



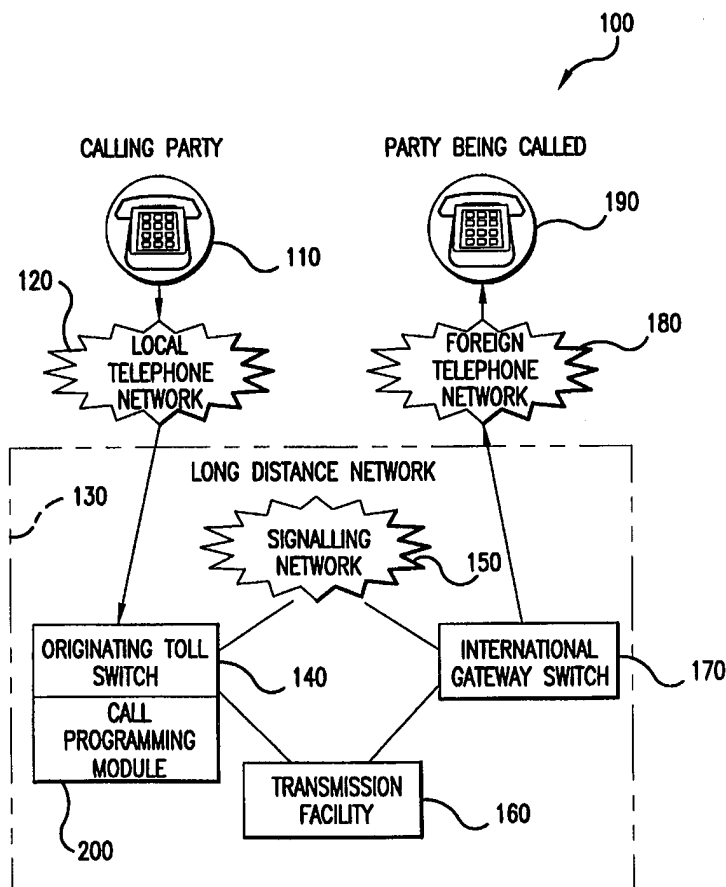
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/US98/00693 (22) International Filing Date: 14 January 1998 (14.01.98) (30) Priority Data: 08/783,773 15 January 1997 (15.01.97) US (71)(72) Applicant and Inventor: STENGER, Robert, J. [US/US]; Apartment 1E, 128 East 85th Street, New York, NY 10028 (US). (74) Agents: TERZIAN, Berj, A. et al.; Pennie & Edmonds LLP, 1155 Avenue of the Americas, New York, NY 10036 (US).		(81) Designated States: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GE, GH, GW, HU, ID, IL, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UZ, VN, YU, 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).  <b>Published</b> <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>

(54) Title: AUTOMATED CALL PROGRAMMING SYSTEM AND METHOD OF OPERATION

## (57) Abstract

An automated system for scheduling and placing long distance phone calls both international and domestic, is provided. A call programming module (200) is described which may be resident in a long distance network (130). The call programming module (200) comprises a call database (210) which stores information (270) regarding scheduled calls, and a call processor (220) which both processes scheduling information (270) received from a calling party and places scheduled calls at the appropriate times. In addition, the system employs an audio processor (250) for assembling and relaying audio prompts (312, 322, 328, 332) to the calling party. Scheduling information is entered by the calling party using a telephone keypad.



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AUTOMATED CALL PROGRAMMING SYSTEM AND METHOD OF OPERATIONBackground of the Invention

It is often difficult to reach a desired party in a  
5 remote time zone by telephone. Because of the time  
difference, there may be only a small window of time during  
which it is convenient for both the calling party to make the  
call and for the called party to receive the call. As a  
result, a calling party might wait several days to speak with  
10 a friend or relative overseas and then miss the opportunity  
by forgetting to call during the relatively small window  
between the time that the caller wakes up and the time that  
the friend or relative goes to sleep.

This problem is even more pronounced with respect to  
15 business calls, because of the limited number of hours in the  
working day. When the amount of overlap in business hours  
between the two locations is small, the calling party may  
forget to place the call during the overlap period, and  
thereby miss his opportunity to make the call that day.

20 Moreover, when the time difference is much greater,  
business hours in the two locations may not overlap at all.  
In such circumstances, a caller may need to place a call very  
early in the morning or very late at night in order to ensure  
that he reaches the desired party. In extreme cases, a  
25 caller may even need to place a call during the weekend to  
reach someone at the beginning of the workweek in the  
location being called.

This leaves the caller in a dilemma. On the one hand,  
it may be difficult or undesirable for the caller to travel  
30 to his place of business early in the morning, late at night,  
or on the weekend. On the other hand, the caller may not  
desire to place the call from his home, for several reasons.  
For example, the caller's employer may impose cumbersome and  
time-consuming reimbursement procedures. In addition, the  
35 phone rates at the caller's home may be substantially higher  
than those paid by the caller's employer since companies

frequently negotiate lower rates than those available to private individuals.

There is therefore a need in the art for an automated system which aids businessmen and others to more conveniently  
5 reach by telephone a desired party located in a different time zone.

#### Objects and Summary of the Invention

It is therefore an object of the present invention to  
10 provide an automated call programming system which permits a calling party to schedule a long distance telephone call for a specified time.

It is a further object of the present invention to provide an automated call programming system in which the  
15 calling party may choose to take the scheduled call at a telephone other than the telephone used to schedule the call. For example, the calling party may schedule the call from the telephone in his office but take the scheduled call at a telephone in his house.

20 It is a further object of the present invention to provide an automated call programming system in which the calling party may choose to bill the scheduled call to a telephone other than the telephone at which the caller has chosen to take the scheduled call.

25 It is a further object of the present invention to provide an automated call programming system in which the telephone of the calling party is made to ring when the scheduled call is connected.

It is a further object of the present invention to  
30 provide an automated call programming system in which the calling party may receive a reminder call at a predetermined time prior to the scheduled call being placed.

It is a further object of the present invention to provide an automated call programming system in which the  
35 calling party may, upon receiving the above reminder, choose to delay the scheduled call by some specific amount of time.

It is a further object of the present invention to provide an automated call programming system in which the calling party may record a message to be delivered to a called party at a scheduled time.

5        These and other objects of the invention are achieved by an automated system for scheduling and placing long distance phone calls. In a preferred embodiment, the system may be implemented by a call programming module resident in a long distance network. The call programming module comprises a  
10 call database which stores information regarding scheduled calls, and a call processor which both processes scheduling information received from the calling party and places scheduled calls at the appropriate times. In addition, the system employs an audio processor for assembling and relaying  
15 audio prompts to the calling party. In response to these prompts, the calling party enters scheduling information using the keypad of his telephone.

#### Brief Description of the Drawings

20        The above objects and summary of the invention will be better understood when taken in conjunction with the following detailed description and accompanying drawings in which:

Fig. 1 is a block diagram of a telephone system  
25 incorporating the automated call programming system of the present invention;

Fig. 2 is a block diagram of a call programming module for implementing the present invention;

Figs. 3A-E are a flowchart depicting the scheduling mode  
30 of the automated call programming system of the present invention;

Figs. 4A-B are a flowchart depicting the calling mode of the automated call programming system of the present invention;

35        Fig. 5 is a block diagram of a scheduled call record of the present invention; and

Fig. 6 is a flowchart depicting the verification mode of the present invention.

Detailed Description of the Preferred Embodiments

- 5 Referring to the drawings, Fig. 1 shows a telephone system 100 incorporating the automated call programming system of the present invention. With the exception of call programming module 200, telephone system 100 is illustrative of a standard telephone system for connecting international  
10 long distance calls. Specifically, as shown in Fig. 1, telephone system 100 comprises a calling telephone 110 connected to a local telephone network 120. Local telephone network 120 is in turn connected to a long distance network 130.
- 15 As is further shown in Fig. 1, long distance network 130 comprises an originating toll switch 140, a signalling network 150, and a transmission facility 160, the purpose of which will be described below. In addition, long distance network 130 further comprises international gateway switch  
20 170 which is used to connect international long distance calls to a foreign carrier.

When a calling party dials an international long distance call from calling telephone 110, local telephone network 120 connects the call to originating toll switch 140  
25 of long distance network 130. The number dialed by the calling party is then transmitted to signalling network 150. Based on the number dialed, signalling network 150 chooses an appropriate transmission facility 160 to carry the call. When signalling network 150 detects that the call is an  
30 international call, it chooses a transmission facility which is connected to international gateway switch 170. The call is then connected via international gateway switch 170 to a local foreign telephone network 180. Finally, foreign telephone network 180 connects the call to called telephone  
35 190.

As is further shown in Fig. 1, telephone system 100 preferably comprises a call programming module 200 which, as

described below, furnishes the calling party with a variety of options including the opportunity to schedule his call for a particular time in the future.

Turning to Fig. 2, there is shown a block diagram of a preferred embodiment of call programming module 200. Call programming module 200 preferably comprises a call database 210 which stores information relating to scheduled calls, and a call processor 220 which is connected to call database 210. Call processor 220 may be implemented as part of a programmed general purpose computer or in other specialized hardware.

Call processor 220 is also connected to two additional databases: a geographical location database 230 and a time database 240. Geographical location database 230 stores a list of country and city long distance codes and their corresponding geographical locations. For each geographical location stored in geographical location database 230, Time database 240 stores the relationship between the local time in that location and some standard time (e.g., Eastern Standard time). For example, for 33 (country code), 1 (city code), geographical location database 230 would store Paris, France. Similarly, using Eastern Standard Time as the standard, Time database 240 would store "+6 hours" for country code 33, city code 1, since the time in Paris is 6 hours ahead of Eastern Standard Time. Geographical location database 230 and time database 240 also store analogous information for area codes in the United States.

