

[54] **CASSETTE-TYPE TOY PHONOGRAPH**

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[51] Int. Cl. **G11b 3/40, G11b 25/04**

[58] Field of Search **274/9 B, 9 C, 4 H, 4 J**

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[57]

ABSTRACT

A toy electric phonograph comprising a housing having a top opening and a closure pivotally supported at one end within the opening. The closure has means on its inner surface for removably supporting a grooved record. The housing contains an upwardly pointed stylus which is supported rotatably to engage in the groove of the record to follow it from end to end. The closure is normally biased at its pivoted end to be upwardly tilted for record insertion and to simultaneously open a switch in the electric circuit. The housing is provided with a latch that automatically engages the other end of the closure when the latter is pressed down against it into level position, to lock it in place with the record in engagement with the stylus, simultaneously closing the switch in the circuit. The latch is automatically released when the stylus reaches the end of the record groove.

1 Claim, 6 Drawing Figures

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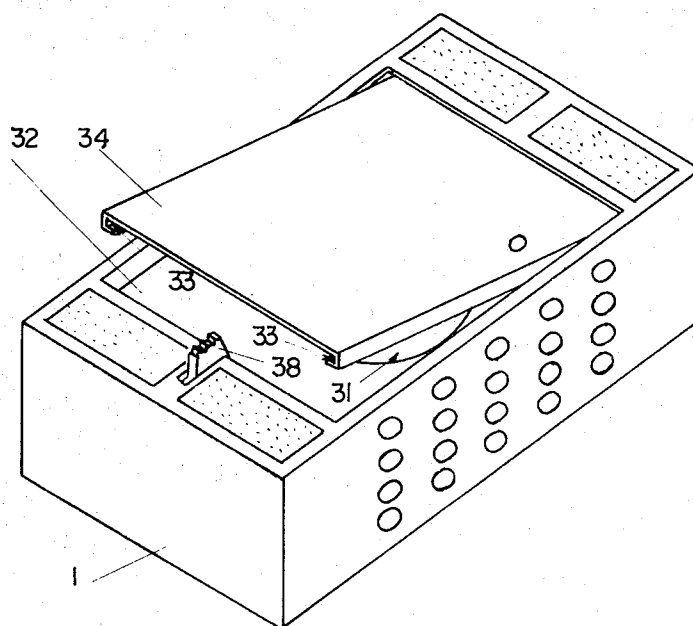


FIG. 1

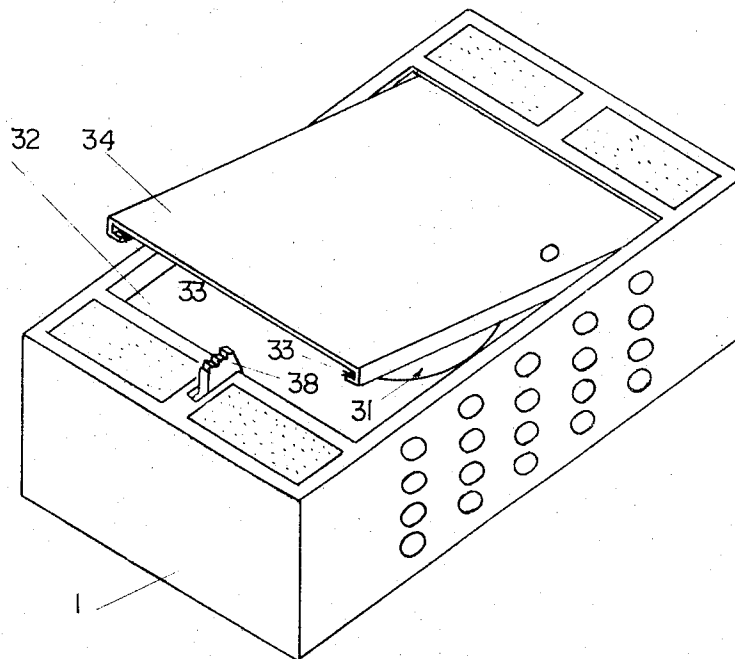
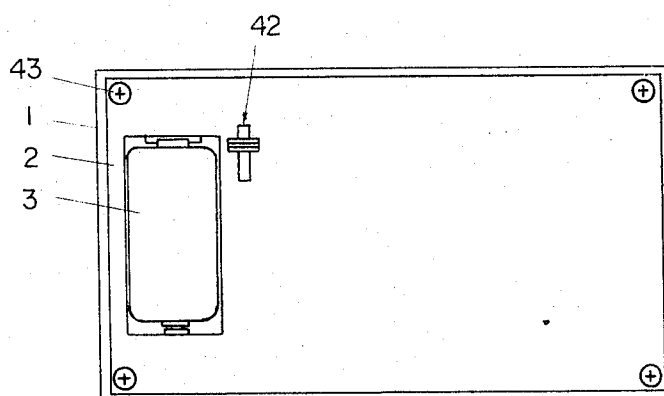


