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(54) **A toy**

(57) The invention relates to an electric toy including means for recording sound, means for automatically playing back after cessation of recording, the recorded

sound at a different speed and/or different pitch; and means for randomly increasing or decreasing the speed of said recorded sound and/or raising or lowering the pitch of said recorded sound.



*Fig. 1*

## Description

**[0001]** This invention relates to a toy and, in particular, an electric toy capable of recording sound and playing back the recorded sound.

**[0002]** There are various electric toys which are capable of recording sound and playing back the recorded sound. In most such toys, once sound is recorded, it will only be played back upon activation of a switch or button. In addition, the sound as played back is exactly that as recorded. Such an arrangement is monotonous and lacking in interest. It is thus an object of the present invention to provide a toy in which the aforesaid shortcomings are mitigated, or at least to provide a useful alternative to the trade and public.

**[0003]** According to the present invention, there is provided an electric toy including means for recording sound; means for automatically playing back, after cessation of recording, the recorded sound at a different speed and/or different pitch; and means for randomly increasing or decreasing the speed of said recorded sound and/or raising or lowering the pitch of said recorded sound.

**[0004]** An electric toy according to an embodiment of the present invention is described below, as an example only, with reference to the accompanying drawings in which:

Fig. 1 is a front view of an electric toy incorporating the present invention;

Fig. 2 is a diagram of an exemplary electronic circuit suitable for use in the toy of the present invention; and

Fig. 3 is a flow chart of the operation of the toy of the present invention.

**[0005]** As shown in Fig. 1, an electric toy according to the present invention is in the form of a stuffed toy, generally designated as 10, although it is of course readily apparent that the toy 10 may be in any other appropriate form or shape. A switch or button (not shown in Fig. 1) may be positioned within a finger or toe of the toy 10 and actuable by a user, e.g. by pressing the finger or toe. A microphone and a speaker (both not shown in Fig. 1) forming part of an electronic circuitry (to be further discussed below) are placed within the body of the toy 10. The speaker may be positioned close to the mouth 11 of the toy 10, to provide talking effect of the animal represented by the toy 10. A light-emitting-diode (LED) (not shown in Fig. 1) may be positioned close to or on the surface of the toy 10 (e.g. as one of the eyes of the toy 10). Alternatively, the circuitry may be provided with two LEDs, each as one of the eyes of the toy 10.

**[0006]** An exemplary electronic circuit suitable for use in the present invention is shown in Fig. 2. The circuit includes a switch or button 12 for changing the circuit from "Standby" mode to "Operation" mode, a microphone 14 for receiving sound from the outside environment and transmitting the received sound to a sound controller (to

be discussed below) for recording and manipulation, a speaker 16 for playing back the recorded sound which has been manipulated by the electronic circuit in a manner to be discussed below, and an LED 18 for signifying the mode of operation of the toy 10. As discussed above, two LEDs may be arranged in parallel with each other so that each acts as one of the eyes of the toy 10.

**[0007]** An audio driver 20 suitable for use in the electronic circuit in the present invention may be one traded by Generalplus Technology Inc. of Taiwan under their Model No. GPY0030B; a CMOS serial flash memory 22 suitable for use in the electronic circuit in the present invention may be a chip which is in 512k x 1 bit structure and traded by Generalplus Technology Inc. of Taiwan under their Model No. GPR25L005B; and a sound controller 24 suitable for use in the electronic circuit in the present invention may be a 16-bit sound controller traded by Generalplus Technology Inc. of Taiwan under their Model No. GPCE048A, which includes a 16-bit microprocessor, a 24k-word ROM, and a 2k-word working SRAM.

**[0008]** The circuit also includes a motor M. In particular, within the toy 10 and close to the mouth 11 of the toy 10 are provided a number of mechanical linkages (not shown) which are drivable by the motor M to open and close the mouth 11, to mimic speaking movement of the mouth 11.

