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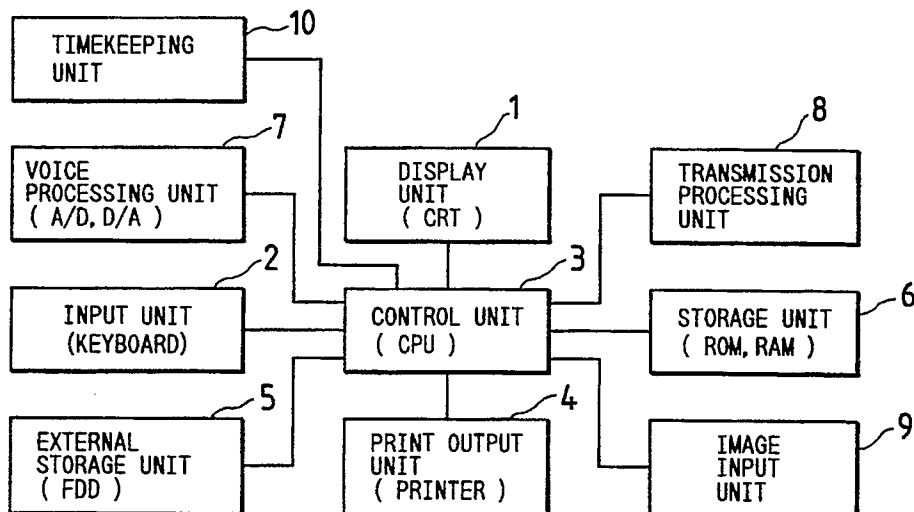
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(54) Document editing apparatus.

(57) A document editing apparatus having a schedule control data input means which adds schedule control data to document data and/or the voice data, and a schedule controller which displays document data

on a display according to a schedule control data and time data obtained from a timekeeping means (10), and/or reproduces voice data using voice reproducing means (7).

**FIG. 1**



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## Field of the Invention

The present invention relates to a document editing apparatus equipped with functions such as inputting, editing and printing the documents as represented by, for example, a Japanese language word processor.

## Background of the Invention

The document editing operation is diversifying owing to the use of a Japanese language word processor that has been rapidly spreading in recent years, and data contained in the document to be edited are not confined to character data (hereinafter referred to as text data) but are diversifying into graphs, figures, illustrations and the like. As for the mode of utilizing the document data, furthermore, the document data are not only used in a printed form, i.e., being simply printed on the paper but are also used in a form in which the document data are transmitted in the form of code data by transmission means and the data transmitted are reproduced and processed on the receiving side.

There has already been known a document editing apparatus having means which reads text data that are input in a form closed to human voice using voice data that have been stored in advance in a storage unit in order to determine whether the character data are input without containing any error or not. The processors of this type have been disclosed in Japanese Laid-Open Patent Publication No. 16330/1983 entitled "A Voice Collating System in a Japanese Language Word Processor" and in Japanese Laid-Open Patent Publication No. 125100/1983 entitled "Voice Collating Apparatus".

Moreover, voice recognition apparatuses that convert voice data back into text data have been widely placed in the market as means for simplifying the inputting method.

However, either when the voice data are to be generated from the text data or when the voice data are to be converted into text data, the document editing apparatus handles only the text data and the prerecorded voice data.

There has further been proposed a word processor capable of handling schedule control data and the like. However, the schedule control that is executed is to control the coded data input through the keyboard. A lot of inconvenience is further involved such as directly manipulating the apparatus to input data and requiring laborious work for inputting the data.

## Summary of the Invention

An object of the present invention is to provide a document editing apparatus which handles text data from which it is usually difficult to identify a person who prepared the data, wherein data specific to the person who prepares data are added in order to add document specific to a writer or to add such data as music making it possible to prepare document having stage effect, and wherein records by convenient voice data without based on the keyboard that is a general input unit are utilized being mixed with text data, and further a secretary function is exhibited based on the schedule control.

In order to achieve the above object, the present invention is concerned with a document editing apparatus comprising an input unit for inputting character data and control instructions, a display unit, a temporary storage unit, an external storage unit, and a control unit which executes the document edit processing according to control instructions and document data input from said input unit by utilizing said temporary storage unit, which executes the display processing to display the edited document data on said display unit, and which stores the edited document data in said external storage unit, means for inputting voice data, means for storing said voice data, schedule control data input means which adds schedule control data to said document data and/or the voice data, voice reproducing means which reproduces voice from the voice data, timekeeping means which generates time data, and schedule control means which displays the corresponding document data on said display unit according to said schedule control data and the time data obtained from said timekeeping means and/or reproduces the voice data using said voice reproducing means.

The text data as well as the voice data can be used in a mixed form as document data and, further, memo data can be handled as voice data making it possible to realize a secretary function on schedule control.

Another object of the present invention is to provide a document editing apparatus of the invention handles the voice data just like the text data, and further enables a password to be added to the voice data to mix in the document the data that can be comprehended by only those persons who know the password in contrast with the text data that can be comprehended by everybody.

A further object of the present invention is to make possible to transmit schedule data from the document editing apparatus to a distant place over a public circuit and to realize the schedule reservation control utilizing a public circuit. By handling the data such as schedule control in the form of voice and by organically coupling communication means.

In order to achieve the above object, the

present invention is concerned with a document editing apparatus comprising an input unit for inputting character data and the like, a display unit for displaying the inputs and the edited results, a storage unit for temporarily storing the character data input from said input unit and for storing a system program, an external storage unit for storing the input and the edited results, and a control unit which executes the document editing according to the program stored in said storage unit, and further comprising means for inputting voice data, means for converting said voice data into digitized data, timekeeping means for counting the year, month and hour, schedule control means in synchronism with the day and hour counted by said timekeeping means, means which stores said voice data in said storage unit as data to be controlled by said schedule control means, means for adding schedule control data to said voice data, means for reproducing voice from said digitized voice data, data transmission means for transmitting said schedule control data over a public circuit, and means for receiving, as schedule control data, the digital inputs of specific voice data generated by said public circuit.

The text data as well as the voice data can be used in a mixed form as document data and, further, memo data can be handled as voice data making it possible to realize a secretary function of schedule control utilizing a public communication channel.

#### Brief Description of the Drawings

Fig. 1 is a block diagram illustrating the whole document editing apparatus according to the present invention;

Fig. 2 is a block diagram of a voice processing control unit;

Fig. 3 is a block diagram of a transmission control unit;

Fig. 4 is a block diagram of a timekeeping unit;

Figs. 5 to 7 are diagrams explaining the method of processing the data of voice signals;

Figs. 8 and 9 are flow charts of a main processing for inputting voice data to the document;

Figs. 10 to 12 are flow charts illustrating the input processing of schedule control data;

Figs. 13 to 17 are flow charts illustrating the schedule control processing;

Figs. 18 and 19 are flow charts of telephone circuit control processings;

Fig. 20 is a flow chart for processing the voice output;

Fig. 21 is a diagram of a push button-type

dial signal detector circuit;

Fig. 22 is a diagram of a push button-type dial signal generating circuit;

Fig. 23 is a flow chart of the automatic answering processing; and

Fig. 24 is a diagram showing the appearance of the document processing apparatus.

#### Detailed Description of the Preferred Embodiments

An embodiment of the present invention will now be described in detail in conjunction with the drawings.

First, the basic constitution of a document editing apparatus is described with reference to Fig. 1. The document editing apparatus comprises a control unit 3 made up of a CPU (central processor unit), a storage unit 6 consisting of a RAM (random access memory) and a ROM (read only memory) used for storing a program that determines the data processing functions of the control unit 3 and for primarily storing the data, an external storage unit 5 such as an FDD (floppy disk drive) for storing the program and the document data that are prepared, a display unit 1 consisting of a CRT (cathode ray tube) that displays the processed contents and the processing conditions, an input unit 2 consisting of a keyboard which is a data input means, and a print output unit 4 such as a dot printer or a laser printer that prints and produces the data. A power source device for supplying electric power is essential for physically operating the apparatus of the invention, but is not described here.

When the document editing apparatus is started, the CPU in the control unit 3 reads program data necessary for the document editing apparatus from the FDD of external storage unit 5 and stores them in the program storage areas in the RAM of storage unit 6 according to the procedure of a program stored in the ROM of storage unit 6. When this processing is completed, the document processing apparatus is ready to operate, executes a necessary program according to data designated by the input unit 2, and stores into the RAM of storage unit 6 the data being edited among the document data that are input. When the edited document data are to be preserved, the processing is effected to register and store them into the external storage unit 5.

The document data include text data and attribute data of document such as underlines, shaded patterns, graphs and figures prepared by a graphic function, which are also stored in the RAM of storage unit 6 and in the external storage unit 5. Thus, the document processing unit is operated in an ordinary manner.

Next, an embodiment for adding voice data to

schedule control data will be described in conjunction with Figs. 1 to 23.

A voice processing unit 7 which digitizes the analog data that are voice data or which converts the data in a reversed manner comprises, as shown in detail by way of a block diagram of Fig. 2, a voice input unit 7a which is usually a microphone, an amplifier 7b that amplifies the voice signals input from the voice input unit 7a, a filter (low-pass filter) 7c which removes high-frequency components from the amplified signals, an A/D converter 7d for digitizing the signals that have passed through the filter 7c, a signal processing unit 7e which effects the data quantity reduction processing (hereinafter referred to as compression processing) for the digitized signals and effects the processing (hereinafter referred to as expansion processing) for restoring the compressed data back to the original data, a D/A converter 7g which restores the expanded signals (digital signals) back to the initial analog signals, a filter (low-pass filter) 7k which removes high-frequency components from the restored signals, an amplifier 7j for amplifying the signals, a voice output unit which is generally a speaker that generates sound in response to the amplified signals, an adjusting unit 7m which adjusts the input voice (hereinafter referred to as input sound pressure), an adjusting unit 7n which adjusts the output sound pressure, and a control I/F unit 7f which sends to and receives from (interfaces) the control unit 3 the signals to control the whole document editing apparatus and which also controls the signal processing unit 7e in response to signals input from the control unit 3.

Next, as shown in detail by way of a block diagram of Fig. 3, a transmission processing unit 8 comprises a modem unit 8a which modulates and demodulates digital signals into signals (analog signals) that are to be transmitted over the public circuit, a hybrid unit 8b which amplifies and filters the input/output signals of the modem unit 8a, an NCU unit which makes connection to or breaks connection from the public communication channel through a circuit connection unit 8f, which detects incoming signal, which forms outgoing signals (dial signals), which sends and receives signals to and from a handset unit 8d (general handset) and which sends signals to a ringer unit 8e (general call bell), a transmission control I/F unit 8h which interfaces the control unit 3 in the editing apparatus and controls the NCU unit 8c, and a voice response unit 8g which produces a voice response when the sensor is a man in automatically processing the incoming signals the are digitally transmitted.

Provision is further made of an image input unit 9 which is generally called image scanner and which inputs image data such as illustrations and

photographs.

It needs not be pointed out that the voice processing unit 7, transmission processing unit 8 and image input unit 9 are controlled by the control unit 3 according to the contents of the program stored in the storage unit 6 as described earlier.

Next, as shown in detail by way of a block diagram of Fig. 4, the timekeeping unit 10 comprises an oscillation circuit 10a for oscillating an oscillator 10m, a frequency divider 10b for dividing the frequency of oscillation signals, a timing generator 10c which forms control signals for a multiplexer 10i based on the signals from the frequency divider 10b, a time counter 10d which counts the time based on the signals of the frequency divider 10b from a unit of one second to a unit of ten years, alarm register 10f which stores alarm date and hour instructed from the control unit 3 that controls the whole document editing apparatus, a comparator 10e which compares the contents of the instructed alarm date and hour with the output of the time counter 10d, a control register 10g which controls the timing generator 10c, the time counter 10d and the alarm register 10e, a control I/F unit 10h that interfaces these counters and register groups as well as the control unit 3, the multiplexer 10i that controls the signals of the timing generator 10c and the alarm signals of the comparator 10e depending upon the content of the control register 10g, and a control I/F unit 10j that interfaces the signal of the multiplexer 10i to the control unit 3. A device having a function of the present timekeeping device can be represented by  $\mu$ PD4991 or the like produced by Nippon Electric Co., which is an IC embodying a range demonstrated by an RTC device 10k.

