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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04M 3/50 // 1/65

A1

(11) International Publication Number: **WO 98/39903**

(43) International Publication Date: 11 September 1998 (11.09.98)

(21) International Application Number: PCT/FI98/00201

(22) International Filing Date: 6 March 1998 (06.03.98)

(30) Priority Data:
970962 6 March 1997 (06.03.97) FI

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published

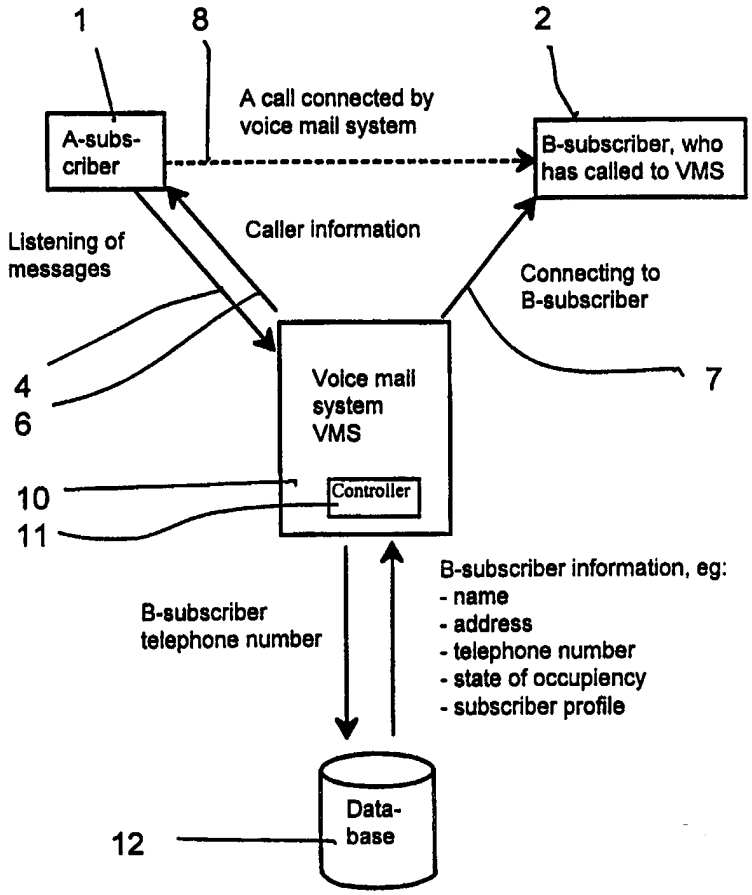
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: AUTOMATIC CALL BACK SERVICE IN A TELEPHONE ANSWERING SYSTEM

(57) Abstract

The method and a system of the present invention relates to a telecommunications network answering service. It is, when required, possible to connect a B–subscriber to a voice mail system as the B–subscriber calls to an A–subscriber, and wherein the A–subscriber may later receive from said voice mail system a message given by the B–subscriber or an announcement that the B–subscriber has tried to call to the A–subscriber. Said voice mail system establishes an operational connection from the A–subscriber to the B–subscriber when said message or announcement about the caller is given to the A–subscriber.



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AUTOMATIC CALL BACK SERVICE IN A TELEPHONE ANSWERING SYSTEM

Field of the invention

The present invention relates to telephone answering services and more precisely to a method and a system for improving the usability and/or characteristics of the answering services.

Background of the invention

Different kinds of separate telephone answering machines are prior known in the art. This kind of answering machines are disposed physically close to the subscriber terminal, and the subscriber uses and controls them eg. by pressing control buttons or a control switch of the answering machine. These prior art answering machines can even be controlled by means of so called remote control from another terminal.

In addition to these fixedly to the telephone terminals attached answering machines, a recent development has introduced so called answering services used in the fixed public telephone networks or in analog or digital mobile telephony networks. In these services the subscriber needs no longer to purchase a separate answering machine, but he/she may utilize the answering system implemented within the public telephone network, such as in a PSTN (Public Switched Telephone Network) or PLMN (Public Land Mobile Network). These systems are sometimes referred to as voice mail systems.