Call programming module 200 additionally comprises an audio processor 250. Audio processor 250 is capable of assembling and relaying audio messages in accordance with information provided to it by call processor 220. An example of an audio processor suitable for this purpose is the AT&T Conversant Voice Information System (TM) programmed or configured to assemble and relay the messages described below.

The automated call programming system of the present invention preferably comprises two modes: a scheduling mode and a calling mode. In scheduling mode, a calling party is

given the opportunity to schedule an overseas call for a specified subsequent time. In calling mode, scheduled calls are placed at their scheduled times. Each of these modes may be implemented in software which may run on call processor 5 220 and audio processor 250 as well as on other computer systems of telephone system 100. Preferred embodiments of these two modes will now be described in connection with the flowcharts shown in Figs. 3 and 4.

As shown in Fig. 3, when a caller places a long distance 10 call (step 302), local telephone network 120 recognizes the call as such and connects the call to originating toll switch 140 of long distance network 130 (step 304). The system then enters a parallel processing mode in which it performs two tasks simultaneously. In the first parallel branch, (not 15 illustrated in Fig. 3), the dialed number is received by signalling network 150 which chooses an appropriate transmission facility 160 to handle the call. When the call is an international long distance call signalling network 150 chooses a transmission facility 160 which connects with 20 international gateway switch 170.

Meanwhile, in step 306, the dialed number is simultaneously transmitted via originating toll switch 140 to call processor 220 where it is temporarily stored. Call processor 220 determines whether the call is an overseas 25 call, and if so, extracts from the dialed number the country and city code prefixes. In step 308, call processor 220 retrieves the location and relative time difference for the dialed country and city codes from geographical location database 230 and time database 240, respectively. From the 30 relative time difference, call processor 220 determines the time and date in the location being called. In step 310, this information is transmitted to audio processor 250 which prepares and relays an announcement to the calling party.

Illustratively, assume a caller in New York City dials 35 the number 011-33-1-12345678 at 8:30 PM Eastern Standard Time on Thursday January 2, 1997. In a preferred embodiment, the announcement may consist of the following message: "You have



dialed number 12345678 in Paris, France. The local time in that location is 1:30 AM on Friday January 3, 1997."

Subsequently, in step 312, the calling party is prompted by audio processor 250 with a variety of options.

5 Specifically, the calling party is given the option of scheduling the call to be placed at a later time, the option of being connected immediately, and the option of abandoning the call without incurring long distance charges.

Illustratively, audio processor 250 may relay the following  
10 message: "Please choose from one of the following options. If you wish to have this call automatically placed at a later time, press one; if you wish to be connected now, press two; if you wish to abandon this call, press three."

The calling party enters his choice using the keypad of  
15 calling telephone 110. The system then proceeds to decision step 314 wherein the caller's choice is received by Call processor 220 which executes one of three steps in response thereto. If the calling party enters three or hangs up, call processor 220 sends a signal to originating toll switch 140  
20 to terminate the call (step 316). In contrast, if the calling party chooses two, call processor 220 sends a signal to signalling network 150 to immediately place the call via international gateway switch 170 (step 318).

If, however, the calling party chooses one, then the  
25 system proceeds to step 320. In step 320, call processor 220 creates a new scheduled call record 270 in call database 210, and stores therein the dialed number. The system then proceeds to step 322, where audio processor 250 prompts the calling party to enter the time at which the caller would  
30 like the call to be placed. Illustratively, the message relayed by audio processor 250 might state: "Using the numbers on your telephone keypad, enter the time that you would like your call to be placed. Enter the hour first, followed by the pound sign, then the minutes, followed by the  
35 pound sign, and then 1 for A.M. or 2 for P.M., followed by the pound sign."

In step 324, the string entered by the calling party is transmitted to call processor 220 which converts the local time entered by the calling party to a standard time using time database 240. This standardized time is then also  
5 stored in the scheduled call record 270 created in step 320.

In a preferred embodiment, the system may further comprise a step in which the time entered by the caller is confirmed. Illustratively, audio processor 250 might relay to the caller the message: "You have entered nine o'clock  
10 A.M. If this is correct, press one, if this is not correct press pound and then re-enter the desired time now." This preferred embodiment is indicated in step 326.

In a further preferred embodiment, the caller may be given the option of leaving a recorded message for the called  
15 party rather than being personally connected to the called party at the scheduled time. Thus, for example, a caller may record a birthday greeting (or other important message) and schedule it to be "delivered" on the morning of the called party's birthday. This preferred embodiment is represented  
20 by steps 328-344 of Fig. 3B.

In particular, as shown in step 328, audio processor 250 relays a message to the calling party inquiring whether the caller wishes to speak personally with the called party or whether the caller wishes to record a message for the called  
25 party. Illustratively, the message might state: "If you wish to be personally connected with your party at the scheduled time, press one now. If you wish to record a message to be delivered to your party at the scheduled time, press two now."

30 If the caller chooses two, then the system proceeds from decision step 330 to step 332 wherein audio processor 250 prompts the caller to state his name. Illustratively, audio processor 250 might relay the message: "Please state your name after the tone." The caller's name is received and  
35 stored by call processor 220 as part of scheduled call record 270 in step 334. Similarly, in steps 336 and 338, the system prompts for and stores the name of the called party.

Next, in step 340, audio processor 250 prompts the caller to record a message for the called party. In step 342, the message is received by call processor 220 and stored as part of scheduled call record 270. Alternatively, the  
5 caller's name, the called party's name, and the message may be stored on audio tape or other medium.

In a preferred embodiment, as concisely shown in step 344, the system may provide the caller an opportunity to listen to the recorded message and to re-record the message  
10 if the caller is not satisfied with the first recorded message. After step 344, the system proceeds to step 372 in Fig. 3D, the purpose of which is described in more detail below.

Returning to Fig. 3A, recall that if the caller chooses  
15 one in decision step 330, this indicates that the caller desires to take the scheduled call in person. In that case, the system collects additional scheduling information regarding the call, as described below.

Specifically, in a preferred embodiment, the calling  
20 party may be given the option of receiving a reminder call at a predetermined time prior to the scheduled call. Thus, as shown in step 346, audio processor 250 relays a message to the calling party inquiring whether the calling party wishes to receive a reminder call prior to the scheduled call.  
25 Illustratively, the message might state: "If you wish to receive a reminder call prior to your scheduled call, press one now. Otherwise, press two now."

If the calling party chooses two, the system bypasses the reminder call portion of the flowchart and proceeds from  
30 decision step 348 directly to step 360. If, however, the calling party chooses one, the system proceeds to step 350 wherein audio processor 250 guides the caller to enter the desired time for the reminder call. Illustratively, audio processor 250 might relay the message: "Using the numbers on  
35 your telephone keypad, enter the number of minutes prior to your scheduled call that you wish to receive a reminder call. Then press the pound sign."

Call processor 220 receives the calling party's entry. If the number selected is below a predetermined permissible maximum (e.g., 30 minutes), then decision step 352 succeeds and the system proceeds to step 354 wherein call processor  
5 220 subtracts the entered number of minutes from the scheduled calling time, and stores the resulting time in the scheduled called record 270 created in step 320. Again, in step 356, the system may confirm that the calling party has correctly entered the desired reminder time. This may be  
10 done in a manner analogous to that described above in connection with step 326.

If, however, the requested reminder window exceeds the predetermined maximum, audio processor 250 relays a message indicating that fact (step 358), and the system returns to  
15 step 350 to give the caller another opportunity to enter the desired reminder window.

In a further preferred embodiment, the calling party may be given the option of taking the scheduled call at a location remote from calling telephone 110. In particular,  
20 as shown in step 360, call processor 220 receives the telephone number of calling telephone 110 from local telephone network 120 and transmits the number to audio processor 250. Audio processor 250 then assembles and relays a message regarding the location at which the calling party  
25 wishes to take the scheduled call. Illustratively, the message might state: "We have identified the number from which you are calling as 212-765-4321. If you wish to take your scheduled call at this telephone number, press one now. If you wish to take your scheduled call at a different  
30 telephone number, press two now."

If the calling party chooses one, the system proceeds from decision step 362 to step 364 wherein call processor 220 stores the phone number of calling telephone 110 as part of scheduled call record 270 in call database 210. The system  
35 then proceeds to step 372, the purpose of which is described below.

If, however, the calling party chooses two, the system proceeds to step 366 wherein audio processor 250 guides the caller to enter the desired telephone number at which the calling party wishes to take the scheduled call.

5 Illustratively, Audio processor 250 might relay the message: "Using the numbers on your telephone keypad, enter the telephone number at which you would like to take your scheduled call. Enter the area code, followed by the telephone number. After you have finished, press the pound  
10 sign."

In step 368, call processor 220 receives the number entered by the calling party and stores it as part of scheduled call record 270 in call database 210.

Again, in step 370, the system may confirm that the  
15 calling party has correctly entered the phone number at which the call is to be taken. This may be done in a manner analogous to that described above in connection with step 326.

In a further preferred embodiment, the system may give  
20 the calling party the additional option of billing the call to a number other than calling telephone 110. Thus, in step 372, audio processor 250 relays a message to the calling party inquiring whether the calling party wishes to bill the scheduled call to calling telephone 110 or to some other  
25 telephone number. Illustratively, audio processor 250 might relay the message: "If you wish to bill your scheduled call to the number from which you are calling press one now. Otherwise press two now."