The processing method for converting analog data that are voice data into compressed digital signals (ADPCM processing: adaptive differential pulse code modulation) by the voice processing unit 7 will now be described in conjunction with Figs. 2 and 5 to 7. A signal Sig1 input from the voice input unit 7a and passed through the amplifier 7b and the filter 7c is converted by the A/D converter 7d from the analog signal into the digital signal. This is realized by effecting the sampling of the voice signal Sig1 which is an analog signal maintaining a predetermined very short period of time  $dt$  with a quantization unit (very small voltage) as a reference, and by converting the voltage value which is a sampled sound pressure level into a digital signal (e.g., a maximum value of 8 bits). That is, a signal Sig2 of a sampling No. 1 is converted into a value obtained by digitizing the sound pressure voltage  $V1$ . The signals thus digitized are successively sent to the signal processing unit 7e and are subjected to the data quantity compression processing. In the data quan-

tity compression processing, a difference dni ( $i=1, 2, \dots$ ) is found between the signal sent previously and a signal of this time, and the data of this difference dni is processed again in order to so change the quantization unit that data consisting of, for example, four bits is obtained at all times (this system is referred to as ADPCM). That is, the quantization unit is increased when the difference dni is great, and the quantization unit is decreased when the difference dni is small in order to maintain the quantity of data constant. An IC that embodies the circuit of block 7p of Fig. 2 which realizes the above processing can be represented by MSM6258 manufactured by Oki Electric Co., Ltd.

The processing for adding voice data to general document data will now be explained in conjunction with Figs. 8 and 9. In renewing and editing the document that is being newly prepared or that is being edited using document data stored in the external storage unit 5, when a voice input mode key is input from the input unit 2 to input the voice data to the document data, a voice editing mode is assumed (step 8a), the position of input is designated by a cursor (which indicates a document input position or an edit processing position) of the display unit 1, and the processing is executed to store the position (step 8b). In this case, the input position is designated by an operator who operates the cursor key to move it.

Next, a voice record start execution key wait condition is assumed (step 8c). When there is received a voice record start execution key input, the processing is executed (step 8d) to store the data from the voice processing unit 7 in the storage unit 6. It is monitored whether the voice input exceeds a given period of time or whether there is a record finish key input (step 8e) and, then, a voice reproduction execution key input is monitored (step 8f). When there is the voice reproduction execution key input, the processing is executed to reproduce the voice from the voice data in the storage unit 6 via the voice processing unit 7 (step 8g). Whether the voice be recorded again or not is determined by the operator depending upon the reproduced voice condition. When the re-record execution key input is detected (step 8h), the processing is executed again from the step 8c to record the voice again. When there is received a record finish key input (step 8i), a voice insert symbol is added to the document data corresponding to a position indicated by the cursor on the display unit 1 and is stored in the storage unit 6 (step 8j). At this moment, furthermore, it is determined whether it is necessary to put a password to voice data added to the document data (step 9a). When a password is to be put, the password from the input unit 2 is stored as attributed data of voice

data stored in the storage unit 6 (step 9b).

Next, it is determined whether it is necessary to edit (delete unnecessary voice data) the voice data that are input (step 9c). When the editing operation request is designated from the input unit 2, it is determined if there is a request for automatically editing the voice (step 9d). Here, if automatic voice editing is designated, the processing is executed to automatically delete the data over a section in which the sound pressure of voice that is recorded and stored is lower than a predetermined threshold value (step 9e). When the manual editing is requested (step 9f), the delete instruction key is input from the input unit 2 while reproducing the voice that is recorded, and the processing is executed to delete the voice signals over the section in which the delete key is input (step 9g). The editing operation is carried out under the condition where the initial voice data are recorded and preserved, and the processing for deletion is executed at a moment (step 9k) when the voice data are to be finally registered.

When the request for reproduction is designated from the input unit 2, the voice reproduction processing is executed (step 9i) according to the edited voice data (step 9i). The designation input of whether the voice data are finished or not is determined (step 9j). When all editing operation is finished, the processing is executed to register and store the data in the external storage unit 5 by inputting the document name as is generally carried out in the modern word processors (step 9k).

Thus, it is allowed to add voice data to ordinary document data.

Next, the input processing of the schedule control data will be explained in conjunction with Figs. 10 to 12. The document editing mode is changed into the schedule control mode by shifting the program (loading another system) according to designation from the input unit 2 (step 10a). In the schedule control mode, a general schedule table is controlled. a processing is executed to display the screen which promotes the input of designation of whether a schedule of year, month, day, hour, and minute be input (step 10b), determination is effected as to whether the input is completed or not (step 10c), a processing is executed when the input is completed to display a screen which promotes the input of designation as to whether the control data that are input be controlled for prearming or not (step 10d) and when it is determined that the setting has been completed (step 10e), a screen is displayed to promote the input of designation of whether the data to be input are document data from the keyboard (input unit 2) or voice data from the voice processing unit 7. When the designation input is the keyboard input (step 10g), a character conversion processing is effected such as "kana-

kanji conversion" of character data that are input and the edited document data are stored in the storage unit 6 (step 10j). When the input designation is the voice data input, a voice processing mode is assumed (10i) to wait for the input of record start execution key (step 11a).

When the execution key is input, voice input data signals converted into digital signals through the voice processing unit 7 are stored in the storage unit 6 (step 11b). When limitation is imposed on the amount of data that are input or when the voice input finish key is input (step 11c), it is determined whether there is a request for reproducing the voice (step 11d). When there is a request for reproducing the voice, the processing is executed to reproduce the voice data stored in the storage unit 6 via the voice processing unit 7 (step 11e). When there is a request of recording (step 11f), the program returns to the initial step 11a of the procedure of starting the recording. When the record finish key is input (step 11g), a voice input symbol is attached to the schedule control position that is input and is stored in the memory unit together with the voice data that are recorded (step 11h). A password is attached to the input data to determine whether they should be confidentially controlled or not (step 12a). When there is a request, numerical data input from the keyboard which is the input unit 2 are added as a password to the stored data (step 12b).

Next, it is determined whether there is a voice editing request for the sound pressure data of the stored voice data (step 12c). When there is a request for editing, it is determined whether there is a request for automatic editing (step 12d). When there is a request for automatic editing, the processing is carried out to reproduce the stored voice data into the initial sound pressure and the processing is further carried out to delete the data from the region where the sound pressure is smaller than predetermined value (step 12e). When there is a request for manual editing (step 12f), the delete key input of the input unit 2 is monitored while the voice is being reproduced and the data are deleted from the section designated by the key input (step 12g). When there is a request for reproducing the voice-edited data (step 12h), the processing is executed to reproduce the edited voice data (step 12i). Here, when the key input of the finish of voice editing is detected (step 12j), the schedule control mode is resumed (step 12k). The processing for attaching a password to the input document data is carried out in the same manner as the processing for attaching a password to the voice data (step 12m) (step 12l).

Next, the processing of the whole schedule control system will be described in conjunction with Figs. 13 to 17. When the control program of the

schedule control system is started, first, the processing is executed to display the menu screen (step 13a) to wait for the input of a menu select number (step 13b). When the menu select input is "1. Preparation of New Schedule", the input processing routine of schedule control data is executed (step 13c) as explained in conjunction with Figs. 10 to 12 and the input processing is finished when the edit finish key is input (step 13d). When the edit finish key is input, a screen is displayed (step 13e) to promote the key input that designates to register the schedule data that are input. When the key input that designates the registration is detected (step 13f), a screen is displayed to input the name of the document registered (step 13g). Then, the input of registration execution key is monitored and when the input of execution key is detected (step 13h), the schedule control data are stored in the external storage unit 5 (step 13i) and the program returns to the menu screen display processing.

When a menu "2. Renewal of Schedule" is selected and is input, the schedule control document stored in the external storage unit 5 is retrieved and the processing is executed to display a list of the document names and document numbers on the display unit 1 (step 13j). Further, the processing is executed (step 13k) to display the screen which promotes the designation input concerning which document be renewed among the documents that have been registered and the call execution key input is monitored (step 13l). When the call execution key is input, the document that is designated to be input is stored in the storage unit 6 from the external storage unit 5 and is displayed on the screen (step 13m). Thereafter, the processing is the same as the processing for preparing a new schedule.

Next, "3. Schedule Control" which is a processing for controlling the schedule control system will be described with reference to Figs. 14 to 15. Like the above-mentioned renewal processing, this control processing consists of retrieving a schedule control document stored in the external storage unit 5 and displaying a list of the document names and document numbers on the display unit 1 (step 14a). The processing is executed to display a screen that promotes the input of designation as to which schedule be controlled among those in the list (step 14b). When the execution key input is detected (step 14c), the content stored in the external storage unit 5 is stored in the storage unit 6 and is displayed on the screen (step 14d). Here, a screen is displayed to promote the input to designate whether the control mode should cover the notice control only or should cover up to the automatic answering control (step 14e). When the "1. Notice Control" is selected and is input, the data

stored in the storage unit 6 are displayed on the screen starting from those closest to the scheduled time (step 14g). A screen is displayed for selecting and inputting a method of notice (step 14h). Here, a plurality of conditions can be set.

When the "2. Automatic Answering Control" mode is selected and is input, a screen is displayed to input, a screen is displayed to input a designation as to whether the notice control be carried out using a communication circuit or not (step 14j). When the control mode which utilizes the communication circuit is selected (step 14k), a screen is displayed to promote the input of a telephone number that should be called (step 14l). When the input of number is finished (step 14m), the control mode, notice mode and telephone number are stored in a stack region in the storage unit 6 (step 15a). Then, a data requesting the prealar-  
ming at a time closest to the present time is selected from the schedule control data that are being controlled (step 15b), and the time at which the data is requesting the prealar-  
ming is set as alarm to the timekeeping unit 10 (step 15c). The trigger of alarm processing is given from the timekeeping unit 10 to the control unit 3 in the form of interrupt processing. When the set time is detected (step 15d), it is determined whether a mode is selected to make communication over the tele-  
phone using public circuit (step 15e). When it is the notice mode by telephone, the telephone number to be called that has been stored is stored in a predetermined place in the storage unit 6 (step 15f) and a telephone circuit processing routine is effected (step 15m).

When it is not the notice mode by telephone, it is determined whether a notice mode by display is assumed or not (step 15f). When this mode is assumed, the content of schedule is displayed on the screen of the display unit 1 (step 15g).

When it is not the notice mode by display, it is determined whether a mode for producing alarm by buzzer is assumed or not (step 15h). When this mode is assumed, the processing is carried out to intermittently energize the buzzer in the control unit for a predetermined period of time (step 15i). When none of these modes is assumed, it is determined whether a mode for producing voice alarm is assumed (step 15j). When this mode is assumed, the voice information of a fixed form saying "it's the scheduled time" or the voice data are stored in a predetermined place in the storage unit 6, and a voice output processing routine is called (step 15n).

Next, the system response to the communication from an external unit over a public communication (telephone) circuit will be described in detail with reference to Figs. 16 and 17. First, when a call signal is input from the telephone circuit (step 16a),

the circuit is off-hooked (circuit is connected), and the voice data stored in advance in the ROM of the storage unit 6 are transmitted to a person sending the signals via the voice processing unit 7 and the transmission processing unit 8 to inform him of the fact that the automatic answering mode is now assumed (step 16b). At this moment, the time control for accepting the reservation of schedules is set to the timer (step 16c), and the input of "0" signal of the push dial which is a signal requesting the reservation of schedule (the processing of this signal will be described later in detail in conjunction with Fig. 22) and the lapse of time are monitored (step 16d) (step 16e). When the "0" signal is not input within a predetermined period of time, the automatic answering function in the schedule control mode is assumed, the timer is set to limit the recording time (step 16f), and a sound "pee" is produced to notify the automatic answering record standby condition (step 16g). Thereafter, the voice input from the telephone circuit is stored in the storage unit 6 via the transmission processing unit 8 and voice processing unit 7 (step 16h). This processing is continued until the circuit is broken (step 16i) or until the preset time of the timer lapses (step 16j) and, then, the on-hook processing (circuit is broken) is executed (step 16k). Whether any abnormal condition has developed or not is determined by retrieving a predetermined area of the storage unit 6 through a series of circuit processings after the on-hook (step 17a). When there is no abnormal condition, the output processing is executed to display the processed content as a message on the display the processed content as a message on the display unit 1 (step 17b). When there is any memory indicating the occurrence of abnormal condition, the display unit 1 displays the occurrence of abnormal condition in the receipt processing (step 17c).

When the input "0" signal requesting the schedule reservation mode is detected in the step 16d, it is determined whether a password is designated to the schedule control (step 16l). When there is the designation, the password processing routine (this processing will be described later in conjunction with Fig. 19) is executed (step 16m). A predetermined area of the storage unit 6 is retrieved to determine whether any abnormal condition has developed in the password processing (step 16n). When no abnormal condition has developed, the timer is set to limit the time for accepting the reservation of schedules (step 16p), and the voice response is executed to notify that the reservation of schedules can be accepted (step 16q). The contents are as shown below.

"Correctly input the day and hour you want to make or cancel your reservation in the order of year, month, day, hour, minute."

