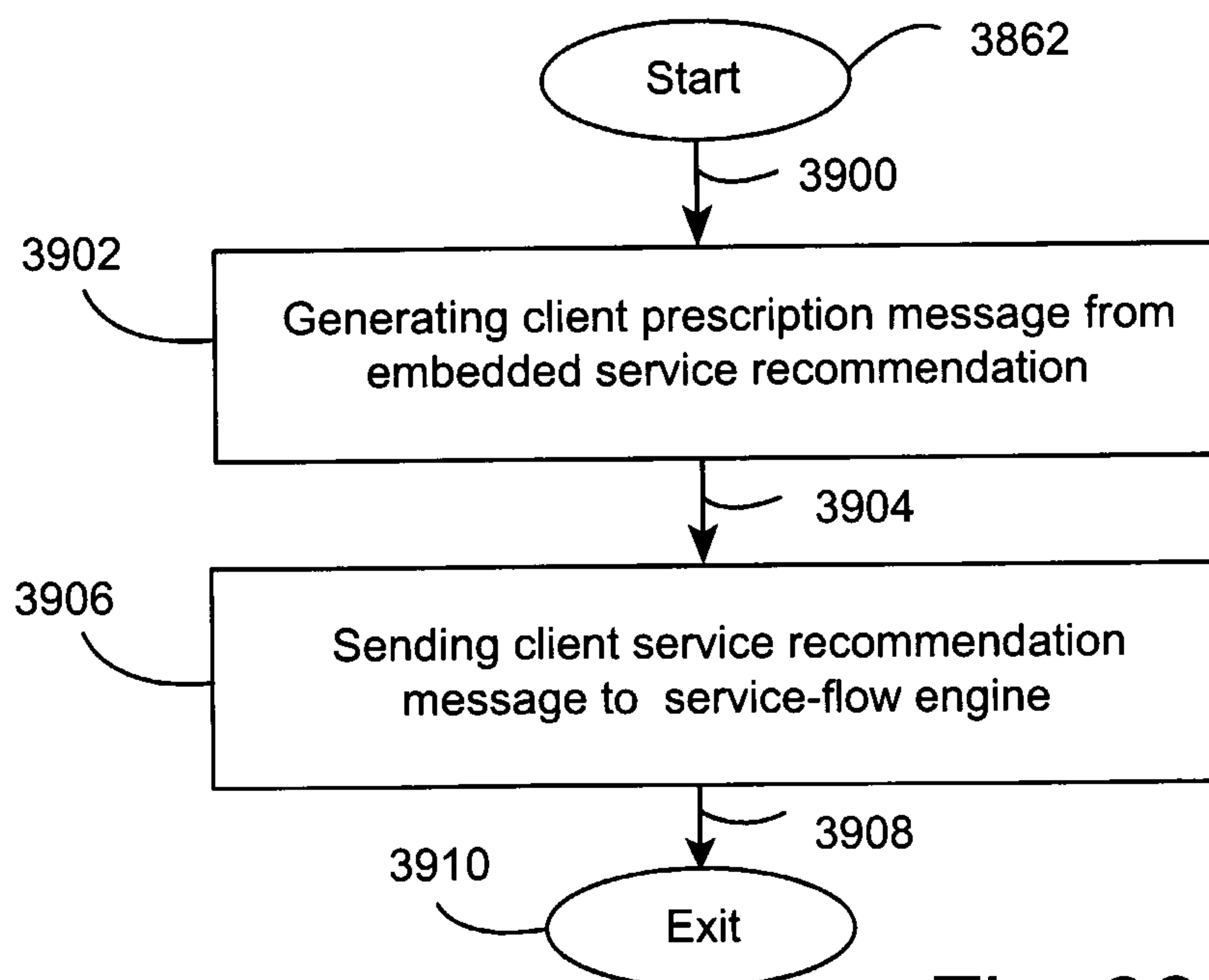


Fig. 98

83/86

