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(54) **INTERACTIVE DOLL**

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(57) **ABSTRACT**

A baby doll has a head, a body, and a display on the surface of the body. The display controllably displays a plurality of different images. Each image depicts an action to be taken with the baby doll. A plurality of sensors are located in the head or body. The sensors detect when a depicted action is taken with the baby doll, and the subsequent display or sounds of the baby doll depends on whether or not the sensors sense that the action depicted by the image displayed on the display is taken within a period of time after the image is displayed on the display.

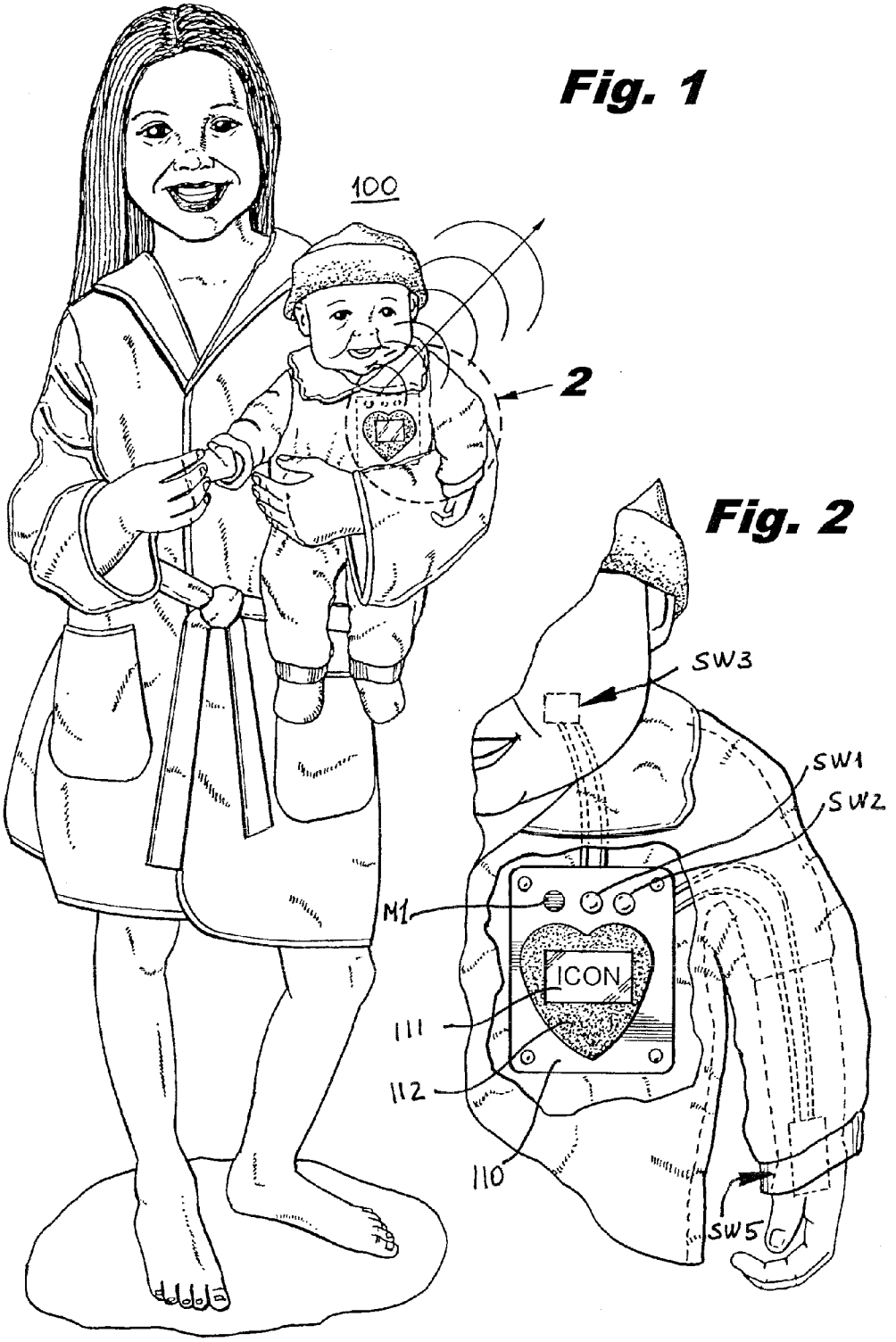

Fig. 1

Fig. 2

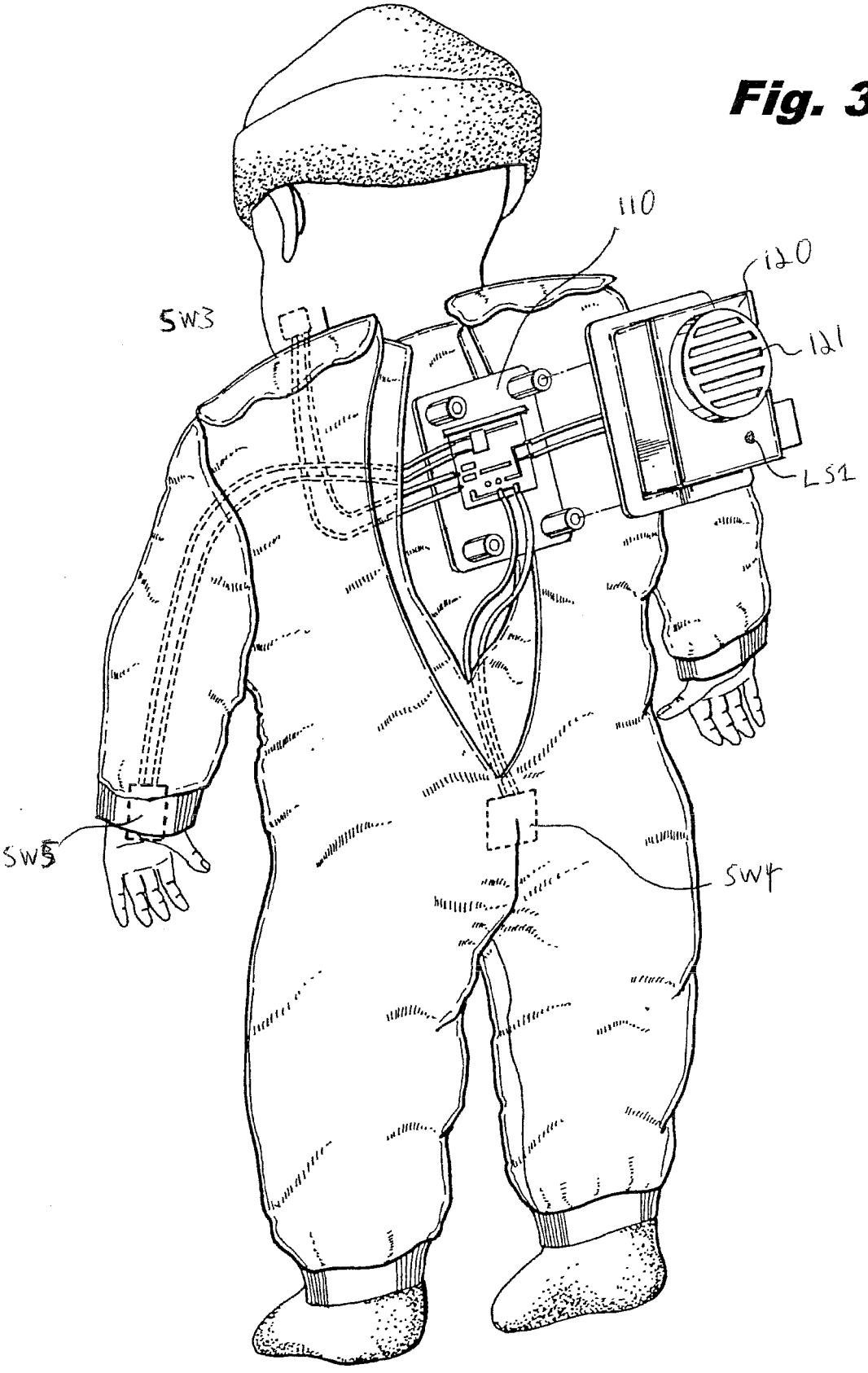

Fig. 3

Fig. 4A