Here, the data each consisting of two digits as a section are received. Further, an outgoing signal specific to the push dial signal is utilized as mentioned earlier, and the reception and determination processings are effected via the transmission processing unit 8. When the digit number of the input signal equals to a predetermined digit number, it is determined whether the format that is input is correct or not (step 16r). When it is not correct and the present time of the timer has not been lapsed (step 16s), the voice response is produced again at the step 16q. When the format is correct, the data in the external storage unit 5 are retrieved to determine whether the schedule has already been booked on the day and hour that are input or not (step 16t). When there has been hooked the schedule, determination is rendered as to whether it is the data with a code "#" for cancelling the reservation (step 16u). When there does not exist the "#" code, the voice response of the fixed form is executed to notify that the schedule has been booked already (step 16v) and the voice response is executed again (16q). When the condition of accepting reservation is satisfied, they are stored in the storage unit 6 as schedule control data according to the input data (step 16w). Further, the voice response of a fixed form is executed to notify the content of reservation and to notify the condition for recording the content of reservation (step 16x), and the program proceeds to a next step 16f.

The processing for controlling the telephone circuit will now be described in conjunction with Figs. 18 and 19. This is the transmission processing for calling the circuit according to a telephone number that is to be called stored in a predetermined region of the storage unit 6 (step 18a). Based upon the presence or absence of a ring-back tone (generally referred to as calling sound) reflected by the person being called, it is determined whether the person being called is already taking (step 18b). When the person being called is talking, a time one minute after the present time is set to the alarm generator 10f of the timekeeping unit 10 (step 18c). When the time of the timekeeping unit 10 is lapsed (step 18d), it is determined whether the redial circuit is less than five times (step 18e). When it is less than five times, the redial processing is effected. When the transmission is not possible even after five times of redialing, the transmission unfinished is displayed to finish the series of processings (steps 18h, 18p). This processing is executed in the same manner as that of the step 18g when the circuit is not connected through the person being called is not talking, i.e., even when the preset time of the calling time-monitoring timer has lapsed with the person being called not present. When the person being called connects the circuit, it is determined

whether a password is attached to the transmitted data or not (step 18i). When the password is not attached, the processing is executed to inform the person who wishes to talk of the arrival of the scheduled time together with the name of a person who is wanted to be called by way of voice response of a fixed form. In this processing, the name of the person who is wanted to be called and the content to be transmitted are stored in a predetermined place in the storage unit 6 (step 18l), and a subroutine of voice processing is called and is executed (step 18m). In the voice output routine as shown in Fig. 20, the data stored at a predetermined position of the storage unit 6 are continuously transmitted maintaining a predetermined period to the voice processing unit 7 to reproduce the voice (step 20a). In this processing, the data to be reproduced are transmitted up to the last data at a predetermined position of the storage unit 6 (step 20b). When a password is put to the content being transmitted, a password processing routine is executed (step 18j). In the password processing as shown in Fig. 19, the name of a person who is wanted to be called and voice data which request the password are stored at a predetermined position of the storage unit 6 (step 19a), a password input allowance time is added to the present time and is set to the alarm generator of the timekeeping unit 10 (step 19b) to execute the aforementioned voice output processing routine (step 19c). The password requested here is determined by digital inputs (predetermined oscillation frequencies are assigned to the buttons) by the push button dial (step 19d). When the password is correct, the program is shifted to the step 18n which is the main processing. When the password is not correct, the timekeeping unit 10 set at the step 19b determines whether the preset time has lapsed or not (step 19e). When the time has not been lapsed, it is determined whether the number of inputs of password is smaller than three times or not (step 19f). When it is smaller than three times, the program returns to the processing of the step 19c. Here, when the password input allowance time is exceeded or when the password is input more than a predetermined number of times, the fact that abnormal condition has developed in the password processing is stored at a predetermined position of the storage unit 6 (step 19g) and the program proceeds to the step 18n of main processing flow. Storage at a predetermined position in the storage unit 6 is utilized for determining whether the processing is properly executed or not by calling a subroutine.

Here, a determining circuit for determining the password using a push button-type dial (hereinafter referred to as PBD) and signal generating circuit used in the handset unit 8d of Fig. 3 will be



described in conjunction with Figs. 21 and 22.

First, the PBD signal generating circuit will be described in conjunction with Fig. 22. The row addresses and column addresses of a PBD switch matrix PBD 8dc are connected to an IC which is a generally known PBD signal generating unit 8da (MSM6234RS or the like of Oki Electric Co.) to generate a tone signal specific to the public circuit using the oscillator 8cc having an oscillation frequency of 3.579545 MHz as a reference. The tone frequencies of row signals R1 to R4 (low group frequencies) are defined as follows:

R1: 697 Hz,

R2: 770Hz

R3: 852 Hz,

R4: 941 Hz

The column signals C1 to C4 (high group frequencies) are defined as follows:

C1: 1290 Hz, C2: 1336 Hz

C3: 1477 Hz, C4: 1633 Hz

In Japan, A, B, C and D arranged on the column C4 are not used. The condition for generating signals will be briefly described here. When, for example, "1" of PBD 8dc is depressed, the frequency of 697 Hz of R1 and the frequency of 1209 Hz of C1 are produced being superposed one upon the other.

In order to determine a password while the circuit is being connected, the NCU unit 8c contains circuit means shown in Fig. 21 as a PBD signal determining unit. This is so constituted that the row/column addresses are detected by an IC which has been known as a reception branching filter 8ca for branching and filtering the received signals (MSM 6908 BAS and the like of Oki Electric Co.), by the oscillator 8cc that produces reference signals for the above IC, and by an IC which has been known as a signal detector 9cb for detecting the original PBD signals from the signals branched into the low group/high group (MSM 6909 BAS and the like of Oki Electric Co.), and are sent to the transmission control I/F unit 8h which is the I/F unit for transmitting the signals to the CPU that controls the whole document editing apparatus. The number of the initial PBD that is depressed is determined by the control unit 3 from the row/column addresses. Concretely speaking, resistors for adjusting levels according to the characteristics of the ICs and capacitors for the filters are connected to the circuits of Figs. 21 and 22 which, however, are not described here.

Next, the processing of automatic answering will be described in conjunction with Fig. 23. When the processing is shifted from the document editing mode to the automatic answering mode (step 23a), a message is displayed on the screen requesting that the document floppy disk used for the schedule control be set to the external storage unit 5

(step 23b). It is determined whether the floppy disk is properly set or not (step 23c) and on the screen is displayed that the automatic answering mode is being assumed (step 23d). When there is the ringing from the public circuit (step 23e), the circuit is off-hooked (circuit is connected), a message is stored at a predetermined position of the storage unit 6 to inform of the automatic answering, and the processing is executed to call a voice output processing routine (step 23f). Then, a record limit time is set to the timekeeping unit 10 (step 23g), and information sound "pee" which informs of the record standby condition is produced (step 23h). The process for storing the input voice in the storage unit 6 (step 23i) is continued until the telephone circuit is broken (step 23j) or until the time lapses (step 23k). When the circuit is broken or the time has lapsed, the one-hook processing (circuit break processing) is executed (step 23m) and the data in the storage unit 6 is stored in the external storage unit 5 (step 23n). This processing is continued until the finish of automatic answering mode is input (step 23p).

Fig. 25 illustrates the appearance of a Japanese language word processor having the document edit processing and data processing functions. The same portions as those of the apparatus of Fig. 1 are denoted by the same reference numerals.

According to the present invention, the voice data can be input using simply constructed data input means in addition to document data such as text data and graphic data that are input through an input unit such as a keyboard. By controlling the schedule of voice data or document data, furthermore, a secretary function can be realized.

In addition to the above, the voice data can be input using simply constructed data input means in addition to document data such as text data and graphic data that are input through an input unit such as keyboard.

By utilizing the feature of data transmission function of a public circuit network, furthermore, the data such as schedule control can be transmitted to a distant place.

By putting a password to the voice data and by inputting the password by a push button dial of a public communication channel without using the keyboard which is an input unit of the document editing apparatus, furthermore, it is allowed to make sure confidential information from a distant point.

When the person being called is absent, furthermore, the document editing apparatus effects the secretarial work of schedule control by putting the voice message and the push dial signals for a person who is making a call over a public communication channel.

## Claims

1. A document editing apparatus comprising an input unit (2) for inputting character data and like data, a display unit (1) that displays the inputs and the edited document data, a storage unit (6) that temporarily stores character data input from said input unit (2) and stores a system program; an external storage unit (5) that stores the edited document data, and a control unit (3) that executes the document edit processing according to the program stored in said storage unit (6), which further comprises:

means (7) for inputting voice data;  
means (7d) for converting said voice data into digitized data;  
timekeeping means (10) for counting the year, month, day and hour;  
schedule control means for working in synchronism with the day and hour counted by said timekeeping means (10);  
means for storing said document data and/or said digitized voice data in said storage unit as data to be controlled by said schedule control means;  
means for adding schedule control data to said document data and/or to said voice data; and  
voice reproducing means (7h) for reproducing the voice from said digitized voice data;  
wherein said schedule control means causes said display unit (7) to display said document data according to schedule control data and/or causes said voice reproducing means (7h) to reproduce said voice data.

2. A document editing apparatus according to claim 1, which further comprises notice sound generating means for generating notice sound at a predetermined period of time before a scheduled time of schedule control data controlled by said timekeeping means (10).

3. A document editing apparatus according to claim 1, which further comprises means for causing said voice reproducing means (7h) to reproduce said voice data at a predetermined period of time before a scheduled time of schedule control data controlled by said timekeeping means (10).

4. A document editing apparatus according to claim 1, which further comprises public communication channel connection control means (8f) for connecting said voice data input means and said voice reproducing means (7h) to a public communication channel.

5. A document editing apparatus according to claim 1, which further comprises means for inputting voice memo data to schedule control data reserved over said public circuit.

6. A document editing apparatus according to claim 1, which further comprises means for adding password data to schedule control data, and means

for permitting neither input nor reproduction of data that are not in agreement with the passwords.

7. A document editing apparatus according to claim 1, wherein said voice data converting means (7d) is provided with means that variably sets the digitizing frequency.

8. A document editing apparatus according to claim 1, which further comprises means for detecting a section in which the sound pressure of a voice input from said voice input means (7a) is smaller than threshold value, and means for blocking signals of the section detected by said detecting means from being input to said voice data converting into digitized data.

9. A document editing apparatus according to claim 6, which further comprises means for substitutes said password data by specific voice data generated by public transmission equipment.

10. A document editing apparatus according to claim 1, which further comprises means for displaying a message on said displaying means (7) when said schedule control data from said public communication channel are input or are cancelled.

11. A document editing apparatus comprising an input unit (2) for inputting character data and control instructions, a display unit (1), a temporary storage unit (6), an external storage unit (5), and a control unit (3) which executes the document edit processing according to control instructions and document data input from said input unit (2) by utilizing said temporary storage unit (6), which executes the display processing to display the edited document data on said display unit (1), and which stores the edited document data in said external storage unit (5), further comprising:

means (7a) for inputting said voice data;  
means for storing said voice data;  
schedule control data input means for adding schedule control data to said document data and/or to the voice data;  
voice reproducing means (7h) for reproducing voice from the voice data;  
timekeeping means (10) for generating time data; and  
schedule control means for displaying the corresponding document data on said display unit (1) according to said schedule control data and the time data obtained from said timekeeping means (10) and/or reproduces the voice data using said voice reproducing means (7h).

12. A document editing apparatus according to claim 11, further comprising:  
public communication channel connection control means (8f) which connects said voice data input means (7a), said schedule control data input means and said voice reproducing means (7h) to a public communication channel.

13. A document editing apparatus comprising

an input unit (2) for inputting character data and like data, a display unit (1) that displays the inputs and the edited document data, a storage unit (6) that temporarily stores a system program; an external storage unit (5) that stores the edited document data, and a control unit (3) that executes the document edit processing according to the program stored in said storage unit, the improvement further comprising:

means (7d) for converting said voice data into digitized data; 10

timekeeping means (10) for counting the year, month, day and hour;

schedule control means for working in synchronism with the day and hour counted by said timekeeping means; 15

means (6) for storing said document data and/or said digitized voice data in said storage unit as data to be controlled by said schedule control means; 20

means for adding schedule control data to said voice data;

means (7h) for reproducing voice from said digitized voice data;

data transmission means for transmitting said schedule control data over a public communication channel; and 25

means for receiving, as schedule control data, the digital inputs of specific voice data generated by said public communication channel. 30

14. A document editing apparatus according to claim 13, which further comprises means for reproducing by voice a scheduled time of schedule control data registered already.

