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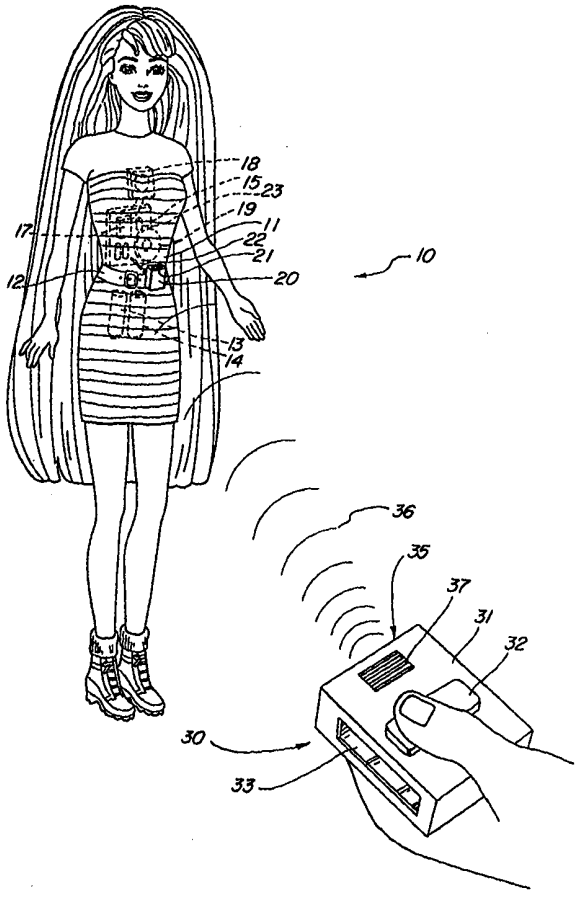
(54) Title: DOLL WITH MINIATURE TOY PAGER RESPONSIVE TO A CHILD–SIZED TOY PAGER

(57) Abstract

A doll (10) includes a hollow torso (11) within which an electronic circuit (17) having a conventional sound circuit and speaker (19) supported thereon is operatively coupled to a sound sensor (18). The doll further includes a simulated doll pager (20) which is worn externally by the doll (10) and coupled internally to the circuit (17). A child–sized toy pager (30) includes a housing (31) supporting a light emitting diode (31) and a speaker grille (37). The housing (31) further supports a push button (32) operable to energize sound–producing circuitry within the housing to generate sound signals which are coupled to a speaker thereby transmitting sound energy (36). The sound energy is detected by the sound sensor (18) within the doll (10) causing the sensor to activate the sound–producing circuit within the doll and mimic the appearance of actuation of the doll pager (20).



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DOLL WITH MINIATURE TOY PAGER RESPONSIVE TO A CHILD-SIZED TOY PAGER

SPECIFICATION

Field of the Invention

This invention relates generally to toys and dolls and particularly to those having a remote control or remote activation system.

Background of the Invention

Many different types of toys and dolls have been fabricated having apparatus for remote control or remote activation of the toy. Thus the familiar remote control toys such as toy vehicles or the like have become extremely prevalent in the art. Other toys such as remotely controlled robot, or dolls activated by a remote signal to cycle through a series of operations or maneuvers, have also become common and well known.

While the variety of remotely controlled and remotely activated toys and dolls is virtually endless, they all share certain generic features. One common element is the provision of a toy or doll having a performed feature such as effects provided by sound and/or lights. In many instances a movement feature such as propelling the toy or doll or moving various limbs of a doll is also provided. In all such toys and dolls having a feature responsive to a remote control, some type of energy sensor is utilized in the toy or doll to trigger the operation of the feature

when the controller so commands. The second element of these types of toys and dolls is a controller which may vary from extremely complex radio frequency signal systems to extremely simple systems producing energy which is either infrared or sound or higher frequency ultrasound usually in relatively simpler command formats.

As practitioners in the art endeavor to continually improve play value and amusement of such remotely controlled or activated toys and dolls, a variety of interesting themes have been employed. For example, U.S. Patent 5,032,099 issued to Cham sets forth a TOY MUSICAL BOX having a housing supporting an electronic musical sound reproduction circuit. The operation of sound reproduction and the motor drive operating the display are remotely controlled by sound impulses from a separate hand-held device. The music box includes a microphone and discriminator to provide an output signal upon receipt of the sound pulses.