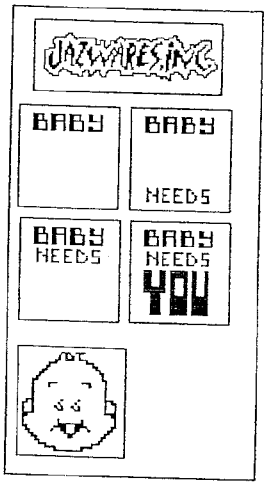

Fig. 4B

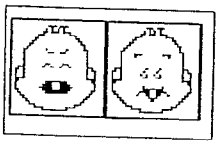

Fig. 4C

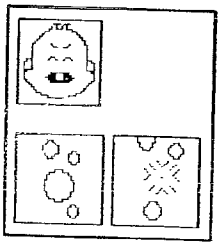

Fig. 4D

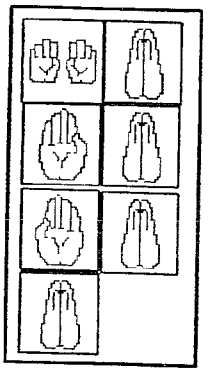

Fig. 4E

Fig. 4F

Fig. 4G

Fig. 4H

Fig. 4I

Fig. 4J

Fig. 4K

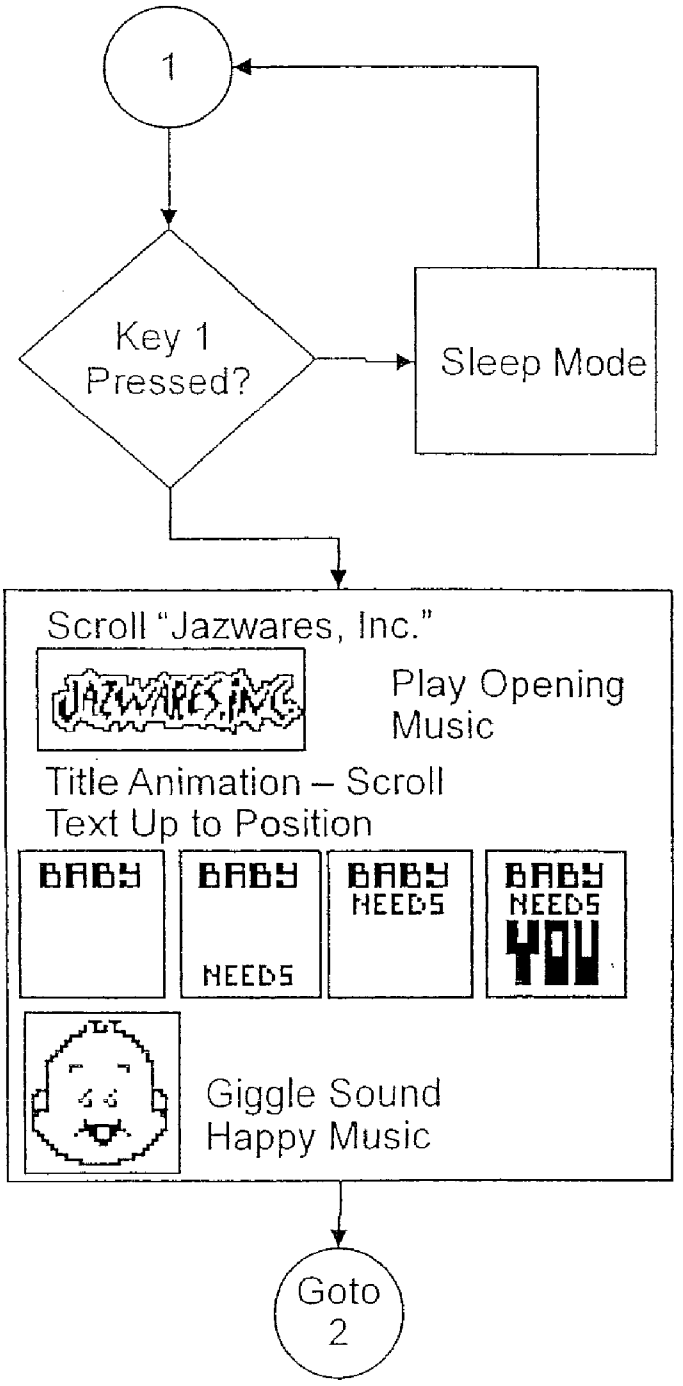
1
Key 1 Pressed?
Sleep Mode
Scroll "Jazwares, Inc."
Play Opening Music
Title Animation – Scroll Text Up to Position
BABY
BABY NEEDS
BABY NEEDS
BABY NEEDS YOU
Giggle Sound
Happy Music
Goto 2

Fig. 5A

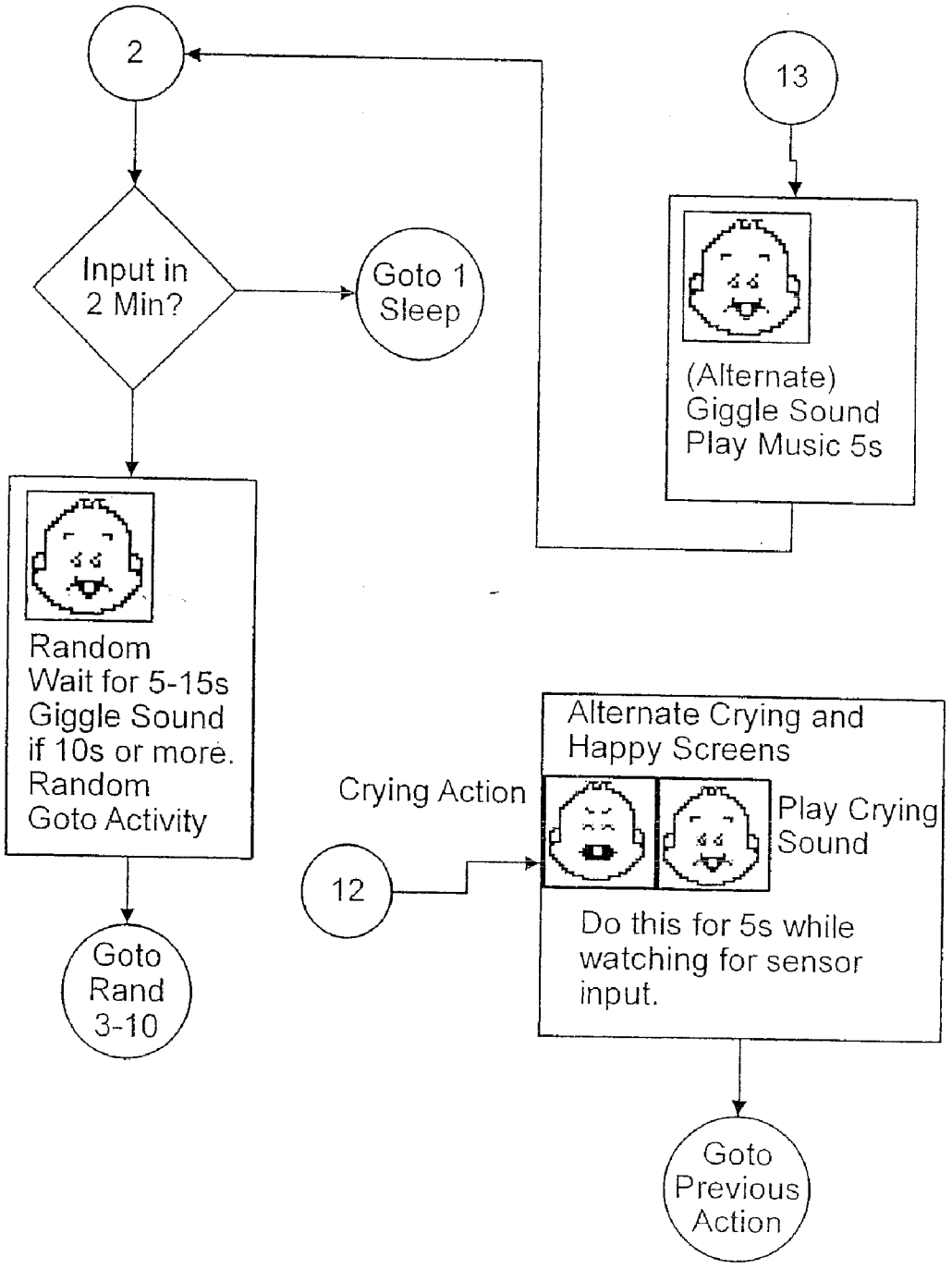
2
Input in 2 Min?
Goto 1 Sleep
Random Wait for 5-15s Giggle Sound if 10s or more. Random Goto Activity
Goto Rand 3-10
13
(Alternate) Giggle Sound Play Music 5s
Alternate Crying and Happy Screens
Crying Action
12
Play Crying Sound
Do this for 5s while watching for sensor input.
Goto Previous Action