15. A document editing apparatus according to claim 13, which further comprises means for comparing the reservation time input as digital inputs from said public communication channel with the reservation time registered already. 35

16. A document editing apparatus according to claim 13, which further comprises means for cancelling the registered schedule control data upon receipt of specific voice data generated by said public communication channel. 40

17. A document editing apparatus according to claim 13, wherein means that converts voice data of said document editing apparatus into digital data is provided with means for variably setting a digitizing frequency or sampling frequency. 45

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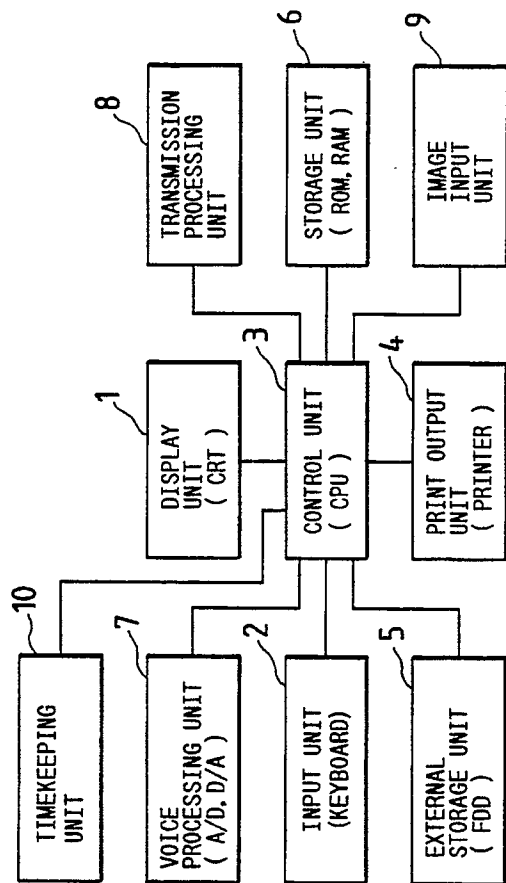


