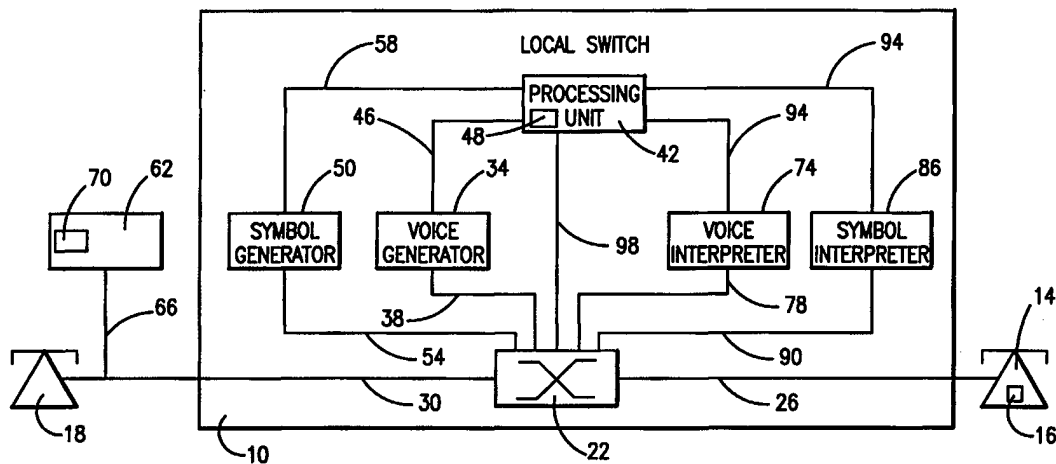




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US97/22680 (22) International Filing Date: 12 December 1997 (12.12.97) (30) Priority Data: 08/766,974 16 December 1996 (16.12.96) US (71) Applicant: ERICSSON INC. [US/US]; 7001 Development Drive, P.O. Box 13969, Research Triangle Park, NC 27709 (US). (72) Inventor: STRICKLAND, David; 3416 Sheffield, Plano, TX 75075 (US). (74) Agents: BACON, Jeffery, E. et al.; Jenkins & Gilchrist, P.C., Suite 3200, 1445 Ross Avenue, Dallas, TX 75202 (US).</p>		<p>(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, 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).</p> <p>Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: METHOD AND APPARATUS FOR ROUTING AN ANONYMOUS CALL



(57) Abstract

An apparatus and method are disclosed for playing an announcement to a calling party that is placing a call in an anonymous manner to prompt the calling party to respond in a manner which causes a switch to make the call identifiable by the called party. The apparatus is operable to play the announcement if the called party is a subscriber to anonymous call rejection and has activated the feature and if the calling party is calling in an anonymous mode. If the calling party does not respond within a specified time period the call is blocked. Specified responses include verbal responses as well as key entries on the calling party phone. A typical specified time period is five seconds.

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METHOD AND APPARATUS FOR ROUTING AN ANONYMOUS CALL

BACKGROUND OF THE INVENTION

Technical Field of the Invention

5 This invention relates generally to the telecommunications field, and more specifically, to a method and apparatus for responding to anonymous calls within a telecommunications network.

10 Description of Related Art

 Traditionally, the home telephone has facilitated communications between friends and family. However, many calls received during the evening are from organizations seeking to sell products or collect
15 donations. Because these calls are unsolicited and usually unwelcome, there is a great demand for subscriber features which enable telephone customers to curtail the ability of outside organizations to invade their privacy at home. Exemplary and commonly known subscriber features
20 which have been developed to help the consumer include Caller ID, Anonymous Call Rejection, Specified Call Blocking and Do Not Disturb. In general, these features either provide information to the called party about an incoming call or operate to reject a call for a specified
25 reason.

 A problem with anonymous call rejection is that an anonymous calling party is forced to hang-up and redial the called party phone number in a non-anonymous manner. In other words, the call is routed with specified
30 information which identifies the calling party. Frequently, telephone service subscribers make outgoing calls anonymous by default. This capability is often ordered as a part of the telephone service provided by the phone company. Consequently, all outgoing calls are
35 unidentifiable anonymous calls.