U.S. Patent 4,231,184 issued to Corris et al sets forth a REMOTE-CONTROL DOLL ASSEMBLY having a human infant doll with motor driven arms pivotable at the shoulders thereof. The drive mechanism for the arms includes a sound responsive trigger which causes the doll to move its arms upon receipt of a remotely transmitted sound. The high frequency sound used to trigger activation is produced by squeezing a toy baby bottle having a whistle therein.

U.S. Patent 4,642,710 issued to Murtha et al sets forth an ANIMATED DISPLAY CONTROLLED BY AN AUDIO DEVICE in the form of a representation of a face controlled by an associated audio tape player and microprocessor controlled display. The facial

features are varied responsibly to the audio sound of the tape player under microprocessor control.

U.S. Patent 4,496,149 issued to Schwartzberg sets forth a GAME APPARATUS UTILIZING CONTROLLABLE AUDIO SIGNALS having a container within a game apparatus in which an electronic circuit capable of emitting repetitive audio signals is supported. The container is hidden by one of the players who selects the rate and volume of the audio signals with the remaining players attempting to locate the container in response to the emitted signals.

U.S. Patent 5,209,695 issued to Rothschild sets forth a SOUND CONTROLLABLE APPARATUS PARTICULARLY USEFUL IN CONTROLLING TOYS AND ROBOTS having an internal electronic circuit and battery powered propulsion means for moving and actuating the robot. Remotely transmitted sound commands are sensed by the robot and the activities of the robot are controlled accordingly.

U.S. Patents 5,648,999 and 5,651,049, both issued to Easterling et al set forth a system and method of remotely controlling the recording of a telephone message at a selected recording device connected to a telephone by an RF link. The device includes a base station having an RF transmitter connected to a telephone receiver and plural paging/recording devices each with an RF receiver and a message recorder.

U.S. Patent 5,218,705 issued to DeLuca et al sets forth a PAGER RECEIVER WITH SELECTIVE OPERATING VOLTAGE AND REDUCED POWER CONSUMPTION having power saving features which operate the pager at different

power system voltages in response to paging activity or the absence thereof.

U.S. Patent 4,987,349 issued to Nakamura sets forth an INFRARED REMOTE CONTROLLED TOY having a toy vehicle operative in response to a battery powered motor and controlled by a light sensor activation system. Commands are transmitted as light signals to be sensed by the light sensor and control the vehicle.

U.S. Patent 4,964,837 and U.S. Patent 5,195,920, a continuation thereof, both issued to Collier and both entitled RADIO CONTROLLED MODEL VEHICLE HAVING COORDINATED SOUND EFFECTS SYSTEM provide a toy vehicle having an internal sound-producing mechanism together with a radio frequency receiver. Command signals are transmitted to the toy vehicle via the radio frequency link causing particular activities of sound production and movement in the toy vehicle as it responds.

U.S. Patent 4,717,364 issued to Furukawa sets forth a VOICE CONTROLLED TOY which receives commands via a radio transmitter and receiver pair in response to which a central processing unit outputs commands to various movement and light producing features.

U.S. Patent 4,654,659 issued to Kubo sets forth a SINGLE CHANNEL REMOTE CONTROL TOY HAVING MULTIPLE OUTPUTS having a remote housing and a main housing. The remote housing has a transmitter and signal generator associated with the transmitter. The transmitter outputs a signal which is encoded by the signal generator to reflect which switch or switches are activated on the remote housing. The remote housing responds to the radio frequency signals in accordance with control settings.

U.S. Patent 4,612,472 issued to Kakizaki et al sets forth a REMOTE CONTROLLED TOY USING PIEZOELECTRIC ELEMENT having a toy replicating a reptile-like creature which includes a battery powered propulsion system together with a signal receiver. A remote housing incorporates a radio transmitter which includes a piezoelectric element for generating a current capable of generating radio frequency waves. When the remote unit is actuated, the piezoelectric element therein produces a burst of energy which is converted to radio frequency and which is received at the toy.

U.S. Patent 4,325,199 issued to McEdwards sets forth an ENGINE SOUND SIMULATOR having a remote controlled car driven by an electric motor and battery combination. A sound simulator produces output sounds simulating the various sounds made by a race car. A plurality of transmitter means are provided about the trackway to create certain sounds from the sound simulator as the toy vehicle passes around the track.