FIG. 1

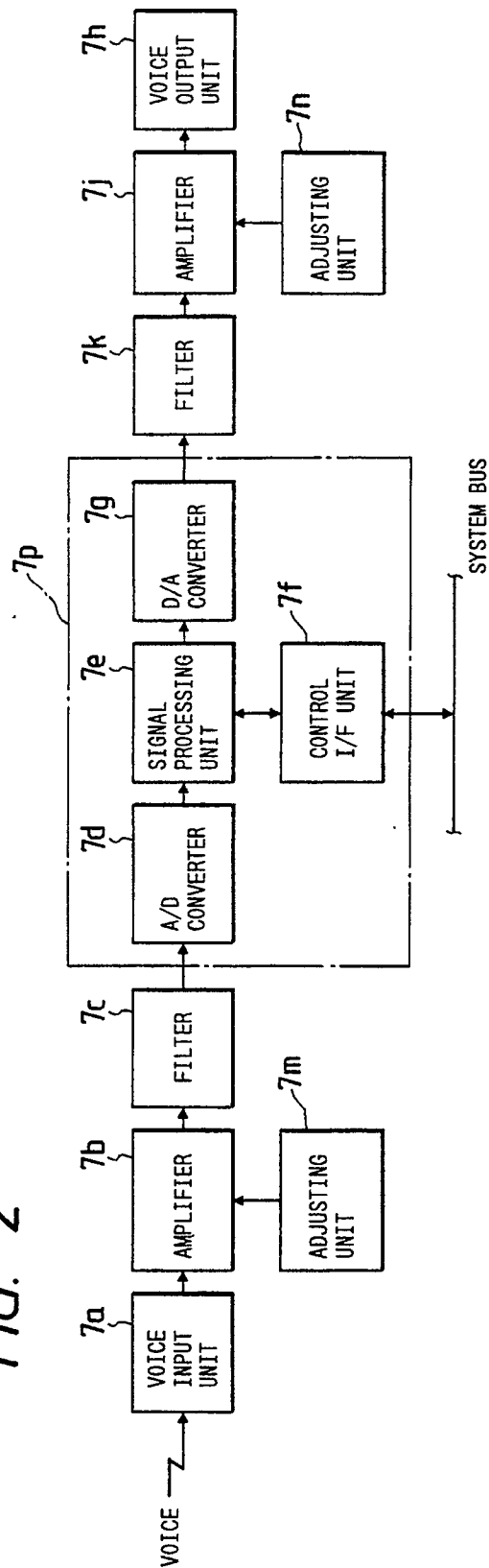


FIG. 2

FIG. 3

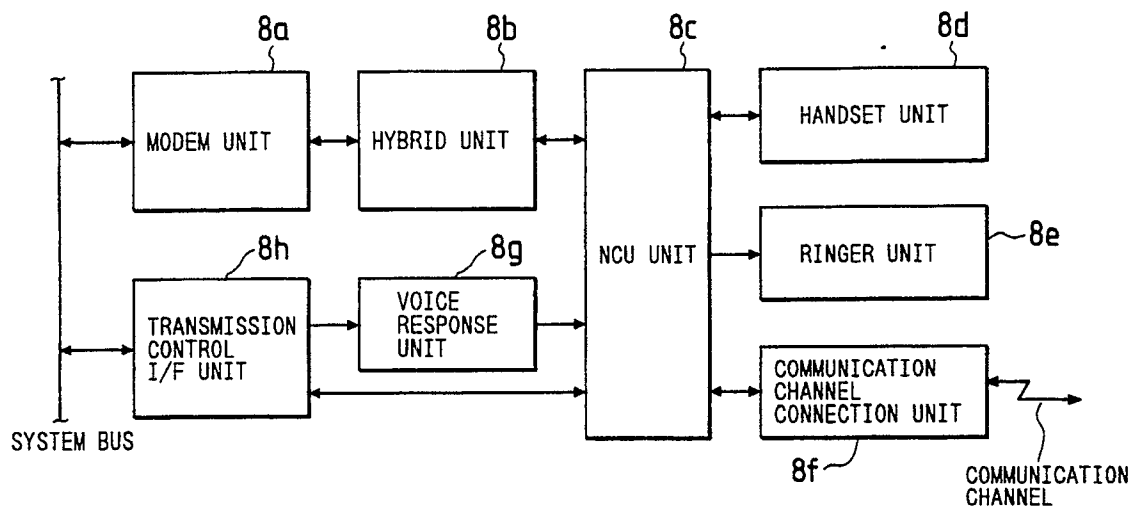


FIG. 4

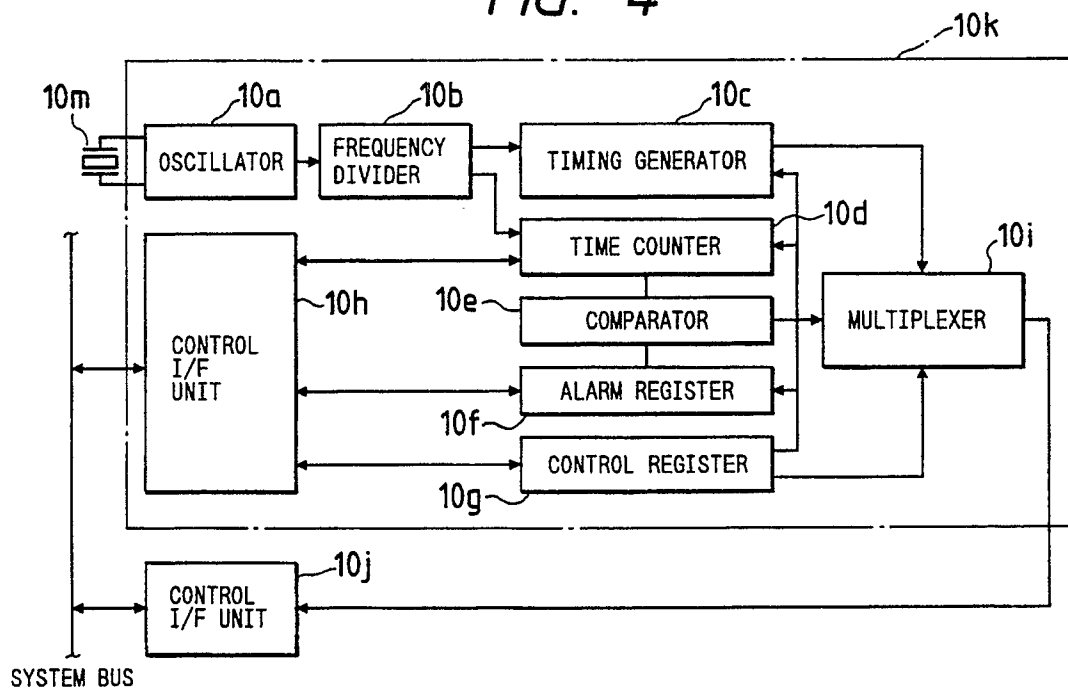


FIG. 5

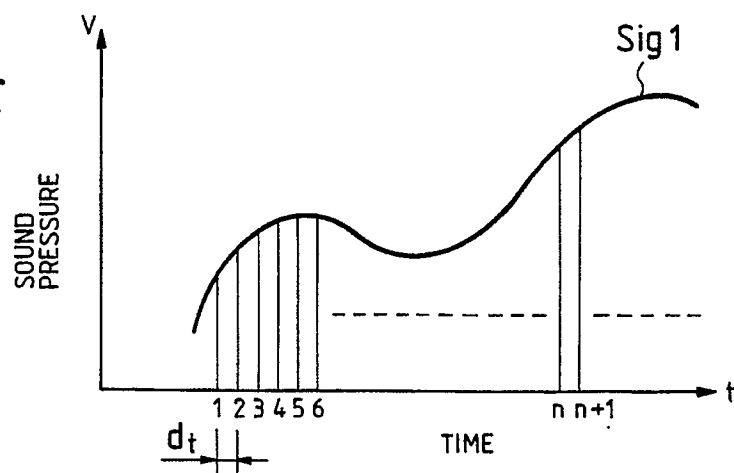


FIG. 6

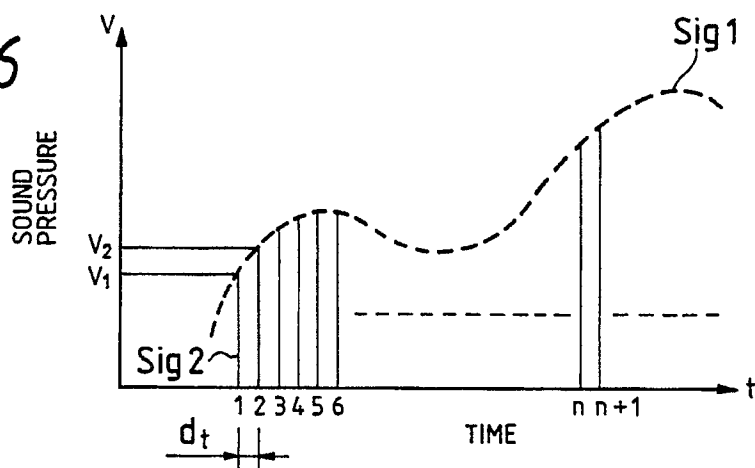


FIG. 7