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In some situations, however, a calling party is unable to deactivate the anonymous call feature after a call has been blocked. For example, a calling party's employer may require all calls to be made anonymously through default, as described above. Accordingly, a calling party that is an employee will not be authorized to deactivate the anonymous calling feature. In other scenarios, the calling party may not know the anonymous call feature deactivation code. In both of these cases, a call will not be connected to the called party because the calling party was not able to deactivate the anonymous call feature. Even if the calling party is able to deactivate the anonymous calling feature, the calling party must, under current systems, hang up, dial a specified code, and redial the called party phone number in order to place the call. What is needed, therefore, is a way to allow a calling party to deactivate the anonymous calling feature for a current call without being forced to hang-up and redial.

20

SUMMARY OF THE INVENTION

A method and apparatus are provided for allowing an anonymous call to be completed without forcing the calling party to hang up and redial even though the called party's active subscriber features include anonymous call rejection. An announcement prompts the calling party to selectively de-activate the anonymous call feature to make the call identifiable. The call becomes identifiable if the calling party's caller ID, or phone number, may be transmitted to the called party. The system may only transmit the calling party phone number, however, if the calling party responds in a specified manner to the announcement. Consequently, the anonymous calling party becomes identifiable during the present call and avoids having the call blocked even if the anonymous call blocking feature is presently activated for the called party.

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BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the method and apparatus of the present invention may be obtained by reference to the following Detailed Description along with the accompanying Drawings wherein:

Figure 1 is a functional block diagram that illustrates one embodiment of the present invention as implemented within a local switch;

Figure 2 is a functional block diagram that illustrates a second embodiment of the present invention as implemented within an advanced intelligent network; and

Figure 3 is a flow chart that illustrates a method for allowing an anonymous caller to become identifiable, in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Figure 1 is a functional block diagram that illustrates one embodiment of the present invention. Referring to Figure 1, a local switch 10 for connecting a calling party phone 14 having a keypad 16 to a called party phone 18 is shown. Local switch 10 includes a router 22 which is connected to calling party phone 14 by line 26 and to called party phone 18 by line 30. Generally, router 22 is for connecting one phone line to another and for connecting feature devices within switch 10 to the phone lines carrying a particular call. Feature devices are those devices which are used by a telecommunication network to support subscriber features such as caller ID, call blocking, etc.

One feature device within local switch 10 is a voice generator 34 for generating messages to be played either to a called party or to a calling party. Voice generator 34 is connected to router 22 by line 38 and to processing unit 42 by line 46. Local switch 10 also includes a symbol generator 50 which is connected to router 22 by line 54 and to processing unit 42 by line 58. Symbol

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generator 50 is for generating signals which cause specified symbols to be displayed on a display device. For example, symbol generator 50 can generate signals to cause caller ID display 62, which is connected to line 30
5 by line 66, to display a specified symbol to identify a caller by name or by number. Caller ID display 62 receives signals on line 66 to generate a symbol 70, which symbol 70 identifies the caller.

Local switch 10 further includes a voice interpreter
10 74. Voice interpreter 74 is connected to router 22 by line 78 and to processing unit 42 by line 82. Voice interpreter 74 is for detecting speech or other sounds produced at a telephone and for interpreting the speech or other sounds.

Local switch 10 further includes a symbol interpreter
15 86. Symbol interpreter 86 is connected to router 22 by line 90 and to processing unit 42 by line 94. Symbol interpreter 86 is for detecting and for interpreting a dual tone multi-frequency (DTMF) signal produced at a
20 phone, which is produced whenever a key on a keypad of the telephone is depressed.

Local switch 10 also connects calling party phone 14 to called party phone 18 and to caller ID display 62. In the system shown in Figure 1, called party phone 18 is
25 connected to calling party phone 14 merely by router 22 within local switch 10. It is understood, however, that one or more tandem switches and local switches (not explicitly shown) may be included for connecting calling party phone 14 to router 22. As may be seen, processing
30 unit 42 is also connected to router 22 by line 98. Processing unit 42 transmits control commands to router 22 over line 98 to control the connections there within router 22.

In operation, local switch 10 determines whether the
35 anonymous call blocking subscriber feature is activated for the called party at called party phone 18 whenever a called party phone 18 is receiving a call. Local switch

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10 analyzes the content of store 48 within processing unit 42. Generally, store 48 includes a list of all telephones connected to and serviced by local switch 10 and their corresponding subscriber features. In another embodiment, however, store 48 could just as well maintain a list of those subscribers having the anonymous call blocking subscriber feature. Moreover, store 48 may also be external to processing unit 42 and coupled to provide data thereto. For example, store 48 may include a database coupled to local switch 10.