FIG. 4



SHEET 2 OF 2

FIG. 2

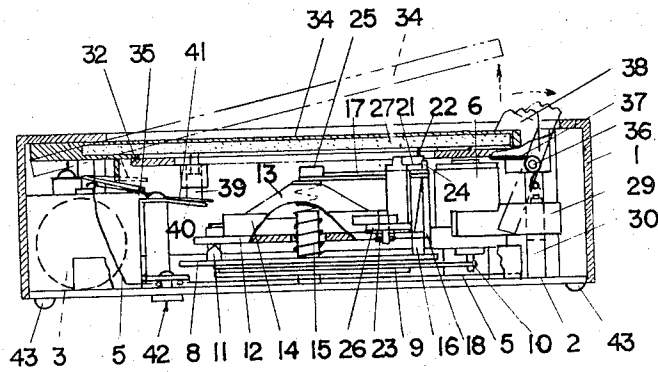


FIG. 3

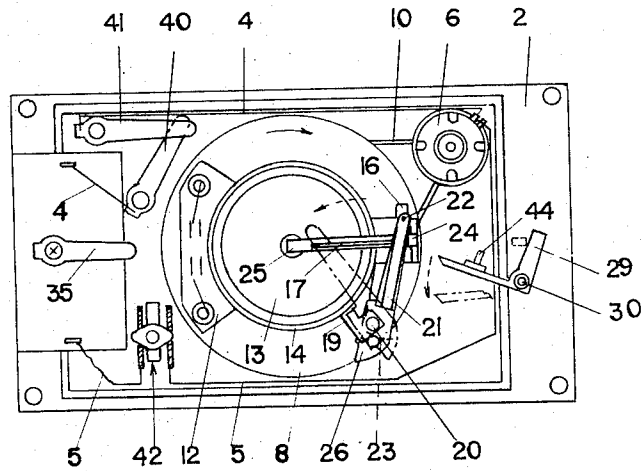


FIG. 5

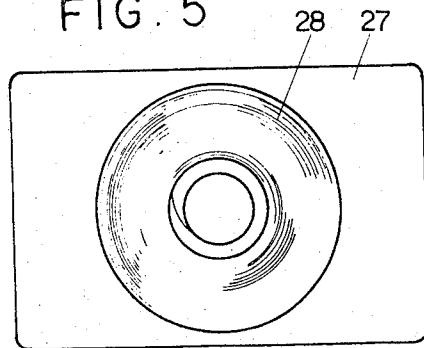
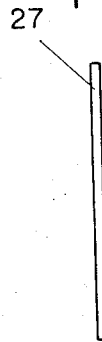


FIG. 6



CASSETTE-TYPE TOY PHONOGRAPH

SUMMARY OF THE INVENTION:

The present invention relates to a toy phonograph, and has the principal object in providing a toy phonograph or small-sized phonograph which is very simple and easy in exchange of a record disc and which is reliable in operation.

BRIEF OF THE DRAWINGS:

FIG. 1 is a perspective view of a toy phonograph according to the present invention; FIG. 2 is a front view, partially in section, showing the state in which a record disc is inserted to operate the phonograph; FIG. 3 is a plan view showing the state in which a housing is removed; FIG. 4 is an underside view of the embodiment; FIG. 5 is a front view of the record disc; and FIG. 6 is a side view of the record disc.

DETAILED DESCRIPTION OF THE INVENTION:

The aspect of performance of the present invention will now be described with reference to the accompanying drawings. At a corner of a bottom plate 2 for a housing 1, a motor 6 is mounted which is connected to the anode and cathode of a battery 3 by means of electric wires 4 and 5. An endless belt 10 is extended between the motor and a lower pulley section 9 of a rotary disc 8 supported by a shaft at the central part of the bottom plate 2. A rocking plate 12 is provided which may rock up and down with fulcrums at supporting shafts 11 being fixed to the rotary disc 8. A cone-type loudspeaker 13 has its outer-peripheral free and fixed through a holding cylinder frame 14 in such a manner that it is laid face down in the inverted-V form at the central part of the upper surface of the rocking plate. A hole is made at the central part of the rocking plate, and said plate 12 is operated by a spring 15 interposed between the top of the cone-type loudspeaker 13 and the rotary disc 8, so as to be normally pushed upwards. Therewith, a stopper 16 is projected from the rotary disc 8, which stopper suitably limits the degree of extension of the rocking plate 12 by catching and end of the rocking plate. The front end of a vibration-transmitting rod 17, which is fixed at the other end to the top of the cone speaker 13, is fixed to a supporting rod 18 protruding from the rocking plate 12. Furthermore, a supporting piece 19 is projected from one side of the holding cylinder frame 14. A pickup rod 21 is provided which rocks about a shaft 20 mounted on the supporting piece, with its rear surface normally kept in contact with the vibration-transmitting rod 17.

A sound stylus 22 is fixed face up at the front end of the pickup rod, while the pickup rod 21 is normally urged towards the supporting rod 18 of the vibration-transmitting rod 17 by a spring 23. An initiation stopper 24 is projected on the side of the supporting rod 18 of the vibration transmitter rod 17, while a termination stopper 25 on the side of the top of the cone speaker 13, whereby the rocking range of the pickup rod 21 is restricted. Now, when the sound stylus 22 moves along a sound groove 28 of a record disc 27, the music ends and the front end of the pickup 21 comes close to the termination stopper 25, then a projecting end 26 in a pivotally-mounted portion of the pickup rod turns properly an L-shaped lever 29 fitted to a protruding shaft 30 on the bottom plate 2. The turning range

thereof is limited by a stopper 44 which is also disposed on the bottom plate 2.

At the central part somewhat lower than the upper surface of the housing 1, a receiving frame 32 is provided which is formed with a circular hole 31 slightly larger than the turning range of the stylus 22. On the receiving frame, there is pivotally arranged a record supporting closure 34 having record holding edges 33 on both opposed sides. The rectangular record disc 27 provided at the central part with the sound groove is inserted into the holding edges, and has opposed side edges thereof held by the holding edges 33.

The closure 34 is normally biased into upwardly tilted position, as by spring 35, at its pivoted end, to raise it for record positioning, and is held down, in closed position for the engagement of the record groove 28 by stylus 22, by a U-shaped hook or latch 38 at the front of the opening 32 on a rotatable shaft 36 suitably supported or journaled in housing 1, in position to engage the forward edge of the closure 34. Latch 38 is normally biased by a spring 37 to maintain it in closure locking position and is provided with a depending rod extension adapted to engage one of the arms of an L-shaped lever or rocker arm mounted within housing 1.

Accordingly, when the sound stylus 22 moves along the sound groove 28 of the record disc 27 to reach the terminal end thereof, the front end portion of the pickup rod 21 comes close to the termination stopper 25 of the vibration-transmitting rod 17, then the protruding piece 26 at the rear end of the pickup rod 21 engages, as it is turning together with the rotary disc, the other arm of the L-shaped lever 29 thereby turning the L-shaped lever 29 to have its other arm engage the projection of the stopping hook piece 38, thereby unlocking the cassette case 34. As a result, the closure 34 has its front end raised above the upper surface of the housing by the elastic force of the spring 37, and the whole keeps a proper inclination. Furthermore, there is disposed below the receiver frame 32 a switch consisting of a lower, fixed contact 40 and an upper, movable contact 41 and insulated from each other with a gap therebetween. The switch is caused to face outwards through the circular hole 31 of the receiving frame, while the movable contact 41 is normally held in contact with a switch actuator 39 projected on the receiving frame.

On the rear surface of the bottom plate 2, a current-adjusting device 42 is provided. The housing 1 and the bottom plate 2 are integrally assembled by means of screws 43.

Description will be hereinbelow made of the way of use of the toy phonograph according to the present invention. Now, the stopping hook piece 38 is moved against the elastic force of the spring 37 and in the direction of an arrow in dotted line in FIG. 2, thereby releasing the engagement with the end of the closure 34. Then, the rear end of the closure 34 is pushed upwards by the elastic force of the spring 35, and the front end thereof is inclinedly lifted up as illustrated by chain lines. Under this state, the record disc 27 is fittedly inserted into the holding edges 33 on both the inner sides of the case. Thereafter, the front end of the closure 34 is depressed and is locked by the stopping hook piece 38. Then, the surface of the record disc 27 depresses the switch actuator 39 protruding on the receiving frame 32, and thus brings the movable contact 41 into

