

[54] TOY PHONOGRAPH

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[51] Int. Cl. .... **G11b 25/04**  
[58] Field of Search ..... **274/1 A**

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[57] **ABSTRACT**

A toy phonograph comprising a box structure and cover member pivotally secured thereto so that the latter may be opened or closed as desired, said box structure having provided therein a motor-driven turntable, and said cover member having provided therein a pickup, a speaker and other like elements, wherein arrangement is made such that when said cover is opened, the pickup is returned, and when the cover is closed an electric current is relayed to start rotation of the turntable, and upon completion of the record performance, the electric circuit is broken to stop rotation of said turntable.

**3 Claims, 7 Drawing Figures**

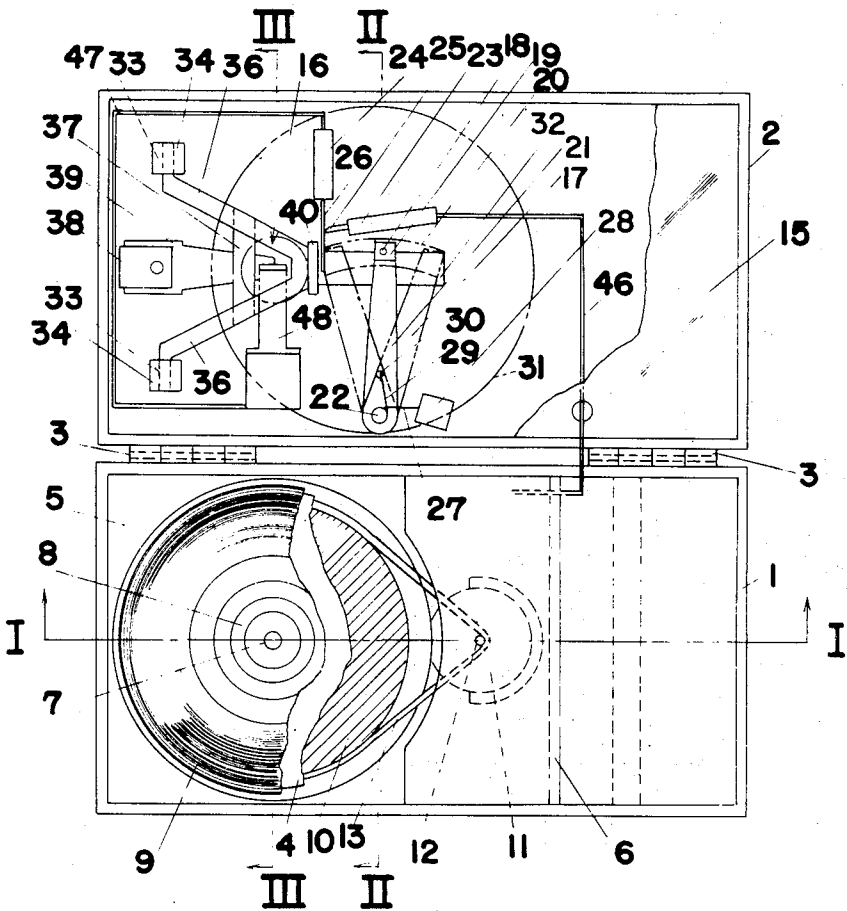


Fig. 1

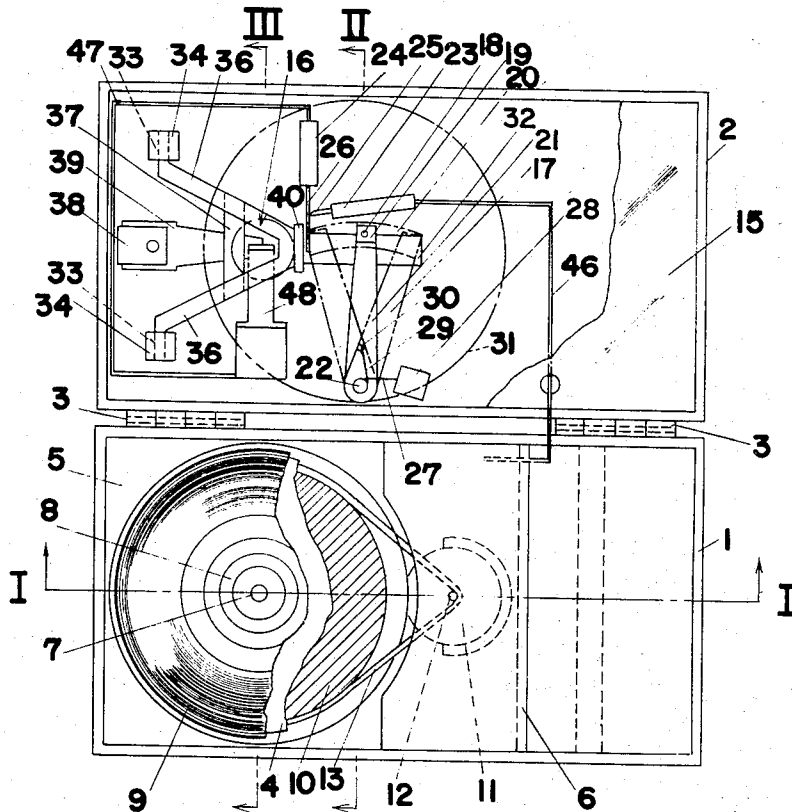
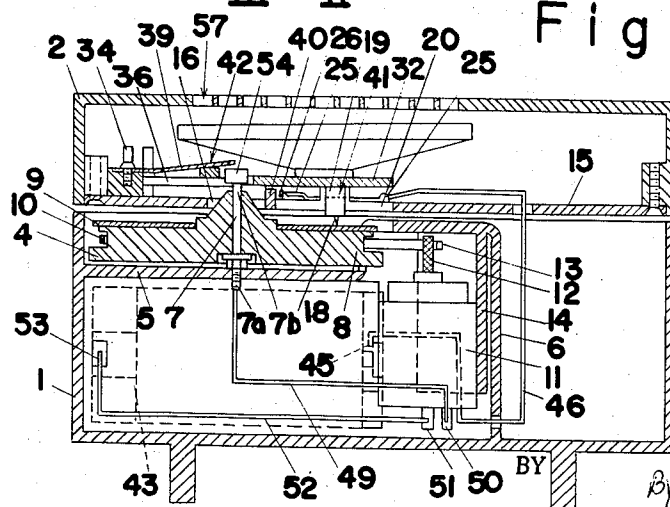


Fig. 2



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Fig. 3

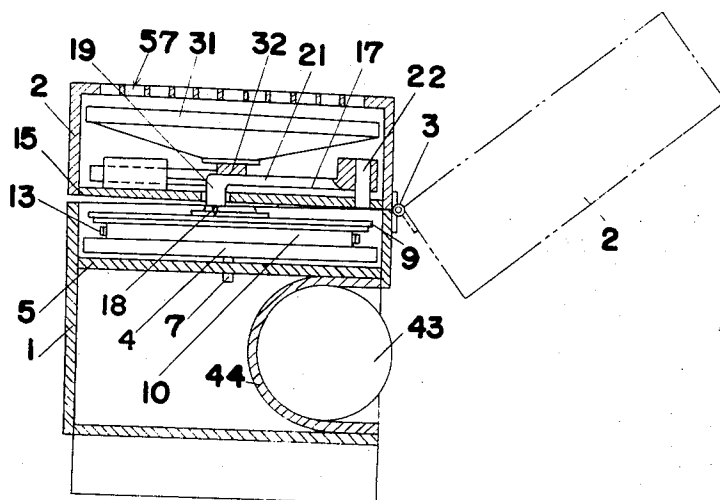
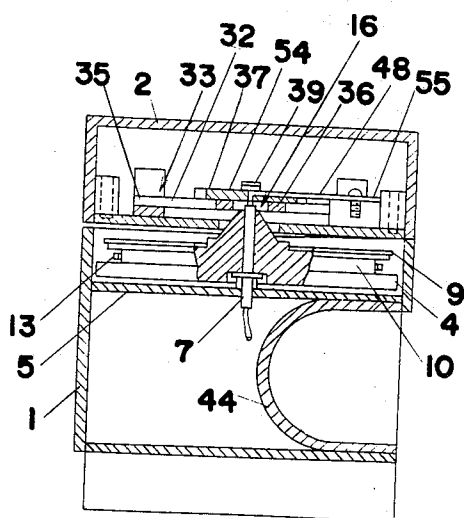