According to one sophisticated answering service a telephone answering facility is provided into the telecommunications network, which is arranged such that it can be used by all subscriptions of the network in a common calling number. When the calling party (the B-subscriber) tries to access the

called party (the A-subscriber), which does not answer or has otherwise activated the answering service, the caller is connected to the answering facility in which he/she may leave a message. According to one feature of the arrangement, in a case where the caller does not leave any message, a voice message may be given to the A-subscriber, ie. to the subscriber of the called number, which includes the telephone number of the caller. To provide this a signalling transmitted on the network is utilized, such as a Telephone User Part (TUP) of a Common Channel Signalling, ie. so called TUP signalling, by means of which the answering system receives necessary information of the calls and the callers (for the details, see eg. CCITT recommendations Q.721 - Q.275).

Summary of the invention

Even though the above arrangement has provided some advantage to the users of the answering service, the use thereof has, however, still been difficult in many instances. For instance, it does not give a telephone number in such a case in which a message has been given. The message dictated by the caller does not always include the number of the caller or similar contact information, and sometimes there is no actual message left at all, but the message contains only eg. a "silence" caused by the embarrassment of the caller or some unrecognizable background noise. Furthermore, it may be difficult to remember the telephone number given as a voice message, or to write it down, especially when no pen and/or paper is available when listening the message. The easiness of using said arrangement is also decreased by the fact that the number which has been received by listening has to be redialled on the telephone terminal after it has been received. This increases possibility for incorrect keying, especially together with the possibility that the number has been incorrectly received when listening the message.

Therefore it is an object of the invention to provide a method

and a system for an answering service which provides an improvement to the prior art.

It is also an object of the invention to provide a method and a system for an answering service, by means of which the A-subscriber avoids the need of remembering and/or storing the telephone number from which a call has been established to the answerer and/or the need of dialling or otherwise feeding it in to the A-subscriber terminal.

It is a further object of the invention to provide a method and a system for an answering service which decreases the possibility for a faulty call.

The invention is mainly based on the idea that it is possible to arrange a voice mail exchange system implementing the answering service to establish an operational connection between the called, ie. the A-subscriber, and the calling, ie. the B-subscriber.

According to the invention a method in a telecommunications network answering service is provided, wherein it is, when required, possible to connect a B-subscriber to a voice mail system as the B-subscriber calls to a A-subscriber, and wherein the A-subscriber may later receive from said voice mail system a message given by the B-subscriber or an announcement that the B-subscriber has tried to call to the A-subscriber. According to the essential feature of the invention said voice mail system establishes an operational connection from the A-subscriber to the B-subscriber when said message or announcement about the caller is given to the A-subscriber.

In an inventive system in a telecommunications network, to which subscribers may be connected to through a subscriber terminal, and which telecommunications network comprises a voice mail system for receiving messages from a B-subscriber to an A-subscriber or identification information of the

B-subscriber who has tried to call to the A-subscriber and for delivering them to the A-subscriber, the voice mail system comprises means for establishing an operational connection between said A-subscriber and the B-subscriber who made the original call.

Several advantages are obtained by means of the invention. The comfort of using the answering service is improved for instance such that the A-subscriber avoids remembering / storing telephone numbers from which he/she has received calls to the answering service. In addition, he/she does not need to feed these numbers in his/hers terminal if he/she wishes to respond to the call. A risk for calls to be directed to an incorrect number decreases since the possibility for errors related to receiving and infeeding of the number is removed.

In the following the present invention and the other objects and advantages thereof will be described in an exemplifying manner with reference to the annexed drawings, in which similar reference characters throughout the various figures refer to similar features. It should be understood that the following exemplifying description is not meant to restrict the invention to the specific forms presented in this connection but rather the present invention is meant to cover all modifications, similarities and alternatives which are included in the spirit and scope of the present invention, as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 discloses a schematic chart of a system according to the present invention.

Figure 2 discloses a simplified chart of another system according to the present invention.