If the calling party presses one, then the system  
30 proceeds from decision step 374 to step 382 wherein call processor 220 stores the number of calling telephone 110 as the billing number for the scheduled call. The system then proceeds to step 384 wherein call processor 220 generates a unique confirmation number for the scheduled call and stores  
35 the confirmation number as part of scheduled call record 270. As will be explained in more detail below, the confirmation number may be used by the caller to modify or cancel his

scheduled call before it is made. The system then proceeds to step 386 wherein audio processor 250 relays to the calling party a final confirmation message reviewing the particulars of the scheduled call (number to be called, time of call, 5 unique confirmation number, etc.), and thanking the calling party for using the scheduling service. At this point, the system exits scheduling mode.

If the calling party presses two, however, the system proceeds to step 376 wherein audio processor 250 relays a 10 message requesting that the calling party enter the number to be billed for the scheduled call. Illustratively, audio processor 250 might relay the message: "Using the numbers on your telephone keypad, enter the telephone number that you would like to be billed for your scheduled call."

15 In step 378, the desired billing number is received by call processor 220 and stored as part of scheduled call record 270 in call database 210.

In step 380, the system confirms that the calling party has correctly entered the phone number at which the call is 20 to be taken. This may be done in a manner analogous as that described above in connection with step 326. From step 380, the system proceeds to final confirmation step 386, after which the scheduling mode terminates.

Of course, as will be recognized by those skilled in the 25 art, employing the additional preferred embodiment of steps 372-380 may require security measures to ensure that the calling party does not bill a telephone number for which he is not authorized to do so.

In view of the above description, it will be recognized 30 that, at any given time, call database 210 may contain a plurality of scheduled call records 270, each of which stores a phone number to be called, a phone number to be billed for the call, and a scheduled time. In addition, each scheduled call record 270 may comprise a phone number at which the call 35 is to be taken and a reminder time, or may instead comprise a recorded message for the called party. One illustrative

arrangement of the fields in a scheduled call record 270 is shown in Fig. 5.

A preferred embodiment of the system's calling mode will now be described in connection with Fig. 4. For ease of illustration, the system's calling mode is described with reference to a case in which the calling party has chosen to take the scheduled call at calling telephone 110. As those skilled in the art will recognize, when an alternative telephone has been chosen, the telephone number of the alternative location may simply be substituted for that of calling telephone 110. Similarly, for ease of illustration, the calling mode is described with reference to a case in which the calling party has chosen to receive a reminder call five minutes prior to the scheduled call.

Beginning with step 402, when the time for a scheduled call approaches, call processor 220 retrieves the call record 270 associated with the scheduled call from call database 210. This may be accomplished using time driven interrupts or any other method known in the art.

In decision step 404, the system determines the whether scheduled call record 270 comprises a recorded message. If it does, then decision step 404 succeeds and the system proceeds to step 406 wherein a connection is established between long distance network 130 and called telephone 190 at the scheduled time. Once the connection has been established, the system proceeds to step 408 wherein audio processor 250 assembles and relays a header message to the party who answers called telephone 190. Illustratively, the header message might state: "Good morning. The following is a message for [called party] from [caller]. To hear the message press one now." In step 410, call processor 220 detects that the called party has pressed one, and transmits the recorded message to called telephone 190.

In a preferred embodiment, shown in steps 410-414, the system may give the called party an opportunity to play the message a second time. Illustratively, in step 410, audio processor 250 might relay a message to the called party which

states: "If you wish to hear this recorded message again, press one now. Otherwise, press two now." If the called party chooses one, the system returns to step 410 and plays the recorded message a second time. If the called party  
5 chooses two, the system terminates the call. This preferred embodiment is especially beneficial in situations where the message is intended for more than a single person, e.g., for both parents.

If scheduled call record 270 does not comprise a  
10 recorded message, decision step 404 fails and the system proceeds to step 418 wherein five minutes prior to the scheduled time stored in call record 270 (i.e., at the reminder time), call processor 220 transmits the telephone number of calling telephone 110 via originating toll switch  
15 140 to local telephone network 120. A connection is established between calling telephone 110 and long distance network 130, and calling telephone 110 is made to ring three times. The system then proceeds to decision step 420. If the caller does not answer, decision step 420 fails, and the  
20 connection between call processor 220 and calling telephone 110 is terminated. The system then proceeds to step 422 wherein call processor 220 places the scheduled call via long distance network 130 at the appropriate time. When the connection to the overseas number is made, call processor 220  
25 reconnects to calling telephone 110 and causes calling telephone 110 to ring. The calling party then lifts the receiver of calling telephone 110 and is connected to called telephone 190.

If, however, the calling party answers his phone after  
30 step 418, decision step 420 succeeds, and the system proceeds to step 424. There, audio processor 250 relays a message reminding the caller of the scheduled call, and alerting the caller that the call will be placed within five minutes. In one preferred embodiment, the system may then proceed  
35 directly to step 422, in which the scheduled call is placed at the appropriate time.



In a further preferred embodiment, the calling mode of the present invention may additionally comprise a "snooze" feature. When furnished with this feature, the system may give the calling party the option of delaying the scheduled  
5 call for some amount of time. This feature is illustrated in steps 426-436. In particular, in step 426, audio processor 250 relays a message to the calling party inquiring whether the calling party would like to delay the scheduled call. Illustratively, Audio processor 250 might relay the message:  
10 "If you would like to postpone your scheduled call by up to 60 minutes press one now. Otherwise press two now. If the caller presses two, the system proceeds from decision step 428 to step 422 in which the scheduled call is placed at the appropriate time.

15 If, however, the calling party presses one, the system proceeds to step 430, wherein audio processor 250 relays a message requesting that the calling party enter the number of minutes he would like the call delayed. Illustratively, audio processor 250 might relay the message: "Using the  
20 keypad on your telephone, enter the number of minutes by which you would like to delay your scheduled call, followed by the pound sign."

Call processor 220 receives the calling party's entry. If the number selected is below a predetermined maximum  
25 permissible delay (e.g., 60 minutes), then decision step 432 succeeds and the system proceeds to step 434 wherein call processor 220 updates the scheduled calling time stored in scheduled call record 270 in accordance with the amount of delay requested by the calling party. After a confirmation  
30 step 436 (analogous to confirmation step 326), the calling mode concludes.

If, however, the requested delay exceeds the predetermined maximum, audio processor 250 relays a message indicating that fact (step 438), and the system returns to  
35 step 430 to give the caller another opportunity to enter a desired delay.

It will be appreciated that while the two modes have been described independently, they may operate simultaneously. Thus, a first calling party may schedule a call while the system simultaneously connects a scheduled  
5 call requested by a second calling party.

In a further preferred embodiment, the system may provide callers with a means to verify, modify, or cancel a scheduled call prior to the scheduled time. This preferred embodiment is described in connection with Fig. 6.

10 As shown in step 602 of Fig. 6, when a caller desires to verify, modify, or cancel a scheduled call, he dials a toll free telephone number (or other designated number) dedicated to the scheduled call service of the present invention. In step 604, the system answers the call and audio processor 250  
15 prompts the caller to enter his confirmation number. Illustratively, audio processor 250 might relay the message: "Using the keypad on your telephone, please enter your confirmation number followed by the pound sign."

In step 606, call processor 220 receives the  
20 confirmation number and retrieves the scheduled-call record associated therewith from call database 210. Then, in step 608, audio processor 250 assembles and relays a message to the caller verifying the particulars of the scheduled call, and offering the caller several options. Illustratively, the  
25 message relayed by audio processor 250 might state: "At 4:00 AM on Friday January 3, 1997 your scheduled call will be placed from 212-765-4321 to 12345678, in Paris, France. If you wish to retain your scheduled call, press one now. If you wish to cancel your scheduled call, press two now. If  
30 you wish to modify your scheduled call, press three now."

If the caller chooses one or hangs up, the scheduled call record is retained unaltered (step 612). In contrast, if the caller chooses two, the system cancels the scheduled call by deleting its scheduled call record 270 from call  
35 database 210 (step 614). Finally, if the caller chooses three, the system re-enters the scheduling mode at step 322,

thus permitting the caller to modify any aspect of the scheduled call record desired.

It will be appreciated that while the preferred embodiment has been illustrated with respect to overseas  
5 calls, the invention could find use in any telephone environment in which a calling party might wish to automatically schedule a call for a later time. For example, a caller on the East Coast of the United States may schedule all of his West Coast calls for the day when he arrives in  
10 his office in the morning and thus avoid the frustration of forgetting to place the calls after lunch.

While the invention has been described in conjunction with specific embodiments, it is evident that numerous alternatives, modifications, and variations will be apparent  
15 to those skilled in the art in light of the foregoing description.

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What is claimed is:

1. An automated call programming method for placing scheduled telephone calls between a caller and a called party, comprising:
  - 5 storing scheduling information regarding a call to be placed at a specified subsequent time; and
  - placing the scheduled call at the specified subsequent time.
- 10 2. The automated call programming method of claim 1 wherein the step of storing scheduling information comprises:
  - storing a phone number of a called party dialed by a caller;
  - storing the phone number of a telephone at which the
  - 15 caller desires to take the scheduled call; and
  - determining the time at which the caller would like the call placed.
3. The automated call programming method of claim 2, wherein
- 20 the number of the called party is captured and stored as it is initially dialed by the caller.
4. The automated call programming method of claim 2, wherein the phone number at which the calling party takes the
- 25 scheduled call may be different than the telephone number from which the calling party scheduled the call.
5. The automated call programming method of claim 2, further comprising storing a number to be billed for the scheduled
- 30 call.
6. The automated call programming method of claim 5, wherein the billing number need not be the number at which the calling party has elected to take the scheduled call.
- 35 7. The automated call programming method of claim 2, wherein the step of determining comprises prompting the calling party

to enter the time at which the calling party wishes the scheduled call to be placed.