Fig. 5B

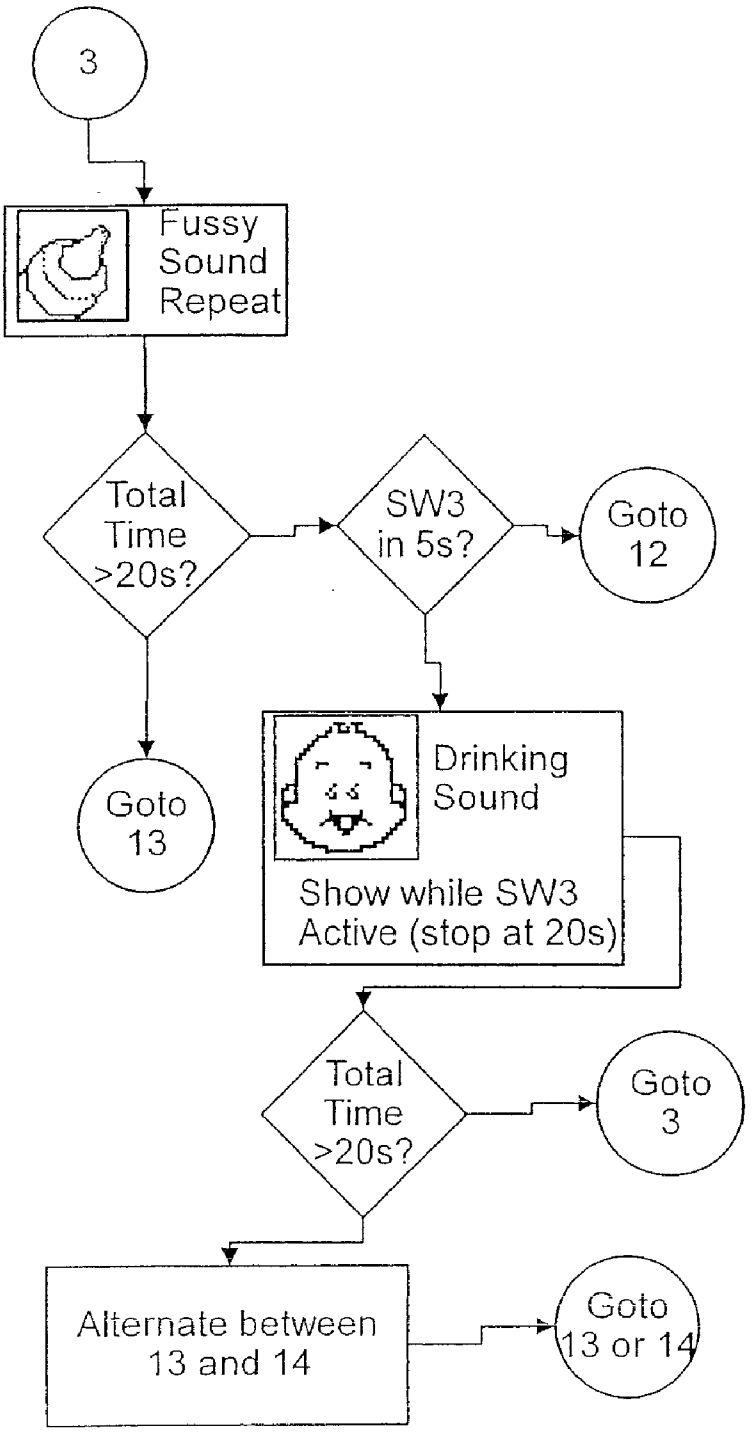
3
Fussy Sound Repeat
Total Time >20s?
SW3 in 5s?
Goto 12
Goto 13
Drinking Sound
Show while SW3 Active (stop at 20s)
Total Time >20s?
Goto 3
Alternate between 13 and 14
Goto 13 or 14

Fig. 5C

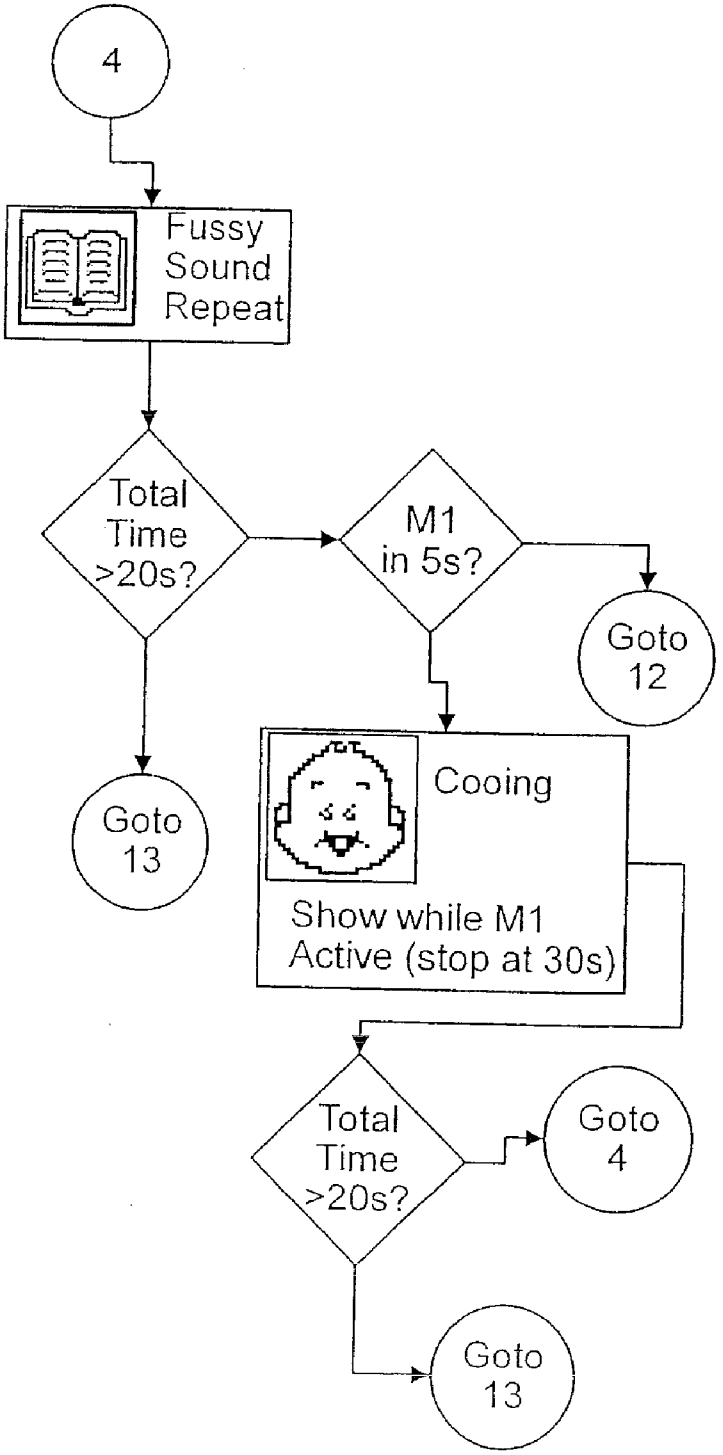
4
Fussy Sound Repeat
Total Time >20s?
M1 in 5s?
Goto 12
Goto 13
Cooing
Show while M1 Active (stop at 30s)
Total Time >20s?
Goto 4
Goto 13

Fig. 5D

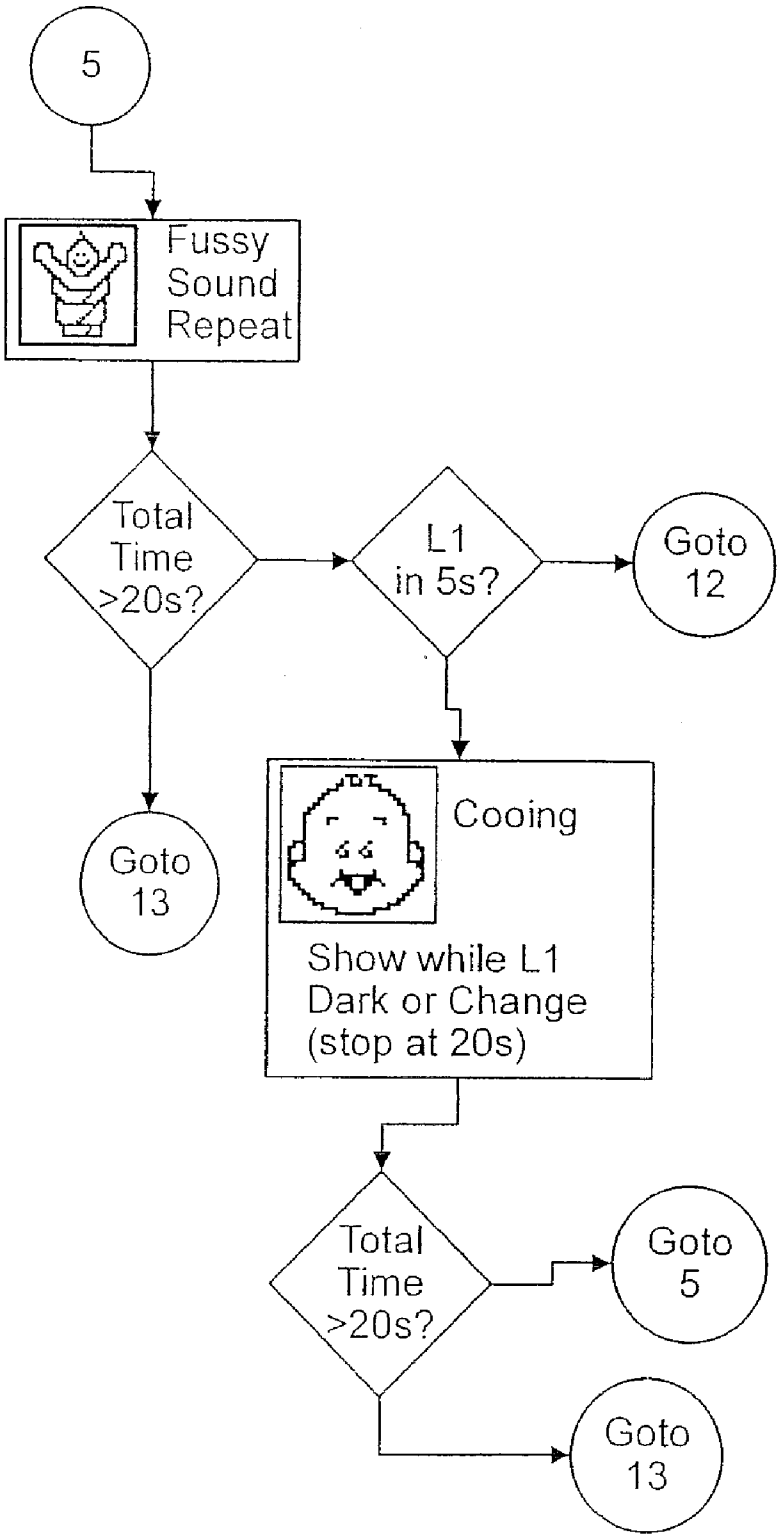
5
Fussy
Sound
Repeat
Total
Time
>20s?
L1
in 5s?
Goto
12
Goto
13
Cooing
Show while L1
Dark or Change
(stop at 20s)
Total
Time
>20s?
Goto
5
Goto
13