U.S. Patent 3,628,283 issued to Mizoule sets forth an ELECTRONIC CONTROLLED DEVICE SENSITIVE TO ELECTROSTATIC CHARGE FOR CONTROLLING ELECTRICALLY OPERATED TOYS AND THE LIKE in which a control device utilizing a field effect transistor is connected in series with a load impedance across a DC current source. The utilization portion includes a current active device which may be part of an animation toy such as a relay.

U.S. Patent 5,655,945 issued to Jani sets forth a VIDEO AND RADIO CONTROLLED MOVING AND TALKING DEVICE having a VCR coupled to and driving a standard

television receiver. A special decoder is added to the VCR which responds to signals recorded during blank spaces in the program information on the tape to remotely control one or more dolls in coordination with the television display.

While the foregoing described prior art devices have improved the art, and have in some instances enjoyed commercial success, there remains nonetheless a continuing need in the art for evermore improved, and interesting remote controlled or activation type toys.

Summary of the Invention

Accordingly, it is a general object of the present invention to provide an improved remotely controlled or activated toy. It is a more particular object of the present invention to provide an improved remotely controlled or activated doll having simulated pager action and response.

In accordance with the present invention, there is provided in combination, a doll having a toy doll pager and a child-sized toy pager, the combination comprising: a sound sensor, a control circuit, and a first sound-producing circuit supported within the doll, a second sound-producing circuit supported with the child-sized toy pager, a button switch supported on the child-sized toy pager for activating the second sound-producing circuit to propagate sound energy to the sound sensor, and a miniature toy doll pager supported on the outer surface of the doll operatively coupled to the control circuit and supporting a first light-emitting diode, the combination cooperating to respond to actuation of the button switch to transmit

sound to the sensor causing the control circuit to actuate the first sound-producing circuit and/or the first light-emitting diode.

Brief Description of the Drawings

The features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The invention, together with further objects and advantages thereof, may best be understood by reference to the following description taken in conjunction with the accompanying drawings, and in which:

Figure 1 sets forth a perspective view of the present invention doll in combination with a child-sized toy pager in an operative relationship; and

Figure 2 sets forth a schematic diagram of the electronic circuit within the child-sized pager of Figure 1.

Description of the Preferred Embodiment

Figure 1 sets forth a perspective view of a doll constructed in accordance with the present invention and generally referenced by numeral 10 together with a child-sized toy pager generally referenced by numeral 30. The invention includes the combination of doll 10 having its own toy doll pager 20 together with child-sized toy pager 30.

More specifically, doll 10 includes a torso 11 upon which a belt 12 is secured. Belt 12 supports a doll sized pager 20 having one or more light emitting diodes 21 visible on the upper surface thereof. Doll

10 further includes an internal circuit 15 having a sound circuit 17 and a speaker 19. Circuit 15 is coupled to doll pager 20 by a plurality of wires 22 which pass from within torso 11 outwardly through the outer surface of torso 11 to connect with pager 20 from behind. A battery power supply comprised of conventional batteries 13 and 14 is supported within torso 11 and, in accordance with conventional fabrication techniques, is operatively coupled to circuit 15 using a plurality of contacts and connecting wires which are not shown to avoid cluttering the drawing in Figure 1. A sound sensor 18 is supported within the interior of torso 11 and is coupled to circuit 15 by conventional connecting wires.

In the preferred fabrication of the present invention, doll pager 20 is integrally formed with torso 11 and/or belt 12. Alternatively, belt 12 and doll pager 20 may be fabricated independently with doll pager 20 secured removably to belt 12 in which case appropriate connectors are provided to couple wires 22 to the operative system within doll pager 20.

Child-sized toy pager 30 includes a generally rectangular housing 31 supporting a plurality of light emitting diodes 33 and defining a grille 37. A speaker 35 (seen in Figure 2) is supported within housing 31 and is directed to the output of sound energy in a particular direction such as that shown in Figure 1. Housing 11 further supports a push button 32 which, as is better seen in Figure 2, is operative to close switch 34.

In operation, the child initiates activity by grasping child-sized pager 30 and pressing button 32.

In response to pressing of button 32, switch 34 (seen in Figure 2) activates the sound-producing circuit within housing 31 which is shown in Figure 2. As a result, sound energy waves 36 propagate outwardly from child-sized toy pager 30 and are directed toward doll 10 by virtue of the child user's hand position.