8. The automated call programming method of claim 7, wherein  
5 the step of prompting comprises prompting the caller as to whether the call should be put through immediately.

9. The automated call programming method of claim 7, wherein  
the step of prompting comprises prompting the caller as to  
10 whether the call should be made at a later time.

10. The automated call programming system of claim 2,  
wherein the step of determining comprises receiving an entry  
entered by the caller using the keypad of the caller's  
15 telephone.

11. The automated call programming system of claim 2,  
wherein the step of determining comprises ascertaining that  
the caller would like the call made immediately.  
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12. The automated call programming system of claim 2,  
wherein the step of determining comprises ascertaining that  
the caller would like to place the call at a later time.

25 13. The automated call programming system of claim 2,  
wherein step of determining comprises:  
receiving a series of signals from the calling party;  
deriving from said signals a time at which the call is  
to be made;  
30 and storing the time at which the call is to be made.

14. The automated call programming method of claim 1 further  
comprising ringing the calling party when the scheduled call  
is placed.  
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15. The automated call programming method of claim 1 further  
comprising placing a reminder call to the caller a

predetermined amount of time before the scheduled call is placed.

16. The automated call programming method of claim 1 further  
5 comprising delaying the call by a specific number of minutes at the request of the caller.

17. The automated call programming method of claim 1,  
wherein the step of placing the call comprises retrieving the  
10 number to be called at the appropriate time; and placing a call to that number.

18. The automated call programming system of claim 1,  
wherein the step of storing scheduling information comprises  
15 the step of storing a message from the caller for the called party.

19. The automated call programming system of claim 1,  
wherein the step of placing the scheduled call comprises the  
20 step of playing a recorded message from the caller for the called party.

20. In a telephone system for handling long distance calls,  
an automated system for storing and placing scheduled calls,  
25 comprising:

a memory;

a call database located in the memory for storing  
scheduled-call information regarding the time at which the  
scheduled call is to be made, and the number to which the  
30 scheduled call is to be made;

a call processor connected to the memory and adapted to  
retrieve the scheduled-call information and to place the  
scheduled call at the scheduled time.

35 21. The system of claim 20 further comprising an audio processor connected to the call processor for assembling and relaying messages to a calling party.

22. The system of claim 20 further comprising a geographical location database and a time database each connected to the call processor.

5 23. An automated system for placing scheduled telephone calls, comprising:

a memory;

a plurality of records stored in said memory, each of said records comprising a plurality of fields storing

10 information regarding a particular scheduled call;

wherein one of said fields stores the number of a party to be called; and

a second of said fields stores the time at which the scheduled call is to be placed.

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24. The automated system of claim 23, wherein a third of said fields stores the number at which a calling party has elected to take the scheduled call.

20 25. The automated system of claim 23 wherein a fourth of said fields stores the number to be billed for the scheduled call.

26. The automated system of claim 23 wherein a fifth of said  
25 fields stores the time at which a reminder call is to be placed.

27. The automated system of claim 23 wherein a sixth of said fields stores the name of the caller.

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28. The automated system of claim 23 wherein a seventh of said fields stores the name of the called party.

29. The automated system of claim 23 wherein an eighth of  
35 said fields stores a message for the called party.

30. An automated call programming system for placing previously scheduled telephone calls between a caller and a called party, comprising:

means for scheduling a call to be placed at a specified  
5 subsequent time; and

means for placing the scheduled call at the specified subsequent time.

31. The automated call programming system of claim 30  
10 wherein the means for scheduling comprises:

first means for storing a phone number of a called party dialed by a caller;

second means for storing the phone number of a telephone at which the caller desires to take the scheduled call; and

15 means for determining the time at which the caller would like the call placed.

32. The automated call programming system of claim 31, wherein the first means for storing captures the number of  
20 the called party as it is initially dialed by the caller

33. The automated call programming system of claim 31, wherein the second means for storing stores a telephone number different than the telephone number from which the  
25 calling party scheduled the call.

34. The automated call programming system of claim 31, further comprising third means for storing a number to be billed for the scheduled call.

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35. The automated call programming system of claim 34, wherein the billing number need not be the number at which the calling party has elected to take the scheduled call.

35 36. The automated call programming system of claim 31, wherein the means for determining comprises means for



prompting the calling party to enter the time at which the calling party wishes the scheduled call to be placed.

37. The automated call programming system of claim 36,  
5 wherein the means for prompting prompts the caller as to whether the call should be put through immediately.

38. The automated call programming system of claim 36,  
wherein the means for prompting prompts the caller as to  
10 whether the call should be made at a later time.

39. The automated call programming system of the claim 31,  
wherein the means for determining comprises the keypad of the caller's telephone.

15

40. The automated call programming system of claim 31,  
wherein the means for determining includes means for ascertaining that the caller would like the call made immediately.

20

41. The automated call programming system of claim 31,  
wherein the means for determining includes means for ascertaining that the caller would like to place the call at a later time.

25

42. The automated call programming system of claim 31,  
wherein the means for determining comprises:  
means for receiving a series of signals from the calling party;

30 means for deriving from said signals a time at which the call is to be made;

and wherein the system further comprises fourth means for storing the time at which the call is to be made.

35 43. The automated call programming system of claim 31,  
wherein the first and second means for storing comprise a database in a memory.

44. The automated call programming system of claim 30 further comprising means for ringing the calling party when the scheduled call is placed.

5 45. The automated call programming system of claim 30 further comprising means for placing a reminder call to the caller a predetermined amount of time before the call is placed.

10 46. The automated call programming system of claim 30 further comprising means for delaying the call by a specific number of minutes at the request of the caller.

47. The automated call programming system of claim 30,  
15 wherein the means for placing the call comprises means for retrieving the number to be called at the appropriate time; and

means for placing a call to that number.

20 48. The automated call programming system of claim 30, wherein the means for scheduling the call comprises means for storing a message from the caller for the called party.

49. The automated call programming system of claim 30,  
25 wherein the means for placing the scheduled call comprises means for playing a recorded message from the caller for the called party.

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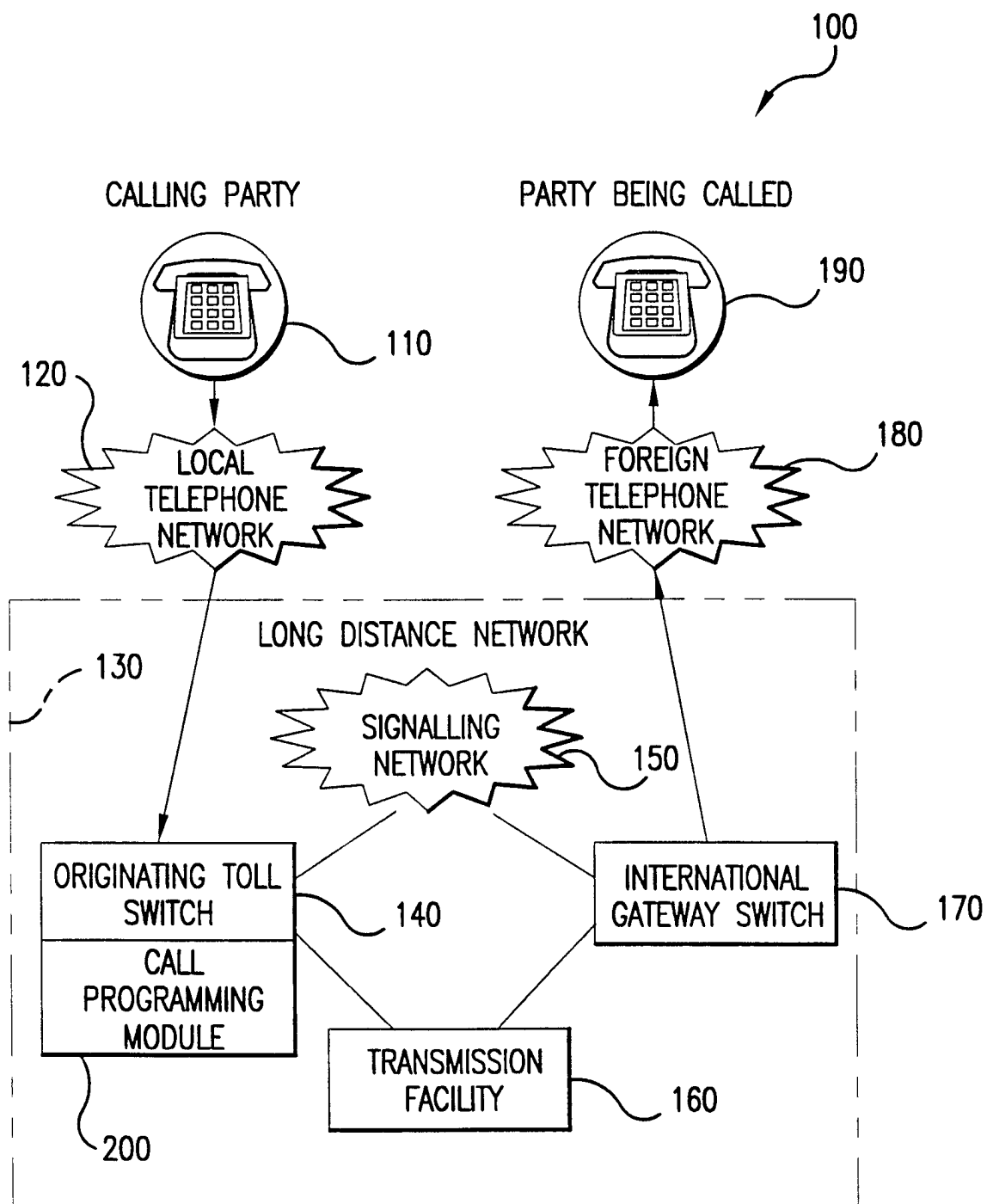


