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(54) Musical toy

(57) A musical toy, which includes several housing members having musical device elements arranged within the housing members. Each of the musical devices have, among other things a power supply (22) and controlling switch (21). The musical device may include at least two musical chips (23). Each of the musical chips (23) is provided within a different housing of the toy. The musical chips (23) are connected electrically with power supply (22) and a switch (21).

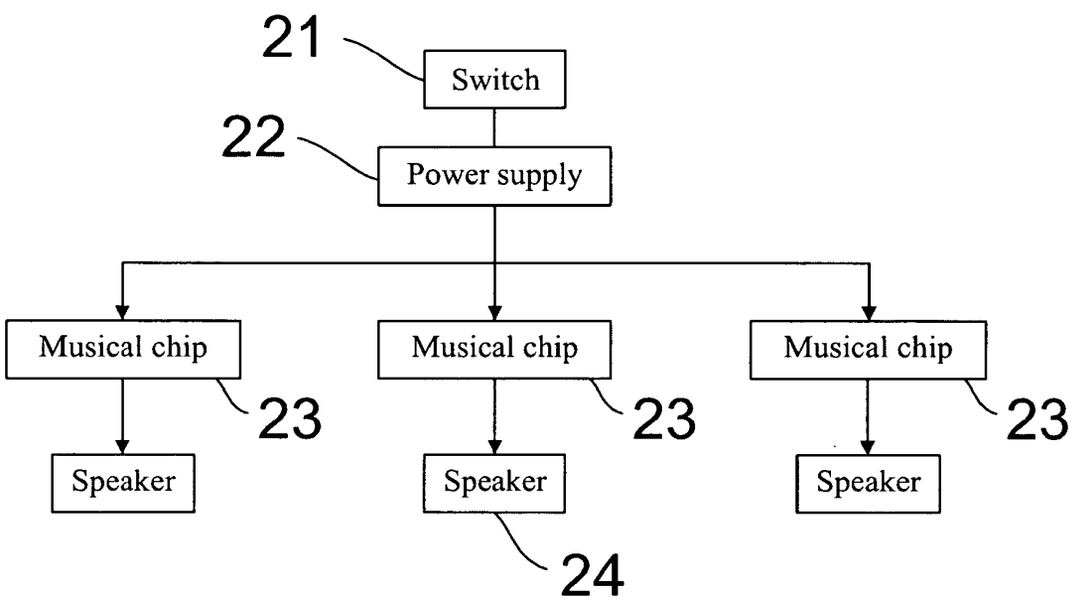

Figure 1

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Description

Field Of The Invention

[0001] The present invention generally relates to musical toys. More specifically, the invention relates to musical toys that may serve as decoration as well as serving to produce musical notes and melodies.

Background Of The Invention

[0002] As living standards have increased, many changes have taken place in consumer leisure time and aesthetic products. For example, the knickknacks in a sitting room are now required to be not only beautiful in appearance, having artistic feeling, but they are also required to have certain realistic characteristics. For example, pile-toys and glassware used as knickknacks are made more desirable as they are manufactured with a realistic appearance and operation. In addition, the best selling children's toys are those which have a style, material, and function that make these toys look more realistic.

[0003] Conventional musical toys typically have two parts; one part is the toy itself, and the other part is a musical device provided within the toy. Conventional musical devices typically have a power supply and a musical chip having various stored musical melodies or sounds. The musical device may be provided with a voice controlled switch, a pressure switch, or a mechanical switch for controlling its on and off function which activates the sound or music. Typically the music generated by this kind of musical toy is of a single musical piece. For example, a piece of musical composition performed by various instruments is recorded on a musical chip in advance. The music chip is then placed into a housing of the toy. When the music chip is turned on, the music is played from the chip.

[0004] These conventional devices suffer from the drawback that people cannot appreciate the melody of various instruments within the musical piece due to signal distortion and the like. This prevents the enjoyment of the music and does not satisfy the user's requirements for a musical toy. In addition, conventional musical toys require that their switch be controlled directly by a user. For example, when the toy has been put into a decorative cupboard, the user has to take it out from the decorative cupboard to activate the switch. This manipulation is not only troublesome, but also negatively impacts the overall decorative effect of the cupboard, and creates a situation where the toy can be more easily damaged.

[0005] In addition, conventional musical toys typically store only one or two pieces of musical composition and transmit them repeatedly. This does not satisfy the requirements of users.

Summary Of The Invention

[0006] The present invention in a preferred form includes a musical toy having not only good decorative characteristics but also having high quality music or sound generating capabilities and realistic function.

[0007] The present invention may include a musical toy having a switch which can be controlled remotely, so as to prevent the need for moving the toy.

[0008] The invention may be in the form of a musical toy having a musical device and a plurality of housings. The musical device is electrically associated with a power supply and a controlling switch. The musical device has at least two musical chips, with each musical chip being located electrically within different housings of the toy. The musical chip is electrically connected with a power supply and switch. The connection between said musical chips can be either serial or parallel. There is also an output device, such as a speaker.

[0009] The musical device may also have motors connected in parallel with each musical chip respectively for controlling action of a mechanical part of the toy. The mechanical part may allow the musical toy to move while at the same time the toy is producing music.

[0010] The musical device may also have a plurality of luminous elements connected in parallel with musical chip.

[0011] The power supply associated with the musical device may be battery. The musical chip may be of a EM55300 chip or the like. The switch of the musical device may be controlled by remote control device. The remote control device provides at least a pressable key, a signal emitting device. The musical device is provided with signal receiving circuit corresponding to the signal emitting device.

[0012] An object of the invention is to allow musical compositions to be performed in unison by different instruments through storing each instruments performance in the musical chips such that the user may appreciate a complete musical piece.

[0013] Another object of the invention is to provide an electrical circuit which additionally includes an electrical motor and a luminous element, so as to cause the toy of the invention have a more vivid appearance during use.

[0014] A further object of the invention is to include a remote control device and a remote control signal receiver associated with a musical chip such that toy housings with musical chips may be arranged in different locations and that the musical chips may be activated remotely and in concert with one another by the user.

Description Of Drawings

[0015]

Figure 1 is a block diagram (I) of the electrical circuit structure of a musical device consistent with the

present invention.