Fig. 5E

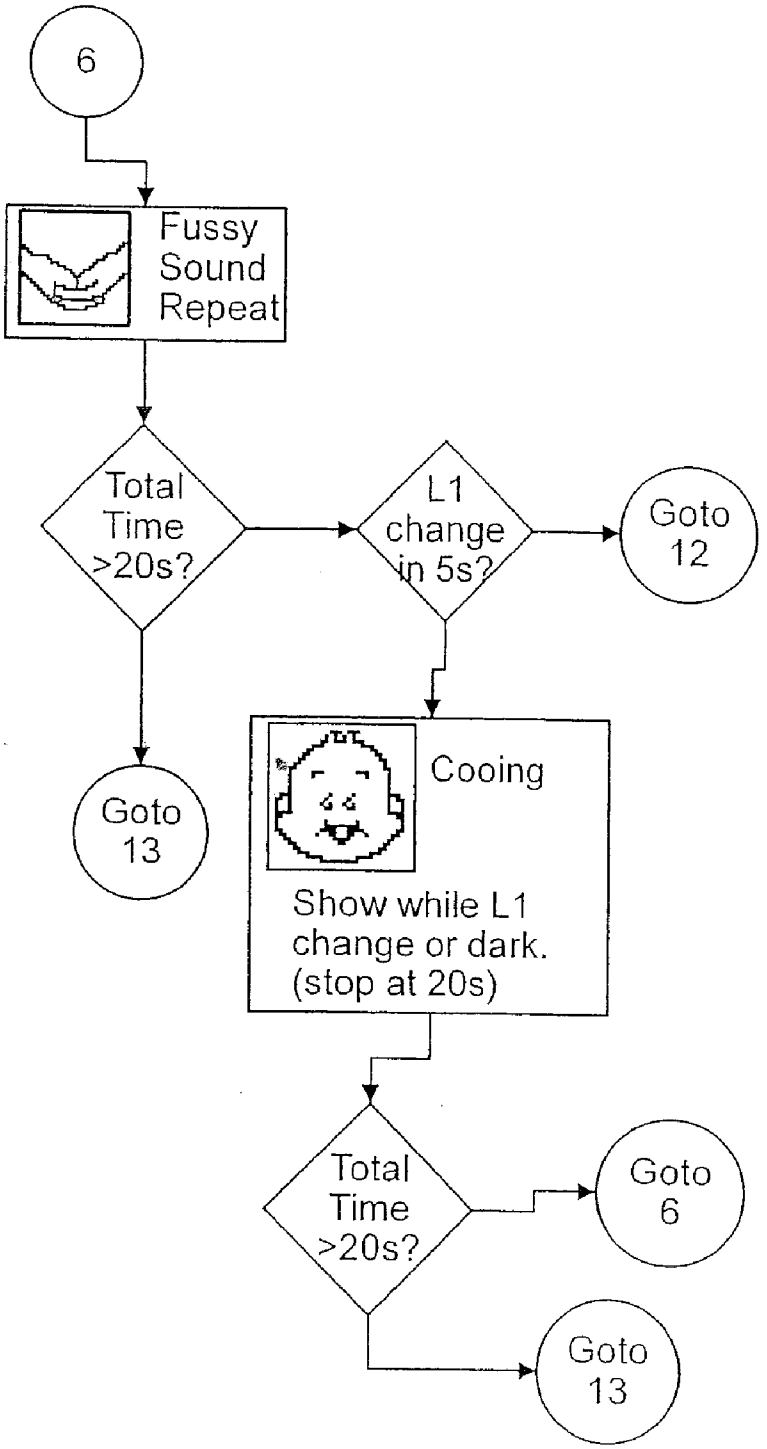
6
Fussy Sound Repeat
Total Time >20s?
L1 change in 5s?
Goto 12
Goto 13
Cooing
Show while L1 change or dark. (stop at 20s)
Total Time >20s?
Goto 6
Goto 13

Fig. 5F

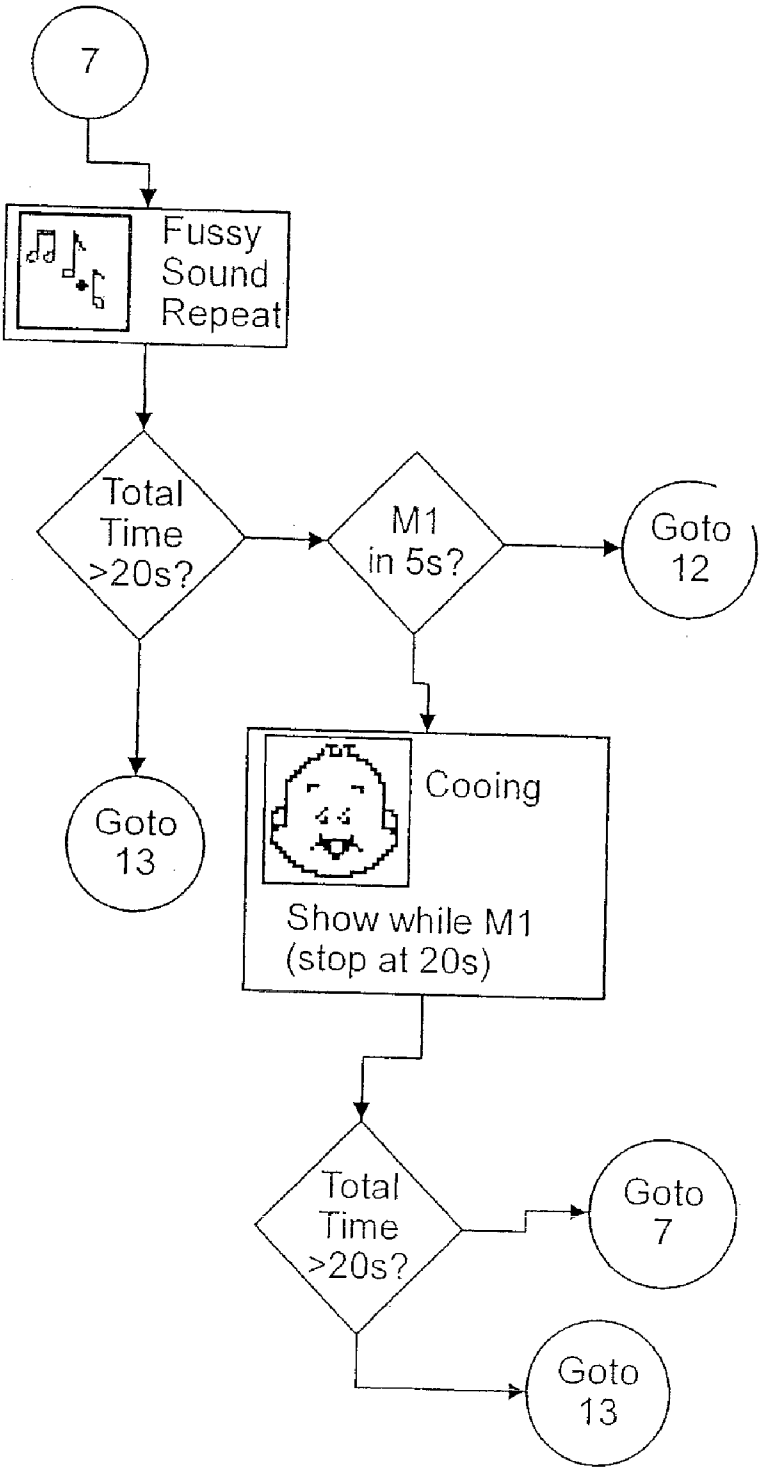
7
Fussy Sound Repeat
Total Time >20s?
M1 in 5s?
Goto 12
Goto 13
Cooing
Show while M1 (stop at 20s)
Total Time >20s?
Goto 7
Goto 13