FIG.1

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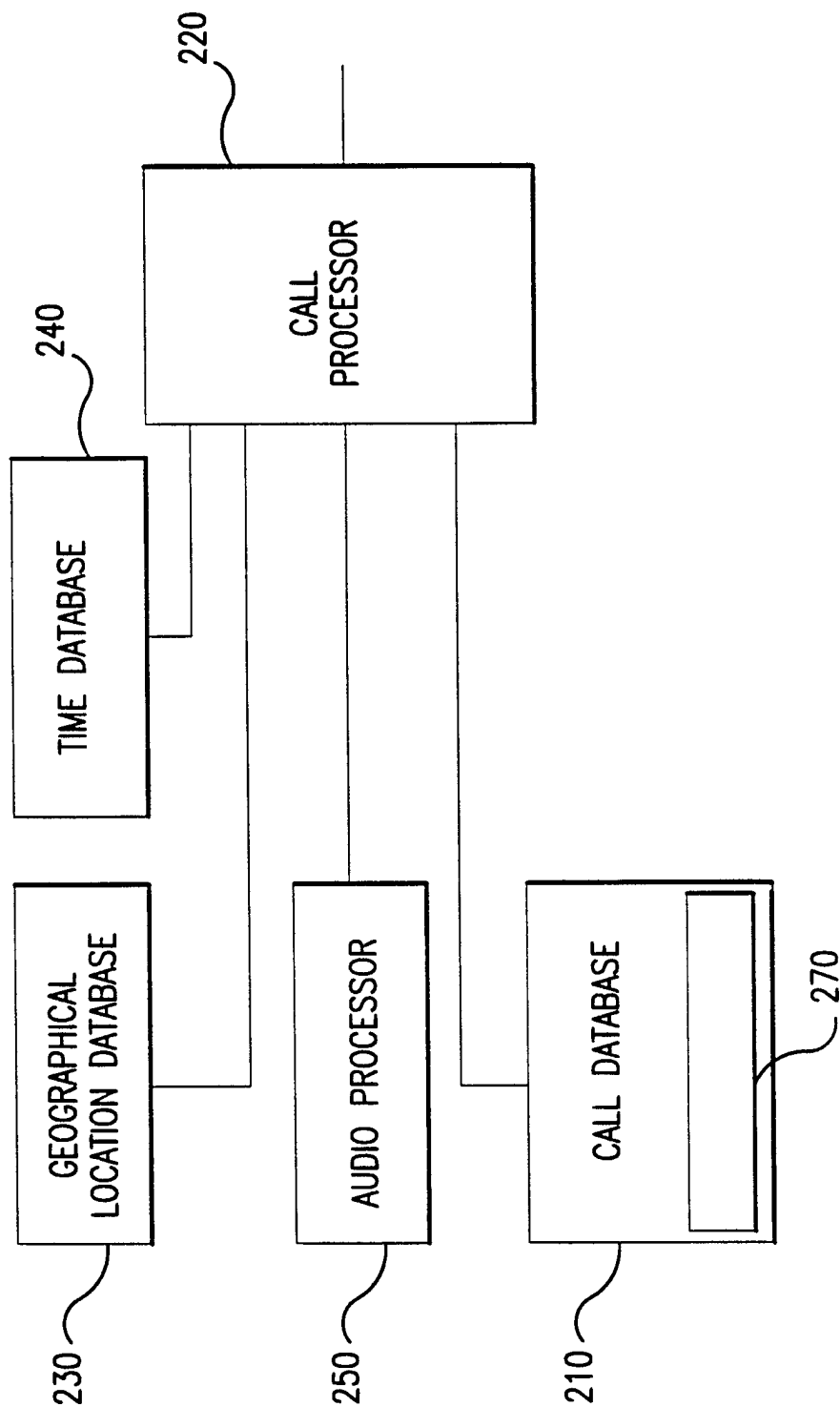


FIG.2

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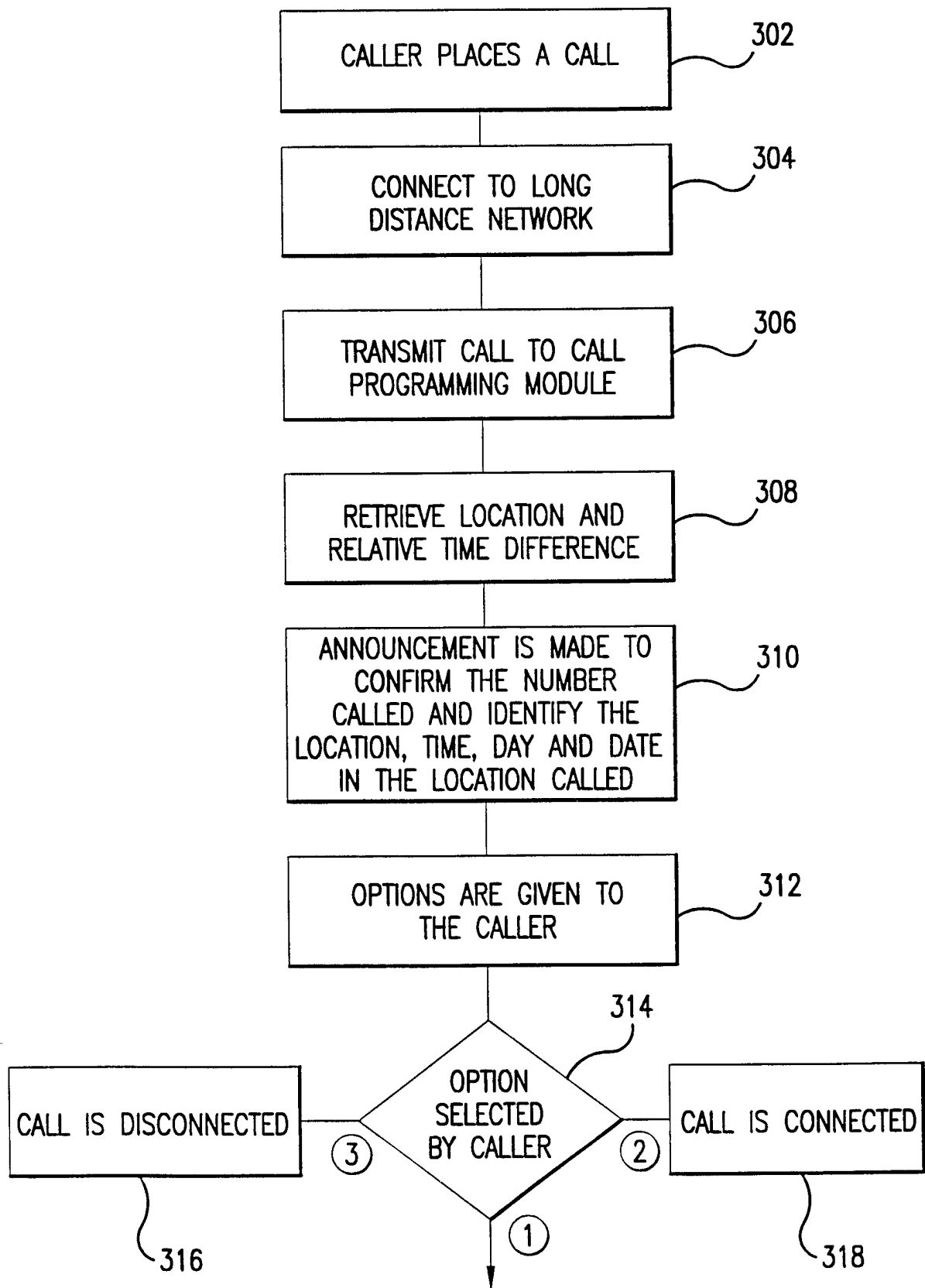
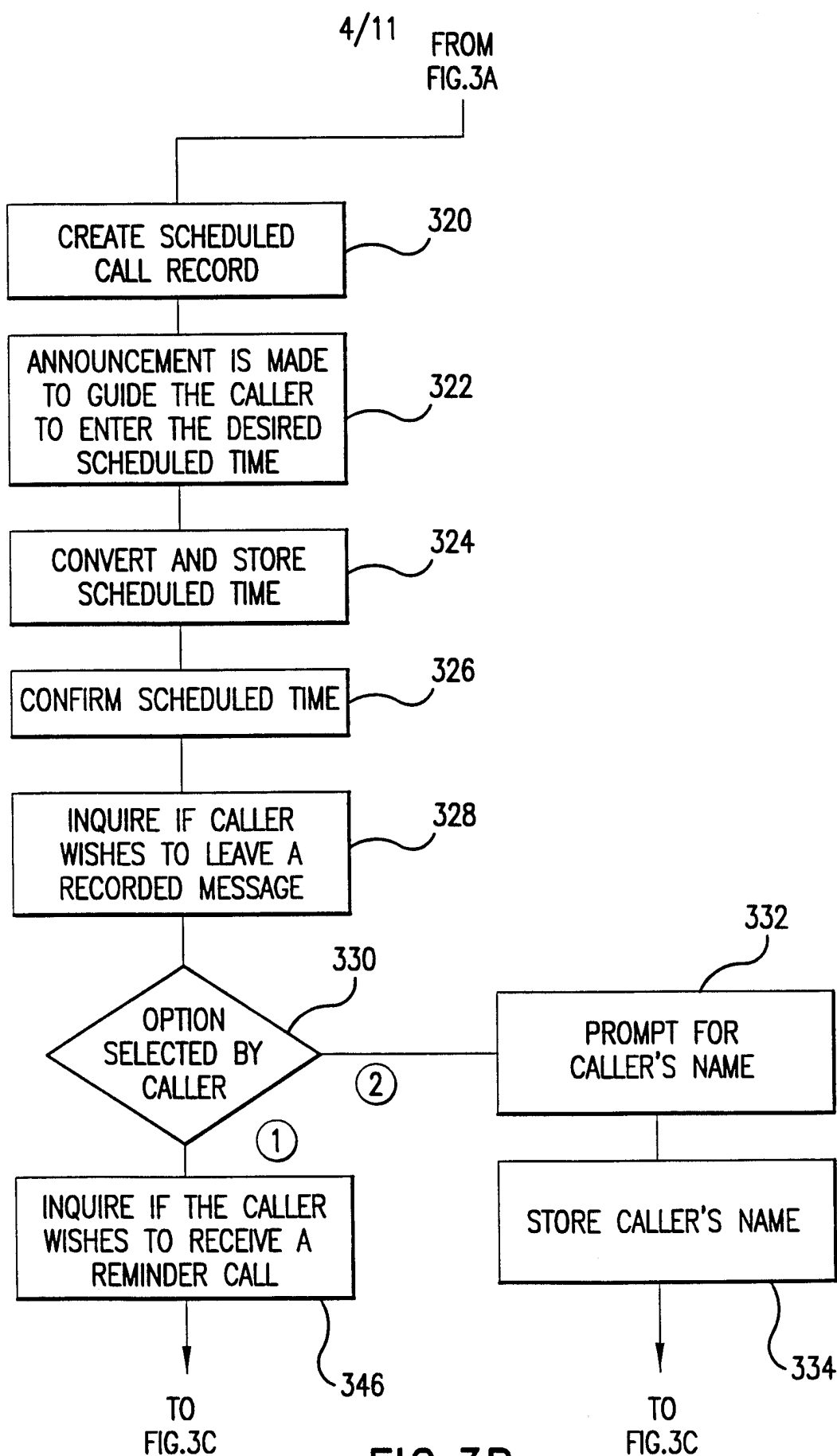
TO  
FIG.3B