**[0009]** A flow-chart showing the steps of operation of the toy 10 according to this invention is shown in Fig- 3. When the toy 10 is switched on, it is usually in a "Standby" mode (Step 102). It will detect whether the button 12 is pressed (Step 104). If not, it will remain in its "Standby" mode. If the button 12 is pressed, the LED 18 will turn on (Step 106), thus emitting light, signifying that the toy 10 is "awakened", and is in an "Operation" mode.

**[0010]** If sound is made and detected by the toy 10 when it is awakened, the sound will be received by the microphone 14 and recorded in the sound controller 24 (Step 108). It is pre-set that the toy 10 will record sound of time duration of up to a maximum of four seconds. An analog-to-digital converter (A/D Converter) in the electronic circuit converts the recorded analog sound into digital data (Step 110).

**[0011]** The toy 10 will keep on recording (Step 112) until it has recorded for up to four seconds (Step 114) or until there has been a period of silence of at least 0.5 second (Step 116). In either of these cases, the toy 10 will stop recording (Step 118). The LED 18 will also turn off (Step 120).

**[0012]** The sound controller 24 will manipulate the digital data of the recorded sound by, randomly:

- a. increasing or decreasing the speed of the recorded sound by up to 30% of the original speed of the sound; and/or
- b. raising or lowering the pitch of the recorded sound.

**[0013]** A digital-to-analog converter (D/A Converter) in

the electronic circuit then converts the manipulated digital data of the recorded sound into analog signals for playback (Step 122). The amplifier in the circuit will also gain the analog signals for subsequent playback, the speaker 16 will then play back the amplified analog signals, and the motor M will operate to drive the mechanical linkages to move the mouth 11 of the toy 10 synchronously during the time of playback, so as to mimic the speaking movement of the mouth 11 (Step 124). When playback is finished, the motor M will turn off (Step 126), and the LED 18 will turn on again (Step 128). The toy 10 will then remain in this awakened "Operation" mode for up to thirty seconds (Step 130). If sound is detected within this thirty-second period, the toy 10 will proceed to Step 106 and 108, and so on. If, on the other hand, no sound is detected within this thirty-second period, the toy 10 will return to "Standby" mode (Step 132).

**[0014]** It can be seen that, in the toy 10 according to the present invention:

1. the toy 10 will play back the (changed) recorded sound automatically without the user having to further press any button or switch, thus enhancing the ease of playing the toy 10;
2. the sound as played back by the toy 10 differs from the originally recorded sound in terms of speed and/or pitch, thus adding to the fun of playing the toy 10; and
3. whether the sound as played back by the toy 10 is faster, slower, of a higher pitch or of a lower pitch than the originally recorded sound is random and not controlled by the user. This element of randomness/uncertainty adds further fun to the playing of the toy 10.

**[0015]** It should be understood that the above only illustrates and describes an example whereby the present invention may be carried out, and that modifications and/or alterations may be made thereto without departing from the spirit of the invention. It should also be understood that certain features of the invention, which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable sub-combination.

## Claims

1. An electric toy including:

means for recording sound;  
 means for automatically playing back, after cessation of recording, the recorded sound at a different speed and/or different pitch; and  
 means for randomly increasing or decreasing the speed of said recorded sound and/or raising or lowering the pitch of said recorded sound.

2. A toy according to Claim 1 wherein said toy comprises a stuffed toy.
3. A toy according to Claim 1 or 2 wherein said recording means is adapted to cease to record sound upon silence for a predetermined period of time.
4. A toy according to any of the preceding claims wherein said playing back means is adapted to play back the recorded sound at a speed of up to 30% faster than the original speed of the recorded sound.
5. A toy according to any of Claims 1 to 3 wherein said playing back means is adapted to play back the recorded sound at a speed of up to 30% slower than the original speed of the original sound.
6. A toy according to any of the preceding claims wherein said playing back means is adapted to play back the recorded sound at a pitch which is higher or lower than the original pitch of the recorded sound.
7. A toy according to any of the preceding claims wherein a mouth portion of said toy is movable during playback of said recorded sound.