If the called party is a subscriber of the anonymous call blocking feature, local switch 10 then determines if the anonymous call blocking feature is presently activated for the called party. In the preferred embodiment, the called party anonymous call blocking feature is continuously activated. In another embodiment, however, the feature is selectable by the called party. For this embodiment, local switch 10 examines a specified stored signal to determine if the anonymous call blocking feature is presently activated. This specified stored signal may be stored either within store 48 or within another memory store (not explicitly shown in Figure 1).

If a call is being received for a called party when the anonymous call rejection feature is activated, local switch 10 prompts the calling party at calling party phone 14 to allow the calling party to be identifiable by the called party. To prompt the calling party, processing unit 42 sends a signal to voice generator 34 over line 46 which causes voice generator 34 to generate a specified announcement. This specified announcement is output on line 38 to router 22. The announcement instructs the calling party to respond either vocally or by keypad entry. Router 22 is operable to connect line 38 to line 26 to cause calling party phone 14 to receive the announcement generated by voice generator 34.

Whether the specified announcement generated by voice generator 34 instructs the calling party to respond by

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depressing a key or by responding verbally depends on the type of circuitry found within local switch 10. If local switch 10 includes only a voice interpreter 74, then the announcement generated by voice generator 34 instructs the calling party to respond verbally. If local switch 10 includes only a DTMF symbol interpreter 86, then the announcement instructs the calling party to respond by depressing a key on the key pad 16 of calling party phone 14. If local switch 10 includes both a voice interpreter 74 and a symbol interpreter 86, similar to the embodiment illustrated in Figure 1, then the announcement gives the calling party the option of responding by responding vocally or by depressing a key.

Referring still to Figure 1, voice interpreter 74 and symbol interpreter 86 are both connected to router 22 by lines 78 and 90, respectively. Router 22 connects lines 78 and 90 to line 26. Accordingly, voice interpreter 74 and symbol interpreter 86 are connected to receive and interpret the calling party response. Both voice interpreter 74 and symbol interpreter 86 are operable to interpret and determine whether the calling party at calling party phone 14 has responded in a manner which indicates that the calling party has granted permission to make the present call identifiable. Voice interpreter 74 and symbol interpreter 86 are also connected by lines 82 and 94, respectively, to processing unit 42 to produce a signal thereto specifying the calling party response. If the calling party does not respond within a specified amount of time, e.g., 5 seconds, the system will block the call. While the specified amount of time may be varied, it is generally preferable to minimize the delay for the calling party. Accordingly, a typical specified amount of time might be, for example, fifteen seconds or less.

Upon receiving a signal reflecting the calling party response or lack thereof, processing unit 42 transmits a signal on line 58 to symbol generator 50 specifying whether caller ID display 62 may display calling party

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information. In the system of Figure 1, symbol generator 50 responds by producing display signals on line 54. These display signals produced by symbol generator 50 include the calling party information as well as the signal which specifies whether caller ID display 62 may display calling party information. In another embodiment, however, symbol generator 50 only transmits display signals which identify the caller if the caller has given his or her permission. Accordingly, if the calling party responds by giving his permission to make the call identifiable, processing unit 42 transmits control commands on line 98 to router 22. The control commands cause router 22 to connect line 26 to line 30 and complete the call.

Referring again to Figure 1, router 22 connects line 54 from symbol generator 50 to line 30 which is connected to called party phone 18 and to caller ID display 62. Accordingly, when router 22 receives a signal from symbol generator 50 on line 54, that signal is transmitted on line 30 to caller ID display 62 and to called party phone 18. Caller ID display 62, which is connected to called party line 30 by line 66, receives the signal generated by symbol generator 50 and produces the corresponding symbol 70 for viewing by the called party. Symbol 70 can be in the form of numerals, letters, and other symbols which provide pertinent information about the calling party.

Local switch 10 instructs a calling party to identify the type of call either vocally or by keypad entry. This is because local switch 10 includes both a voice interpreter 74 and a symbol interpreter 86 to interpret the response by the calling party at calling party phone 14. Local switch 10 also includes a symbol generator 50 for producing specialized symbols to identify or provide information about the calling party. The embodiment illustrated in Figure 1 may be modified to include only voice interpreter 74 or symbol interpreter 86.