FIG.3A



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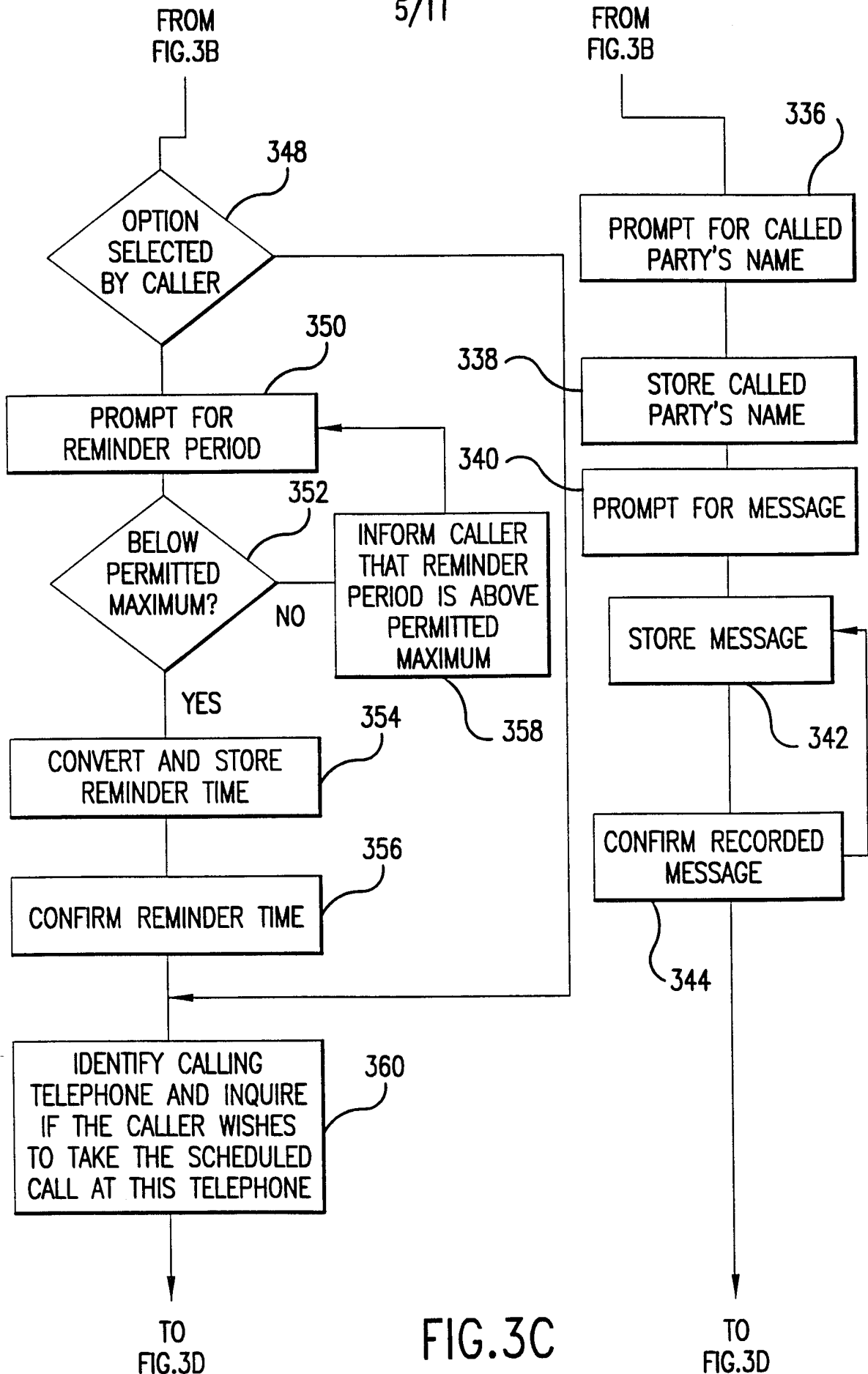


FIG.3C

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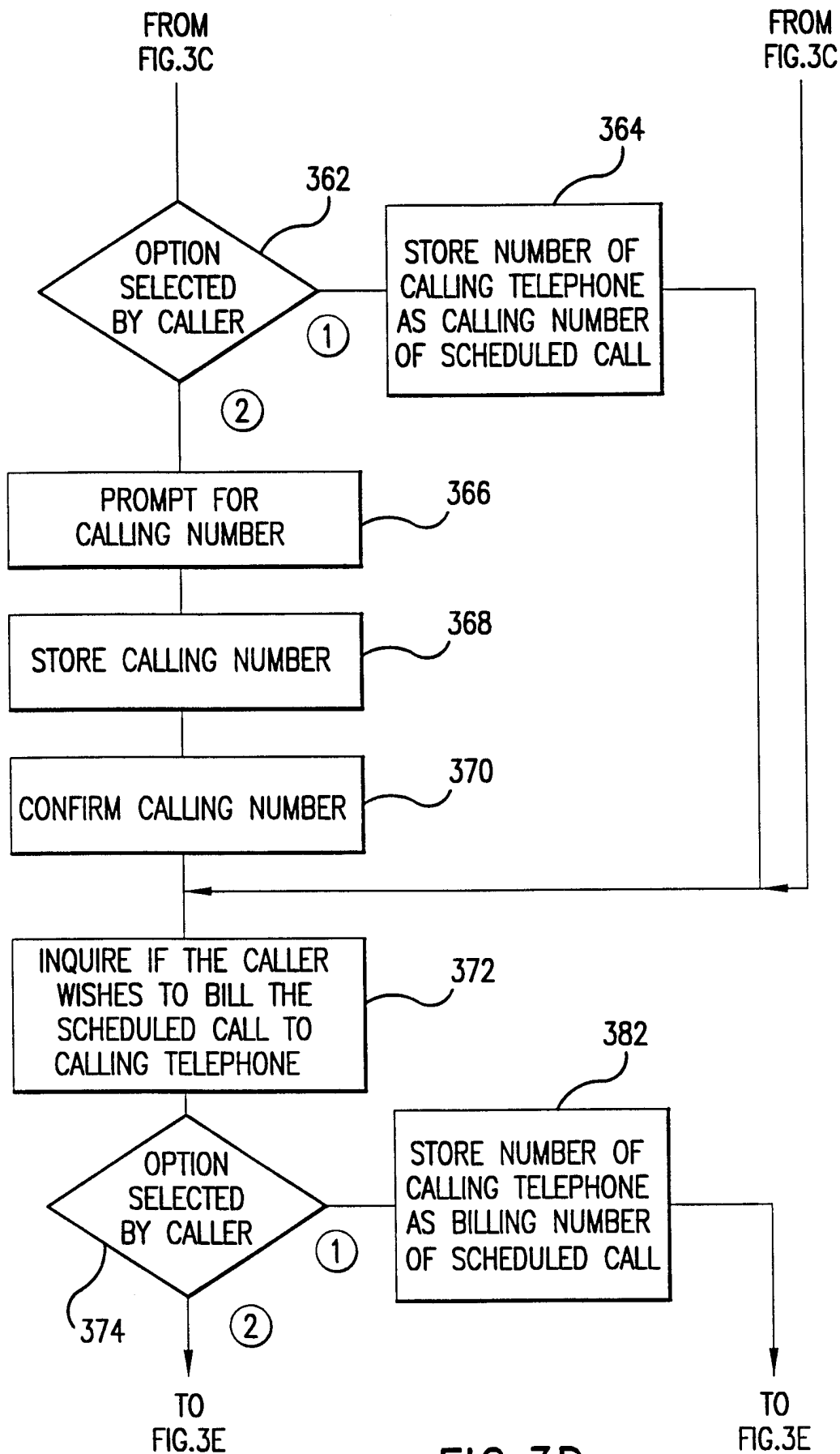