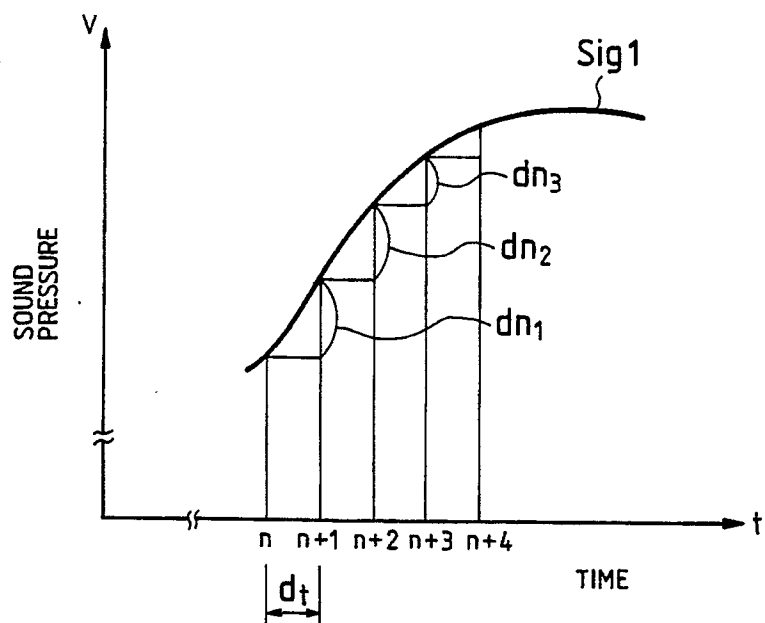


FIG. 8

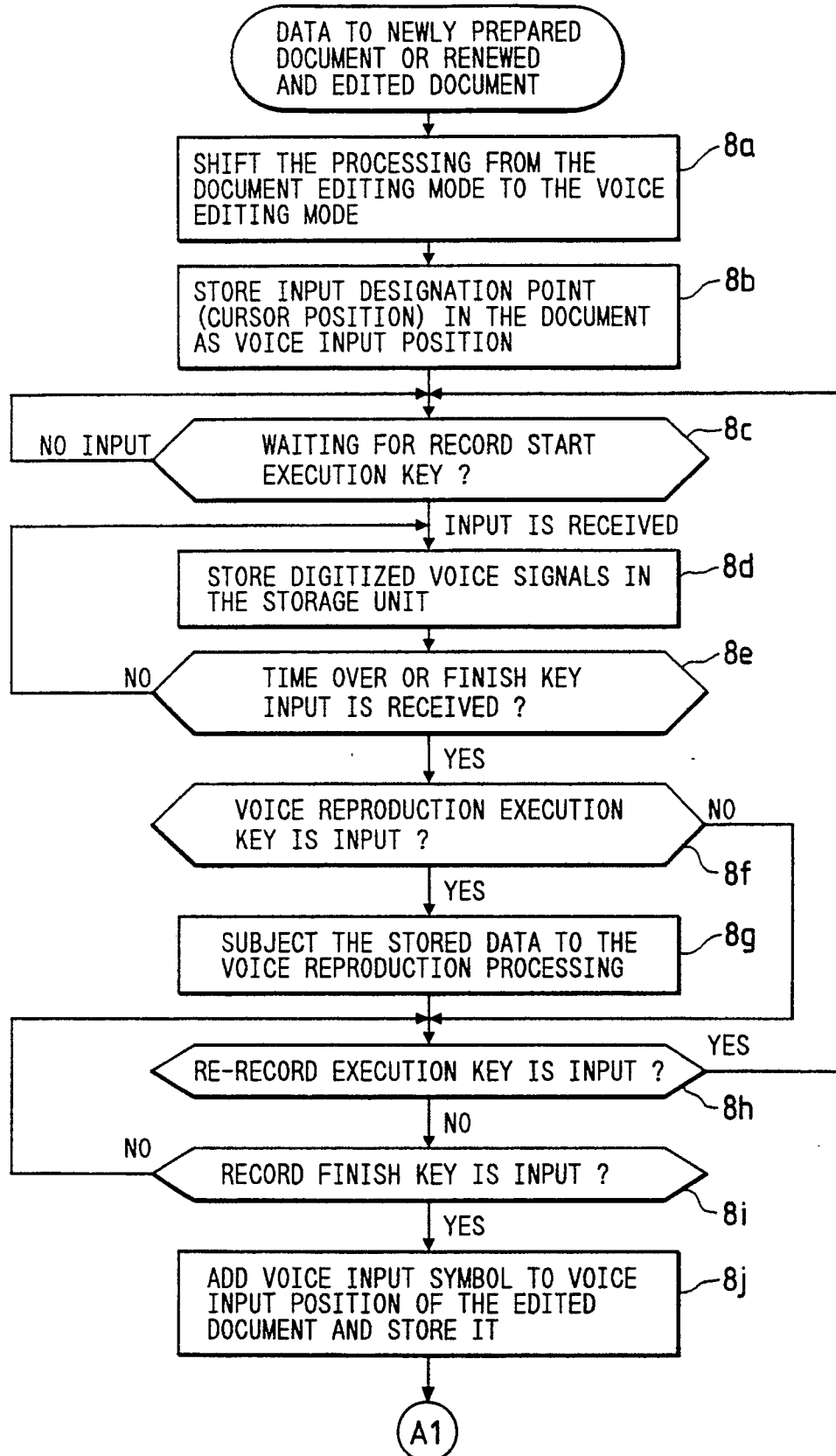


FIG. 9

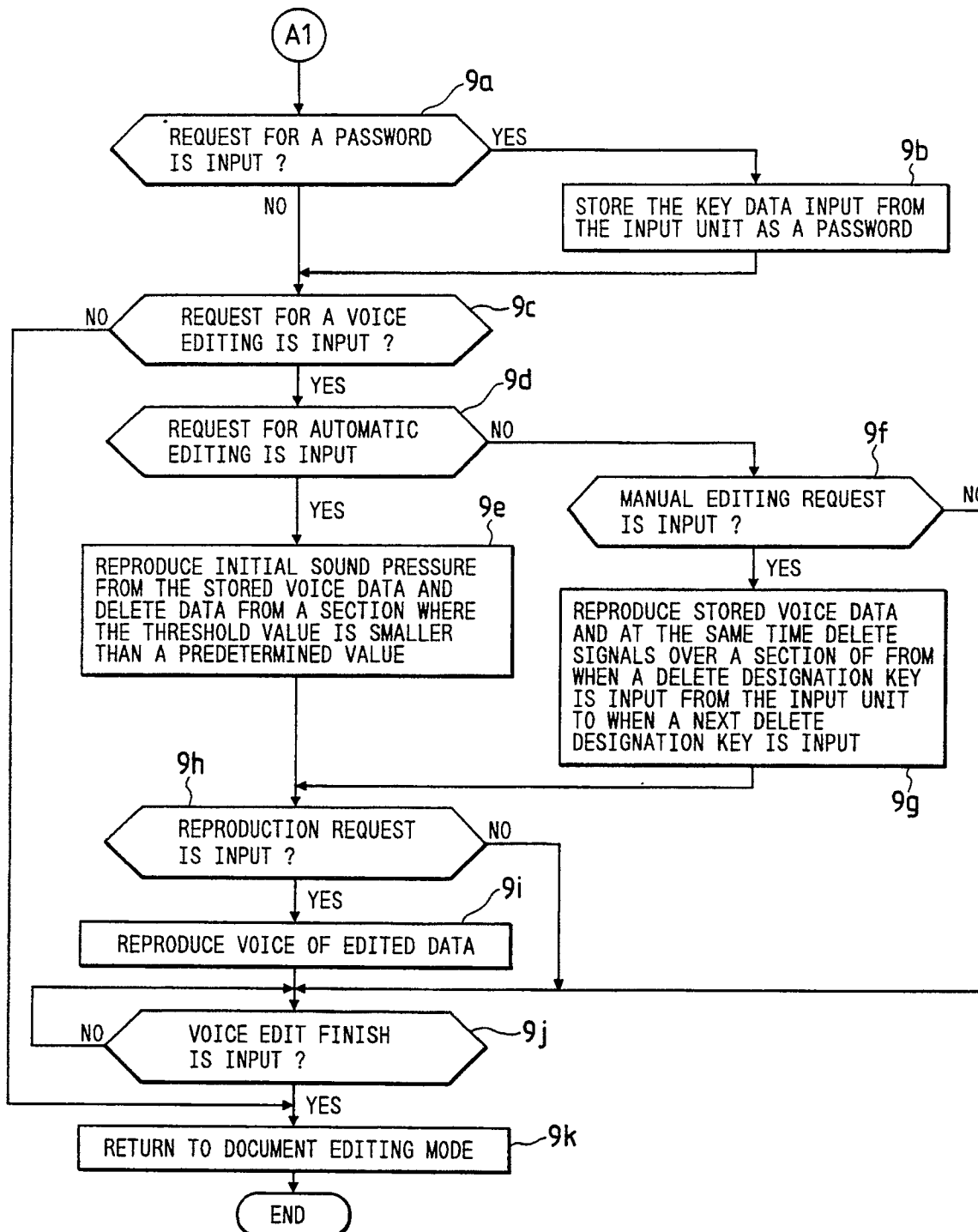




FIG. 10

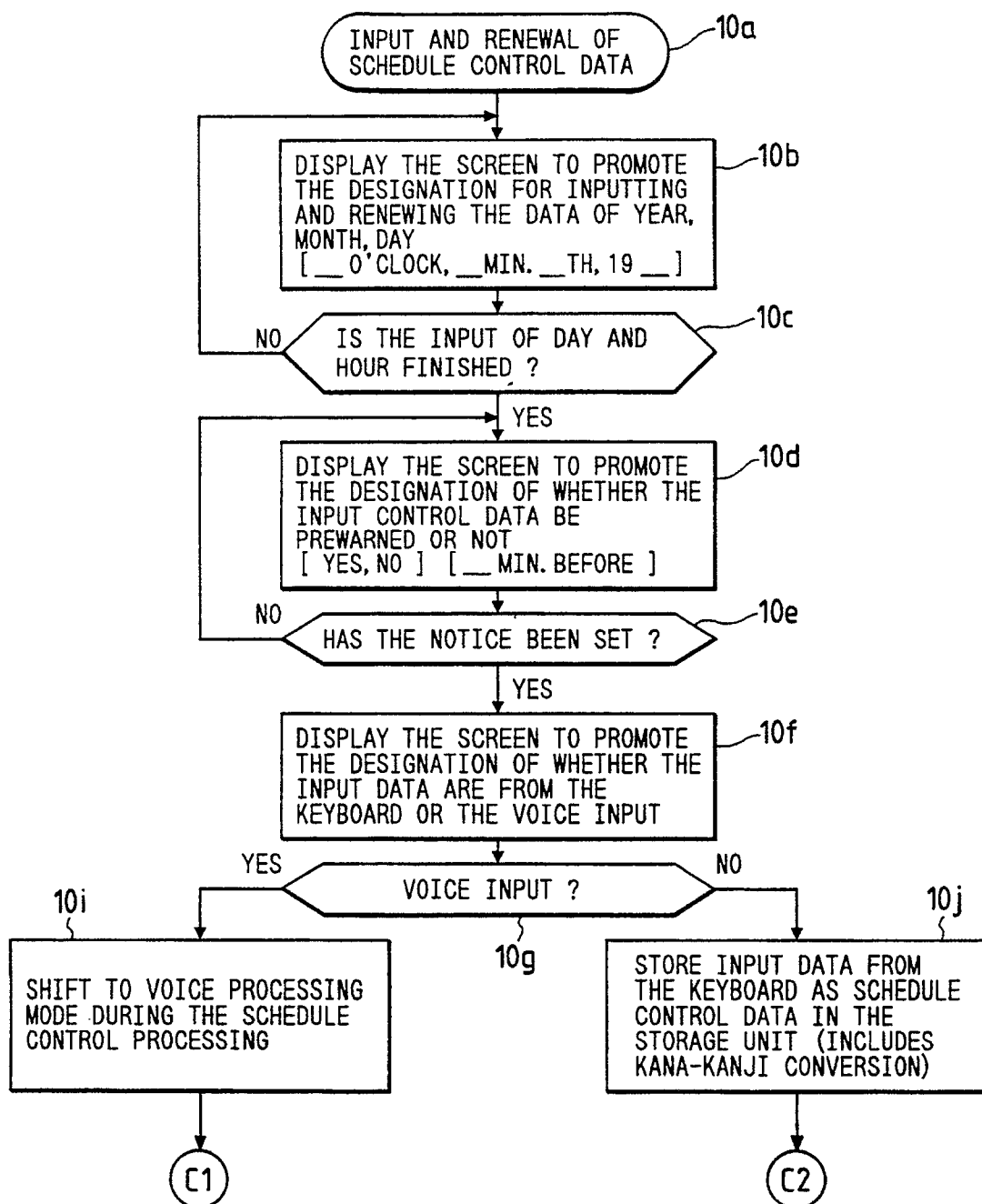


FIG. 11

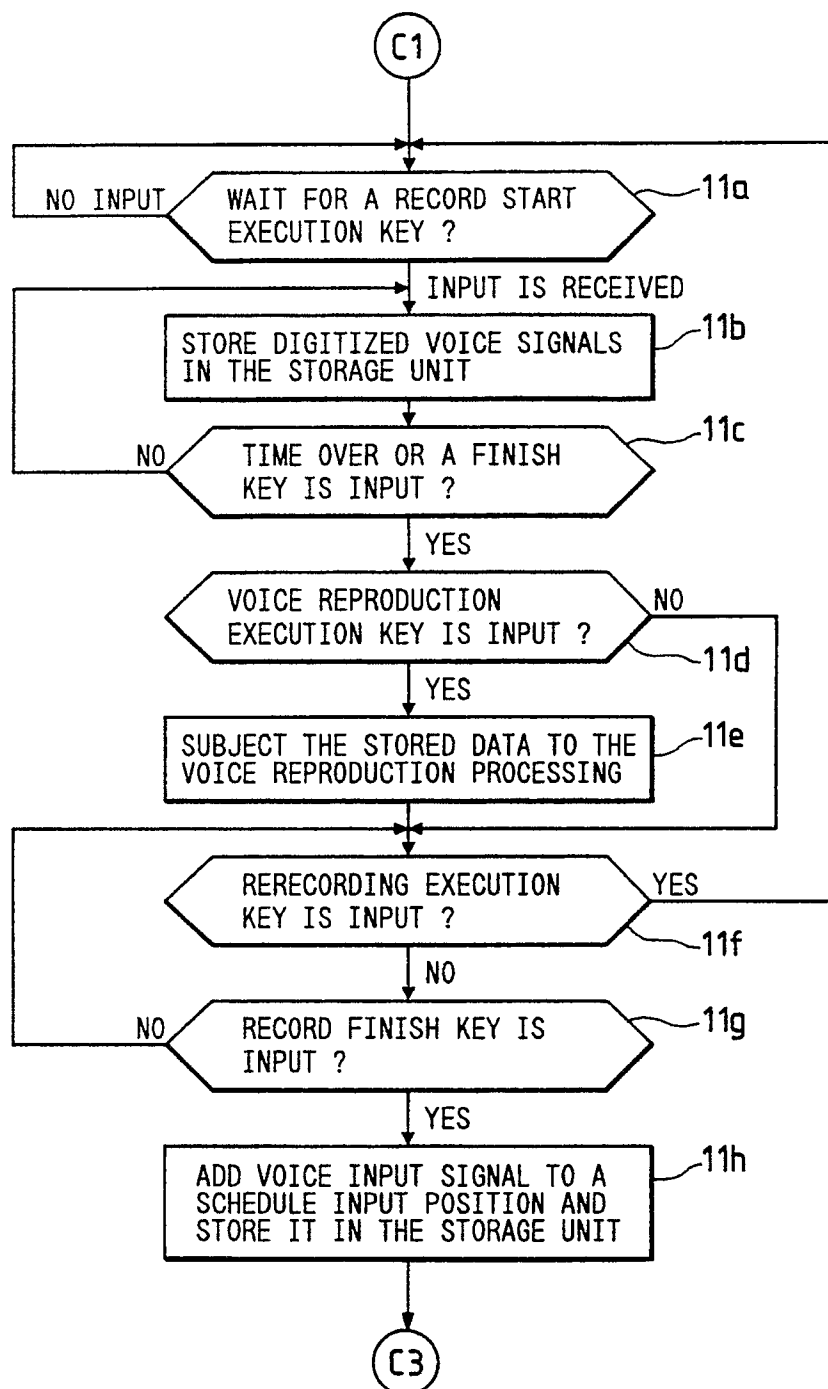


FIG. 12

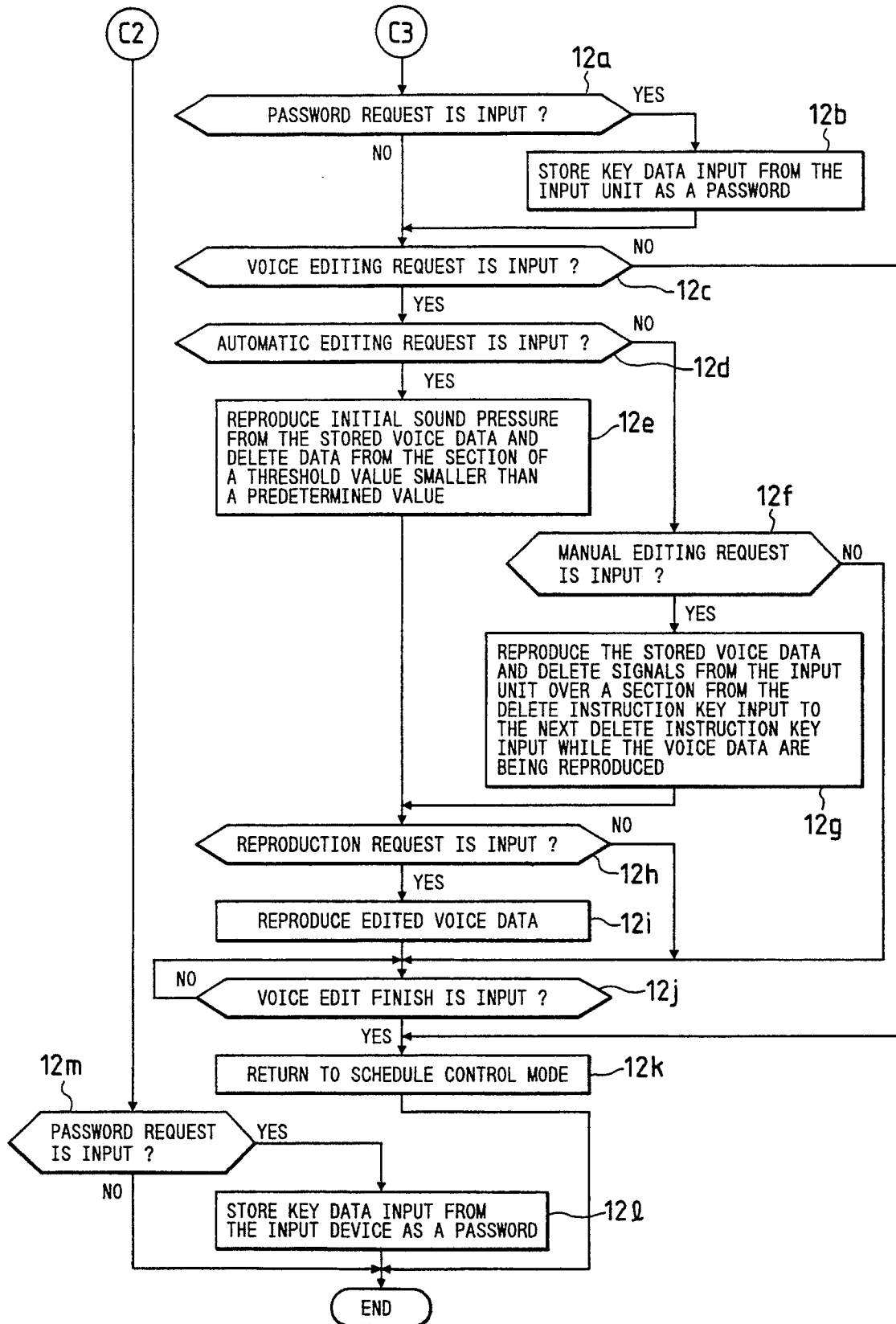