Fig. 4



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Fig. 5

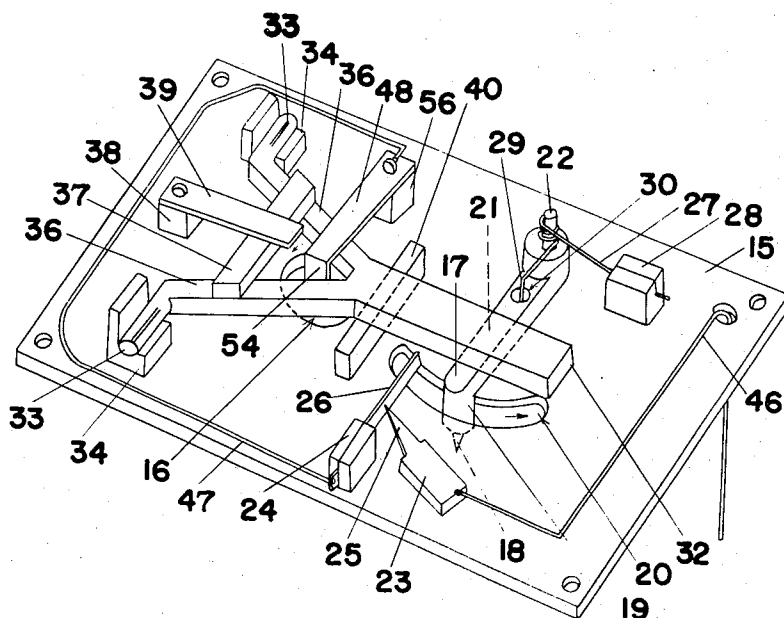
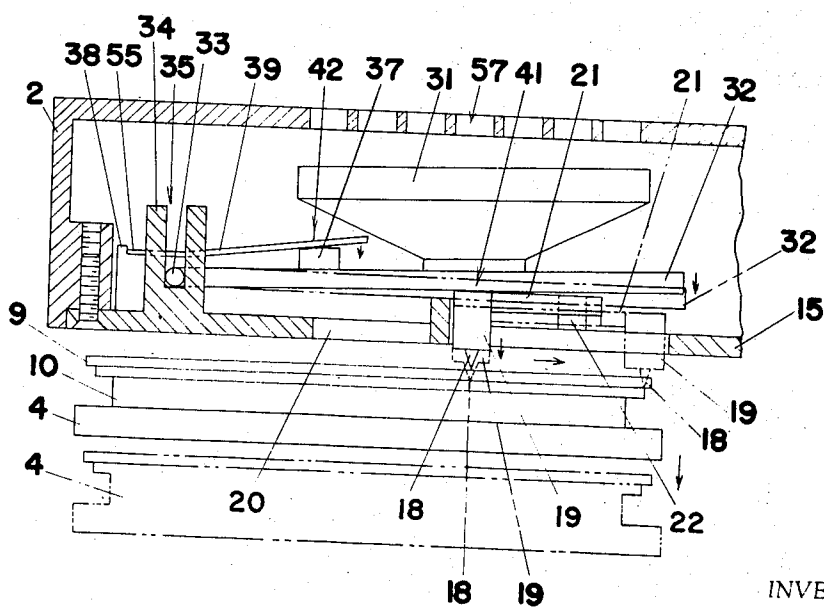


Fig. 6



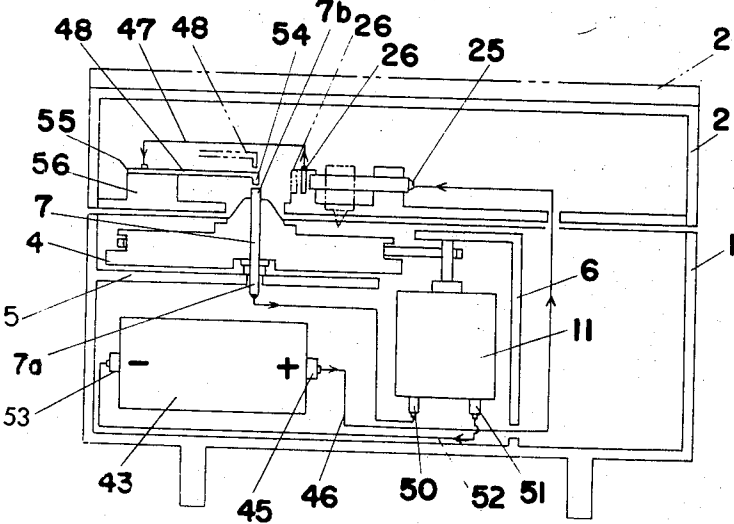
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Fig. 7



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## TOY PHONOGRAPH

## SUMMARY OF THE INVENTION

This invention relates to a toy phonograph which may be used either singly or as an attachment to a sound-producing toy. The primary object of the invention is to provide a phonograph of the type just described, which allows record playing by a simple operation of opening and closing a cover and which operates with high reliability and is also extremely simple in structure.