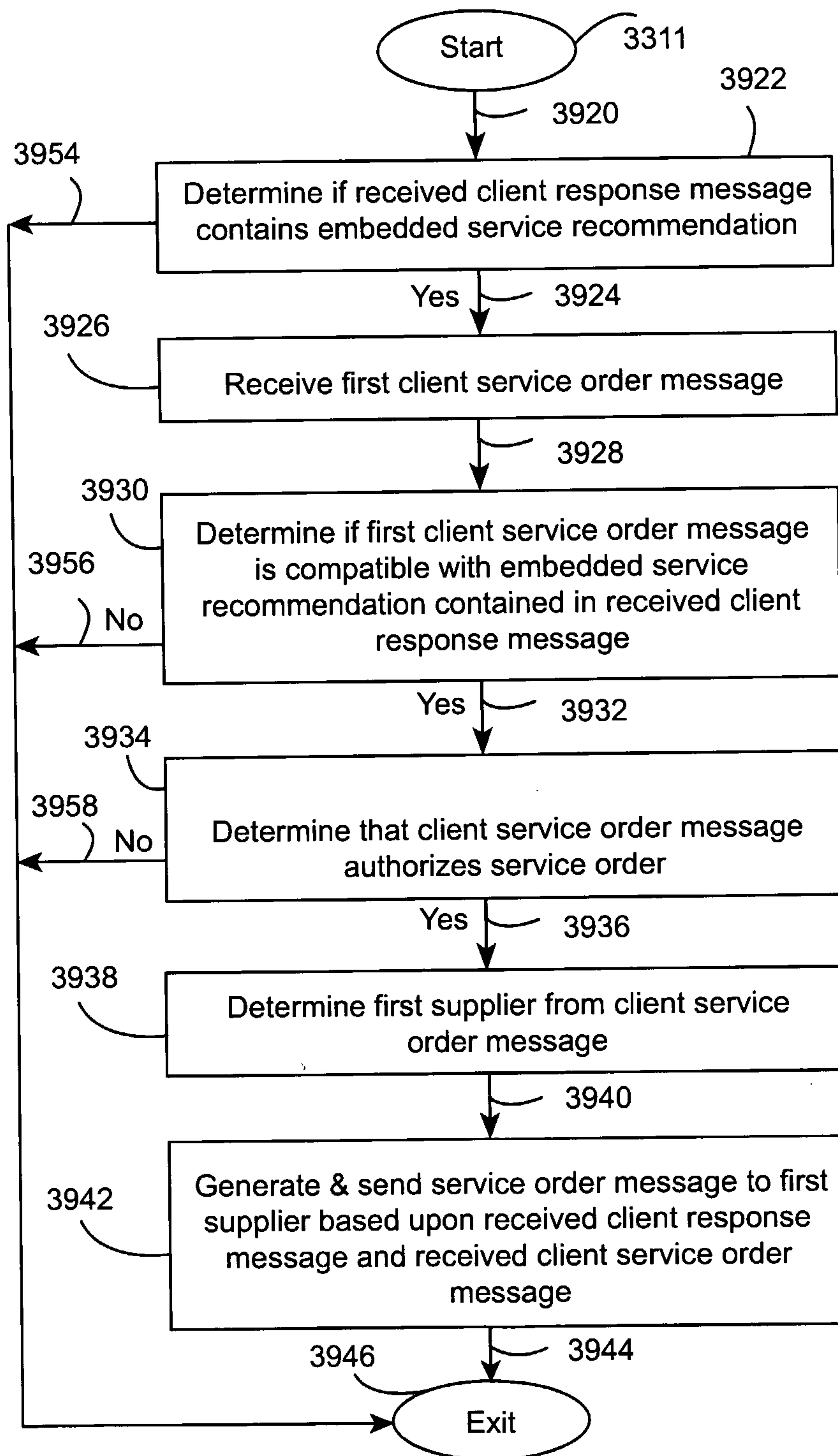


Fig. 98A