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Furthermore, the system shown in Figure 1 may be adapted for use with SS7 networks, public land mobile networks, and other types of communication networks.

Figure 2 is a functional block diagram that illustrates a second embodiment wherein the present invention is implemented within an advanced intelligent network ("AIN"). Referring now to Figure 2, the system of Figure 2 is similar to the system of Figure 1, and includes a symbol generator 50, a voice generator 34, a voice interpreter 74, a symbol interpreter 86 and a store 48. However, the AIN also includes a service switching point ("SSP") 106, a signal transfer point ("STP") 110, a service control point ("SCP") 114 and an intelligent peripheral ("IP") 120. The SSP 106, STP 110, SCP 114 and IP 120 are connected in a known AIN configuration. More specifically, as may be seen, calling party phone 14 is connected to switch 102 by line 104. Switch 102 is connected to SSP 106 by line 108. SSP 106 is connected to STP 110 by line 112. STP 110 also is connected to SCP 114 by line 116. IP 120 is connected to SSP 106 by line 118. It is understood that any one of a voice generator 34, a voice interpreter 74, a symbol interpreter 86, store 48 and symbol generator 50 may be implemented as a part of standard AIN circuitry as described above or as separate circuitry coupled thereto.

The functionality of the commonly numbered elements within Figures 1 and 2 is the same for the embodiments shown in Figures 1 and 2. For example, voice generator 34 of Figure 1 is shown as a system within local switch 10. In the embodiment shown in Figure 2, however, voice generator 34 preferably resides within IP 120. Nonetheless, the functionality for voice generator 34 is similar for each of the two embodiments. For each embodiment, voice generator 34 is operable to play announcements to calling party at calling party 14.

Operationally, SSP 106 analyzes the called party information for a call being placed by calling party phone

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14, and determines whether an AIN treatment is needed and whether the subscriber has AIN capabilities. SSP 106 then sends an inquiry message to STP 110 over line 112. STP 110 then transmits the inquiry message to SCP 114 over
5 line 116. SCP 114 then analyzes the contents of store 48 to determine that called party phone 18 is a subscriber of the anonymous call rejection subscriber feature. If that feature is activated for called party phone 18, SCP 114 sends a response message to SSP 106 via STP 110. SSP
10 106 then prompts IP 120 to cause voice generator 34 to play a specified announcement. The message generated by voice generator 34 is routed to calling party phone 14. Similar to the system of Figure 1, SSP 106 delays the routing process of the call for a specified amount of time
15 after completion of the announcement to give the calling party ample time to respond properly (e.g., depress a key or respond verbally to indicate that the call may be made identifiable).

Figure 3 is a flow chart that illustrates a method
20 for allowing an anonymous caller to become identifiable, in accordance with a preferred embodiment of the present invention. Referring now to Figure 3, the method of the present invention begins upon the receipt of a call within a telecommunication switch (step 300). After a call is
25 received, the switch determines whether the anonymous call blocking subscriber feature is presently activated for the called party (step 310). If not, the present method is terminated (step 320). If the anonymous call blocking subscriber feature is activated for the called party, a
30 specified announcement is played to the calling party by the switch or other device within the telecommunication network (step 330) and the routing of the call is temporarily suspended (step 340). It is worth noting that the announcement may be played by a voice generator within
35 a switch or by an equivalent device. For example, circuitry within an intelligent peripheral within an advanced intelligent network may generate the

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announcement. It is also worth noting that the call is not blocked, but is only suspended for a specified amount of time, at this point.

5 While the call routing is suspended, the switch periodically monitors the calling party line to determine whether the calling party has hung up or released the line (step 350). The switch also monitors the calling party line to determine if the calling party has responded in a specified manner to make the call identifiable (step 10 360). While periodically performing steps 350 and 360, the switch monitors the amount of time that has expired since the call routing was suspended to determine whether a specified amount of time has expired (step 370). If a specified amount of time has not expired, the switch 15 continues to perform steps 350 and 360. A typical specified amount of time is five (5) seconds. Once the specified amount of time has expired, the call is blocked (step 380) and the inventive method is complete.

20 Although an embodiment of the method and apparatus of the present invention has been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it is understood that the invention is not limited to the embodiments disclosed, but can be arranged in numerous ways and that modifications and 25 substitutions may be made without departing from the spirit of the invention as set forth and defined by the following claims.