Figure 3 discloses a flow chart for a call attempt by a B-subscriber which is directed to a voice mail exchange.

Figure 4 discloses a flow chart for the operation of a voice mail exchange according to one embodiment.

Description of the exemplifying embodiments

Figure 1 discloses a chart of an arrangement according to a preferred embodiment of the present invention. The disclosed A- and B-subscribers 1 and 2 are per se known subscribers of a PSTN network (Public Switched Telephone Network). The PSTN may be of any known type, such as a fixed land line network or an analog or a digital mobile telephone network. The necessary equipment for the PSTN, such as the exchanges, devices implementing the wired connections or the wireless connections etc., is per se well known technique by the skilled person, and thus, for the purposes of clarity, it is not described in more detail in this connection.

The number of the subscribers in one PSTN network is, naturally, not limited to two, but for the purposes of clarity this figure does not disclose a greater number of them. The subscribers are connected to the PSTN network by means of a suitable terminal device, such as a fixed line telephone or mobile telephone, in a manner known per se. It is to be noted that for instance the subscribers A and B of figure 1 may also be connected to different networks run by competing operators without any affect to the invention.

The A-subscriber has an operational connection with the voice mail system 10 of the PSTN network. An operational connection to the voice mail system 10 is also created to the B-subscriber 2, who is the calling party, in such case that the A-subscriber 1 does not answer, or that the A-subscriber has otherwise activated the answering service in a manner known per se. (See also the flow chart of fig. 3 for a call attempt).

The voice mail system 10 comprises per se known means to receive and store the messages left by the B-subscriber. In

addition, it comprises means 11 for controlling the operation, such as a central processing unit, CPU, or one or several microprocessors, for controlling and connecting the calls in a manner described later on.

Database 12 is connected operationally to the voice mail system 10. The database 12 may include various predetermined information, such as subscriber information comprising the name, telephone number, address and subscriber status (busy, free, call forwarding activated etc.) and a subscriber profile of an individual subscriber. The arrangement is preferably such that when the voice mail system 10 delivers the telephone number of the caller 2 or similar indication of the caller 2 to the database 12, the database sends as response predetermined information retrieved from the database records thereof to the voice mail system 10. Said control means 11 of the voice mail system 10 are arranged to utilize this information in accordance with the present invention.

Suitable means for the telephone network databases are per se known, and they are used for instance in connection with charging as well as number and address inquiry services, or for storing subscriber profiles, subscription information etc. Databases such as HLR (Home Location Register) and VLR (Visitor Location Register) are known from the mobile telephony.

In the improved answering service according to the present invention it is possible to utilize so called three party service. In general this means that it is possible to introduce a new party into the connection between two parties, whereby the connection simultaneously comprises three parties, ie. three subscribers. In addition to this conference services are known, in which more than three subscribers may attend the same call. The service having three or more parties, and the implementation and the release of the required connections is a technique per se known in the art, and is thus not explained in more detail here.

The following description of an exemplifying embodiment is given with reference to figures 1 and 4. In a system according to the invention the A-subscriber 1 calls to the voice mail system 10 to check the messages left thereto. Simultaneously the A-subscriber 1 may be provided with information which relates to the caller (B-subscriber), either as a voice message by means of a speech synthesizer connected to the voice mail system 10 or for instance as a text message on the display of the telephone or an auxiliary device thereof. Said information is retrieved from the database 12 to the control means 11 of the system 10 as a response to the telephone number of the B-subscriber 2, as was described above.

At this stage the voice mail system 10 establishes a connection 7 to the calling party, ie. to the B-subscriber 2. The establishment of the connection 7 may be performed either by a request of the A-subscriber or automatically. At this stage the established connection resembles the three party call in which the A- and B-subscribers 1 and 2 form two parties and the voice mail system 10 forms the third party. At thus stage the voice mail system 10 can be seen as the party who provides the "main connection" for the call involving three parties.