At doll 10, sound sensor 18 responds to sound energy waves 36 to produce an output signal which is coupled to circuit 15. Circuit 15, upon receiving a sound energy indicating signal from sensor 18, actuates sound circuit 17 within torso 11 and/or doll pager 20 in accordance with a predetermined response. The predetermined response of circuit 15 to bursts of sound energy received by sound sensor 18 is a matter of designer's choice. However, in accordance with the preferred fabrication of the present invention, the child user may initiate a first burst of sound energy by pressing momentarily and releasing button 32. In accordance with a single burst of sound energy received by sensor 18, circuit 15 actuates sound circuit 17 to produce an audible beep and further causes light emitting diode 21 to flash. When the child user transmits to bursts of sound energy by repeating the press and release cycle upon button 32, circuit 15, in response to two output signals from sound sensor 18, causes sound circuit 17 to output a phone ringing sound through speaker 19. Further, the production of three bursts of sound energy by manipulation of button 32 produces three output signals from sound sensor 18 which cause circuit 15 to produce a plurality of beep signals and a sound replicating a phone dial tone. It will be apparent to those skilled in the art that sound circuit 17 and sound sensor 18 may be fabricated entirely in accordance with conventional fabrication techniques.

Sound circuit 15 is provided by a simply array of logic gates which receive the input signals from sound sensor 18 and rotate through the succession of sounds. Such rotating sensors are well known in the art and typically utilize one or more AND gates and OR gates to apply a corresponding signal to sound circuit 17 which in turn produces the desired sound output. For purposes of illustration, circuit 15 is shown supporting an integrated circuit gate array 23. However, it will be apparent to those skilled in the art that a wide variety of devices such as ring counters or the like may be utilized to translate the output signals of sensor 18 to appropriate input signals for sound circuit 17.

As a result, doll 10 having doll pager 20 thereon responds in a variety of manners to the activation of child-sized toy pager 30 by the child user. The result is an interesting and amusing play pattern in which doll 10 seems to be carrying an actual pager.

Figure 2 sets forth a schematic diagram of the circuit operative within child-sized toy pager 30 generally referenced by numeral 40. By way of overview, circuit 40 utilizes an integrated circuit 41 of standard fabrication and design which is commercially available together with a conventional oscillator producing audio frequency output signals. A light emitting diode and a speaker provide additional output effects for stimulation by integrated circuit 41.

More specifically, integrated circuit 41 comprises a device having general device number W5281 manufactured by various manufacturers including Winbond. The integrated circuit is preferably housed

in a conventional dual in-line pin configuration having the various pins thereon numbered in a sequence such as clockwise or counterclockwise. For purposes of illustration, however, the pin numbers of each terminal of integrated circuit 41 shown retain both the pin number of the dual in-line package together with an abbreviation indicating the function to which they are coupled. Thus the terminals of integrated circuit 41 are numbered 42, 43, 44, 45, 46, and 47 for purposes of discussion while the functional abbreviations and pin numbers remain for further reference. Thus terminal 42 of integrated circuit 41 is coupled directly to ground and bears the VSF designation for the low side operating supply connection. Similarly, terminal 43 forms the audio output terminal of integrated circuit 41 and thus retains the abbreviation SPK which indicates an audio output. Further terminal 44 bears the abbreviation LED which indicates the output for a light emitting diode. Terminal 45 bears the abbreviation OSC which indicates the terminal to which a frequency determining element is connected for setting the oscillator frequency within integrated circuit 41. Terminal 46 is designated VDD which indicates operating supply high potential terminal while terminal 47 is designated TGI indicating a trigger signal input.

The surrounding components couple to integrated circuit 41 complete the functioning of circuit 40. Thus a battery power supply 49 has a negative side coupled to ground and a positive side coupled to input 46 of integrated circuit 41. A diode 50 is coupled in parallel with battery supply 49 for protecting against the user's inadvertent reversal of the batteries within power supply 49 during battery replacement. In

response to the provision of operating supply voltage at terminal 46 and a ground connection at terminal 42, and with switch 34 initially open, circuit 40 is inactive and neither light emitting diode 33 nor speaker 35 are outputting any of their respective light and sound energies. Upon the closure of switch 34 which occurs when the user presses button 32 in the manner shown in Figure 1, a trigger signal input is applied to terminal 47 grounding the terminal and causing integrated circuit 41 to respond by outputting signals to light emitting diode 33 and speaker 35. A current limiting resistor 57 couples light emitting diode 33 to the operating supply of circuit 40. Resistor 51 sets the frequency of the internal oscillator within integrated circuit 41.