Fig. 5G

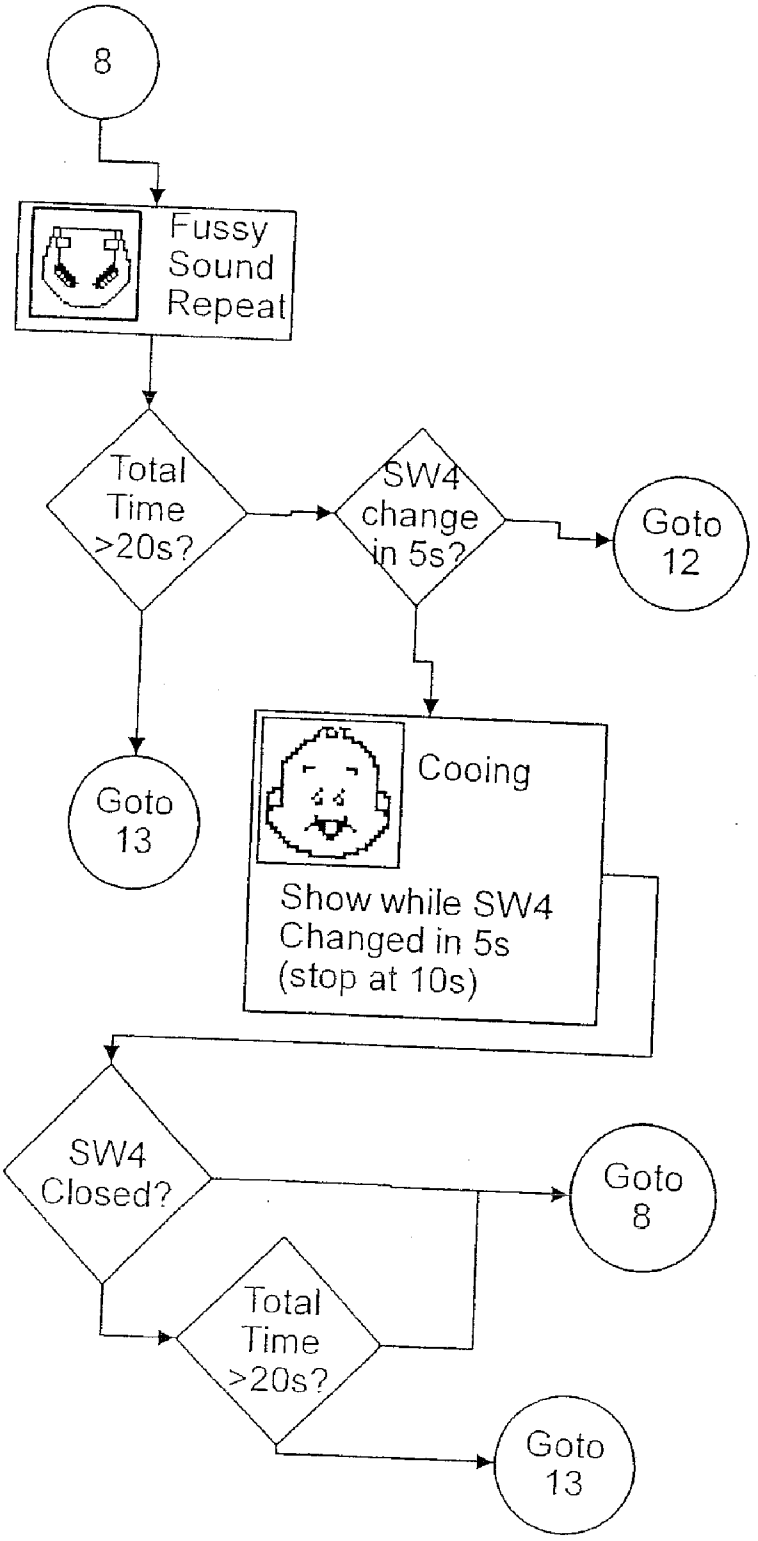
8
Fussy Sound Repeat
Total Time >20s?
SW4 change in 5s?
Goto 12
Goto 13
Cooing
Show while SW4 Changed in 5s (stop at 10s)
SW4 Closed?
Goto 8
Total Time >20s?
Goto 13

Fig. 5H

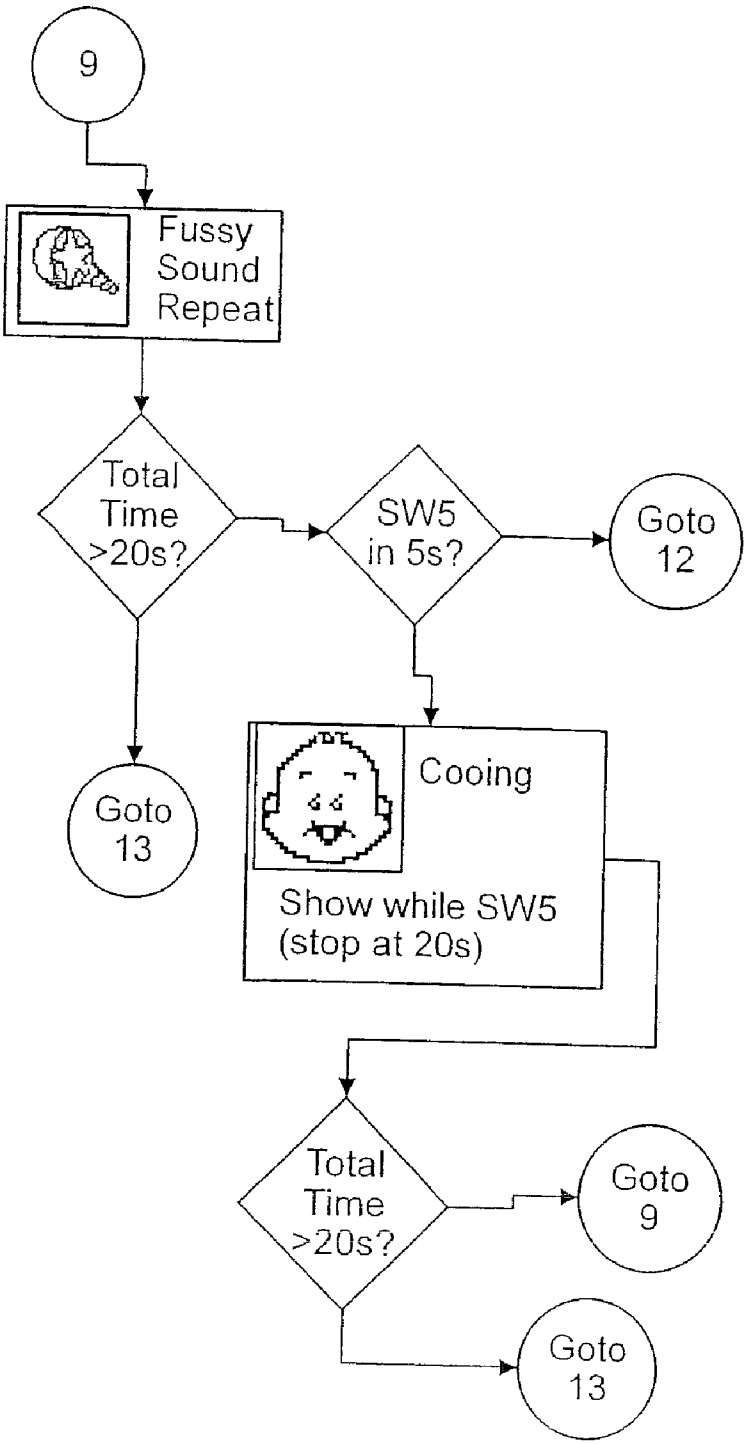
9
Fussy
Sound
Repeat
Total
Time
>20s?
SW5
in 5s?
Goto
12
Goto
13
Cooing
Show while SW5
(stop at 20s)
Total
Time
>20s?
Goto
9
Goto
13