When the connection of the three parties 1, 2 and 10 is ready, the voice mail system 10 releases it's connections to the A- and B-subscribers, wherein the only remaining connection is the direct connection 8 between the A- and B-subscribers 1 and 2. Thus a connection is established from the A-subscriber to B-subscriber without a need for the A-subscriber to know the number of the B-subscriber, or to write it down from a voice message and/or to feed it in by the keys of his/hers terminal.

Figure 2 discloses one another exemplifying embodiment for improving the voice mail service. Figure 2 discloses, in addition to the A- and B-subscribers, respective local exchanges 20 and 22, and a voice mail system (VMS) 10 implementing the voice mail service. The voice mail system includes also a

telephone exchange (not shown). The local ie. branch exchanges 20 and 22 may, naturally, be another type of exchanges than local exchanges. It is also to be noted that even though figure 2 discloses only two exchanges and the connections therebetween, they form only a part of a larger telecommunications network, to which a plurality of other subscribers and exchanges therebetween may be connected to. Said exchanges may also belong to a networks of two different operators.

According to this embodiment the A-subscriber calls to the VMS 10 so as to check his/hers mail. The VMS 10 provides the A-subscriber with an information that the B-subscriber has called. The B-subscriber may have left a voice message which the A-subscriber can then listen, if he/she wishes to do so. However, this has no effect to the invention itself. Instead it is essential that if the A-subscriber wishes now to establish a call to the B-subscriber, he/she requests said VMS 10 to establish the connection to the B-subscriber, eg. by pressing a certain key in his/her terminal. After this the exchange apparatus of the VMS connects him/her to the B-subscriber through the exchange 22.

In case the B-subscriber is busy, or does not answer, the call may be returned to the VMS 10, and the A-subscriber may pick up the next message left to him/her. Correspondingly, in case the B-subscriber answers, the A-subscriber may at the end of the call return directly to the VMS 10 to check the subsequent messages without a need for a new establishment of the connection from the A-subscription to the VMS between these operations. The VMS 10 includes appropriate control means, which may be based eg. on a microprocessor, for implementing these operations, as was explained in connection with figure 1.

The VMS 10 may also receive the billing information which relates to the call from the local exchange 22 of the B-subscriber, and transfer it further to the local exchange 20 of the A-subscriber. Thus it is possible to charge the A-subscri-

ber, when necessary, of the connection from the VMS 10 to the B-subscriber 2 in addition to the costs for the A-subscriber 1 from his/hers connection to the VMS.

Additional operations, such as an announcement of the location (country, operator etc.) of the B-subscriber, an information about the price of the connection etc. can also be attached to the information possibly send to the A-subscriber.

The solutions of figures 1 and 2 may naturally be combined eg. such that the A-subscriber can decide whether the connection to the VMS 10 is released or if he/she wishes to return to the VMS after ending the discussion with the B-subscriber. It is also clear that the VMS or voice mail exchange 10 may form a simultaneous connection to several therein called subscribers or that a conference call may be arranged both between those who have called to the VMS 10 and other subscribers selected by the A-subscriber.

Many other variations are also possible without departing from the spirit and scope of the invention. Thus it is to be understood that the above examples of the embodiments of the invention are not intented to limit the scope of the invention as defined by the appended claims.

Claims

1. A method in a telecommunications network answering service, wherein it is, when required, possible to connect a B-subscriber to a voice mail system as the B-subscriber calls to a A-subscriber, and wherein the A-subscriber may later receive from said voice mail system a message given by the B-subscriber or an announcement that the B-subscriber has tried to call to the A-subscriber, c h a r a c t e r i z e d in that said voice mail system establishes an operational connection from the A-subscriber to the B-subscriber when said message or announcement about the B-subscriber who has called is given to the A-subscriber.

2. A method according to claim 1, c h a r a c t e r i z e d in that it comprises a step of retrieving a predetermined subscriber information of the B-subscriber who has called, such as telephone number, name, address or similar, from a database operationally connected to the voice mail system.