Unlike light emitting diode 33 which is driven directly from output terminal 44, speaker 35 requires additional power amplification to properly operate. As a result, an amplifier stage is interposed between speaker output 43 and one side of speaker 35. This amplifier is provided by an NPN transistor 53 having an emitter coupled to ground, a base 55 coupled to terminal 43, and a collector 56 coupled to one side of speaker 35. A biasing resistor 52 is coupled between base 55 and ground.

In operation, amplifier 53 is inoperative in the absence of signals outputted at terminal 43. In essence, transistor 53 is turned off by a lack of forward bias on the junction of base 55 and emitter 54. As a result, with transistor 53 off, no current can flow through speaker 35 and no sound is produced. In response to the triggering of switch 34, however, signals are outputted at terminal 43 which intermittently raise the voltage of base 55 above

emitter 54 a sufficient amount to turn on transistor 53 intermittently. The frequency of the intermittent signals applied to base 55 turning on transistor 53 corresponds to the audio frequency of signals being outputted. Each time transistor 53 turns on, the current loop for speaker 35 is completed between the positive supply voltage and ground. As current flows within speaker 35, sound energy is produced. Each time the applied voltage upon transistor 53 cycles between on and off, a cycle of the sound energy takes place. Once the user ceases closure of switch 34, the sound output at terminal 43 ceases and transistor 53 returns to its off condition.

It will apparent to those skilled in the art that circuit 40 shown in Figure 2 is readily fabricated of conventional commercially available components. When such components are arranged in the configuration of circuit 40, the operation of integrated circuit 41 is assured. The system is relatively low in cost and equally as important small in size to facilitate its use in the child-sized pager of the present invention combination.

What has been shown is a combination toy having a doll which supports a doll pager together with a child-sized pager which energizes the doll pager. Internal circuitry within the doll receives the sound inputs and operates the child-sized pager as well as internal components to simulate response of the doll pager.

While particular embodiments of the invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the

invention in its broader aspects. Therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention.

THAT WHICH IS CLAIMED IS:

1. In combination, a doll having a toy doll pager and a child-sized toy pager, said combination comprising:

a sound sensor, a control circuit, and a first sound-producing circuit supported within said doll;

a second sound-producing circuit supported within said child-sized toy pager;

a button switch supported on said child-sized toy pager for activating said second sound-producing circuit to propagate sound energy to said sound sensor; and

a miniature toy doll pager supported on the outer surface of said doll operatively coupled to said control circuit and supporting first light-emitting diode,

said combination cooperating to respond to actuation of said button switch to transmit sound to said sensor causing said control circuit to actuate said first sound-producing circuit and/or said first light-emitting diode.

2. The combination set forth in claim 1 wherein said control circuit responds to a first burst of sound from said child-sized toy pager to cause said first light-emitting diode to flash and causing said first sound-producing circuit to output a beep sound.

3. The combination set forth in claim 2 wherein said control circuit responds to said first burst of sound and a second burst of sound from said child-sized toy pager to cause said sound-producing circuit to output a phone ringing sound.

4. The combination set forth in claim 3 wherein said control circuit responds to said first and second bursts of sound followed by a third burst of sound to cause said first sound-producing circuit to output a phone system dial tone and causing said first light-emitting diode to flash.

5. The combination set forth in claim 4 wherein said child-sized toy pager includes a second light-emitting diode which is flashed when said button switch is activated.

6. The combination set forth in claim 1 wherein said child-sized toy pager includes a second light-emitting diode which is flashed when said button switch is activated.

7. The combination set forth in claim 6 wherein said control circuit responds to a first burst of sound from said child-sized toy pager to cause said first light-emitting diode to flash and causing said first sound-producing circuit to output a beep sound.

8. The combination set forth in claim 7 wherein said control circuit responds to said first burst of sound and a second burst of sound from said child-sized toy pager to cause said sound-producing circuit to output a phone ringing sound.