Figure 2 is a block diagram (II) of the electrical circuit structure of a musical device consistent with the present invention.

Figure 3 is an electrical circuit diagram of a musical chip consistent with the present invention.

Figure 4 is a block diagram of an electrical circuit structure of a musical device consistent with the present invention.

Figure 5 is an electrical circuit diagram of a portion of the signal receiving circuit for a musical device consistent with the present invention.

Figure 6 is an electrical circuit diagram of a remote control device consistent with the present invention.

Figure 7 is an exploded view of a toy housing and mechanism consistent with the present invention.

Figure 8 is an exploded view of a toy having an LED consistent with the present invention.

Figure 9 is an exploded view of a toy mechanism consistent with the present invention.

Detailed Description of the Preferred Embodiments

[0016] The invention in one form is a musical toy comprising a toy housing and a musical device associated with the housing. The musical device is connected with a power supply 22, a switch 21 and at least two musical chips 23. Each of the musical chips 23 may be located within at least two different toy housings, wherein each of the musical chips 23 is operably connected with the power supply 22 and the switch 21.

[0017] The invention in one embodiment may have a plurality of toy housings, with each of the toy housings including a musical chip 23. Each of the musical chips 23 may, for example, perform the same musical composition by a different musical instrument. The musical information such as recording or sound generating signals stored in each chip. Activation of the chips is switched on and off by selective use of the switch 21 and the power supply 22. As illustratively shown in Figures 1 and 2 there may be a single switch 21 and a power supply 20, or as illustratively shown in Figure 4 there may be a plurality of switches and power supplies. In use, each housing may be arranged in a decorative cupboard or may hang from, for example, a Christmas tree or other decorative place. The musical chips 23 may be arranged in each housing and may be connected to each other by such things as wire either in parallel or in serial. One of the toy housings may be provided with a power supply 22 and a switch 21. The switch 21 selectively interrupts the flow of electrical current to elements of the device. For example, after switching on the switch, the power supply provides electrical energy to the musical chips 23. The musical chips 23 then process and transmit the music stored. Since, for example, each of the musical chips 23 contain the same musical composition performed by different musical instruments, the user may feel the musical performance is being performed by different musical instruments clearly and simultaneously.

[0018] The processing procedure of the musical chips 23 in one embodiment of the invention includes receiving a signal at the musical chip wherein the signal is timed by a timing pulse generator, the signal is then sampled, music is then read from the chip storage, a sound signal is synthesized and the synthesized signal is output through, for example, a speaker 24.

[0019] In one embodiment of the invention, the musical chip may be an integrated circuit chip of the EM55300 type. The electrical circuit diagram of musical device of the embodiment is illustratively shown in Figure 3, wherein the integrated circuit chip is a EM55300 type musical chip.

[0020] In one embodiment of the invention, as illustratively shown in Figures 2 and 3, an electrical motor 25 is connected in parallel to a pin of the musical chips 23. The electrical motor may be connected with a mechanical structure, such as an arm, or other movable element of the toy housing through a transmission mechanism. This can cause the toy to move when the motor is activated. In addition, the musical toy can be enjoyed at night, in one embodiment of the invention, since luminous elements 26 may be connected with the electrical motor in parallel. The luminous elements may be a light-emitting diode (LED), and the musical toy can thus be made light-emitting. An illustrative electrical circuit diagram shown in Figure 3 includes an illumination element. In addition, an attachment member may be present on the housing of musical toy and may be in the form of a hook for convenience to hang the musical toy.

[0021] In one embodiment of the invention, the device may be in the form of a knickknack, for example, a glassware, plastic, poly-resin, polyester fabric, or metallic object having an artistic appearance. The position of such a knickknack decoration is typically not static. In order to prevent, such things as, the wires connecting the musical chips 23 from being damaged and causing damage to the device during operation or movement, the device may be provided with an individual musical device in each toy housing, as shown illustratively in Figure 4.

[0022] In one embodiment of the invention, the switch 21 of the musical device may be controlled by a remote device. The remote device may be operated by pressing a key, button, or other structure that actuates a signal emitting element. The signal emitting element may include any of the numerous signal emitting circuits well known in the art and may be, for example, infrared emitting. Each of the music devices may be provided with a signal receiving device may have a corresponding signal emitting device which can control the on and off switch. The signal receiving device may adopt a signal receiving circuit as illustratively shown in Figure 6. An example of the electric circuit block diagram and electric circuit diagram of a musical device with a signal receiving device are shown illustratively in Figures 5 and 6.

[0023] During use of one embodiment of the invention, the user may displace the position of each toy hous-

ing at any time according to the personal preference. The user may input an activation order through pressing a key located on a remote control device. The signal is transmitted by a signal emitting circuit in the remote control and is received by a signal receiving circuit included on the musical device. The received signal causes the switch to be switched on and the musical information is output from the musical chip 23. The information may be modified according to such things as the signal order, and the information is transmitted through a speaker.

[0024] In one embodiment of the invention, a circuit chip such as an EM55300 chip which has a large storage space and allows the user to select from a variety of different musical compositions may be used.

[0025] In one embodiment of the invention, the device may be in the form of toys, for example, molded dolls in human, animal, and/or other form. The dolls depending on the configuration of elements are not required to be connected by wires. Thus, these dolls may be placed in individual positions of a decorative cupboard respectively, or may hang in the individual corners of the room. With illustrative reference to Figures 7, 8, and 9, in, for example, the housing of a doll body 40A, and a doll head 40B may be stored the same musical composition performed by, for example, different musical instruments, or having different tonal qualities. The remote control device may be used to activate the musical chip in each doll such that they are switched on simultaneously, and start to perform in unison such that they perform a complete music arrangement. In addition, each doll may include a mechanical connective structure 42, such as an arm. The mechanical connector may be connected to an electrical motor 44 in the musical device. When the motor 44 is activated, the mechanical connector 42 is set into motion. A luminous element, such as an LED 46, may also be associated with the musical device. The luminous element may be switched on simultaneously with the motor 44. To cause the musical toy to be much more splendid and dynamic, different musical notes are stored in each musical chip of the musical toy. The music can thus be sung by a different doll during playing of the songs. Each doll may at the same time push its left hand or right hand simultaneously during singing musical notes, while the luminous element (LED) provided on the arm is also flashing simultaneously, so that the toy has more attractiveness to the user.