3. A method according to claim 1 or 2, c h a r a c t e r i z e d in that said establishing of the connection comprises a step of forming a three party telephone call such that a call by the A-subscriber to the voice mail system establishes a first connection between a first party and a second party, whereafter the voice mail system calls to the B-subscriber, whereby necessary connection between the second and a third party becomes established.

4. A method according to any of the preceding claims, c h a r a c t e r i z e d in that the voice mail system establishes a direct connection between the A-subscriber and the B-subscriber and thereafter releases it's connections to the A-subscriber and to the B-subscriber.

5. A method according to any of the preceding claims, c h a r a c t e r i z e d in that it further comprises a step of

transmitting a charging information concerning the connection between the voice mail system and the B-subscriber through the voice mail system to an exchange of the A-subscriber.

6. A method according to any of the preceding claims, c h a r a c t e r i z e d in that the connection of the A-subscriber to the voice mail system is returned in case the B-subscriber is busy, does not answer or when the call with the B-subscriber ends.

7. A system in a telecommunications network to which subscribers may be connected to through subscriber terminals, said telecommunications network comprising a voice mail system for receiving messages from a B-subscriber to an A-subscriber or identification information of the B-subscriber who has tried to call to the A-subscriber and for delivering them to the A-subscriber, c h a r a c t e r i z e d in that the voice mail system comprises means for establishing an operational connection between said A-subscriber and said B-subscriber who made the original call.

8. A system according to claim 7, c h a r a c t e r i z e d in that it further comprises database means which are operationally connected to the voice mail system for storing a predetermined subscriber information, said voice mail system comprising control means adapted to request the predetermined subscriber information from the database means as response to an identification of the B-subscriber who has called, such as response to the telephone number of the B-subscriber, and thereafter to perform predetermined operations, such as indicating the subscriber information to the called A-subscriber and/or establishing an operational connection between the A-subscriber and the B-subscriber.

9. A system according to claim 7 or 8, c h a r a c t e r i z e d in that it further comprises means for transmitting charging information concerning the connection between the

voice mail system and the B-subscriber through the voice mail system to an exchange of the A-subscriber.

10. A system according to any of claims 7 - 9, c h a r a c - t e r i z e d in that it further comprises means for releasing the operational connection to the B-subscriber established by means of the voice mail system and to return the connection to be only a connection between the A-subscriber and the voice mail system.

