May 5, 1931. W. L. MINICK, JR 1,804,265

ELECTRICAL TOY

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Fig. 1.

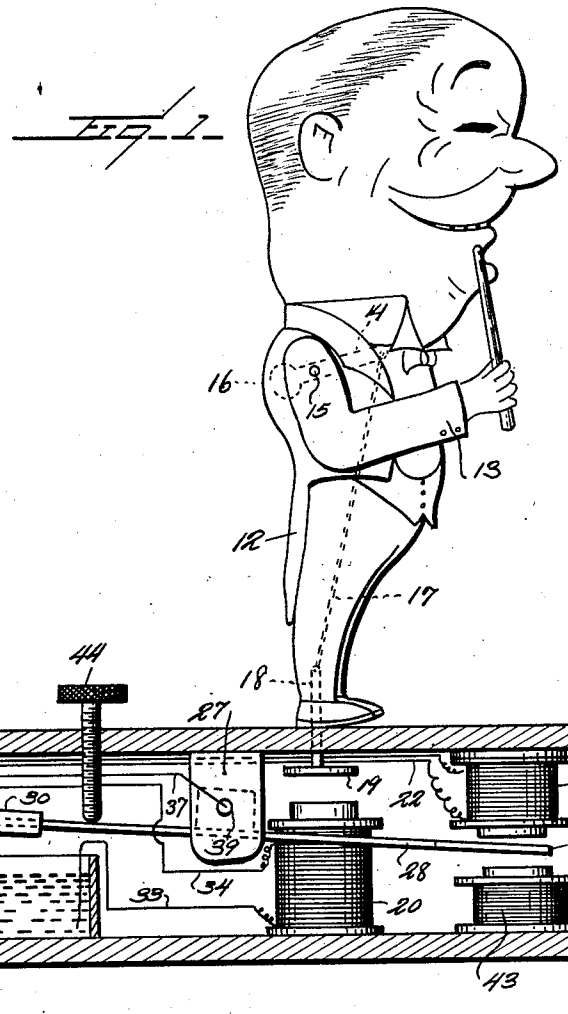


Fig. 3.



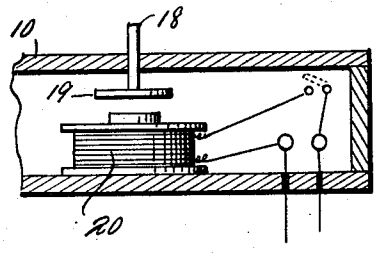


Fig. 4.

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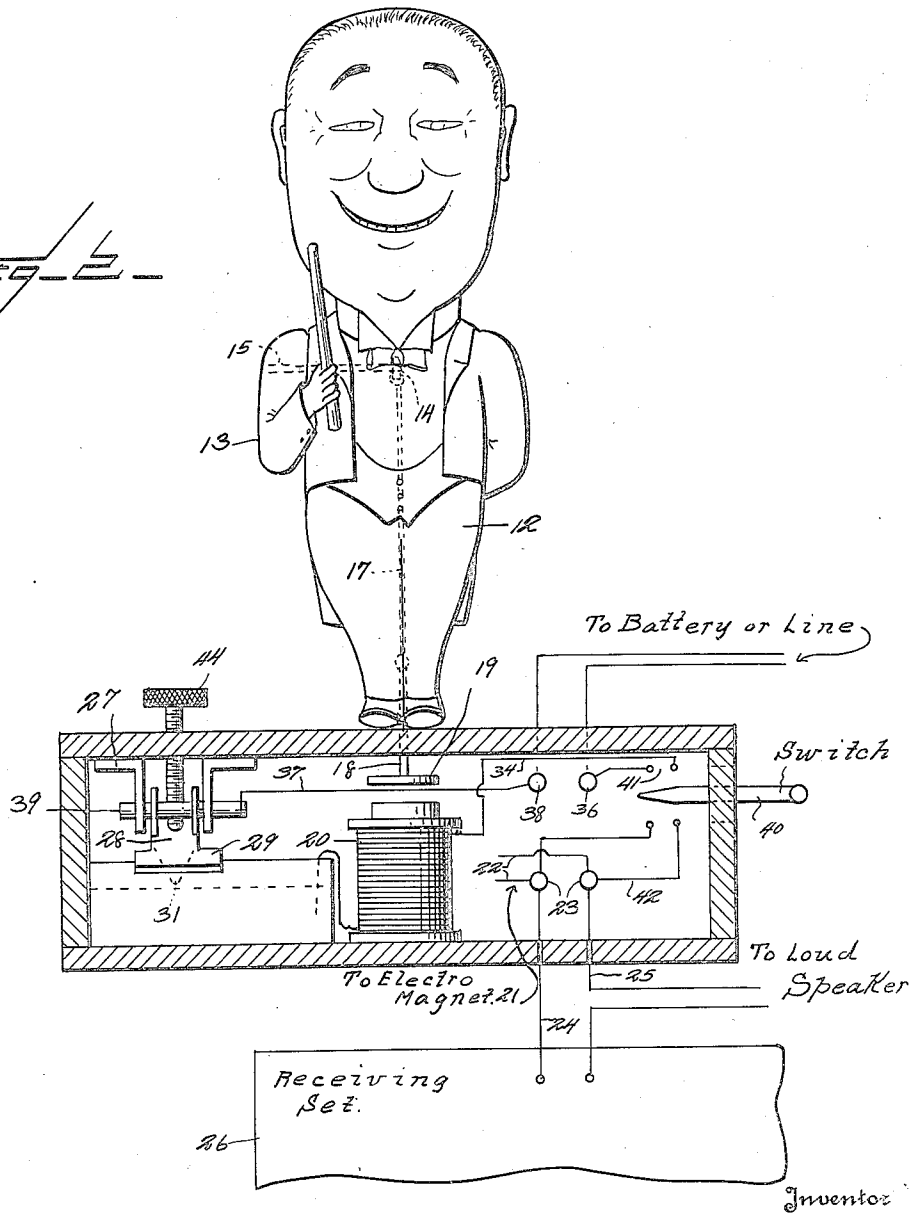
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Fig. 2