84/86

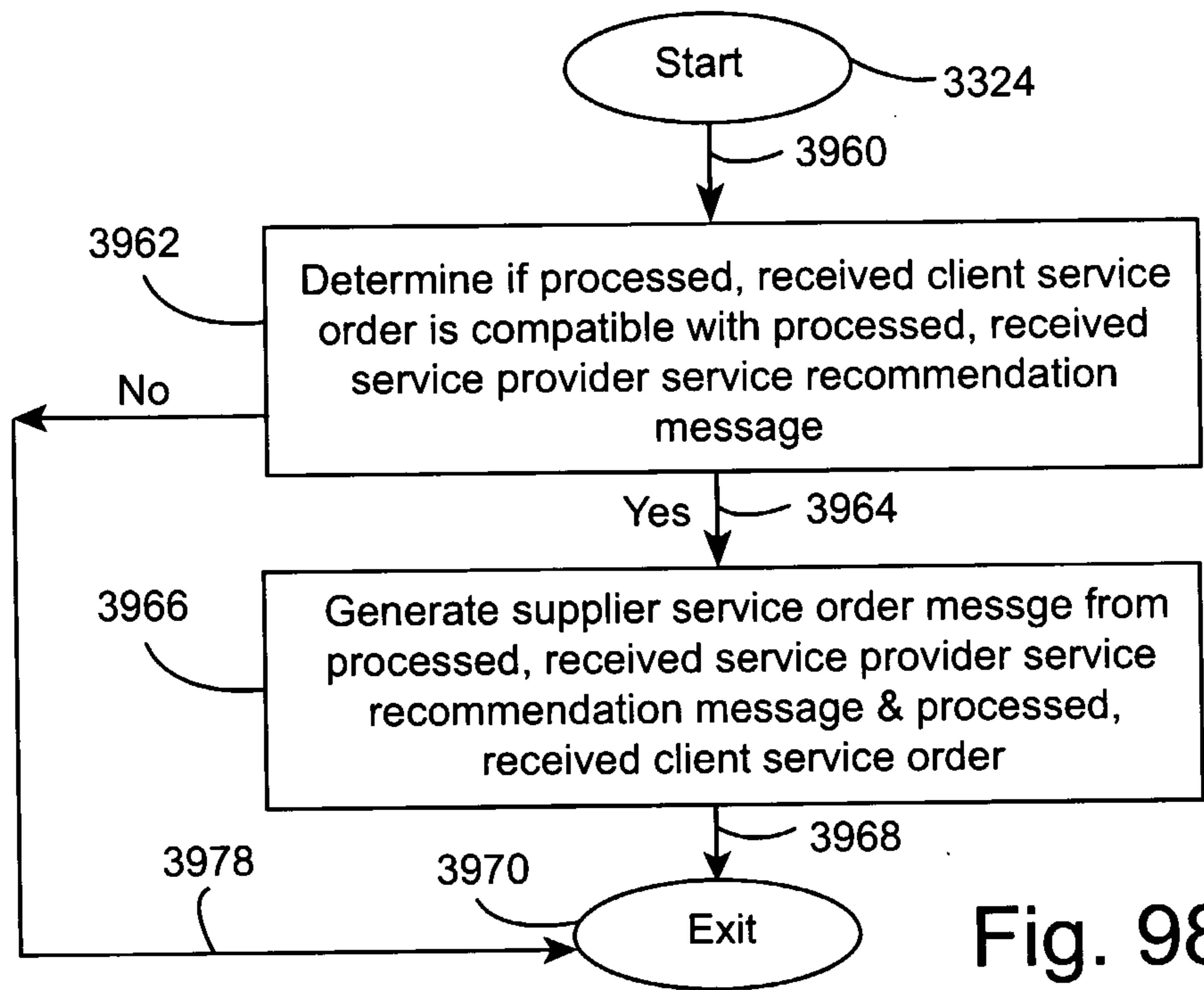


Fig. 98B