FIG. 3D



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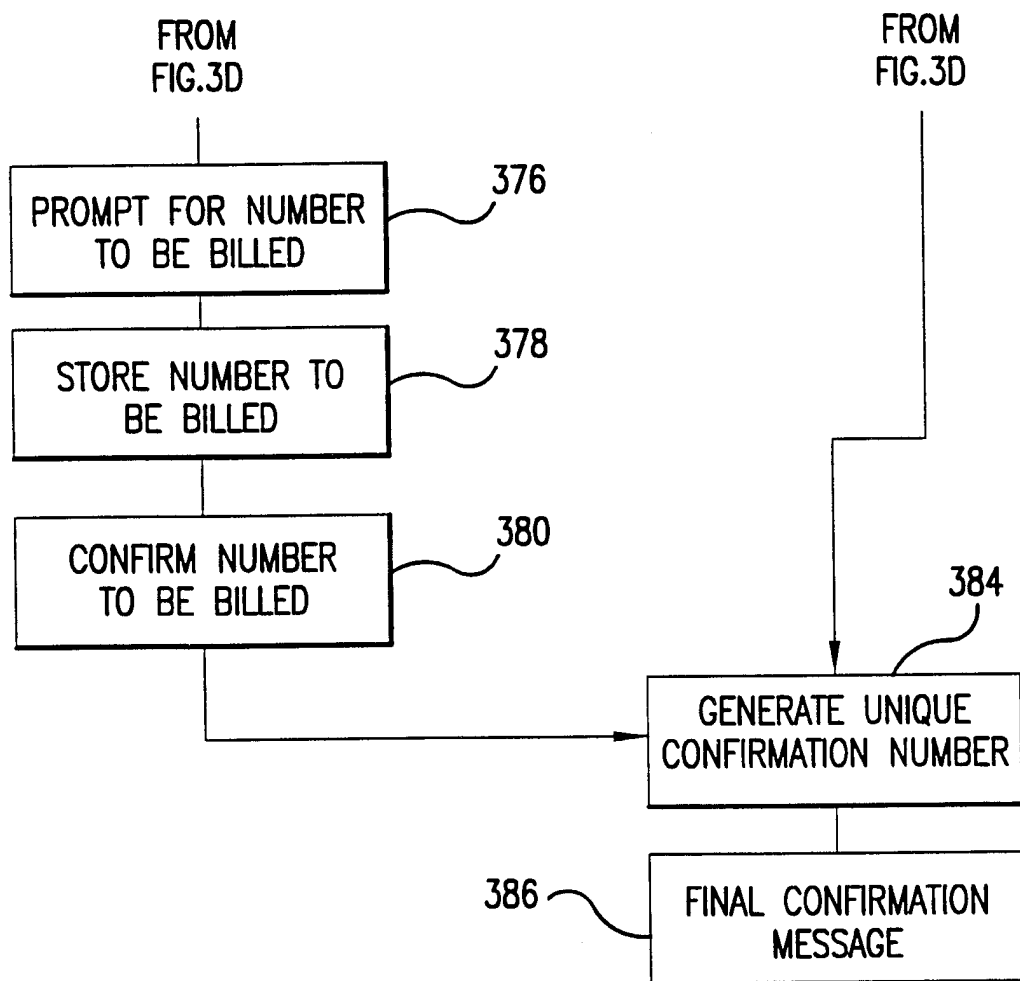
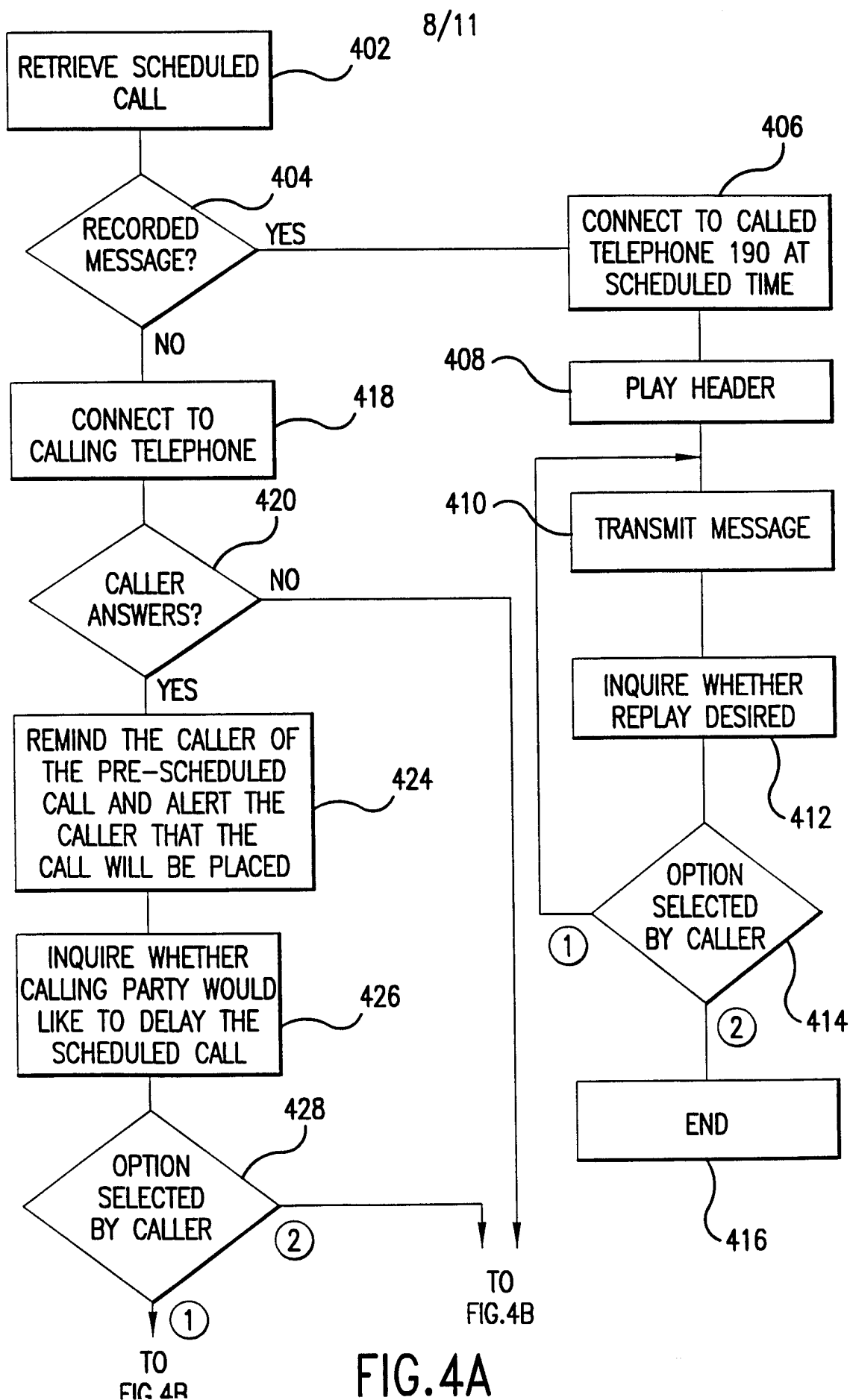


FIG. 3E



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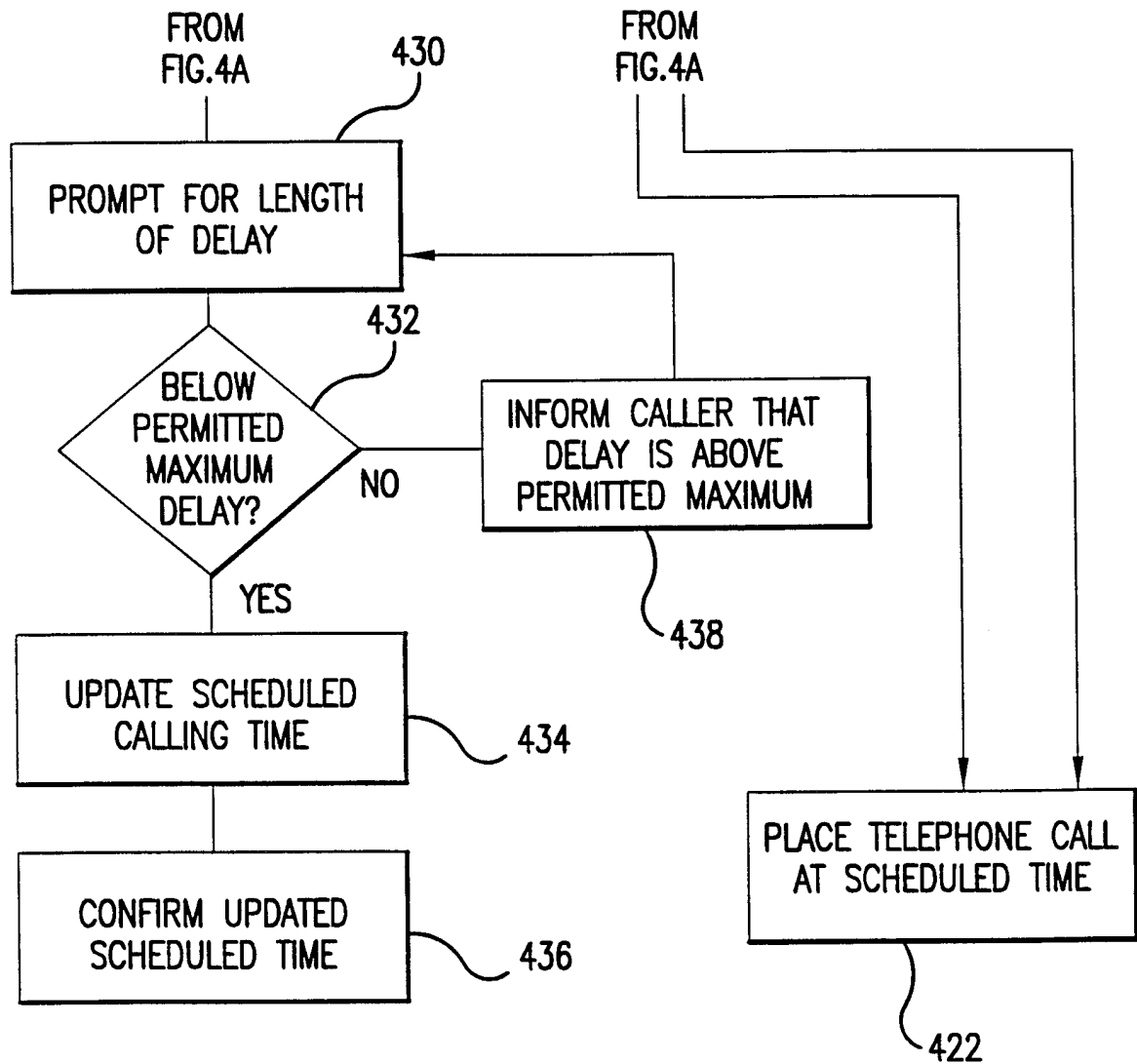