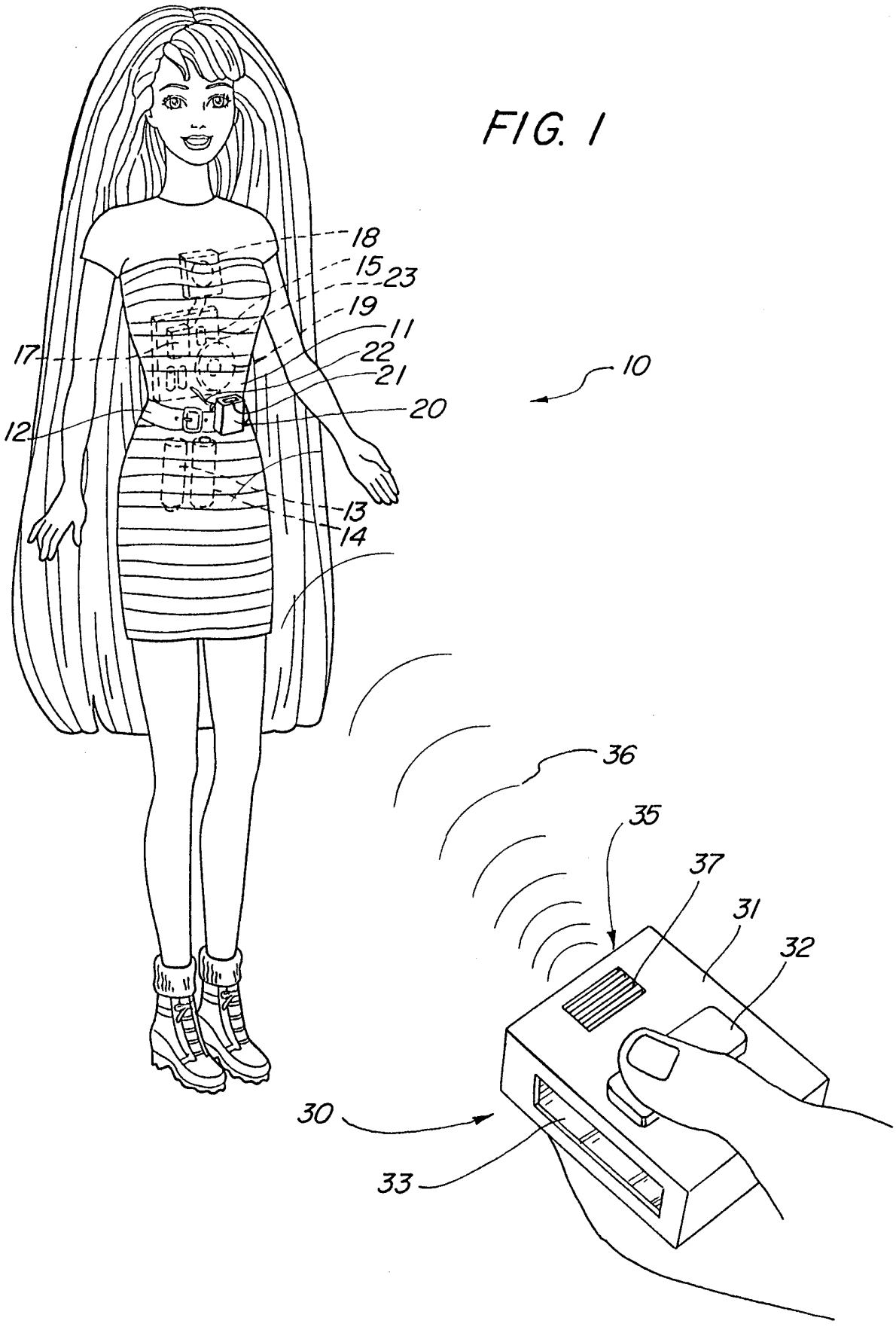
9. The combination set forth in claim 1 wherein said doll includes a doll baby and wherein said toy doll pager is integrally formed with said doll body.

10. The combination set forth in claim 6 wherein said doll includes a doll baby and wherein said toy doll pager is integrally formed with said doll body.

11. The combination set forth in claim 3 wherein said doll includes a doll baby and wherein said toy doll pager is integrally formed with said doll body.

12. The combination set forth in claim 11 wherein said control circuit responds to said first and second bursts of sound followed by a third burst of sound to cause said first sound-producing circuit to output a phone system dial tone and causing said first light-emitting diode to flash.