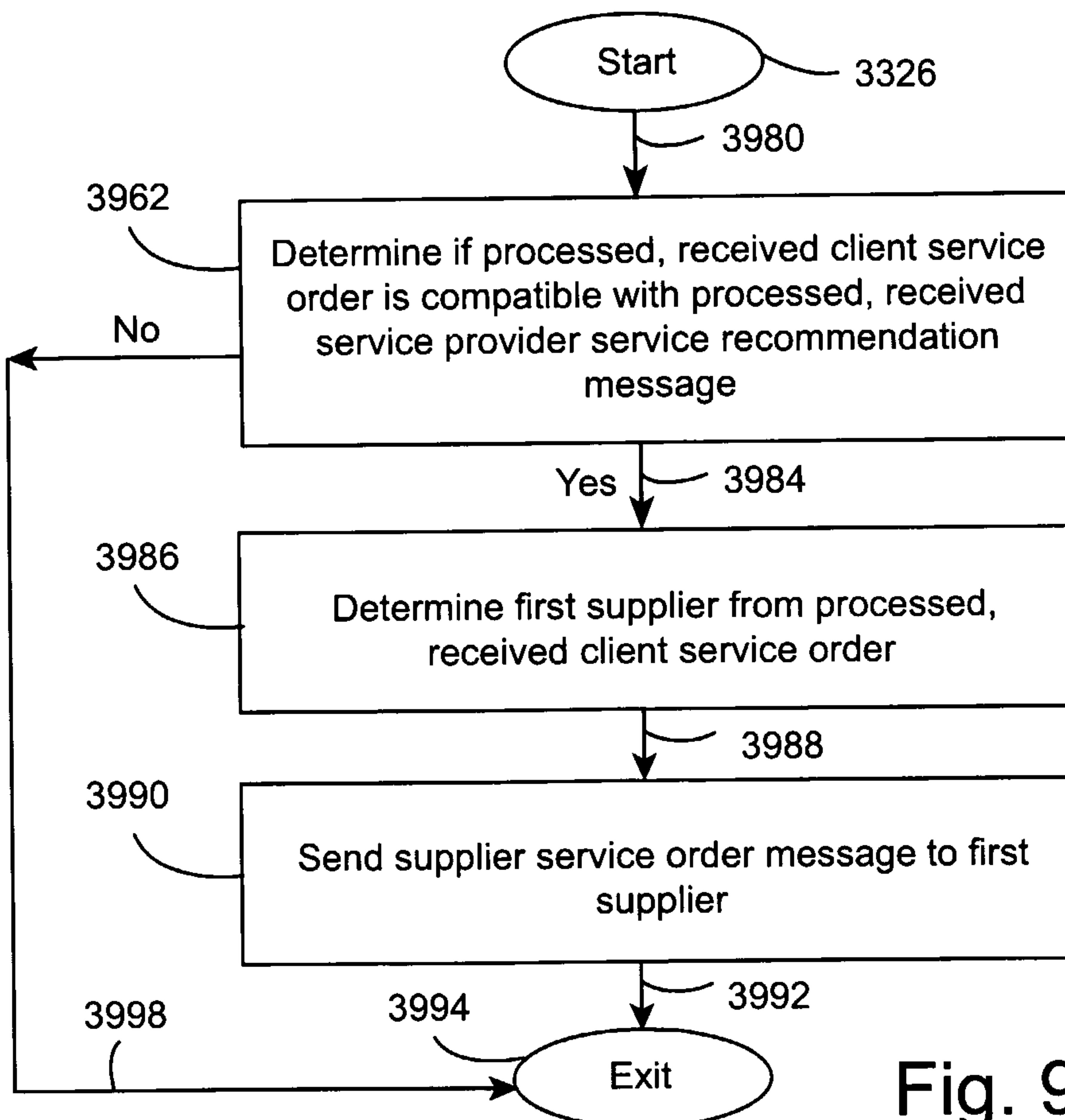


Fig. 98C