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UNITED STATES PATENT OFFICE

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ELECTRICAL TOY

Application filed August 3, 1929. Serial No. 383,198.

This invention relates to electrical toys and more particularly to a device adapted to be attached to a radio, victrola or any structure in which electric current is delivered to a receiving apparatus, reproducer, telephone or the like and which cause sound vibrations, the device including a figure or manikin which moves in time and accordance with said sound vibrations.

A further object is to provide a device of this character which is particularly adapted to be connected to a radio set and which is so constructed that the figure will dance, move its jaws, move its head, arms, legs, or other movable part or parts in time with said vibrations.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a vertical sectional view through a device constructed in accordance with my invention;

Figure 2 is a vertical sectional view at right angles to Figure 1;

Figure 3 is a side elevation of the interior arm of the figure;

Figure 4 is a fragmentary sectional view through a modified form of the device.

Referring to these drawings, 10 designates a case or cabinet of any suitable size and structure. Upon this case or cabinet is mounted a figure designated generally 12, which figure may be that of an animal, a human being or have any other form. This figure may be constructed so as to have movable legs, arms, a movable jaw or a movable head but as illustrated, the figure has only a movable arm 13 shown as carrying the baton of the leader of an orchestra. This figure is purely illustrative and it is to be particularly understood that I do not wish to be limited to such a figure.

The arm 13 as shown is connected to an interior arm 14 pivoted at 15 upon the figure, this interior arm 14 having a counter-weight 16 or equivalent means for urging the outer end of the arm 14 upward and from this arm 14 extends a connection 17 which may be a flexible connection to the shank 18 of the armature 19 which coacts with an electromagnet 20 which is disposed within the case 10.

Also disposed within the case 10 is an electro-magnet 21 having wires 22 connected to binding posts 23 which in turn are connectible to the wires 24 and 25 leading from a receiving set 26 and from a loud speaker (not shown). Pivotally mounted within the case 10, as for instance upon the depending brackets 27, is a metallic lever 28 which constitutes in effect a switch, one end 29 of this lever constituting an armature coacting with the electro-magnet 21. The other end of this lever preferably carries an adjustable counterweight 30 and is downwardly extended as at 31. This lever when the electro-magnet 21 is energized tilts so as to cause the end 31 to electrically engage a contact member hereafter more particularly adverted to and designated 32 which is electrically connected by a wire 33 to the magnet 20. From the magnet 20, a wire 34 passes to a binding post 36 leading to the line or battery and a second conductor 37 passes to the binding post 38 also connected to the line or battery, this conductor 37 being connected to the switch lever 28, as for instance by being connected to the pivot pin 39 thereof.

Preferably a switch 40 is mounted in connection with the wire 34, there being a break in the line 34 at 41 adapted to be closed by this switch. Preferably also the contacts 23 will have conductors adapted to be connected to each other by means of the switch 40. By means of this switch 40, the impulses coming from the receiving set may be caused to travel directly to the loud speaker with the figure actuating mechanism cut out entirely or by shifting the switch 40 to close the gap 41, impulses coming from the receiving set will be transmitted to the electro-magnet 21.

This will cause the lever 28 to vibrate, intermittently, energizing the magnet 20 which will thus cause the armature 19 to vibrate in turn causing the arm 13 of the figure to oscillate as if the figure were beating time to music or if the figure has a movable jaw, causing the jaw to oscillate in time with any speech or music coming in over the radio.

The armature 29 is also adapted to be nor-

mally urged downward to thus raise the end 31 out of contact with the element 32 by means of an electro-magnet designated 43, and disposed below the armature 29 of the lever 28. The space between the armature 29 and the electro-magnet 21 can be controlled by means of the regulating screw 44 extending from the top of the casing.