Fig. 5I

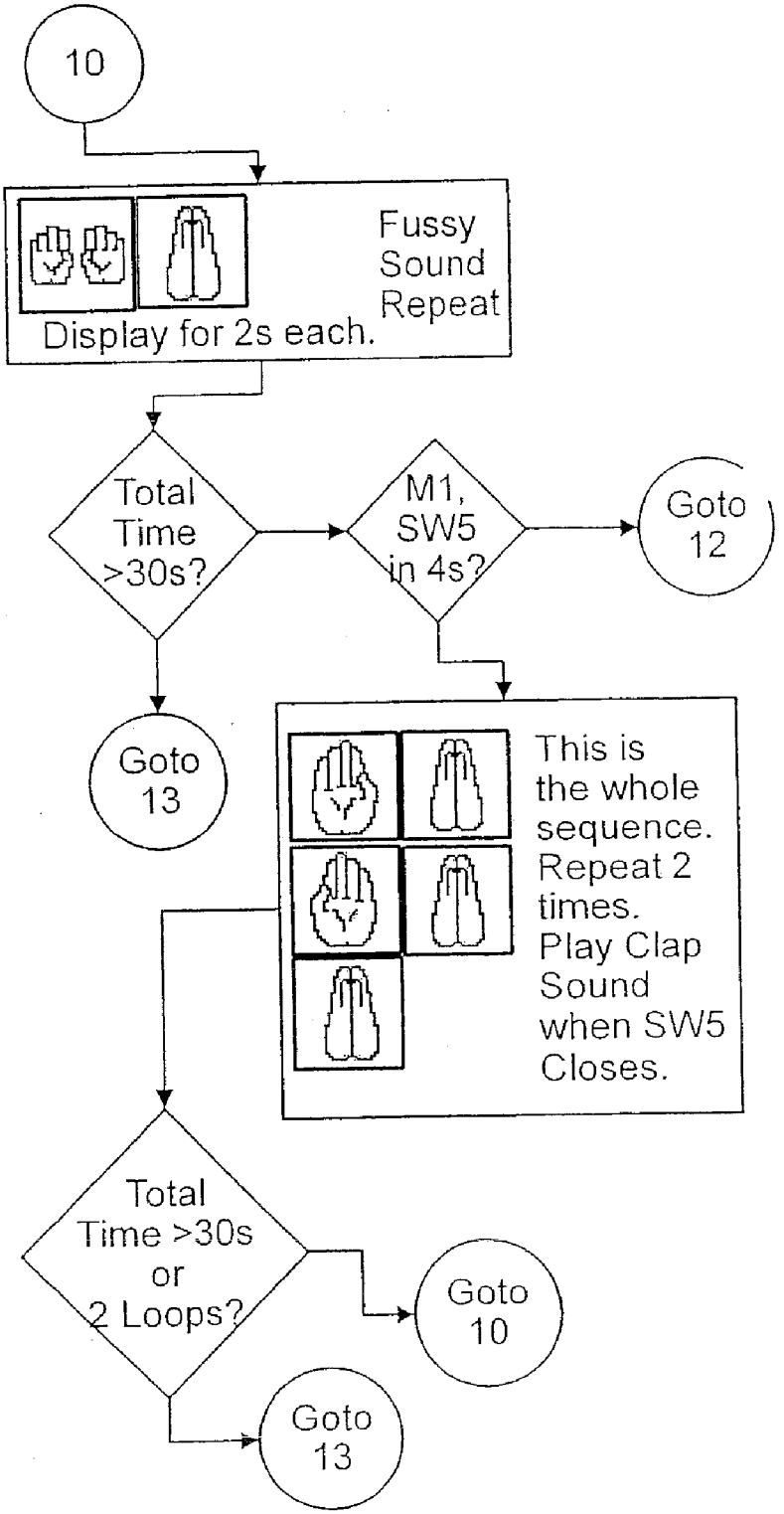
10
Fussy
Sound
Repeat
Display for 2s each.
Total
Time
>30s?
M1,
SW5
in 4s?
Goto
12
Goto
13
This is
the whole
sequence.
Repeat 2
times.
Play Clap
Sound
when SW5
Closes.
Total
Time >30s
or
2 Loops?
Goto
10
Goto
13

Fig. 5J

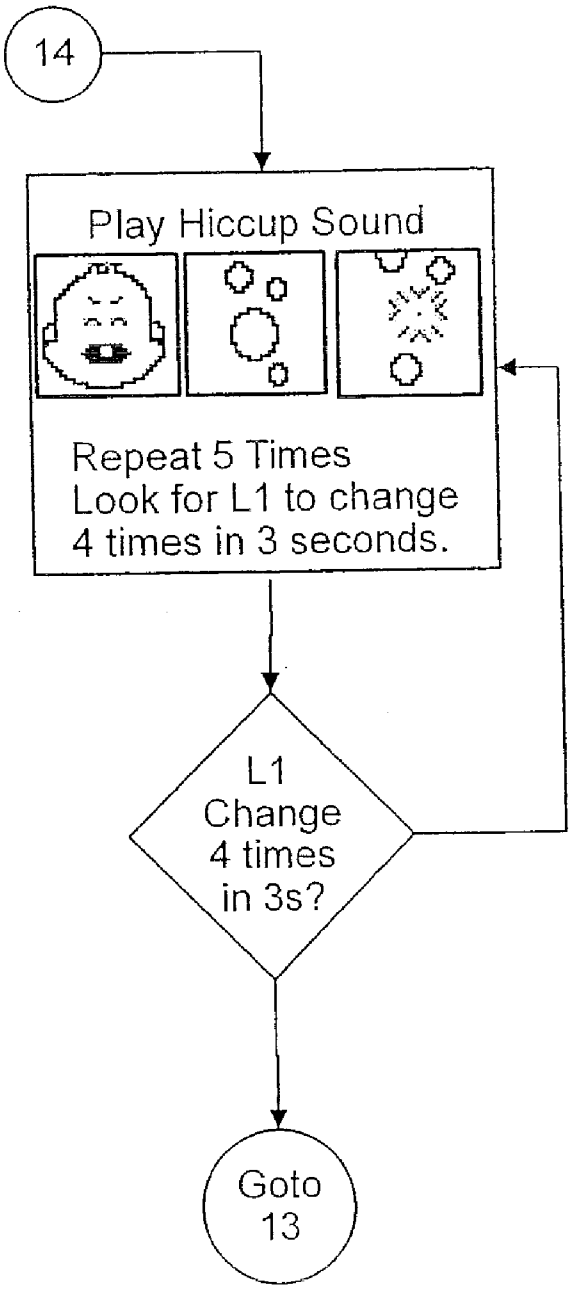
14
Play Hiccup Sound
Repeat 5 Times
Look for L1 to change
4 times in 3 seconds.
L1
Change
4 times
in 3s?
Goto
13

Fig. 5K

INTERACTIVE DOLL

RELATED APPLICATION

[0001] This application claims the priority benefit of U.S. Provisional Application No. 60/884,840 filed on Jan. 12, 2007, which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to dolls. More specifically, the present invention relates to dolls with electronics that provide for human interaction when playing with the doll.

[0004] 2. Background of the Related Art

[0005] Dolls provide enjoyment for boys and girls. The Baby Needs Me doll from Kenner included a watch for the user of a baby doll. When the user pressed the button on the watch, it beeped and showed what the baby doll needed. The user was then to play along, and then provide the baby doll what it needed (e.g., a diaper change, a bottle, etc.). However, the interaction was merely prompted and whether it was performed or not was without consequence and realistic interaction.

[0006] It has become popular to include electronics and other parts in dolls that provide or mimic interaction between the doll and a boy or girl playing with the doll. Perhaps the most popular example of such an interactive doll was the Tickle Me Elmo doll. The popular Toddler Tabitha doll from MGA Entertainment had voice interaction, feeding and crawling/walking. The user needed to follow voice cues for the doll, and the user needed to be relatively older than an infant.

[0007] But it can be expensive or difficult to provide realistic interaction in dolls. Other more simple methods of interaction would be desirable. The interaction with simple games, such as Tamagotchi, is simple and simulates the nurturing and development of a simulated character. However, Tamagotchi games are encased in pocket sized plastic cases, similar to handheld LCD games, and so do not directly represent or mimic the baby doll or other character being nurtured.

BRIEF SUMMARY

[0008] The preferred embodiments of the invention are in the form of a doll as an interactive baby character with a display screen located on the chest. The display screen preferably is depicted as the heart of the baby. The doll includes multiple sensors for light, sound, and basic buttons for interaction. The doll may also include sensors which sense when objects come into contact with the baby doll.

[0009] The game play consists of the display screen displaying a desired input action on the display screen heart of the baby doll, and the user providing the displayed input. If the user fails to provide the desired input within a short amount of time, the doll will respond. For example, the doll will cry and then eventually go to sleep. The doll interacts with several matched accessories, such as a bottle, rattle, and blanket.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The above, and other objects, features and advantages of the present invention will become apparent from the following description read in conjunction with the accompanying drawings.

[0011] FIG. **1** is a perspective view of a baby doll with an integrated display depicted as a heart according to a first preferred embodiment of the invention.

[0012] FIG. **2** is an enlarged view showing the display screen and nearby buttons of the baby doll in the embodiment of FIG. **1**.

[0013] FIG. **3** is a cutaway view showing the location of sensors of the baby doll in the preferred embodiment of FIG. **1**.

[0014] FIGS. **4**A-**4**K are exemplary images depicted actions to be taken with the baby doll that may be displayed on the display screen in the preferred embodiment of FIG. **1**.

[0015] FIG. **5**A-**5**K are flowcharts showing an exemplary sequence of interactions of a human with a baby doll which may be implemented in the embodiment of FIG. **1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Reference will now be made in detail to several aspects of preferred embodiments of the invention that are illustrated in the accompanying drawings. The words "connect," "couple," and similar terms with their inflectional morphemes do not necessarily denote direct and immediate connections, but also include connections through mediate elements or devices.

[0017] The preferred embodiments of the invention involve a baby doll **100** that directs a child to various caretaking responsibilities as shown in FIG. **1**. However, in other embodiments, the doll may represent other characters such as a teddy bear, dog, cat or other pet.