85/86

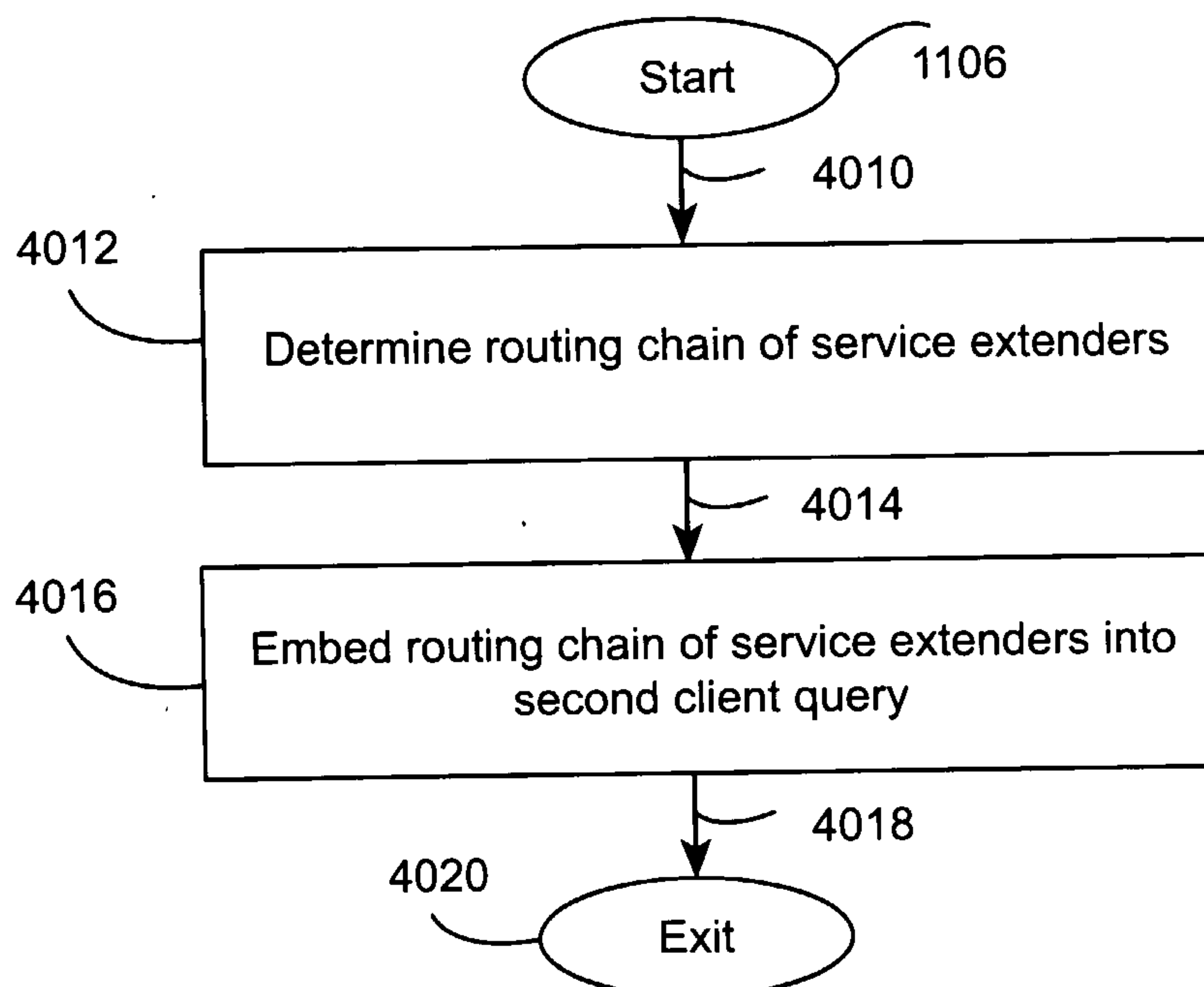


Fig. 98D