[0026] The remote control device may in one embodiment of the invention be provided with various signal transmission programs. For instance, the remote control device may be provided with a program which causes the musical toy to play one song, and then after singing the song completely, the toy will stop. Alternatively, the program may signal, the toy will sing three songs once, the order of which may be in regular order, arranged in an other order, such as "1, 2, 3", "4, 5, 6", "1, 3, 5", "2, 4, 6", etc. The receiving circuit corresponding to the remote device employs a program set correspondingly to the remote device. During toy singing, the receiving device could not receive the order of singing called by remote device again, but only after singing completely, the receiving circuit would stop and stand by for new transmitting signal.

[0027] While certain embodiments of the foregoing invention have been set forth for purposes of illustration, the foregoing description should not be deemed a limitation of the invention herein. Accordingly, various modifications, adaptations and alternatives may occur to one skilled in the as without departing from the spirit and scope of the present invention.

Claims

1. A musical toy, comprising:

   at least a first housing and a second housing; and

   a musical device associated with a power supply, a controlling switch, and at least a first musical chip and a second musical chip, said first musical chip being provided within the first housing and said second musical chip being provided within the second housing, said first and second musical chips being electrically connected with the power supply and the controlling switch, and said first and second musical chips having stored data that can be output through a speaker.

2. The musical toy of claim 1, wherein the first and second musical chips are connected in series.

3. The musical toy of claim 1, wherein the first and second musical chips are connected in parallel.

4. The musical toy of any one of claims 1 to 3, wherein the musical chip is connected with a motor, said motor being operatively connected with a movable part of the toy housing.

5. The musical toy of any one of claims 1 to 3, wherein the musical chip is connected with a motor, said motor being operatively connected with a luminous element in parallel.

6. The musical toy of any one of claims 1 to 3, wherein the power supply is a battery.

7. The musical toy of any one of claims 1 to 3, wherein the musical chip is a EM55300 chip.

8. The musical toy of any one of claims 1 to 3, wherein the switch is connected with a remote device, said remote device is provided with at least a selection key and signal transmitting circuit, and said musical device is provided with signal receiving circuit cor-

responding to said signal transmitting device.

9. The musical toy of any one of claims 1 to 3, wherein each musical chip is connected to a corresponding controlling switch.

10. A musical toy, comprising:

a plurality of housings; and
a musical device located within each housing, said musical device being electrically connected with a power supply and a switch having an on position and an off position, a signal receiver being operatively connected to the switch, at least a first musical chip having stored data, and a speaker associated with the musical chip such that the speaker can output the data, each musical device being operatively connected by a controller, said controller having a selective input element and a signal output element operatively connected to the selective input element, said signal output element configured to direct a plurality of signals to the signal receiver.

11. The musical toy of claim 10, wherein the plurality of signals are in the infrared frequency.

12. The musical toy of claim 10 or claim 11, wherein the musical device is electrically connected with a motor, said motor being mechanically connected with a movable element.

13. The musical toy of claim 10 or claim 11, wherein the musical device is electrically connected with a luminescent element.

14. The musical toy of claim 13, wherein the luminescent element is a light emitting diode.

15. The musical toy of claim 10 or claim 11, wherein each musical chip includes data that forms a musical arrangement, each of said musical arrangements forming part of a larger musical arrangement.

16. The musical toy of claim 10 or claim 11, wherein each musical chip includes a plurality of data that forms a plurality of musical arrangements, each of said plurality of musical arrangements forming parts of a plurality larger musical arrangements.

17. The musical toy of claim 16, wherein the remote control has a plurality of programs that may be selected with the selective input element, and each of the plurality of larger musical arrangements corresponds to at least one of the plurality of signals.

18. The musical toy of claim 10 or claim 11, wherein the signal receiver is a single unit located outside of the plurality of housings.

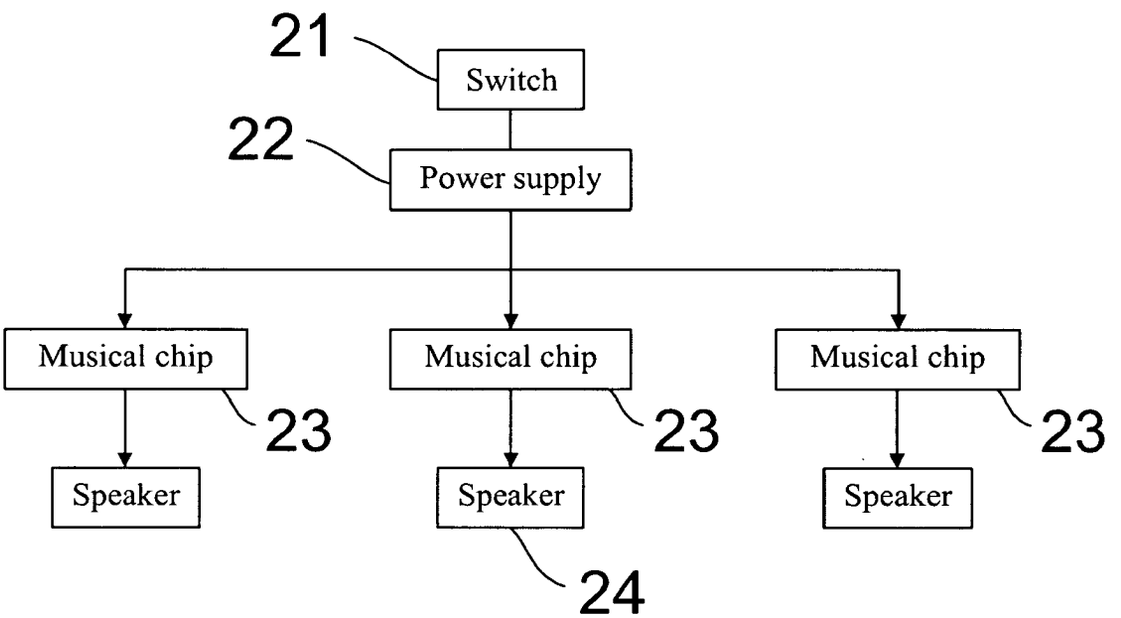
21
Switch
22
Power supply
Musical chip
Musical chip
Musical chip
23
23
23
Speaker
Speaker
Speaker
24