[0018] The various caretaking responsibilities of the preferred embodiments include feeding, burping, playing with a rattle or other toy, changing the baby's diaper, singing a lullaby, etc., although other actions can also be implemented. There may be over a dozen different functions so as to provide a good imitation of a baby. Additional activities may be child games such a Pat A Cake, Itsy bitsy Spider and Peek A Boo.

[0019] The baby doll **100** of the preferred embodiments may of any general construction. For example, the head, hands and feet of the baby doll may be made of PVC or other material, while the body of the baby is of an appropriate soft material and includes exterior clothing.

[0020] A display device **110** is provided in the body of the baby doll as shown in FIGS. **1** and **2**. It includes a display element **111**, such as a liquid crystal display, built into the body of the baby doll. The display device **110** preferably includes a heart shaped display or presents a heart shaped visual effect, such as by providing a heart-shaped plate **112** surrounding a rectangular display element **111**. The display element **111** need not be a liquid crystal display and may be any suitable type of display element. There may also be two tactile switches SW**1** and SW**2** (which may take the forms of rubber buttons, pin, or other user input) on display device **110** which may be easily pressed by a child. Switch SW**1** turns the power, for the display and other parts of the doll, on and off. It may also be operated to awaken the baby doll from a standby or "sleep" mode. Switch SW**2** may also be operated

to awaken the baby doll from the standby or "sleep" mode, to bypass a depicted action, or to play music. Display device **110** also includes a microphone M**1** which is used with a sound sensor to detect sounds such as the child reading, singing or playing patty cake with the baby doll. Although shown as simple buttons in FIG. **2**, switches SW**1** and SW**2** may be incorporated into, or be part of, displate plate **112**. There may be a further button, pin or other device (not shown), which when pressed, changes the volume or performs some other function of the baby doll. Preferably, the display device **110** is configured so that the display element **111**, switch SW**1** and switch SW**2** extend above the clothing of the baby doll **100**. The clothing preferably fits under the plate **112** and covers the remainder of the display device **110**, including microphone M**1**, so that they are hidden from view.

[0021] As shown in FIGS. **2** and **3**, the inward side of the display device **110** supports the electronics used for controlling the operations of the baby doll **100**. These electronics are connected by wires to a plurality of sensors. In the case of the preferred embodiment shown in FIGS. **1-3**, there are three sensors. A contact sensor SW**3** is located near the mouth and is used to detect a feeding action. A contact sensor SW**4** is located near the baby doll's bottom and is used to detect when a diaper is placed in the proper location on the baby doll **100**. A contact sensor SW**5** is located in one of the hands and is used to detect when a toy is in the hand, or when the other hand is near so as to detect if playing patty cake or taking other action which requires the hands to be near each other.

[0022] The electronics may have a microprocessor, but preferably include a very simple processing element or controller that causes the display element **111** and other parts of the baby doll **100** to operate in the manner described herein. The processing element may be responsive to different software programs or firmware recorded on a tangible medium, such as non-volatile memory, that is executed by the baby doll to provide different functions or other aspects of operation when the power is turned on. Indeed, although not shown in FIG. **3**, the tangible medium may be a removable memory, such as flash memory, that can be easily inserted or removed in the same manner as batteries. The different flash memory include respectively different software or firmware that may result in a change in the game play routine of the baby doll, the images displayed on the display, the actions to be sensed by the baby doll, or the consequences depending on whether or not the depicted action is taken in sufficient time.

[0023] The display device **110** is connected to a rear element **120** by rigid posts or other supports. Rear element **120** includes a speaker **121** as well as a battery enclosure (not shown). Preferably, the rear element **120** also includes a light sensor LS**1** which detects if a blanket covers the back of the baby doll **100**, or if someone is holding or burping the baby. The light sensor LS**1** is preferably an inexpensive and sturdy CdS light sensor, but may be any appropriate type of light sensor that merely detects variations in light and which need not be detailed in its measurements. Although shown out of the doll in FIG. **3** for the sake of illustration, the rear element is situated entirely within the doll, but is accessible for the replacement of batteries or other elements.

[0024] The contact sensors SW**3**, SW**4**, and SW**5** are preferably electrical switches operated by an applied magnetic field. For detection of an action and contact according to the invention, the other item to be detected thus must merely include a small magnet. For example, the tip of a feeding bottle may have a magnet detected by contact sensor SW**3**, the diaper may have a magnet detected by contact sensor SW**4**, and the toy may have a magnet detected by contact sensor SW**5**. Preferably, the other hand also has a magnet that can be detected by contact sensor SW**5** when holding hands or playing patty cake. The contact sensors may be the exact same switch requiring the same magnet, or may be different switches with different sensitivities requiring different respective magnets. The electrical switches are preferably reed switches, consisting of a pair of contacts on ferrous metal reeds in a hermetically sealed package. The contacts may either be normally open, closing when a magnetic field is present, or normally closed and opening when a magnetic field is applied. The reeds are preferably in a ceramic package or any other durable package, rather than glass or similarly fragile envelope.

[0025] Of course, various embodiments of the invention may utilize a different number and type of sensors. However, the sensors are very closely correlated to the depicted actions to be taken and may vary in dependence on the action. For example, for an embodiment involving a dog, it may be required to brush the dog and an appropriate sensor would be needed to detect the presence of a hairbrush near the area of the dog to be brushed, etc. There may be magnetic sensors, sound sensors, and other kinds of sensors appropriate to the activity being detected.

[0026] FIGS. **4**C-**4**K show examples of images and associated actions that may be utilized in the preferred embodiments involving baby doll **100**. FIG. **4**E shows a singing icon prompting the child to sing to the doll and FIG. **4**J shows a reading icon prompting the child to read to the doll. The singing and reading actions may be detected by microphone M**1**. FIG. **4**F shows a blanket icon prompting the child to wrap the doll in a blanket. The blanket action may be detected by a light-to-dark change (unless already light) using the light sensor LS**1**. FIG. **4**G is a diaper icon prompting the child to put a diaper on the doll. The diaper includes a magnet detected by reed switch of contact sensor SW**4**. The diaper must be put on, or must already be on. FIG. **4**H shows a icon prompting the child to play with the baby doll using a toy such as a rattle included in a kit with the baby doll. The toy must be in the hand and have a magnet detected by reed switch of contact sensor SW**5**. FIG. **4**K shows an icon prompting the child to hold the baby doll. The light sensor LS**1** must detect light then dark (unless already light).

[0027] Some actions can require followup. For example, FIG. **4**I shows a feeding icon prompting the child to feed the baby doll. The bottle tip must be held to the mouth in order to active electrical switch of contact sensor SW**3**. However, even if the child performs the feeding action, the baby may randomly have hiccups after feedings, which is shown by images such as those in FIG. **4**C. The hiccups may continue for a period of time, until and unless the light sensor LS**1** is activated by the child burping the baby doll **100**.

[0028] Some of the functions may have a timing context, consist of multiple images, and have a series of actions and interactions. For example, FIG. **4**D show a sequence of images representing the playing of patty cake. To perform the action acceptably, there must be singing detected by microphone M**1**, and the doll's two hands must be put together so that the reed switch in contact sensor SW**5** detects the magnet in the other hand. This must occur at a timing when the hands are shown put together on the screen. Furthermore, a clap sound may be played at the time(s) when the switch of contact

sensor SW**5** is activated. Such action as patty cake illustrated by FIG. **4**D is thus not a unitary action as in some of the other actions.

[0029] Of course, the displayed images and associated actions are not limited to those shown here. There may be other images and actions prompted, such as putting the baby doll to sleep or placing the baby on her stomach or back. Of course, the baby doll may be sold with various accessories related to the displayed functions, such as a rattle or other toy, bottle, diapers, and blanket. These accessories have magnets so as to be detected by contact sensors and operate the baby doll.

[0030] Upon startup, a unique series of different images are displayed on display element **111**. These images may begin with a title logo or icon, splash images, and then end with a smiley face as shown in FIGS. **4**A and **5**A. The title logo and splash images may scroll up to position or have some other kind of animation. There may be opening music and then, when the smiley face is displayed, perhaps a giggle sound and/or happy music. The startup routine shown in FIG. **5**A begins whenever SW**2** is pressed to power on the baby doll or either one of SW**1** and SW**2** is pressed to take the baby doll out of sleep mode **501**.

[0031] After startup, the doll is controlled by the electronics so as to go through a game play routine of a sequence of prompting images and corresponding actions depicted by the images. The sequence of prompted actions may be predetermined or may be randomly selected and rotated from among the various available actions. **5**B-**5**K shows an exemplary random game play routine. Preferably, the child can bypass any particular action they choose (if they don't want to do it or have lost an associated object necessary for performing the action) by pressing switch SW**1** next to display element **111**. After each action is prompted by a displayed image, the electronics detect whether the action is taken with a period of time after the image is displayed and provides a response accordingly. For example, if the child performs an action and takes care of the baby, she may be rewarded with a laughing or sleeping baby. If the baby doll is not cared for, then a crying baby image may be displayed on display element **111** (see FIG. **4**B) and/or a crying sound may be played through speaker **121**.