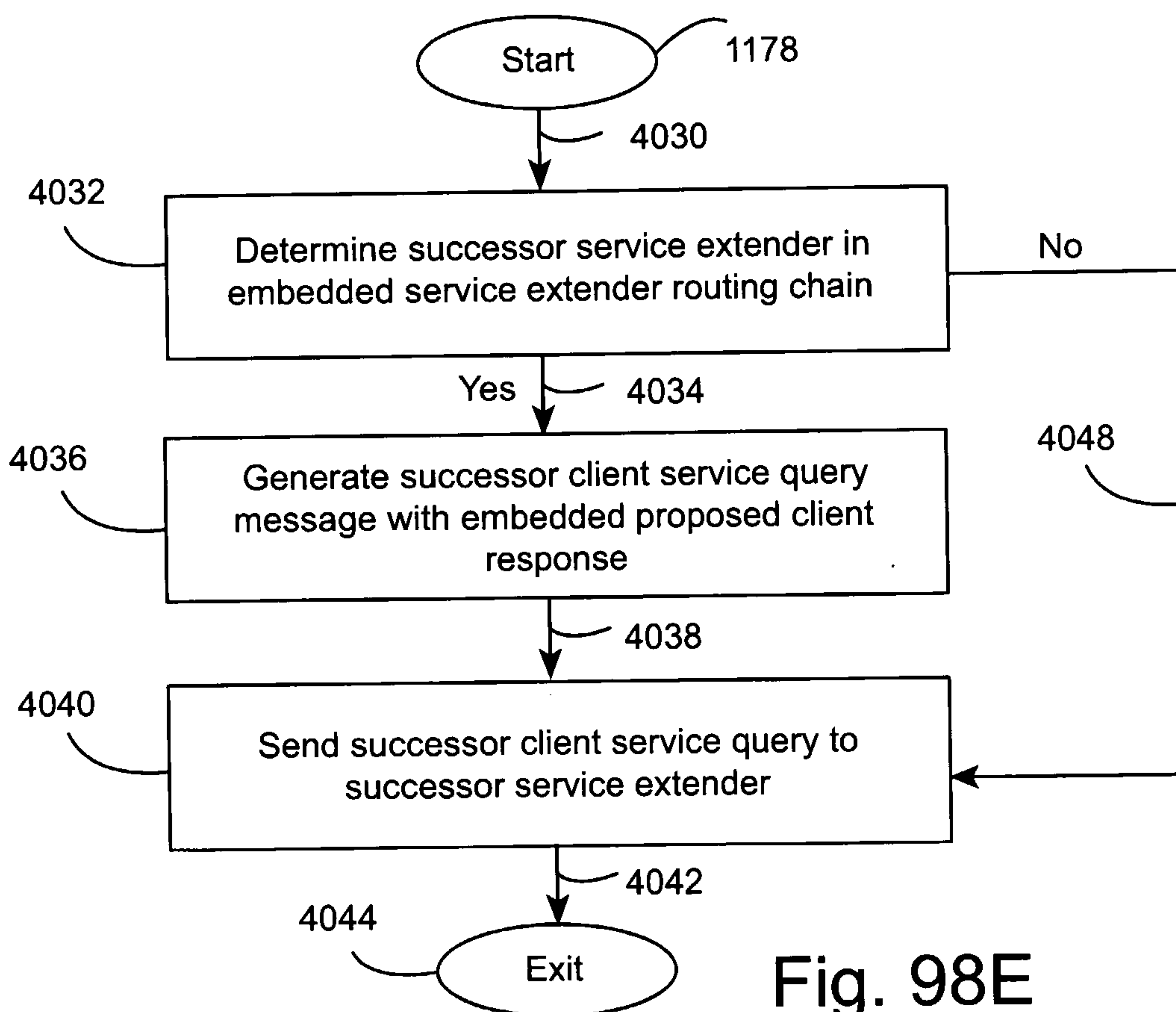


Fig. 98E