Figure 1

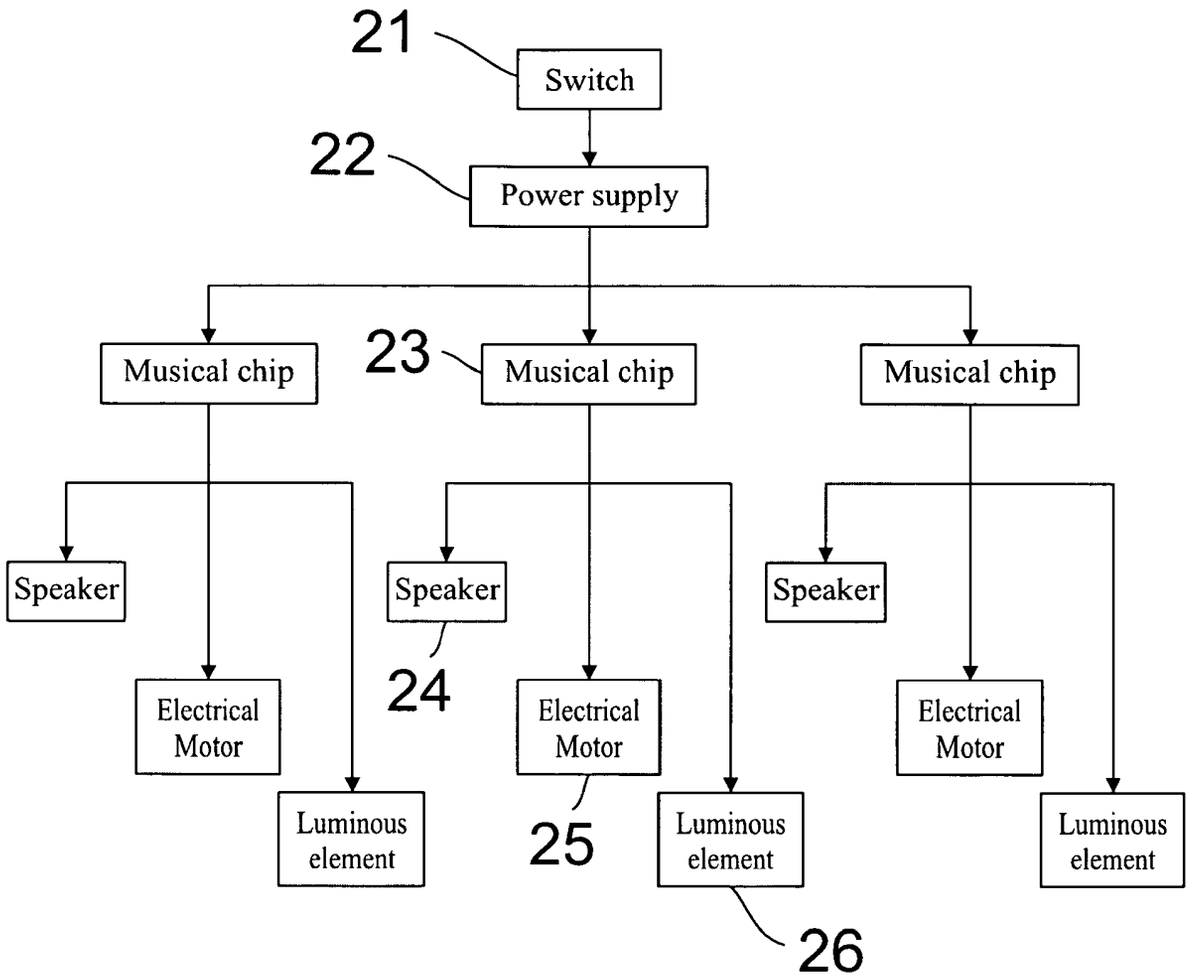
21
Switch
22
Power supply
Musical chip
23
Musical chip
Musical chip
Speaker
Speaker
Speaker
24
Electrical Motor
Electrical Motor
Electrical Motor
Luminous element
25
Luminous element
Luminous element
26