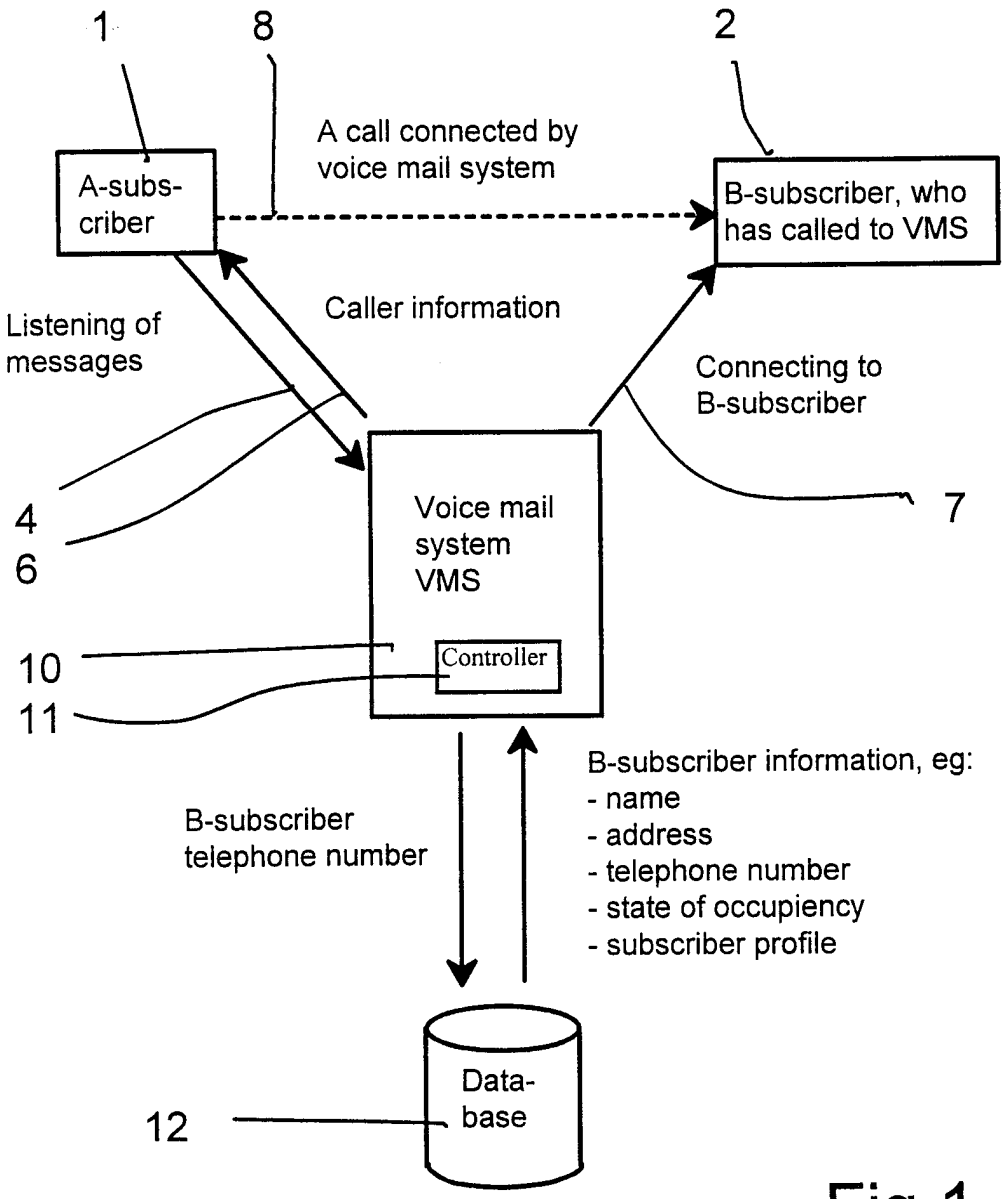
1
8
2
A call connected by voice mail system
A-subs-criber
B-subscriber, who has called to VMS
Caller information
Listening of messages
Connecting to B-subscriber
4
6
7
Voice mail system VMS
Controller
10
11
B-subscriber information, eg:
- name
- address
- telephone number
- state of occupiency
- subscriber profile
B-subscriber telephone number
Data-base
12

Fig 1

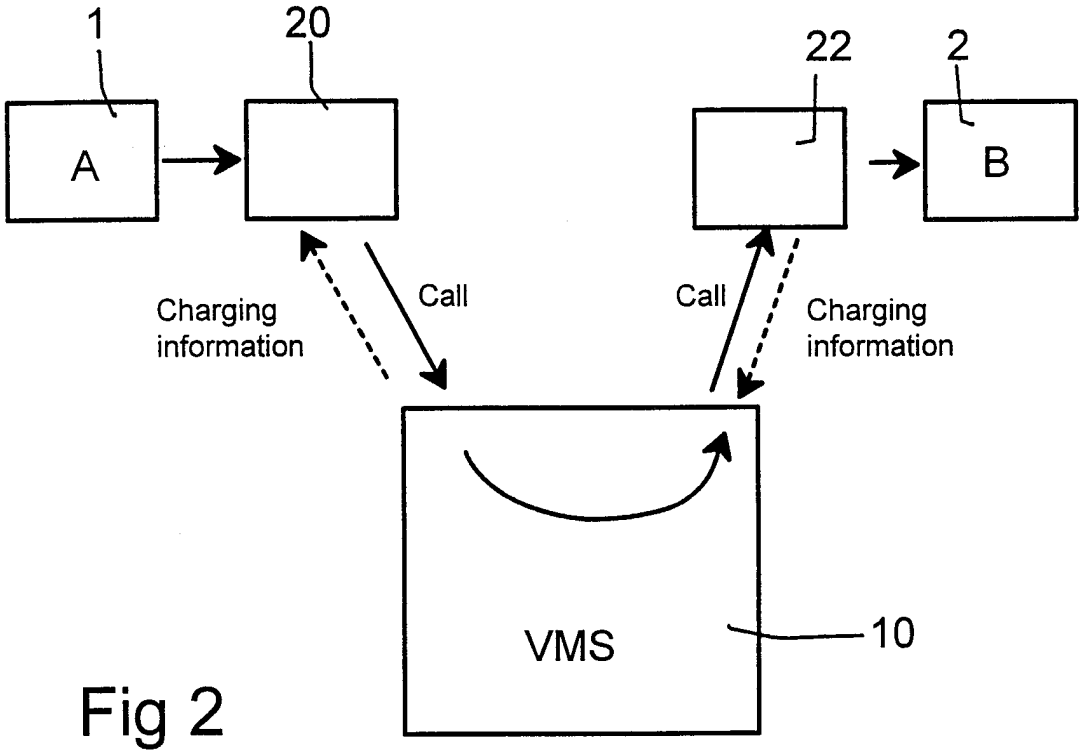
1
20
22
2
A
B
Charging information
Call
Call
Charging information
VMS
10