FIG. 13

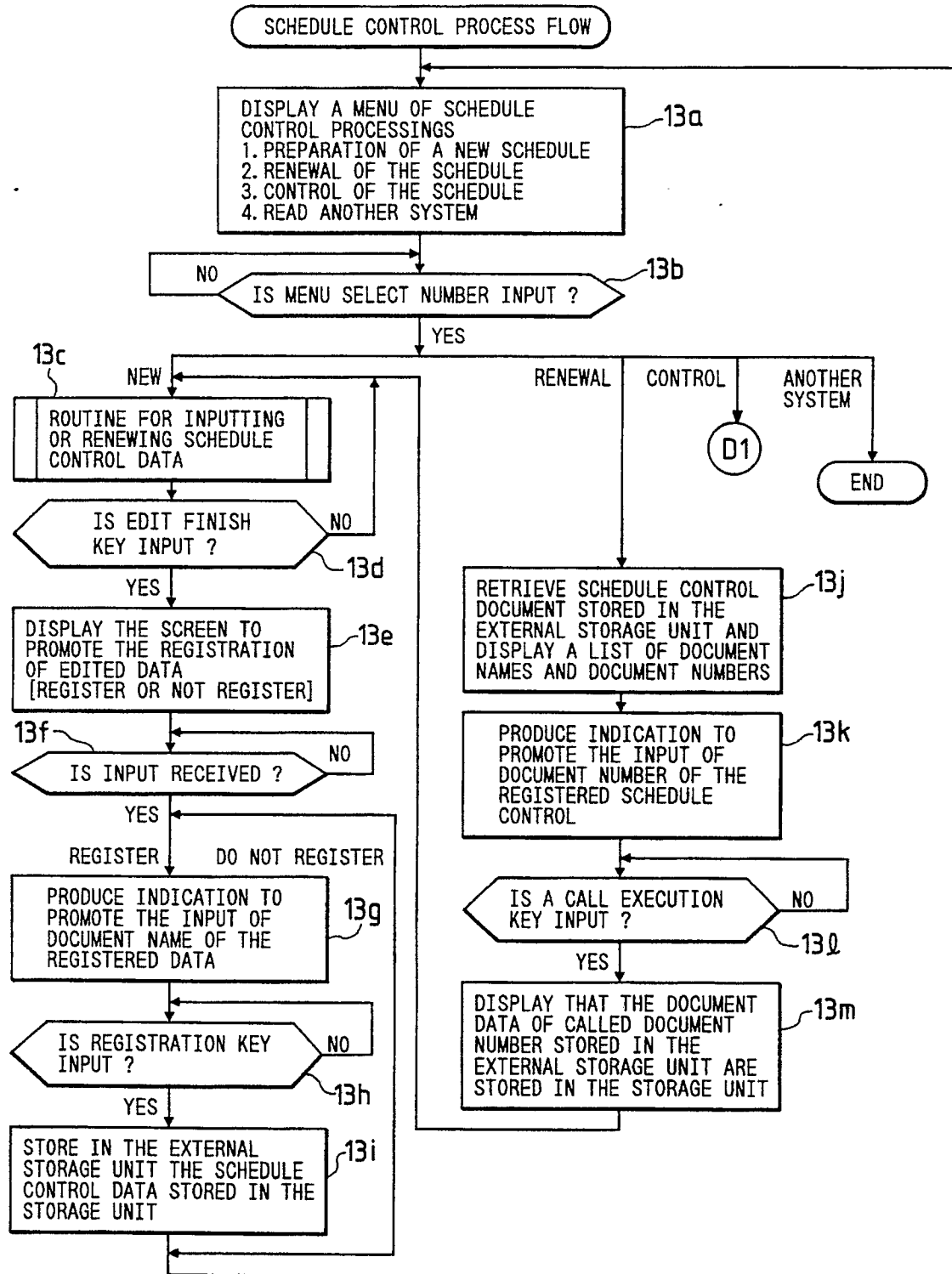


FIG. 14

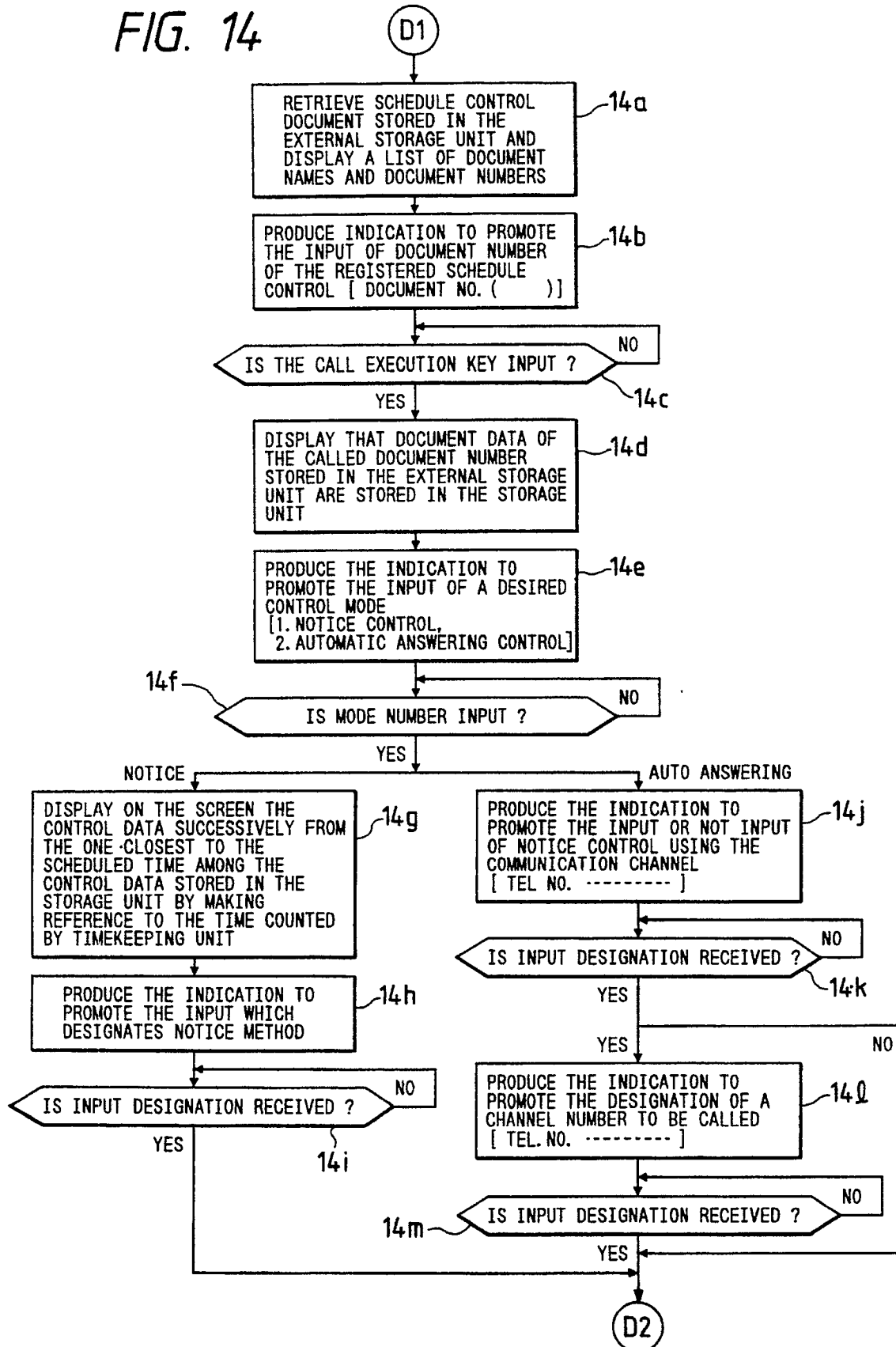


FIG. 15

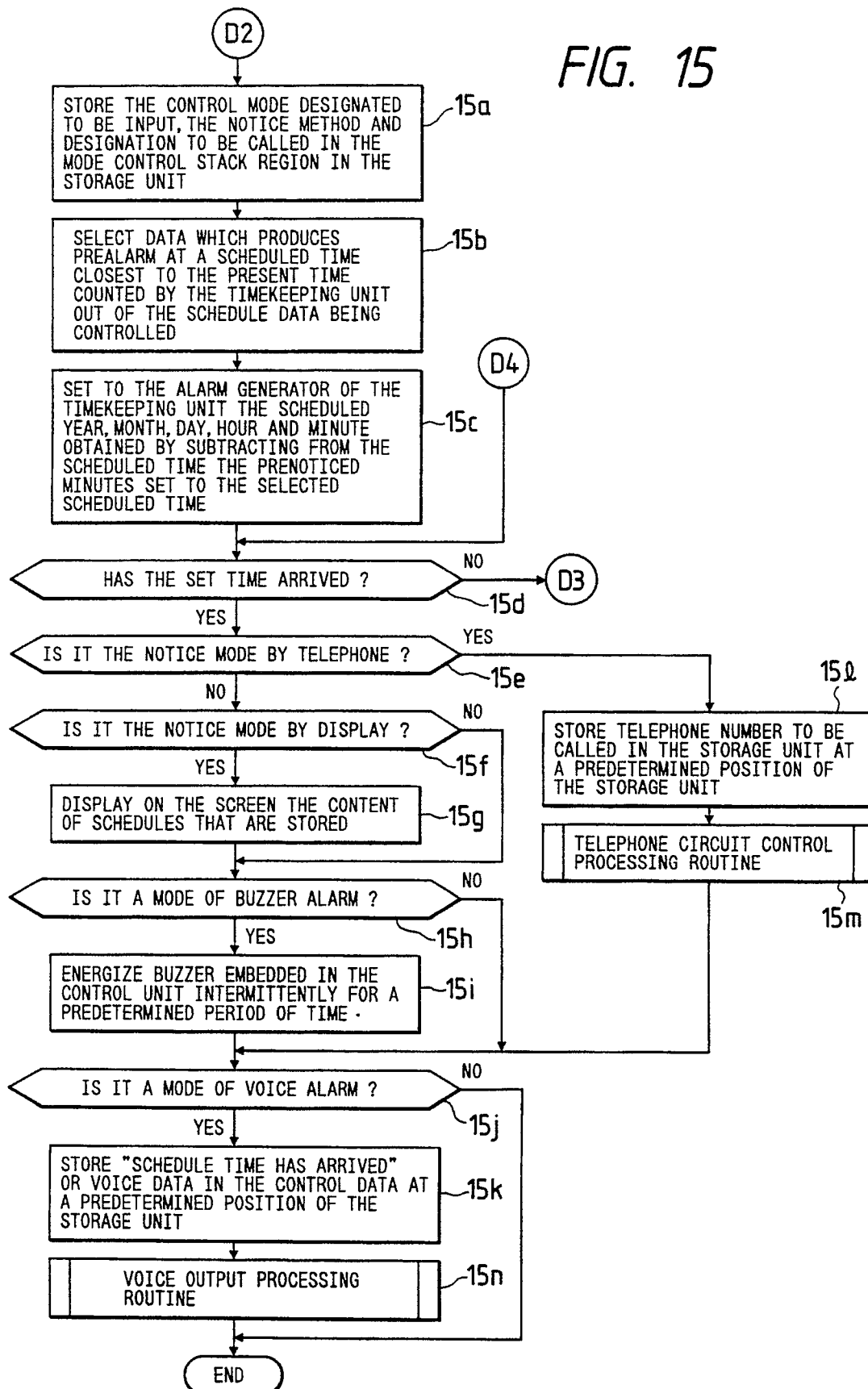


FIG. 16

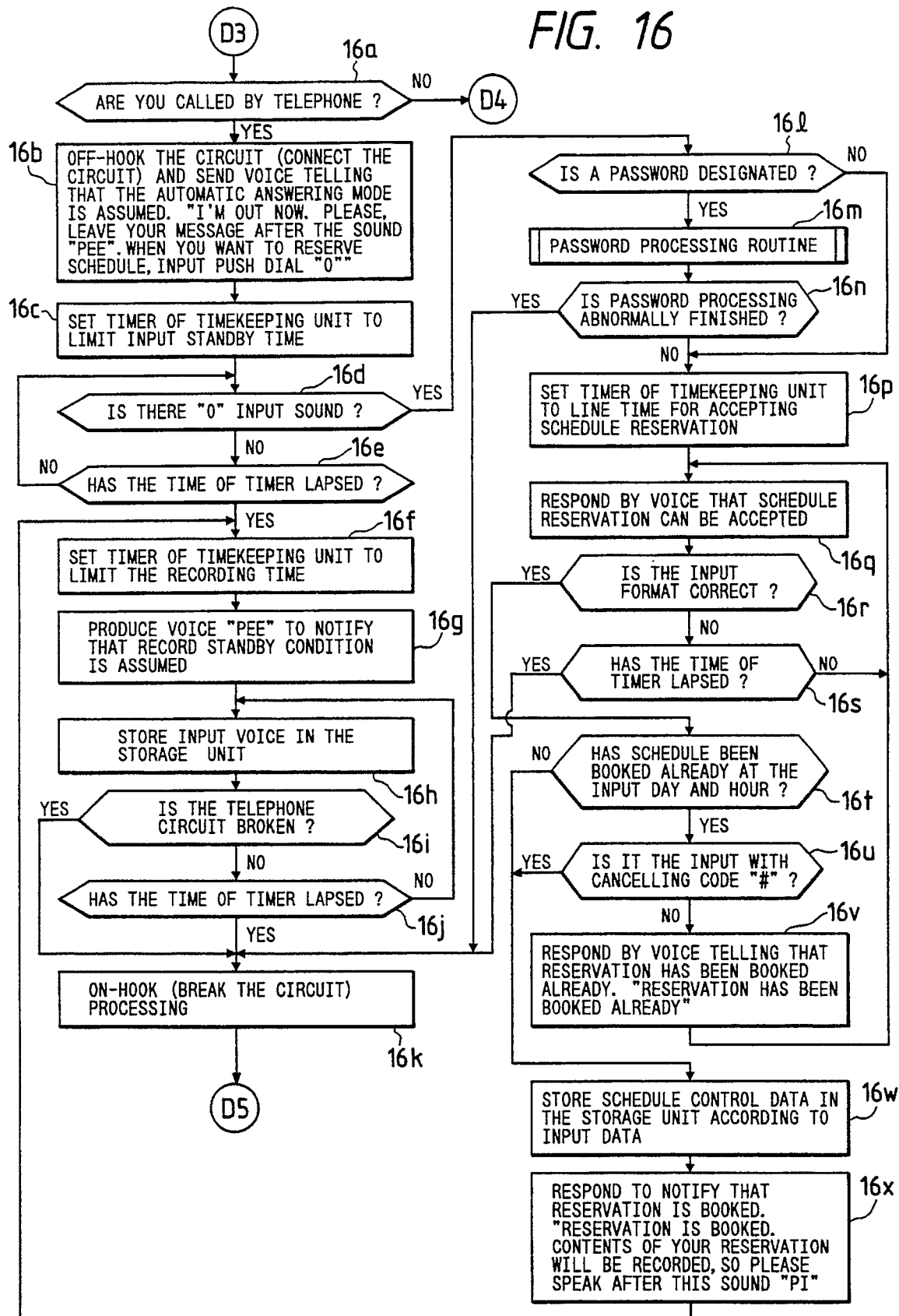


FIG. 17

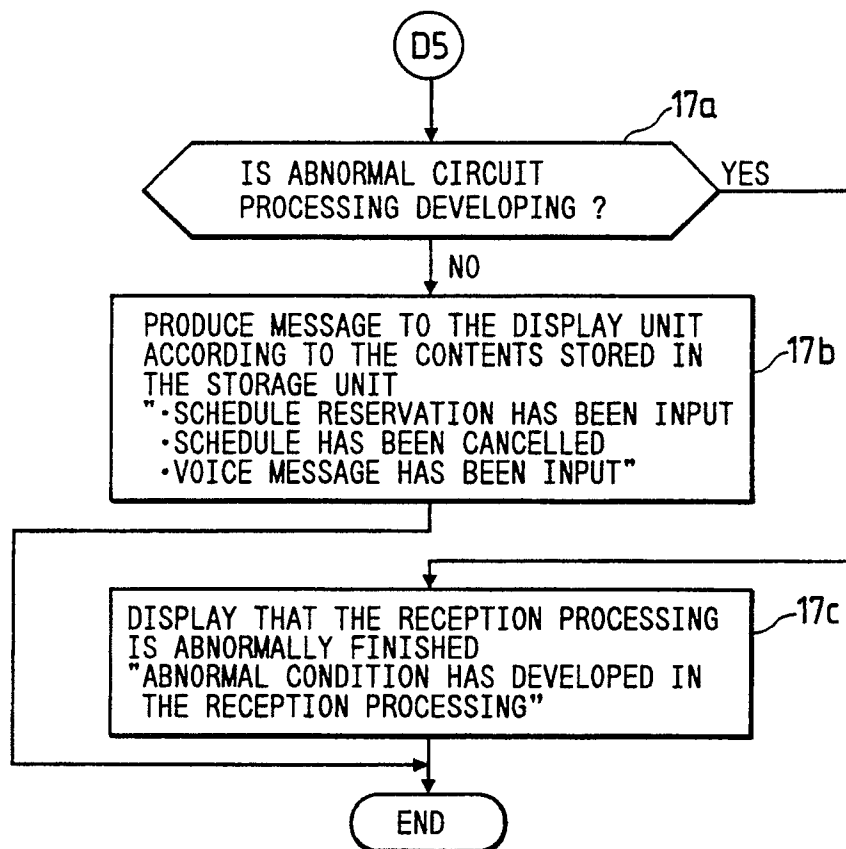




FIG. 18

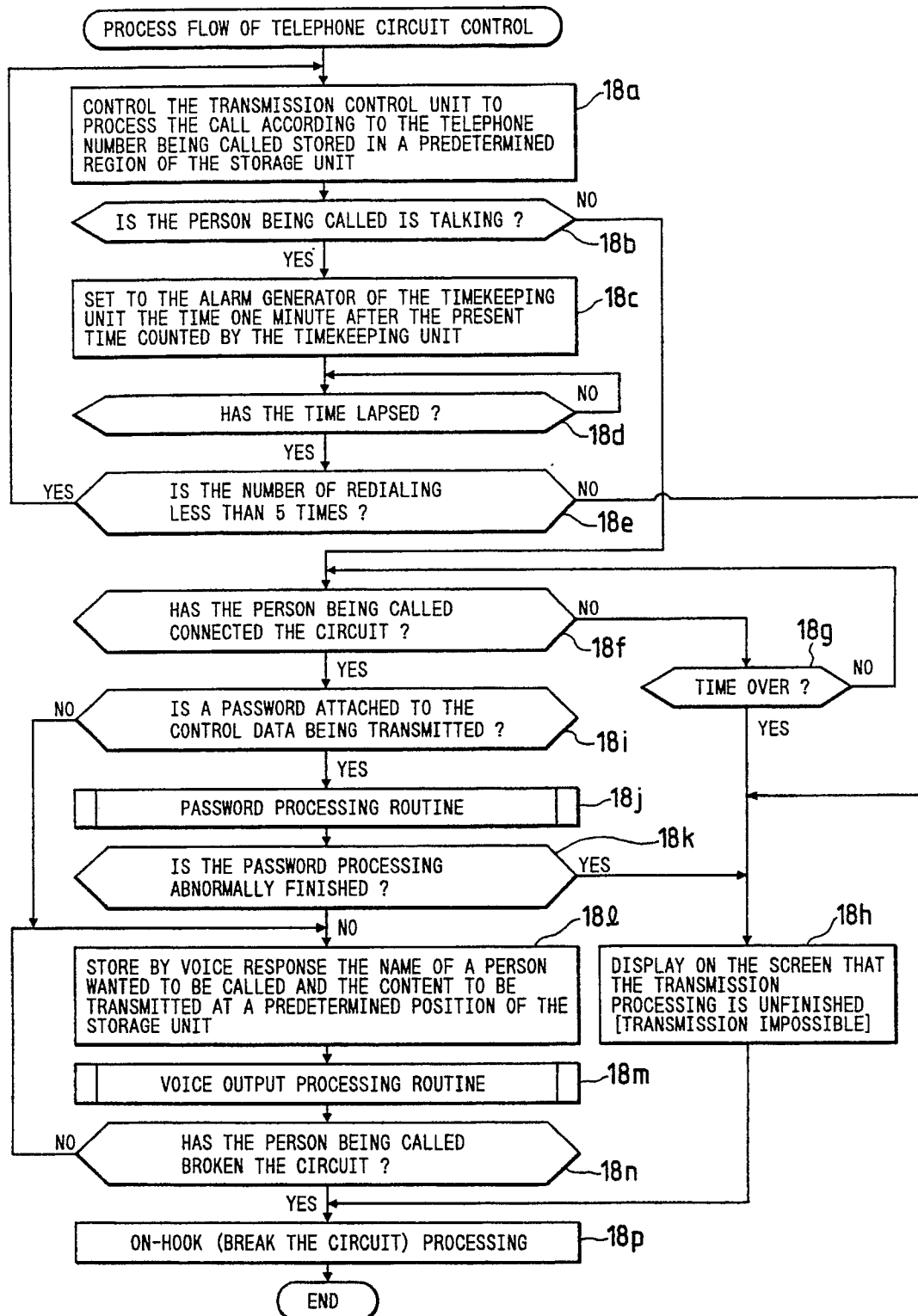