Fig. 1

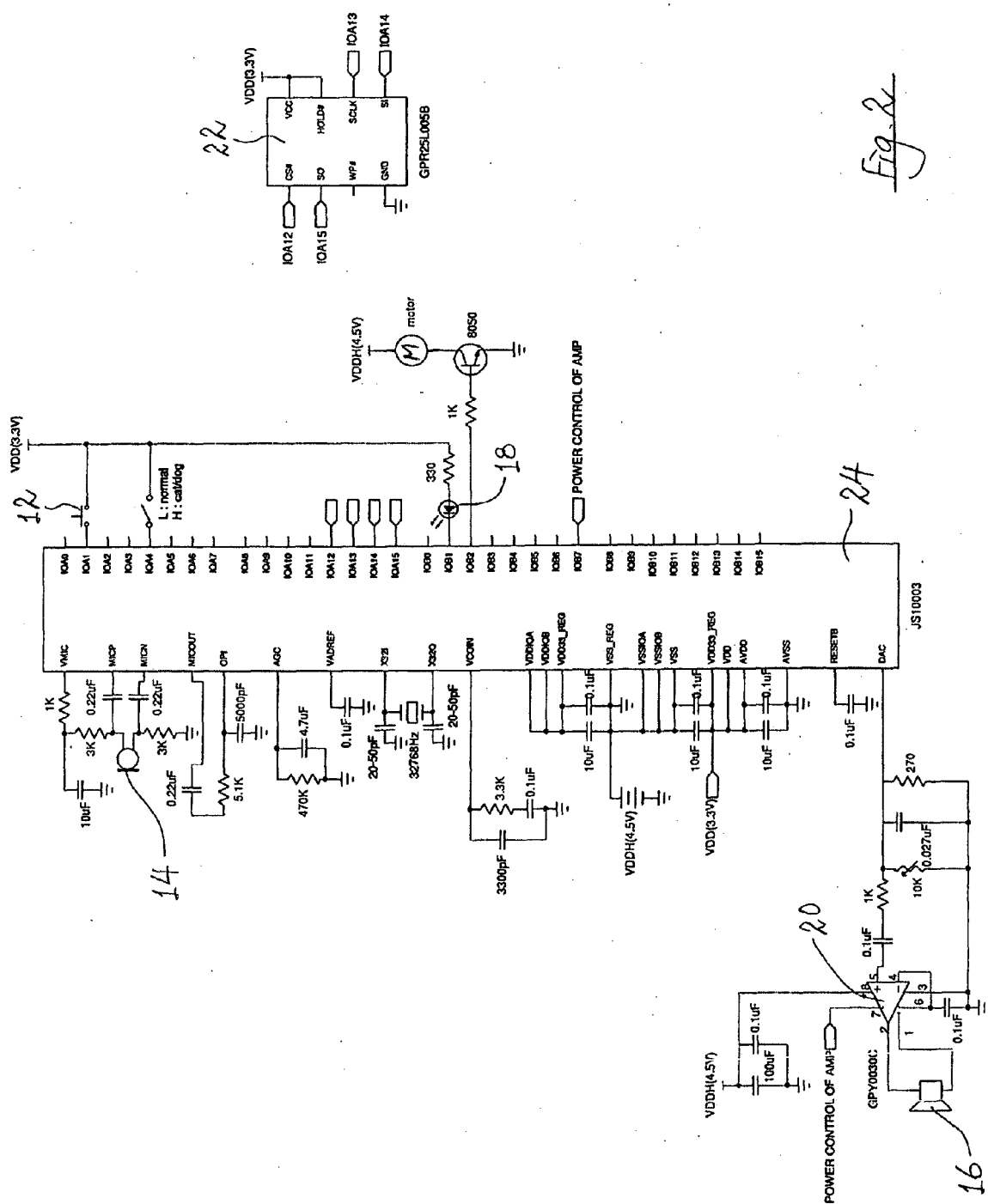


Fig. 2

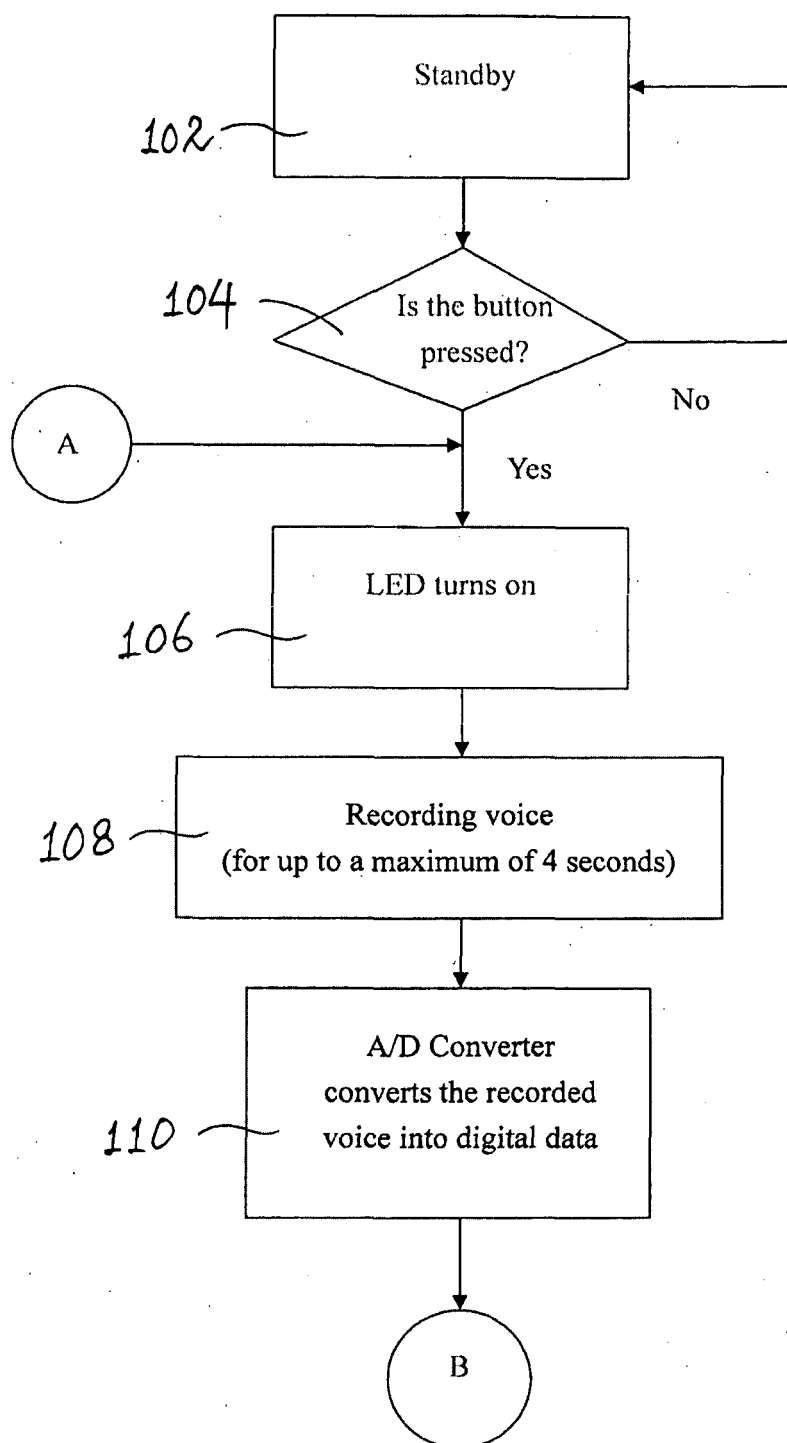
Fig. 3

Fig.4

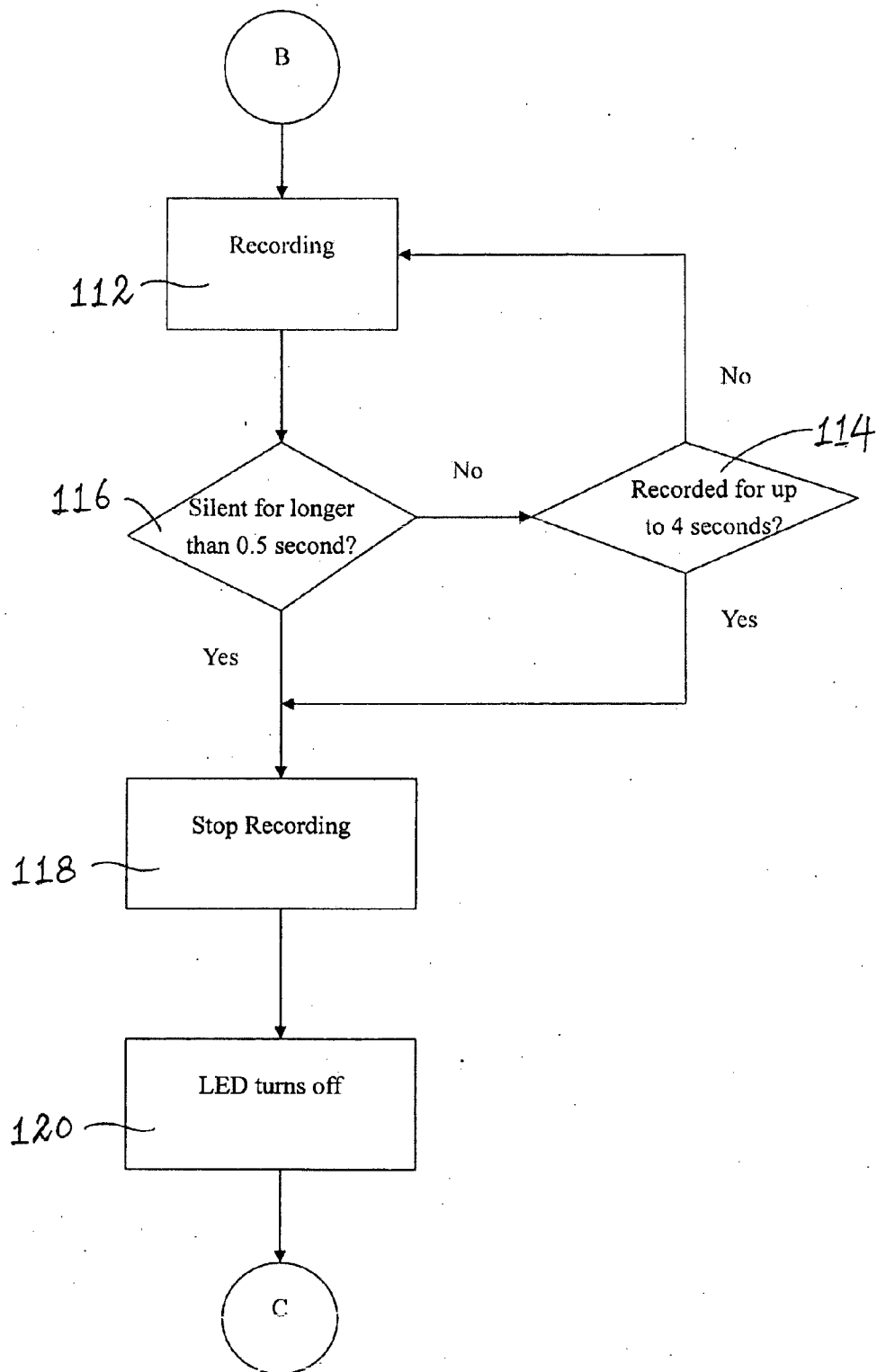