## BRIEF DESCRIPTION OF THE DRAWING

The drawings illustrate an embodiment of the present invention, where

FIG. 1 is a plan view of the device, with the cover opened;

FIG. 2 is a sectional view as taken along the line I—I of FIG. 1, with the cover in a closed position;

FIG. 3 is a longitudinal sectional view as taken along the line II—II of FIG. 1;

FIG. 4 is a longitudinal sectional view as taken along the line III—III of FIG. 1;

FIG. 5 is a perspective view of the sound-producing mechanism, with the speaker removed;

FIG. 6 is a partially cutaway sectional view showing the operation of the pickup; and

FIG. 7 is a schematic wiring diagram.

## DESCRIPTION OF A PREFERRED EMBODIMENT:

The invention will be described in detail hereinbelow by way of its preferred embodiment with reference to the drawings. Referring generally to the drawings, there will be seen a box body structure, generally designated 1, to which a cover 2 is secured by means of hinges 3 so that said cover may be opened or closed as desired. Within said body structure 1 and at a position slightly lower than but parallel to the top open face of said structure is provided a bracket 5 for supporting a turntable 4, and at an end of said bracket is joined a partition plate 6 for accommodating insertion of a record and other component elements. The turntable 4 is connected to said bracket 5 through a shaft 7, and a record 9 is fitted on a boss section 8 of said turntable. An endless belt 13 made of rubber or the like is passed round a pulley 10 of said turntable at one end and round a pulley 12 of a motor 11 at the other end, whereby said table 4 and hence the record 9 placed thereon are rotated in conformity to rotation of said motor 11.

Said motor 11 is positioned underneath the bracket 5 and is fixed in position by a bracket 14 arranged to enclose said motor, and the pulley 12 having its top end knurled is directly connected to the motor shaft.

In the opening of said cover member 2 is detachably mounted an adapter plate 15 which has formed therein a hole 16 adapted to receive the shaft 7 of the turntable and a slot 20 adapted to enable swinging motion of the head 19 supporting the pickup stylus 18. Denoted by reference numeral 21 is an arm of the pickup 17. One end of said arm 21 is pivoted by a shaft 22 to the upper face of said adapter plate 15 and the other end terminates into the head 19 where the stylus 18 is fixed. Said head 19 sticks out into the arcuate slot 20 centered by the shaft 22 formed in the adapter plate, such that the stylus 18 at the end of said head will contact the surface of the record 9. As will also be noted, said head 19 can

swing either rightwise or leftwise within the slot 20 centered by the shaft 22. It will be seen that adapter means 23 and 24 are provided on the upper face of the adapter plate, said means 23 having a fixed contact element 25 and said means 24 having a movable contact element 26, the latter being extended into the scope of swinging motion of said head 19. Numeral 27 is a spring which extends from a mounting block 28 and is coiled around the shaft 22, with its end 29 being fitted into a hole 30 in the arm 21, so that it acts to position the arm always beside the record when the cover 2 is opened. Designated by reference numeral 31 is a speaker which is secured to an end of a Y-shaped arm 32. The stems 33, 33 on both sides of the other end of said arm 32 are fitted into the vertical grooves 35, 35 in the respective bearings 34, 34 provided on the upper face of the adapter plate, thereby to support the arm 32 in position. It is also to be noted that said arm 32 is so arranged as to contact the top end of the arm 21 of the pickup, and a bracing plate 37 is bridged between the bifurcated portion 36, 36 of said arm 32 for the fastening purpose. Said bracing plate 37 is pressed downwardly by a leaf spring 39 secured to a mounting element 38 provided on the upper face of the adapter plate 15 so as to give suitable pressure to the stylus 18. Reference numeral 40 designates a block adapted to facilitate return of the pickup when the cover 2 is opened. Said block is formed thicker than the pickup arm 21 and provided on the adapter plate 15 so that it is positioned below said arm 21.

Thus, an end of said arm 32 is journaled by the bearings 34, 34, with the other end being pressed against the pickup arm 21, and an acting point 42 of the leaf spring 39 is positioned between said bearings 34 and the pressing point 41, so that stylus pressure is enlarged in proportion as the pickup 17 approaches the acting point of the leaf spring (that is to say, as the pickup moves from the periphery of the turntable toward the center). On the other hand, the rotational force of the turntable 4 driven by the belt 13 is increased in proportion to the radial distance from the periphery toward the center. Therefore, frictional force between the stylus and the record and rotational force of the turntable are substantially equilibrated to allow said turntable to rotate at a fixed velocity.