FIG.4B

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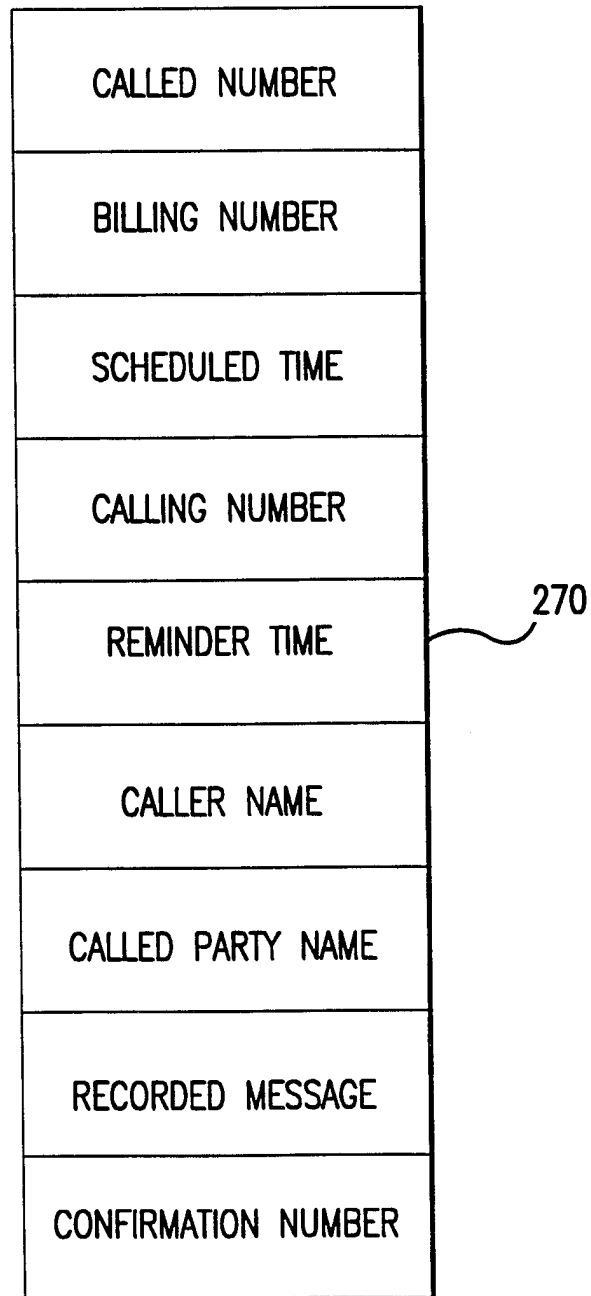


FIG.5

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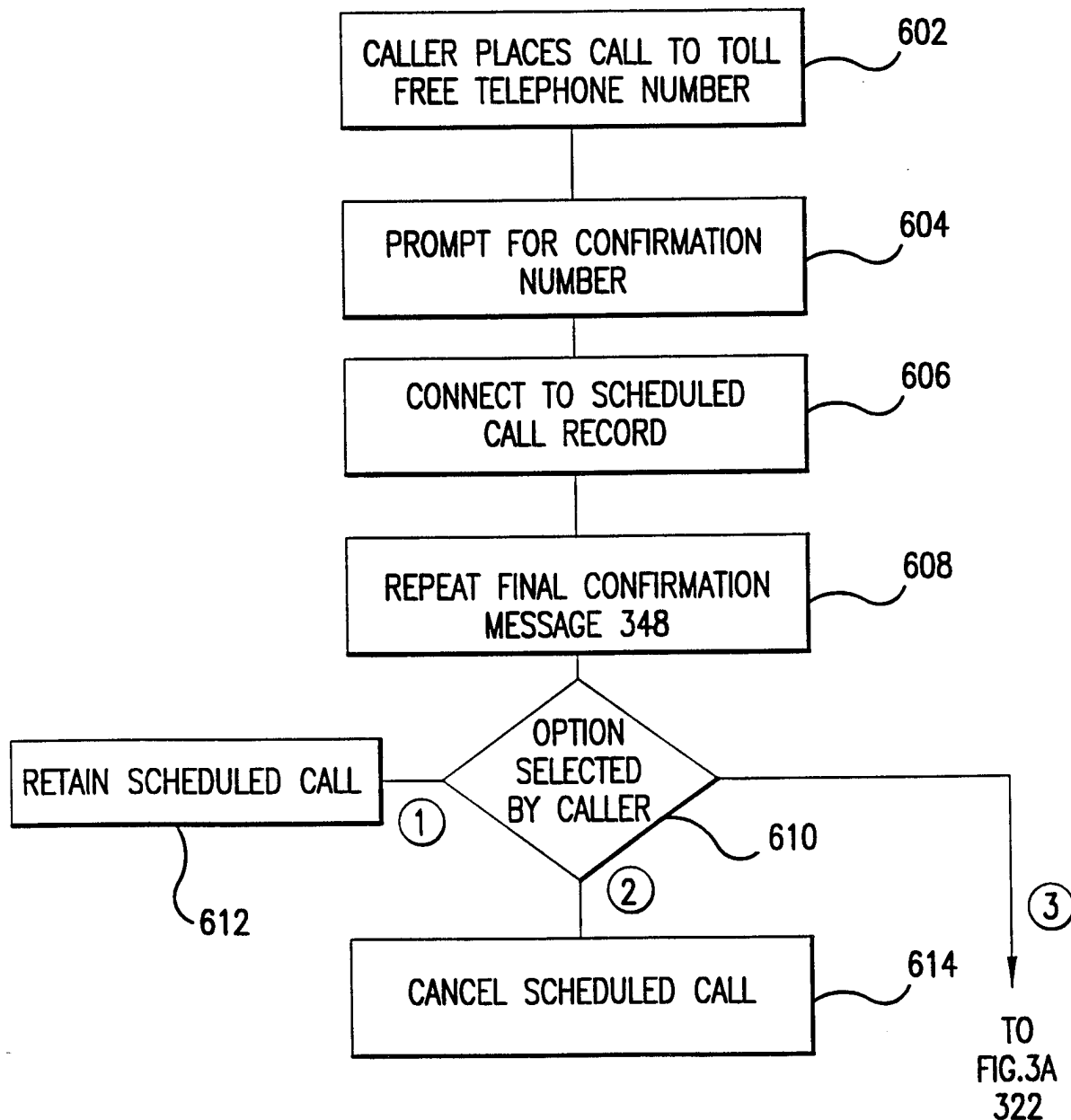


FIG. 6

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/00693

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :H04M 1/64, 1/65, 3/42, 3/48, 15/06,

US CL :379/67, 69, 88, 111, 126, 127, 210, 202, 204, 205, 207

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)

U.S. : 379/67, 69, 88, 111, 126, 127, 210, 202, 204, 205, 207

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

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

APS

search terms: scheduling, reserving, reservations, telephone number, dialed number, calling number

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim
X	US 4,910,766 A (OGINO et al.) 20 March 1990, Abstract; figures 1, 5; col.3,ln.1-27.	1-2, 3, 13-14, 17, 20, 23-24, 31
X --- Y	US 5,483,587 A (HOGAN et al.) 9 January 1995; figures 15-16; col.7,ln.11-27; col.11ln.61-col.12,ln.18; col.13,ln.54-col.14,ln.9; col.14,ln.20-54; col.16,ln.62-col.17,ln.9.	1-14, 17, 20-23-28, 30-44, ----- 15-16, 26, 45--
Y, P	US 5,652,789 A (MINER et al.) 29 July 1997, figures 29, 30, 31; col.5,ln.40-45; col.40,ln.1-col.41,ln.22.	15-16, 26, 45--



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or prior date and not in conflict with the application but cited to understate the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*B* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

12 MAY 1998

Date of mailing of the international search report

24 JUN 1998

Name and mailing address of the ISA/US  
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/00693

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim
A	US 5,438,616 A (PEOPLES) 01 August 1995, Abstract, figures 4, 5; col.1,ln.54-col.2,ln.7.	1-49