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WHAT IS CLAIMED IS:

1. A system for connecting a calling party to a called party through a switch, comprising:
 - 5 announcement generator means for generating a specified announcement whenever an anonymous call is received;
 - response interpreter means for interpreting a calling party response; and
 - 10 logic means for determining whether to block or to route the call.
2. The system of claim 1 wherein said announcement generator means generates the specified announcement
15 whenever and the calling party has an anonymous call rejection feature activated.
3. The system of claim 1 wherein said response interpreter means is a voice interpreter.
20
4. The system of claim 1 wherein said response interpreter means is a dual tone multi-frequency tone interpreter.
- 25 5. The system of claim 1 wherein said announcement generator means is for informing the calling party that the call will be blocked unless the calling party responds in a specified manner.
- 30 6. The system of claim 1 wherein said logic means sends a control signal to the switch to cause the call to be blocked whenever the calling party does not respond in a specified manner within a specified time period.
- 35 7. The system of claim 6 wherein said logic means sends a control signal to the switch to cause the call to

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be blocked whenever the calling party does not respond verbally within the specified time period.

5 8. The system of claim 7 wherein the specified time period is less than fifteen seconds.

10 9. The system of claim 6 wherein said logic means sends a control signal to the switch to cause the call to be blocked whenever the calling party does not respond by depressing a key on a calling party telephone keypad within the specified time period.

15 10. The system of claim 9 wherein the specified time period is less than fifteen seconds.

20 11. A method for routing a phone call from a calling party phone to a called party phone through a switch, comprising the steps of:

 determining whether an anonymous call rejection feature is activated for the called party;

 playing an announcement to the calling party to prompt the calling party to respond in a specified manner;

 suspending the routing of the call to the called party for a specified period of time;

25 determining that the calling party has responded in a specified manner within the specified period of time; and

 routing the call.

30 12. The method of claim 11 wherein the step of determining further includes the step of determining that the calling party has responded in a specified manner which causes the switch to make the call identifiable.

35 13. The method of claim 12 wherein the step of suspending the routing the call includes suspending the call for a specified time period.

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14. The method of claim 13 wherein the specified time period is less than fifteen seconds.