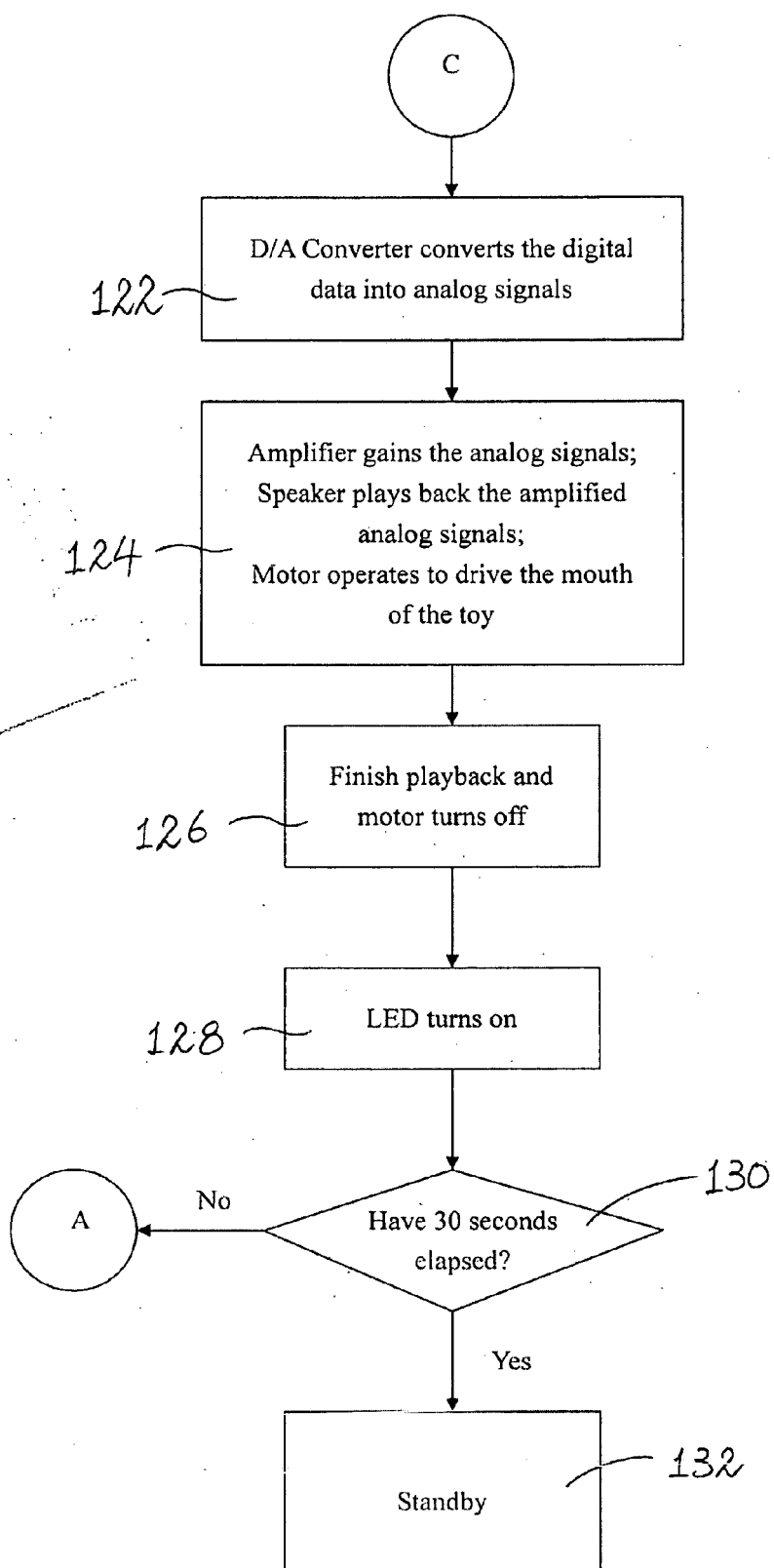


Fig.5







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Application Number  
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| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                                                                                      |                                  |                                         |

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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