[0032] Each action may have slightly different responses. See the examples in FIGS. **5**C through FI. FIGS. **5**D-**5**G shows typical action responses. When the image is displayed (at step **4** of FIG. **5**D, step **5** of FIG. **5**E, step **6** of FIG. **5**F, step **7** of FIG. **5**G and step **9** of FIG. **5**I), a fussy sound is played and repeated. If the prompted action is detected within 5 seconds, a cooing sound is played through speaker **121** and a happy image is displayed. If the prompted action is not detected within 5 seconds, then the process goes to step **12** shown in FIG. **5**B. At step **12**, a crying sound is played and there are alternative crying and happy screens. This is done for 5 seconds and then the doll goes back and repeats the steps shown in the respective one of FIGS. **5**D-**5**G and FIG. **5**I. This process repeats in 5 second intervals for a maximum time limit. The time limit may be, for example, 30 seconds for the reading action prompted in FIG. **5**D and 20 seconds for the other actions prompted in FIGS. **5**E-**5**G and FIG. **5**I. At that point, the process continues on to step **13** in FIG. **5**B.

[0033] Step **13** in FIG. **5**B has a giggle sound and music playing, either simultaneously or alternating for 5 seconds, and then the routine returns to step **2** in FIG. **5**B. At step **5**B, there is a random wait of between 5-15 seconds, then a giggle sound plays after certain period of time. If there is any user activity, then an action is selected at random. If there is no user activity for 2 minutes, the baby doll is put into sleep mode ("standby") if there is no input within 2 minutes.

[0034] Of course, each action in FIGS. **5**D-**5**G and FIG. **5**I is detected in different ways as shown and described previously. The process of detecting the diaper changing action (step **8** in FIG. **5**H) has an additional variation in the process. Instead of merely detecting a diaper at contact sensor SW**4**, the process detects whether there is a change in the presence of a diaper within 10 seconds and also whether the contact sensor SW**4** remains closed (meaning a diaper is on) for more than 20 seconds. This is because the child could either change the diaper on the baby doll or put a diaper on the baby doll who didn't have a diaper previously. The process either repeats at step **8** if there is no diaper change detected of proceeds to step **13** in FIG. **5**B if the diaper changed is detected.

[0035] FIG. **5**C shows a slightly less simple example for the feeding action associated with FIG. **4**I. When the image is displayed at step **3**, a fussy sound is played and repeated. If the bottle tip is detected within 5 seconds, a drinking sound is played through speaker **121** and an image is displayed. If the bottle tip is not detected within 5 seconds, then the process goes to step **12** shown in FIG. **5**B. At step **12**, a crying sound is played and there are alternative crying and happy screens. This is done for 5 seconds and then the doll goes back and repeats the steps shown in FIG. **5**C. This process repeats in 5 second intervals for 20 seconds.

[0036] However, instead of immediately continuing to step **13** in FIG. **5**B, the process continues and alternates between step **13** in FIG. **5**B and step **14** in FIG. **5**K. Step **13** in FIG. **5**B was described above. At step **14** in FIG. **5***k*, a hiccup sound is played and images depicting hiccups are played. This is repeated, for example, five times. The burping action is detected, such as by sensing whether light sensor L**1** detects a change in light 4 times in seconds. If burping is not detected, then the process is repeated. If burping is detected, then the routine goes to step **13** in FIG. **5**B.

[0037] Finally, FIG. **5**J shows the process for the patty cake action. At step **10**, the fussy sound is played and repeated. The two images of two hands and clapping hands, respectively, are displayed for 2 seconds each. If the prompted action (singing at microphone M**1** and hands together at contact sensor SW**5**) is detected within 4 seconds, a cooing sound is played through speaker **121** and a happy image is displayed. If the prompted action is not detected within 4 seconds, then the process goes to step **12** shown in FIG. **5**B. At step **12**, a crying sound is played and there are alternative crying and happy screens. This is done for 5 seconds and then the doll goes back to step **10** in FIG. **5**J. This process repeats in 4 second intervals up to the maximum time limit of 30 seconds. At that point, the process continues on to step **13** in FIG. **5**B. If the action is detected, then the whole sequence of patty cake images is displayed and repeated. A clapping sound is played each time contact sensor SW**5** closes. The patty cake is repeated for up to 30 seconds or for 2 loops of the patty cake sequence, and then the process proceeds to step **13** in FIG. **5**B.

[0038] Of course, all of the various parameters in the game play routine shown in FIGS. **5**B-**5**K may be different than the values shown. For example, the time periods may be changed. The number of attempts may be change. There may be other sounds besides giggling, crying and laughing. Indeed, some of these parameters may be changed by the user. Having

described at least one preferred embodiment with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various changes, modifications, and adaptations may be effected therein by one skilled in the art without departing from the scope or spirit of the invention.

1. A baby doll comprising:

a head,

a body,

a display on the surface of the body, the display controllably displaying a plurality of different images, each one of said images depicting an action to be taken with the baby doll;

a speaker controllably producing sounds; and

a plurality of sensors located in the head or body, said sensors detecting when a depicted action is taken with the baby doll, the subsequent display or sounds of the baby doll depending on whether or not one of said plurality of sensors senses that an action depicted by an image displayed on said display is taken within a period of time after said image is displayed on said display.

2. The baby doll recited in claim **1**, wherein the display is shaped like a heart and located at the heart on the body.

3. The baby doll recited in claim **1**, wherein the plurality of sensors include at least one contact sensor which senses when an object associated with a depicted action comes into contact with the baby doll.

4. The baby doll recited in claim **3**, wherein said at least one contact sensor comprises a reed switch and the object associated with the depicted action includes a magnet.

5. The baby doll recited in claim **4**, wherein said at least one contact sensor is located in a hand of the baby doll and the object is a toy.

6. The baby doll recited in claim **4**, wherein said at least one contact sensor is located in the head, near the mouth of said baby doll, and the object is a bottle.

7. The baby doll recited in claim **4**, wherein said at least one contact sensor is located near the baby's bottom, and the object is a diaper.

8. The baby doll recited in claim **1**, wherein the plurality of sensors include a sensor which detects sound and a sensor which detects light.

9. The baby doll recited in claim **1**, wherein the amount of time is predetermined.

10. The baby doll recited in claim **1**, wherein, if the action depicted by an image displayed on said display is not taken within a period of time after said image is displayed on said display, then the speaker produces a crying sound and the baby doll goes into sleep mode.

11. The baby doll recited in claim **1**, wherein the doll further includes a plurality of buttons associated the play routine of the baby doll.

12. The baby doll recited in claim **11**, wherein one of said plurality of buttons, when selected, bypasses a depicted action displayed on the display.

13. A baby doll kit comprising:

a baby doll, said baby doll having,

a body,

a display on the surface of the body, the display controllably displaying a plurality of different images, each one of said images depicting an action to be taken with the baby doll, and

at least one contact sensor located in the head or body; and

at least one object associated with the baby doll and with the action depicted by the image displayed on said display of said baby doll, said at least one contact sensor detecting when said at least one object comes into contact with a part of the baby doll near said at least one contact sensor,

wherein the baby doll makes a display or sound depending on whether or not said at least one object comes into contact with a part of the baby doll near said at least one sensor within a period of time after said image is displayed on said display.

14. The baby doll kit recited in claim **13**, wherein said at least one contact sensor comprises a reed switch and the object associated with the depicted action includes a magnet.

15. The baby doll kit recited in claim **14**, wherein said at least one contact sensor is located in a hand of the baby doll and the object is a toy.

16. The baby doll kit recited in claim **14**, wherein said at least one contact sensor is located in the head, near the mouth of said baby doll, and the object is a bottle.

17. The baby doll kit recited in claim **14**, wherein said at least one contact sensor is located near the baby's bottom, and the object is a diaper.

18. The baby doll kit recited in claim **13**, wherein the amount of time is predetermined.

19. The baby doll kit recited in claim **13**, wherein, if the action depicted by an image displayed on said display is not taken within a period of time after said image is displayed on said display, then the baby doll produces a crying sound and then goes into sleep mode.

20. A software program recorded on a tangible medium, said software program, when executed by a processing element, causing a baby doll to operate a game play routine, said game play routine comprising:

displaying a plurality of different images on a display of said baby doll, each one of said plurality of different images depicting one of a respectively corresponding plurality of actions to be taken with the baby doll;

sensing whether the plurality of depicted actions are taken with the baby doll;

making a display or sound after each respective image is displayed depending on whether or not the respectively corresponding action is taken with the baby doll within a period of time after said respective image is displayed on said display.

21. The software program recited in claim **20**, wherein said tangible medium is a memory removable from said baby doll.

22. The software program recited in claim **21**, wherein the amount of time is predetermined by the software program.

23. The software program recited in claim **20**, wherein, if the action depicted by an image displayed on said display is not taken within the period of time after said image is displayed on said display, then the software program causes a speaker of the baby doll to produce a crying sound and then the baby doll goes into a sleep mode.

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