Figure 2

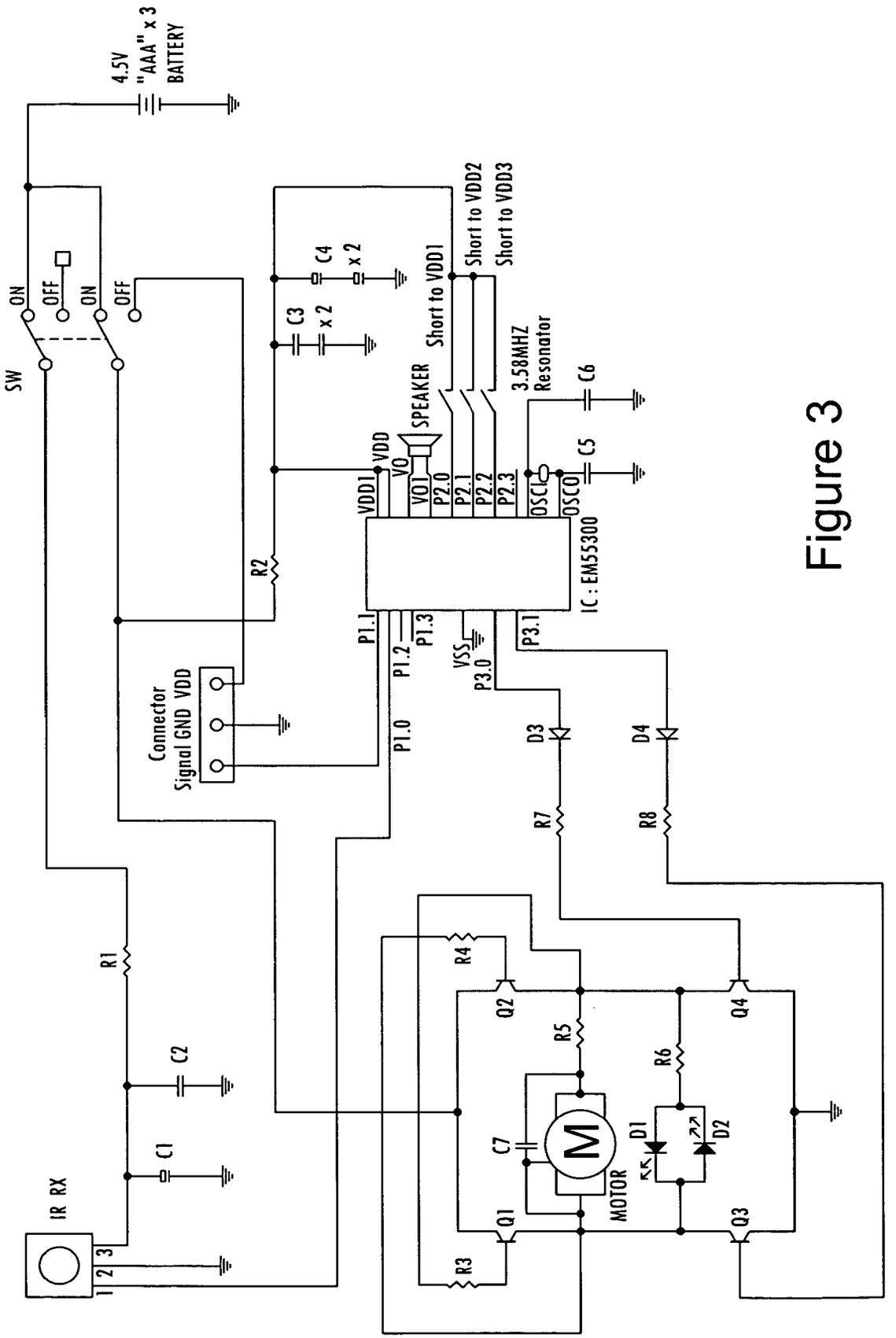
4.5V
"AAA" x 3
BATTERY
SW
ON
OFF
ON
OFF
C4
x 2
C3
x 2
Short to VDD1
Short to VDD2
Short to VDD3
SPEAKER
3.58MHZ
Resonator
C6
C5
VDD
VO
VDD1
VO1
P2.0
P2.1
P2.2
P2.3
OSCI
OSCO
IC : EM55300
R2
P1.1
P1.2
P1.3
VSS
P3.0
P3.1
P1.0
Connector
Signal GND VDD
D3
D4
R7
R8
R1
C2
C1
IR RX
1
2
3
R4
Q2
R5
Q4
R6
C7
M
MOTOR
D1
D2
Q1
Q3
R3

Figure 3

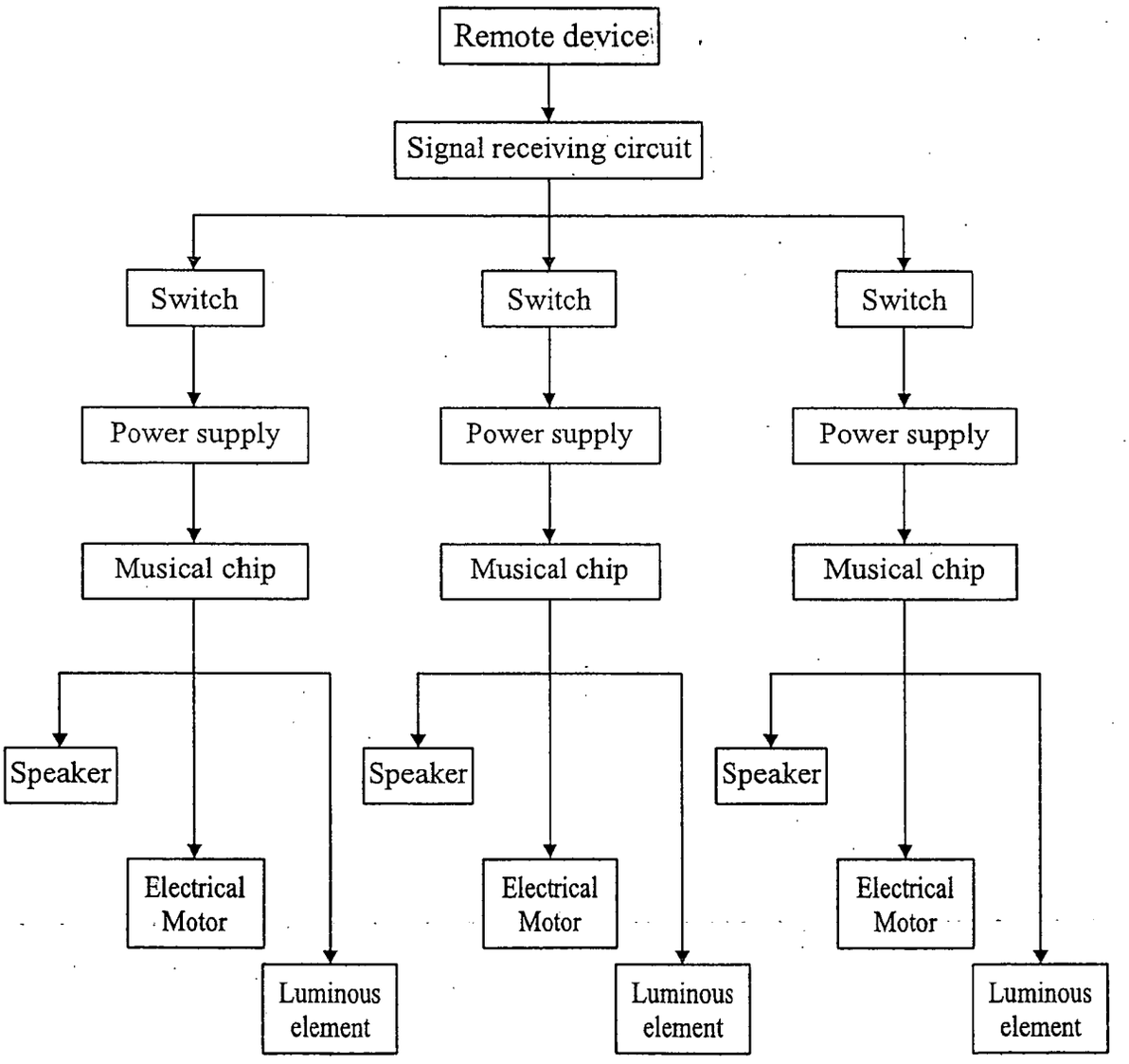
Remote device
Signal receiving circuit
Switch
Switch
Switch
Power supply
Power supply
Power supply
Musical chip
Musical chip
Musical chip
Speaker
Speaker
Speaker
Electrical Motor
Electrical Motor
Electrical Motor
Luminous element
Luminous element
Luminous element