FIG. 19

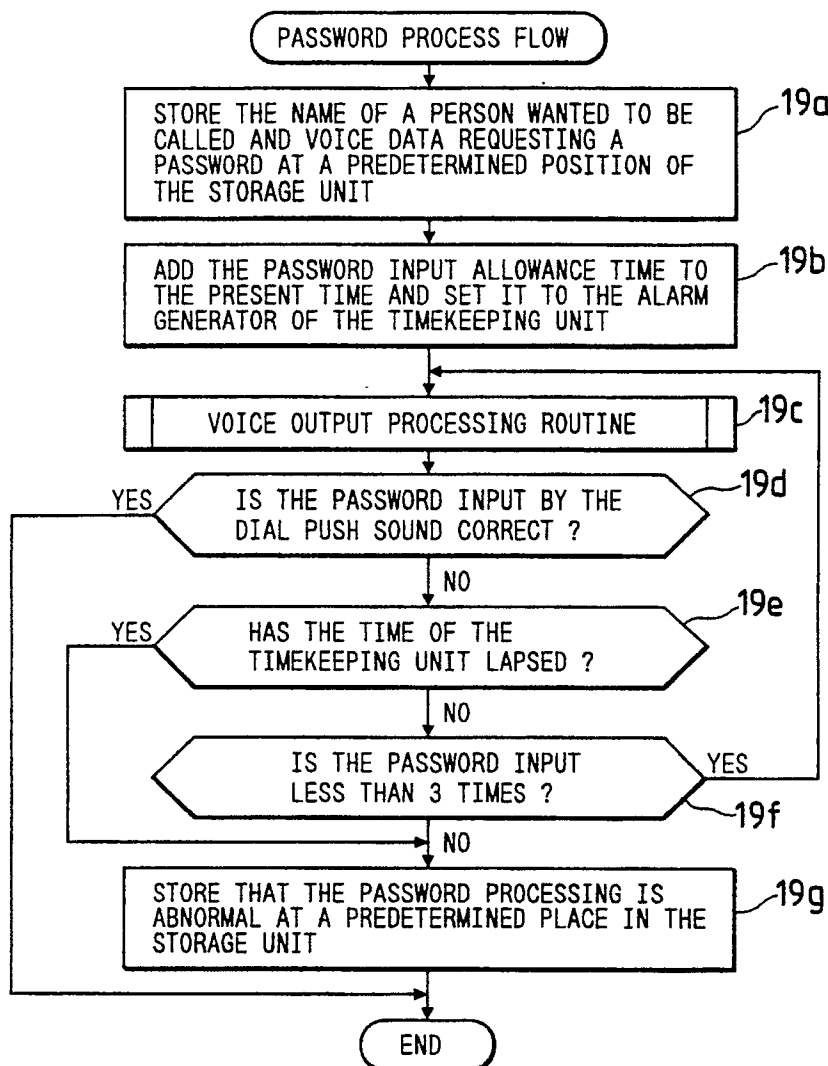


FIG. 20

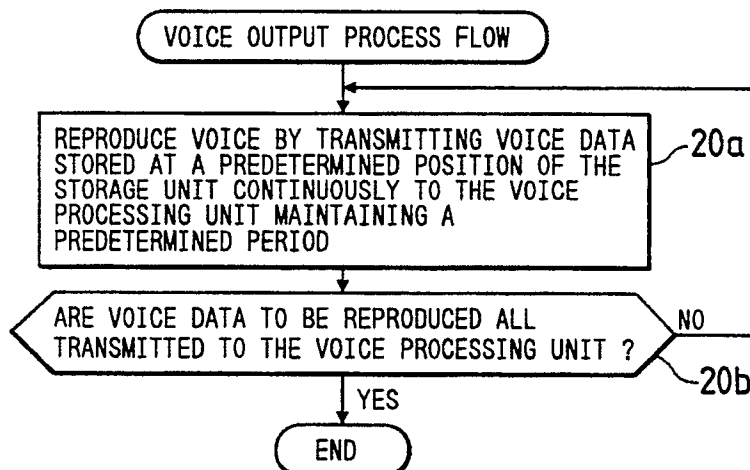


FIG. 21

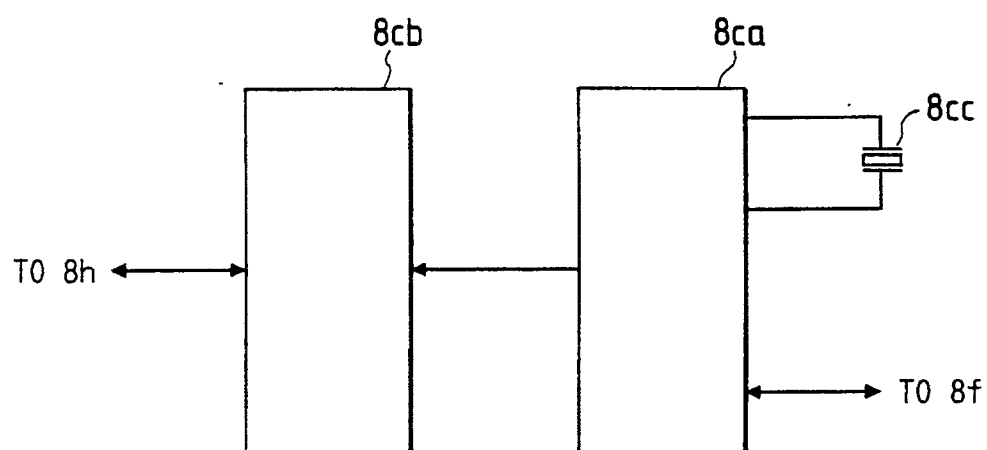


FIG. 22

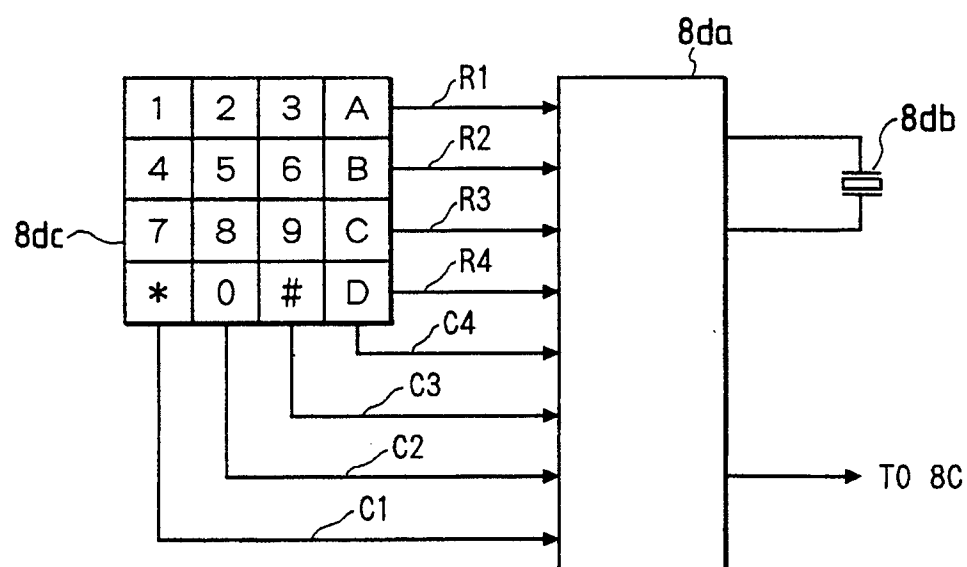


FIG. 23

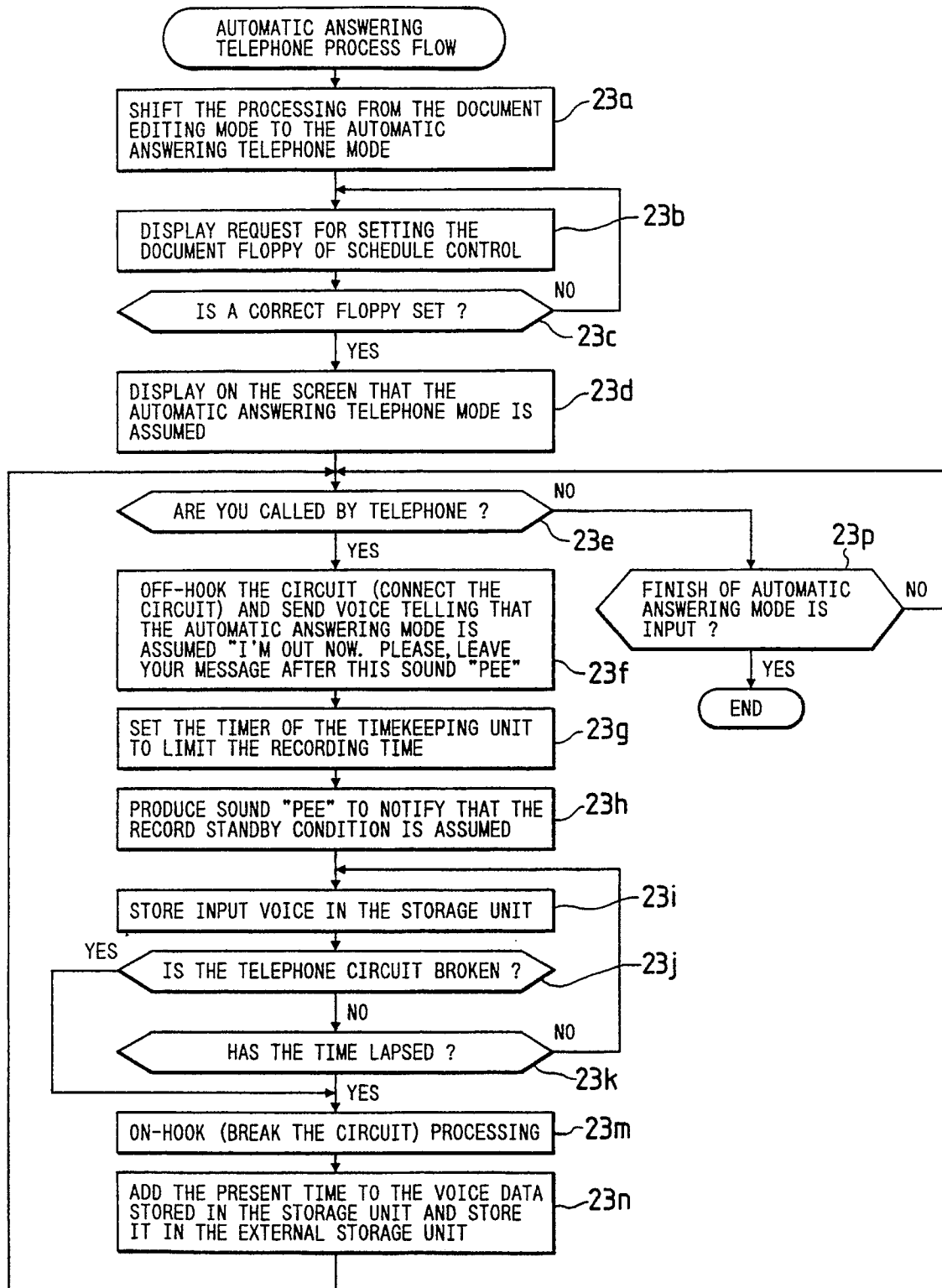


FIG. 24