FIG. 1



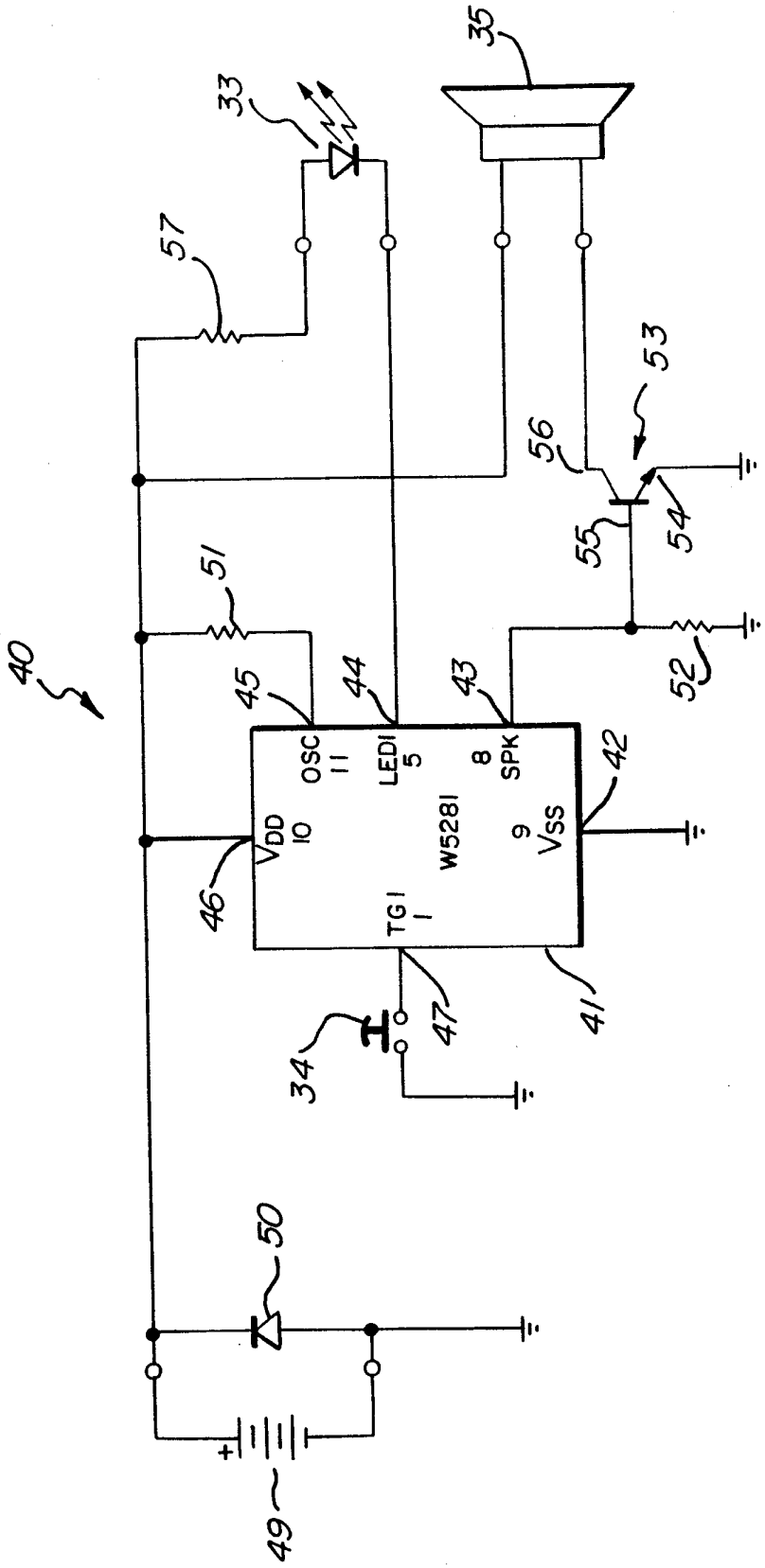

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FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/16529

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A63H 30/00, 3/00, 3/28
US CL :446/175, 268, 297
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 446/175, 268, 297,298,299,302,303,295,456,454,485

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

NONE

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

APS, toy or toys, doll or dolls, pager, led, sounder or speaker, remote control

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,738,526 A (CERDA ET AL.) 14 April 1998, see entire document	1-12
Y	US 5,032,099 A (CHAN) 16 July 1991, see entire document	1-12
Y	US 5,452,901 A (NAKADA ET AL.) 26 September 1995, see fig 4 and col 3, line 57.	5-8 and 10
A	US 5,764,131 A (TWINING ET AL.) 09 June 1998, see figs 1 and 2.	

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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