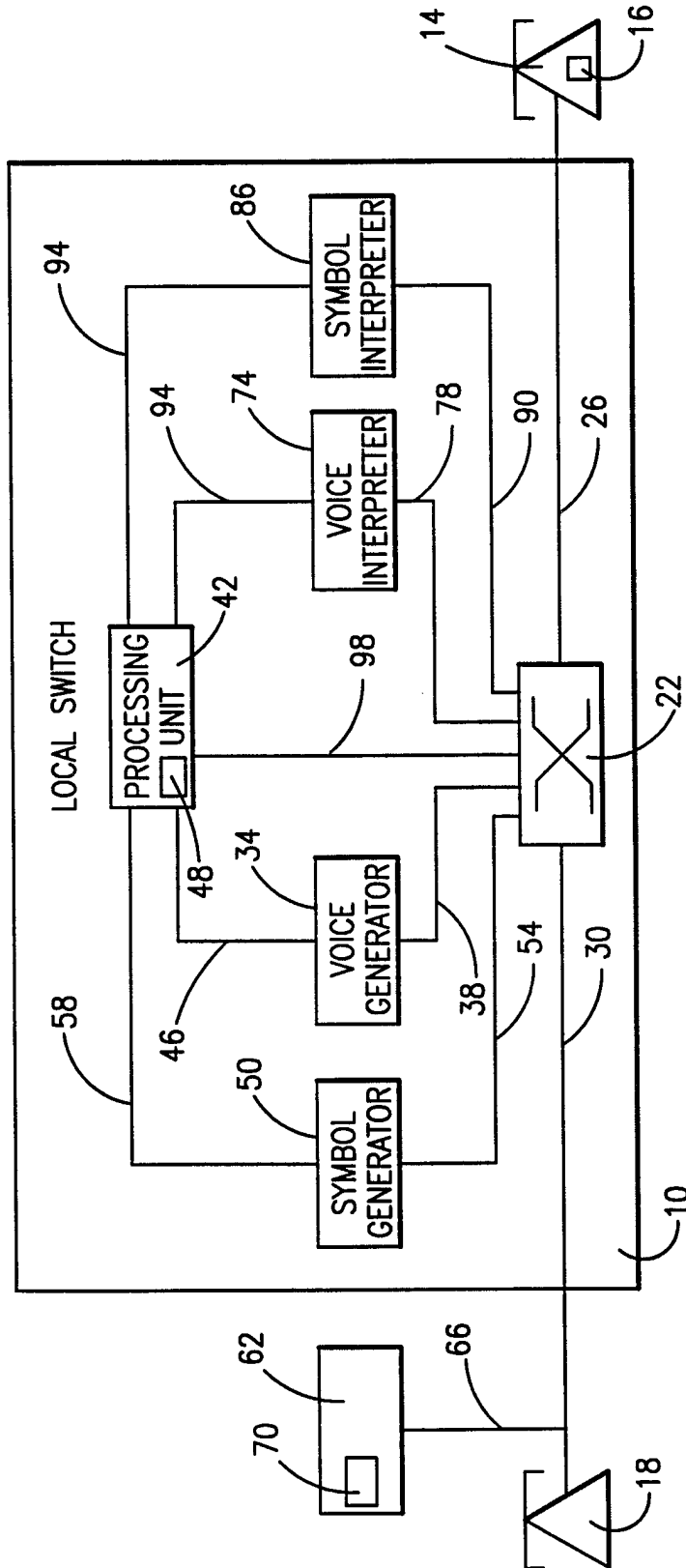


FIG. 1

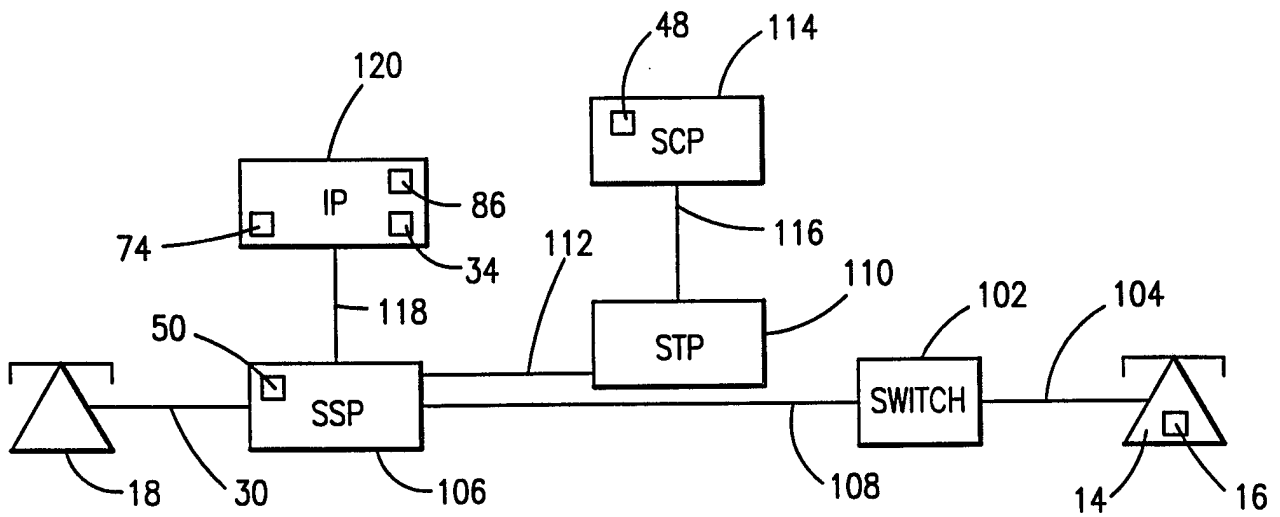


FIG. 2

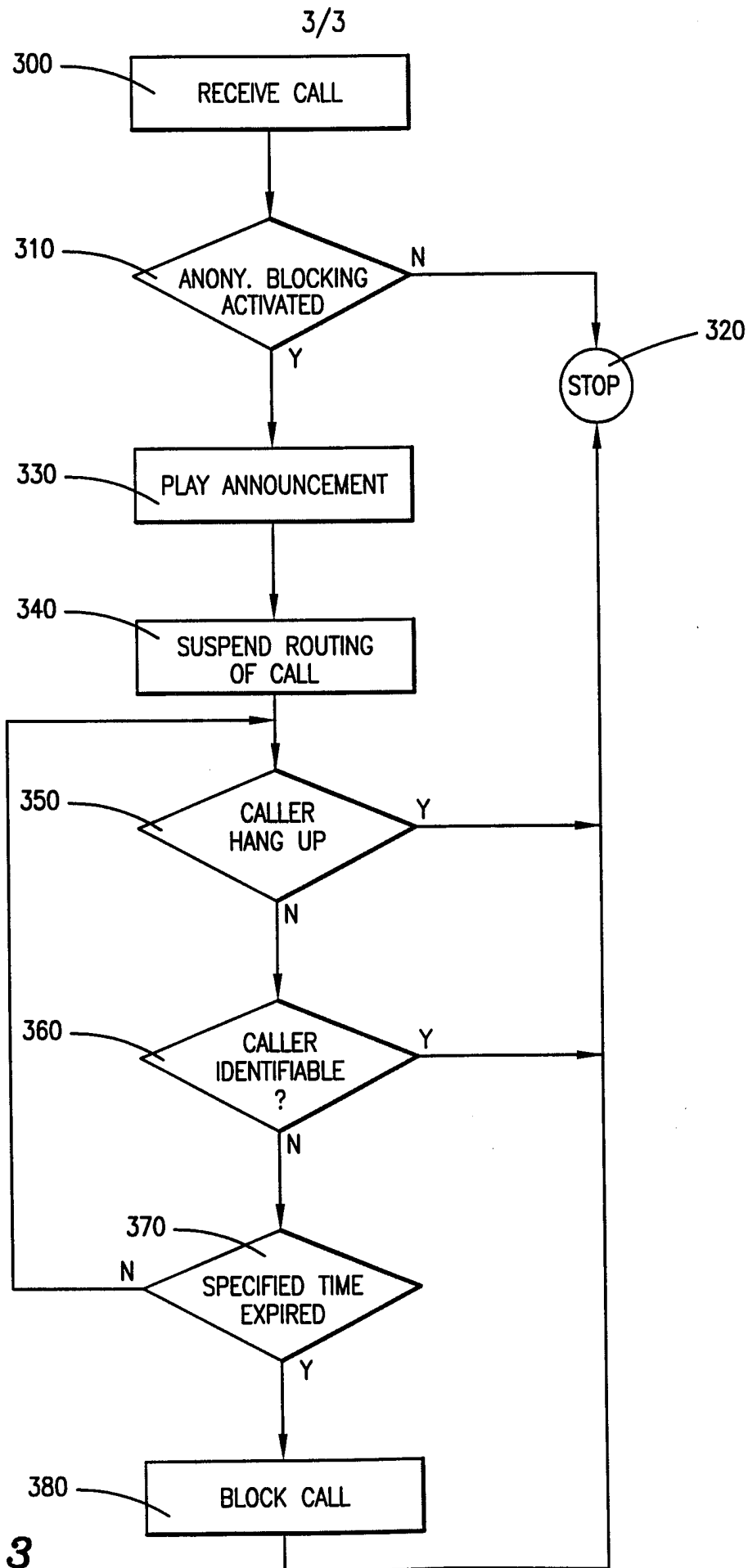


FIG. 3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/22680

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M1/57

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)

IPC 6 H04M

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

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 533 106 A (BLUMHARDT) 2 July 1996 see column 3, line 60 - column 7, line 13; figures 1-5 ---	1-5 11,12
X A	US 5 521 969 A (SERINESE ET AL) 28 May 1996 see column 2, line 24 - column 5, line 59; figure 1 ---	1-5 11,12
X	US 5 497 414 A (BARTHOLOMEW) 5 March 1996 see column 3, line 12 - line 62 see column 4, line 40 - column 8, line 55; figures 1-5 ---	1,2,4,5, 11
X A	US 5 033 076 A (MAZUR ET AL) 16 July 1991 see column 3, line 35 - column 5, line 61; figures 1,2 ---	1,2,4,5 11
	-/--	

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Patent family members are listed in annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 161 181 A (ZWICK) 3 November 1992 see column 3, line 45 - column 8, line 57; figures 1--3 ----	1-5,11, 12
A	US 5 341 414 A (POPKE) 23 August 1994 see column 10, line 40 - column 13, line 30; figures 1-3 ----	1-5,11, 12
A	US 5 412 711 A (HAYASHI) 2 May 1995 see column 2, line 48 - column 7, line 3; figures 1-4 -----	1,2,4,5, 11,12

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. Patent Application No

PCT/US 97/22680

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