contact with the fixed contact 40 to close an electric circuit. As a consequence, the motor 6 is driven, and rotates the rotary disc 8 through the endless belt 10. Accordingly, the sound stylus 22 is brought into contact with the sound groove 28 of the record disc 27 by the elastic force of the spring 15, with a proper stylus pressure. Vibrations, to which the sound stylus 22 moving along the sound groove 28 is subjected in this case, are transmitted to the vibration transmitter rod 17 being always held in contact with the pickup rod 21. The vibrations further oscillate the cone-type loudspeaker 13 fixed at the front end of the vibration-transmitting rod 17, and are converted into acoustic waves. Thus, a desired melody may be performed. When, after completion of the performance, the front end of the pickup rod 21 comes close to the termination stopper 25 of the vibration transmitter rod 17, the projecting end 26 at the rear of the pickup rod 21 turns about the shaft 20 to protrude externally of the rotary disc 8 to thereby catch one end of the L-shaped lever 29, causing its other arm to engage against the projection depending from latch 38 and turning the latter in the direction of the broken arrow in FIG. 2, to disengage it from the forward edge of closure 34. Simultaneously therewith, the closure 34 having the front end disengaged is raised and inclined in the direction of the arrow similarly shown by the chain line in FIG. 2, by the elastic force of the spring 35 held in contact with the underside of the other end. The movable contact 41 which has been kept depressed by the record disc 27 till then and which has been pressedly contacted with the fixed contact 40 by means of the switch actuator 39, restores to the original position by elastic force of its own. Thus, it separates from the stationary contact 40 to open the electric circuit thereby to stop the rotation of the motor 6. Upon the rising and inclination of the front end of the closure 34 as described above, the pickup rod 21 having been pressed onto the vibration-transmitting rod 17 through the sound stylus 22 by means of the record disc 27 till then is released from the pressure, and moves to the position of the initiation stopper 24 of the vibration transmitter rod 17 by the elastic force of the spring 23. Thus, the pickup rod returns to the starting position of the sound groove 28 of the record disc 27. Simultaneously therewith, the rocking plate 12 is pushed upwards about the supporting shafts 11 by the elastic force of the spring 15, and collides with the stopper 16 fixed to the rotary disc 8 and is thus stopped.

As described above, according to the phonograph of the present invention, a motor is not actuated unless a record disc is inserted into a cassette case. Upon completion of a piece, the motor is automatically stopped and the cassette case is projected. It is accordingly fa-

cilitated to draw out or exchange the record disc. Moreover, in case of the drawing-out or exchange, the opening condition of the closure is good, and there is no damage of, e.g. the record disc due to a sound stylus. The present invention has such a number of advantages.

I claim:

1. An electrically operated toy phonograph comprising a housing having a top opening, a mechanism for reproducing sound from a spirally grooved record disposed within said housing, said mechanism including a motor connected in an electric circuit, a pick up arm pivoted at one end and having an upwardly pointed stylus at its other end, said stylus arranged to engage the groove of a record when said opening is closed, spring means biasing said pick up arm to dispose said stylus to a side of said opening and below said opening, a closure for said opening pivotally supported at one end of said opening, said closure having means on its underside for removably supporting a grooved record, spring means normally biasing said closure into an upwardly tilted position for positioning a record on said supporting means, latch means for selectively engaging said closure, a normally open switch in the circuit of said motor arranged to be closed upon movement of said closure into a closed position, means actuated by said pick up arm for actuating said latch means to release said closure upon movement of said stylus to the inner end of the groove of said record, wherein said latch means includes a U-shaped latch member having first and second arms, said latch member tiltably supported on said housing with its arms in vertically spaced alignment and directed over the other end of said opening, said latch member normally spring tensioned to maintain said first arm in horizontal position to overlies an edge of said closure, said latch member being tiltable in one direction for upwardly slanting said first arm for releasing said closure and being tiltable in another direction when said second arm is engaged by said closure edge as said closure is lowered into said closed position causing said first arm to overlies the edge of the closure to maintain the closure in its closed position, and wherein said means actuated by said pick up arm for moving said latch means includes a first extension disposed on the pivoted end of the pick up arm, a second extension extending from one of said latch arms and a rocker arm having a first end and a second end, said rocker arm mounted in said housing in a position to have its first end engaged by said first extension when said stylus is at the inner end of the record groove causing the second rocker arm end to move against said second extension thereby tilting said latch member in said one direction to release said closure.

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