86/86

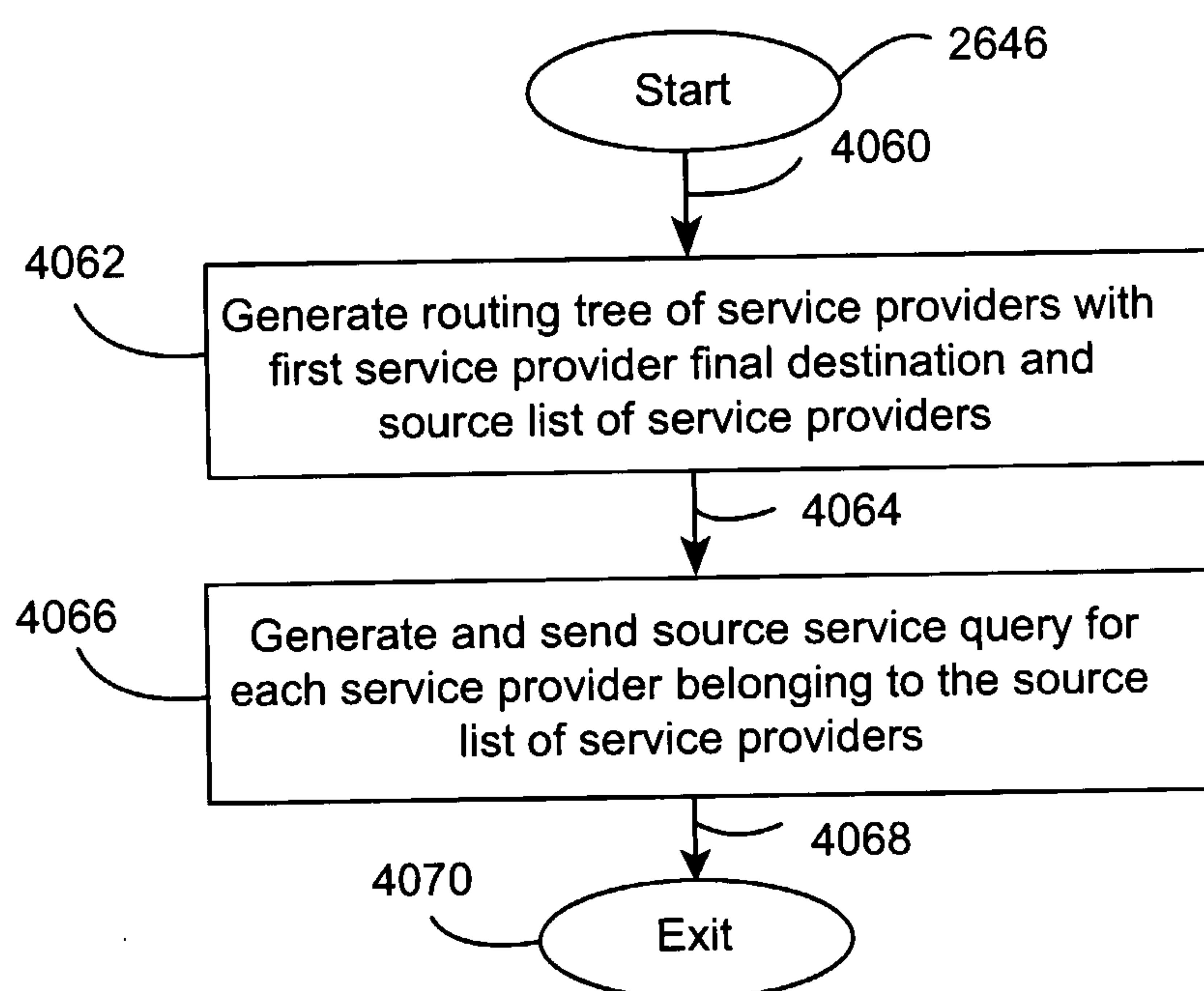


Fig. 98F