Figure 4

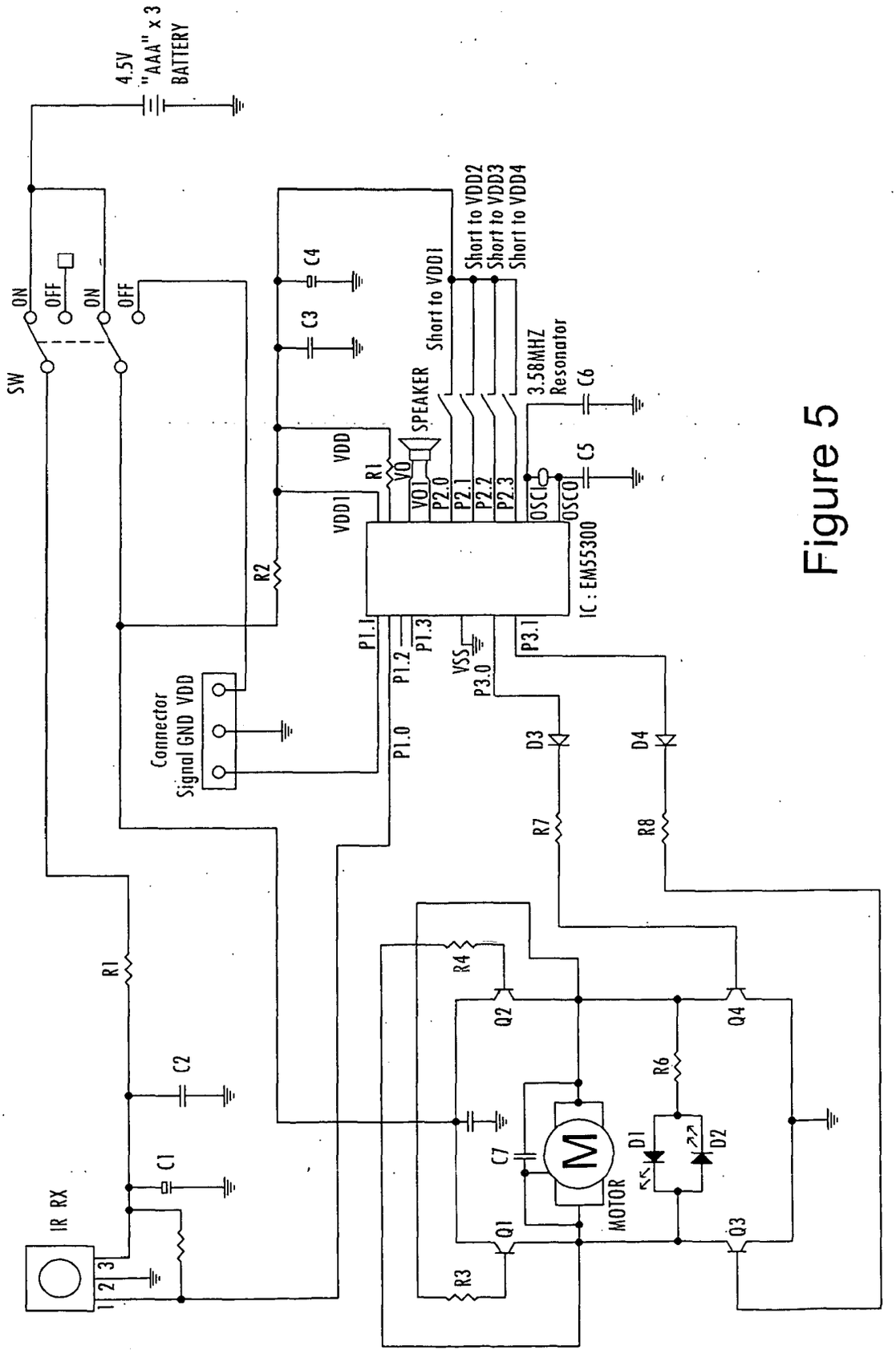
4.5V
"AAA" x 3
BATTERY
SW
ON
OFF
ON
OFF
C4
C3
Short to VDD1
Short to VDD2
Short to VDD3
Short to VDD4
3.58MHZ
Resonator
C6
C5
SPEAKER
VDD
R1
VO
VO1
P2.0
P2.1
P2.2
P2.3
OSCI
OSCO
VDD1
R2
IC : EM55300
P1.1
P1.2
P1.3
VSS
P3.0
P3.1
Connector
Signal GND VDD
P1.0
D3
D4
R7
R8
R1
R4
Q2
Q4
C2
R6
C1
C7
M
D1
D2
MOTOR
IR RX
1 2 3
Q1
Q3
R3