Fig 2

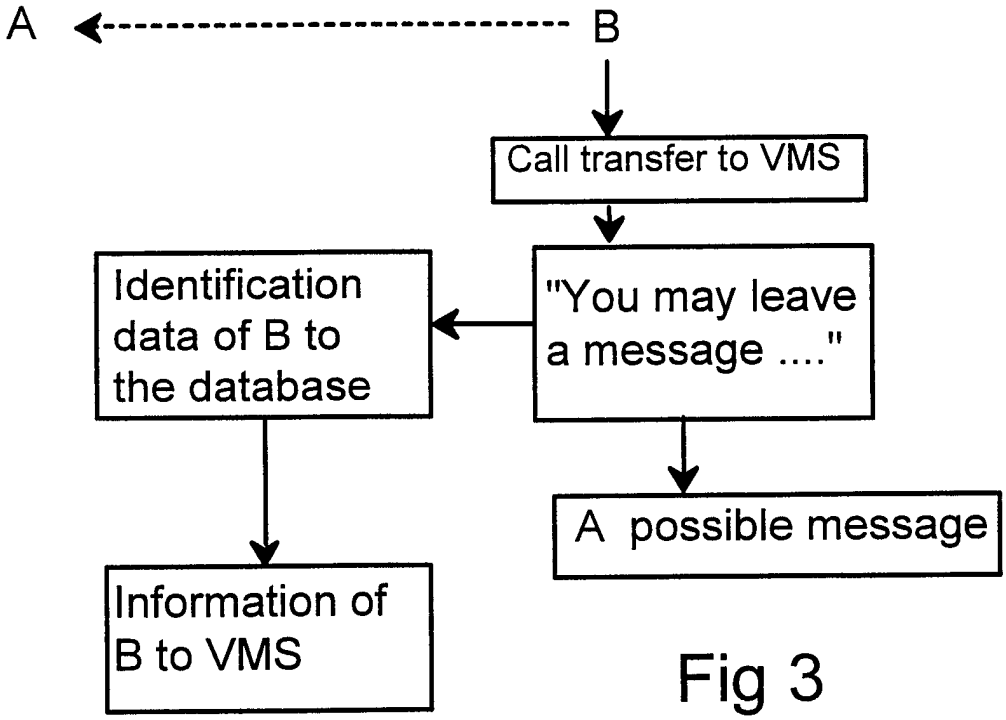
A
B
Call transfer to VMS
Identification data of B to the database
"You may leave a message ...."
A possible message
Information of B to VMS