The wires from the set 26 may be connected either in parallel or in series with the loud speaker and obviously the wiring may be changed in many respects without departing from the spirit of the invention. When the switch 40 is thrown to close the gap 41, current will pass from the battery or from the house wiring and current from the machine or receiving set must pass through the coil 21. When the switch 40 has been shifted to close the circuit between the wires 42, the current to magnet 20 is cut off and the current passes to the speaker, thus missing the coils in the toy and rendering it inoperative.

One of the distinctive features of my invention resides in the fact that the terminal end 31 of switch 28 dips to a greater or less degree into the liquid contact element 32 depending entirely upon the strength of the current passing through the electro-magnet 21 from the receiving set. If the terminal end of the switch 28 only touches the liquid contact element 32, the motions made by the toy are not nearly so strong as when the terminal dips into the liquid contact element. It has been found in actual practice that weak notes transmitted through the receiving set do not dip this switch terminal 31 as deeply into the liquid contact element 32 as strong notes do as the resistance is greater and the attraction of the magnet 20 is varied. Thus my construction is capable of producing varying beats in accordance with fluctuations in the loudness of the music or the strength of the beat. Loud notes which cause strong electrical impulses make the apparatus beat with much more force and amplitude than weak notes which cause only weak impulses. Thus the toy orchestra leader will accent those notes which are strong and should be accented, while weak notes are only relatively slightly accented.

It is to be understood that I have illustrated only one form of this toy and that it is within the purview of this invention to use many other figures in place of the figure of a man illustrated and to move other parts of the body than the arms.

The figure may be that of a person or animal or have any other desired form and may have both arms movable, the jaw movable, the head movable or the legs movable or a number of parts movable; thus the arms may beat time, the jaws may move as in talking, the arms and legs can move as in dancing, the figure may have a movable skirt which can be shifted to represent the skirt of a "hula hula" dancer and any number of actions can be caused to occur in exact time with the music or speech as above mentioned.

In Figure 4, I have illustrated a similar form of toy in which the case 10 simply encloses the electro-magnet 20 which coacts with the armature 19 as before described. In this construction, the electro-magnet receives its current from the set and is electrically connected to the set and speaker as will be clear from Fig. 4, there being a switch to close the circuit through the electro-magnet 20 and open it.

The end 31 of the switch lever 28 is designed to make a preferably non-arcing contact with element 32. The element 32 may be of any desired form for this purpose, as for instance, a vessel containing an aqueous solution, mercury or any other conducting material into which the member 31 will dip. Where an aqueous solution is used, this solution is weak enough to act as a resistance as well as a conductor and the resistance is greatest when the rod only touches the solution, which means that the greater the resistance, the less strong is the impulse which actuates the manikin or figure. Thus by using a weak aqueous solution the figure produces the varying beats in accordance with the fluctuations in the loudness of the music.

The city current can enter the device through a resistance or not as desired. This being obvious, it is not illustrated. Obviously also the electrical connections might be changed in many ways without departing from the spirit of the invention as defined in the appended claims. Thus, for instance, the member 32 may be a contact point or surface and wires 33 and 37 may or may not be crossed by a condenser or any other device as desired. In place of the electro-magnet 43, a permanent magnet might be used for the purpose of causing the retraction of the armature 28 or a spring might be used for this purpose, and as before stated, either a portion of the figure may move or the entire figure may move or any part or parts of the figure.

I claim:—

1. A toy of the character described, including a figure having a movable part, an armature operatively connected to said movable part to oscillate the latter as the armature is oscillated, an electro-magnet associated with the armature, a pivoted switch adapted when shifted in one direction to close a circuit and when shifted in the other direction to open the circuit, means urging the swicth to a position where the circuit is open, a second electro-magnet for which the switch constitutes an armature, the last named magnet having current conducting means adapted to be connected in circuit with a radio receiving set and a loud speaker, a shiftable weight mounted upon one end of the switch, and means limiting the movement of that end

of the switch adjacent the electro-magnet coacting therewith away from said electro-magnet.

2. A toy of the character described including a figure having a movable part and means for moving the part in correspondence with impulses received from a receiving set including an electro-magnet, an armature operatively connected to the movable part of the figure and coacting with said electro-magnet, a pivoted switch, an electro-magnet adapted to be connected to a radio receiving set and receiving impulses therefrom, one end of the switch acting as an armature for said magnet, an aqueous solution contact element into which the other end of said switch is adapted to dip when the last named electro-magnet is actuated, the aqueous solution element being in circuit with the first named electro-magnet and a source of current, and means urging the switch to a position out of contact with the aqueous solution element.

3. A toy of the character described, including a figure having a movable part and means for moving the part in correspondence with impulses received from a receiving set including an electro-magnet, an armature operatively connected to the movable part of the figure and coacting with the electro-magnet, a pivoted switch, a liquid contact element into which one end of said switch is adapted to dip when the switch is oscillated, said last named end of the switch having a portion extended toward the electric contact element, the switch and the liquid contact element being in circuit with the electro-magnet and a source of current, means urging the switch to one position, and means connected to a radio receiving set and receiving variable impulses therefrom and acting to variably vibrate said switch.

In testimony whereof I hereunto affix my signature.

WILLIAM L. MINICK, JR.