Figure 5

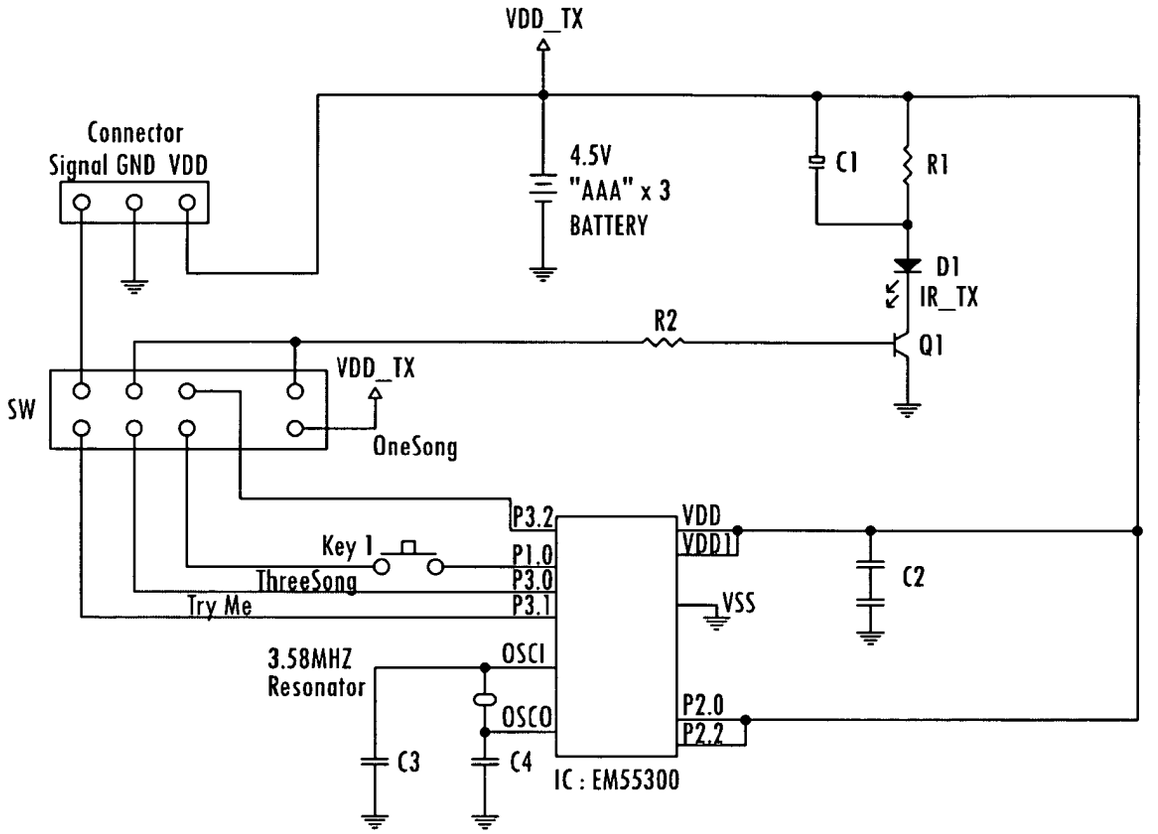
VDD_TX
Connector
Signal GND VDD
4.5V
"AAA" x 3
BATTERY
C1
R1
D1
IR_TX
R2
Q1
VDD_TX
SW
OneSong
P3.2
VDD
Key 1
P1.0
VDD1
C2
ThreeSong
P3.0
VSS
Try Me
P3.1
3.58MHZ
Resonator
OSCI
OSCO
P2.0
P2.2
C3
C4
IC : EM55300