Fig 3

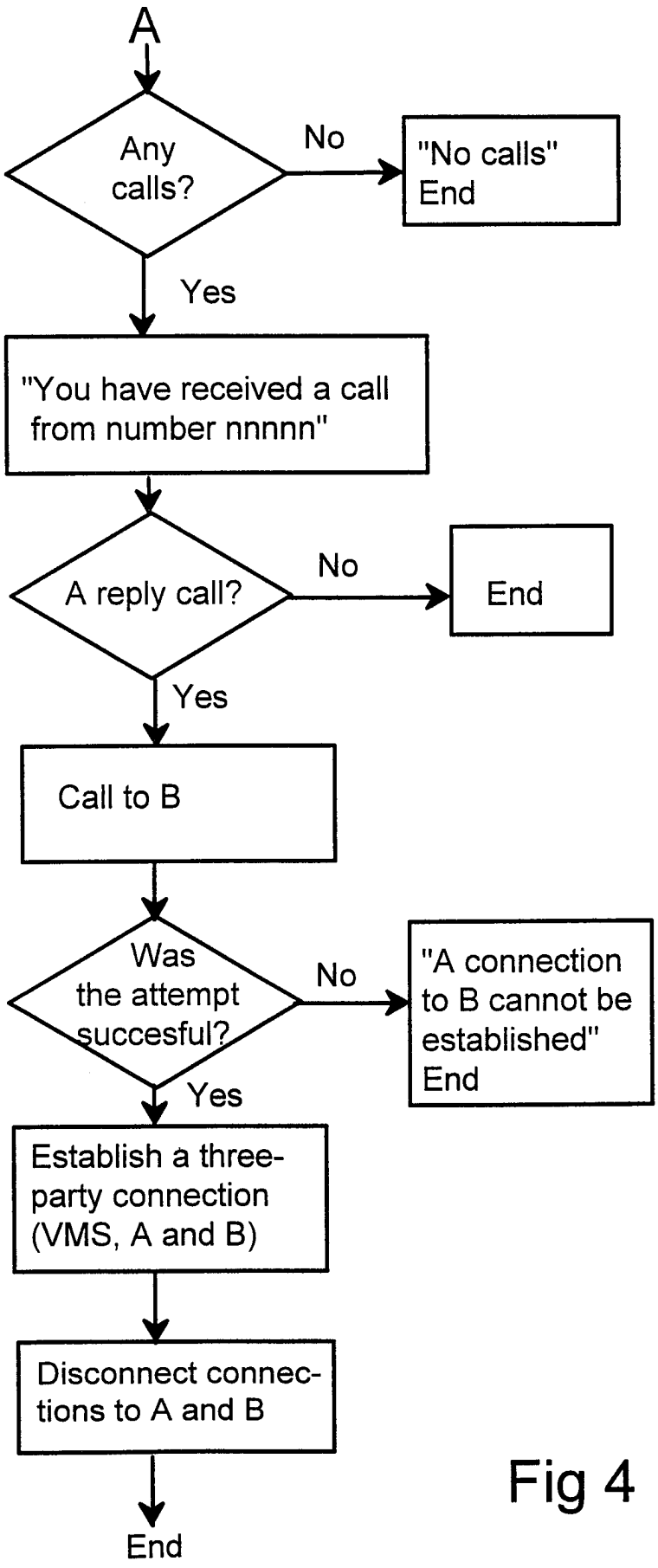
A
Any calls?
No
"No calls" End
Yes
"You have received a call from number nnnnn"
A reply call?
No
End
Yes
Call to B
Was the attempt succesful?
No
"A connection to B cannot be established" End
Yes
Establish a three-party connection (VMS, A and B)
Disconnect connec-tions to A and B
End

Fig 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 98/00201

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 3/50 // H04M 1/65
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, JAPIO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y		3-6,9-10
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X	EP 0619668 A2 (AT&T CORP.), 12 October 1994 (12.10.94), page 1, line 34 - line 51; page 5, line 4 - page 6, line 24	1
Y		6-10
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Y	US 5438616 A (JOHN T. PEOPLES), 1 August 1995 (01.08.95), page 1, line 49 - page 2, line 7; page 2, line 57 - page 3, line 10	3-5,9
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 July 1998	17 -07- 1998
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Friedrich Kühn Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 98/00201

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

30/06/98

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