Figure 6

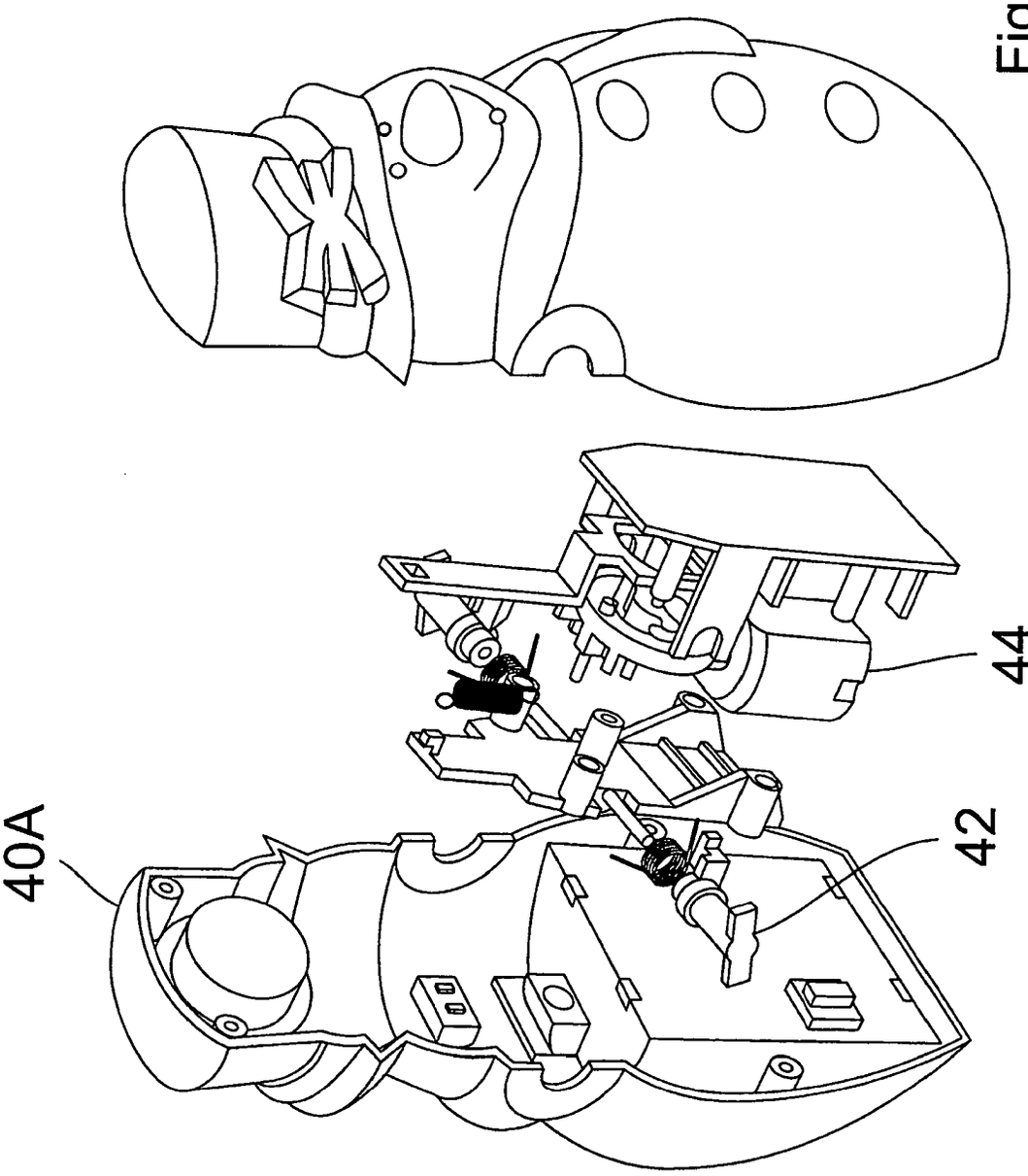

Figure 7

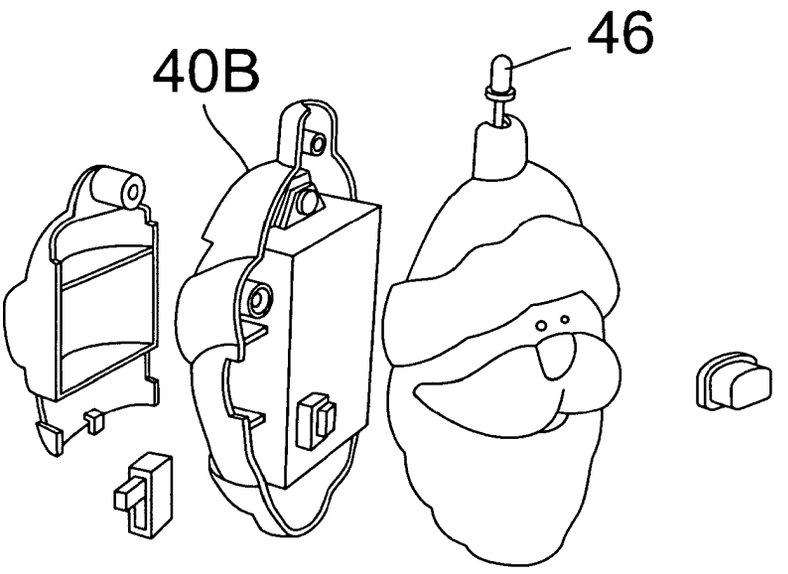

Figure 8

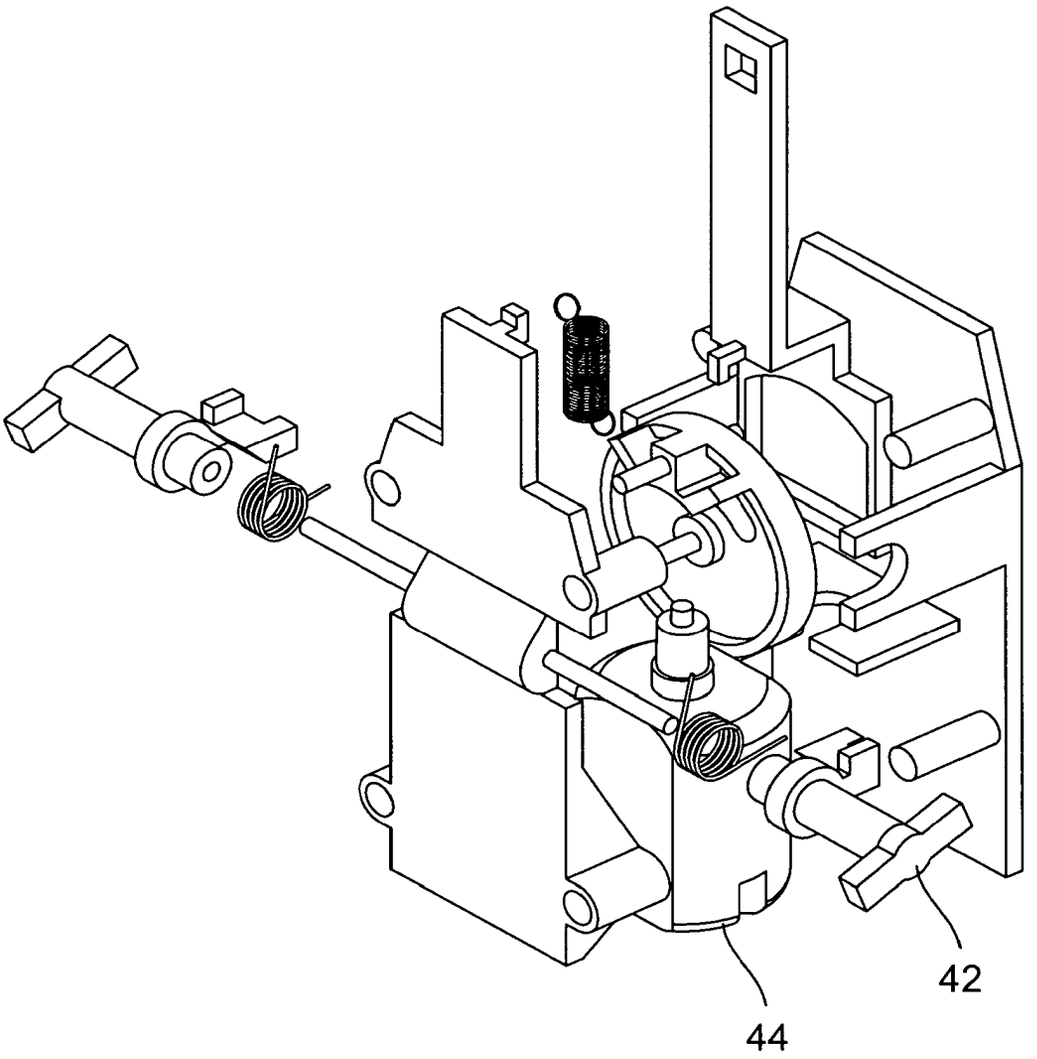

Figure 9

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 6608

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2001/055931 A1 (KHAMPHILAVONG LISA ET AL) 27 December 2001 (2001-12-27) * page 1, paragraph 9-11 * * page 1, paragraph 16 * * page 2, paragraphs 27,28 * * page 2, paragraph 33-36; figures 1-6 *	1-18	A63H33/00 A63H3/00 A63H3/28
Y	US 4 363 181 A (HYMAN ET AL) 14 December 1982 (1982-12-14) * column 1, line 38 - column 2, line 61; figures 1-3 * * claims 1-17 *	1-18	
Y	US 5 803 786 A (MCCORMICK ET AL) 8 September 1998 (1998-09-08) * column 1, line 59 - column 3, line 60; figures 1,2 *	1-18	
X	US 6 113 455 A (WHELAN ET AL) 5 September 2000 (2000-09-05) * the whole document *	1-18	
A	US 2003/153240 A1 (DEJULE AARON M) 14 August 2003 (2003-08-14) * the whole document *	1-18	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A63H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 February 2005	Brumme, I

CATEGORY OF CITED DOCUMENTS

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