Reference numeral 43 indicates a battery which is housed within a case 44 provided in the box structure 1. The anode terminal 45 of said battery is connected through a conductor 46 to the fixed contact element 25 which is contacted with the movable contact element 26, the latter being connected through a conductor 47 to a movable contact element 48 contacted with the shaft 7 of the turntable, the bottom end of said shaft 7 being connected through a conductor 49 to a terminal 50 of the motor, the other terminal 51 of said motor being connected through a conductor 52 to the cathode terminal 53 of said battery, thus forming an electric circuit. Said movable contact element 48 has its one end bent in the form of a hook and has its other end 55 secured to a mounting block 56 provided on the adapter plate 15, such that when the cover 2 is closed, the hooked portion 54 of said movable element 48 will come into contact with the head of said shaft 7 and will separate therefrom when the cover is opened. Numeral 57 denotes the openings designed to let out the sound produced by the speaker. Said openings are formed in

suitable number over a range substantially corresponding to the size of the speaker.

The bearings, mounting blocks and other elements provided on said cover may be formed integral with said cover with synthetic resin or other like material by injection molding or other suitable methods. It is also preferable to make the box structure, speaker, pickup, arms, turntable and other members with synthetic resin or like material.

In use of the toy phonograph according to the present invention, first the cover 2 is opened, whereby the pickup 17 held between the arm 21 and the record 9 is liberated as the arm 21 is withheld by the protruding block 40, and is swung rightwise (in FIG. 1) by the action of the spring 27 until it is stopped at an end of the slot 20, while the movable contact element 26 is contacted with the fixed contact element 25. Thereafter, the cover is closed, whereby the movable contact element 48 is contacted with the head of the shaft 7 to start rotation of the turntable, while the stylus 18 comes into contact with the record surface and is given a suitable pressure by the arm 32 which is elastically pressed by the leaf spring 37, thus starting record playing.

In accordance with rotation of the record, the stylus 18 is moved from right to left (see the upper side of FIG. 1) until finally the pickup head 19 pushes back the movable contact element 26 to cut off the switch, whereby the record playing is stopped. Re-opening of the cover will restore the initial condition, and, if desired, the record may be replaced at that time.

Thus, the present invention allows its user to enjoy record playing with a simple operation of opening and closing the cover, and, although a toy, it can give the children excitement as if they are listening to a real stereo music.

Further, according to the toy phonograph of the present invention, since a protuberance 40 is provided between the arm 32 and the adapter plate 15, when the cover 2 is opened said arm is held back by said protuberance to release the pickup from the pressing action of the arm, thus allowing easy return to the original position.

Owing to these structural features, the present device can be operated with extremely high reliability and also the entire structure can be extremely simplified since, as its additional feature, the turntable shaft is utilized as part of the electric circuit.

I claim:

1. A toy phonograph comprising a box body structure and a cover movable between a closed position closing said box body structure and an open position uncovering said box body structure, said box body structure having therein a rotary turntable and an electric motor operatively connected thereto for driving the same and said cover carrying a speaker and a pickup which is movable away from and back to a starting position, means carried by said cover and operatively connected with said pickup for returning the latter to said starting position when said cover is displaced from said closed to said open position thereof, and an electrical circuit

operatively with said motor for energizing the same, said electrical circuit including a first switch having a movable switch element located in the path of movement of said pickup to be displaced thereby to a switch-opening position when said pickup has completed the playing of a record on the turntable for automatically stopping the rotation of the latter, and a second switch having a pair of switch elements respectively carried by said box body structure and said cover and directly engaging each other only when said cover is in said closed position for energizing the motor only when said closed position and said first switch is in said closed position, so that even when the cover is removed and the first switch is closed the motor will not be energized until the cover is replaced to close the second switch, said second switch including a shaft of the turntable carried by the box body structure and a spring electrical contact carried by said cover and engaging said shaft only when said cover is in said closed position.

2. The combination of claim 1 and wherein said cover is pivotally connected with said box body structure.

3. A toy phonograph comprising a box body structure and a cover movable between a closed position closing said box body structure and an open position uncovering said box body structure, said box body structure having therein a rotary turntable and an electric motor operatively connected thereto for driving the same and said cover carrying a speaker and a pickup which is movable away from and back to a starting position, means carried by said cover and operatively connected with said pickup for returning the latter to said starting position when said cover is displaced from said closed to said open position thereof, and an electrical circuit operatively connected with said motor for energizing the same, said electrical circuit including a first switch having a movable switch element located in the path of movement of said pickup to be displaced thereby to a switch-opening position when said pickup has completed the playing of a record on the turntable for automatically stopping the rotation of the latter, and a second switch having a pair of switch elements respectively carried by said box body structure and said cover and directly engaging each other only when said cover is in said closed position for energizing the motor only when said closed position and said first switch is in said closed position, so that even when the cover is removed and the first switch is closed the motor will not be energized until the cover is replaced to close the second switch, said pickup carried by said cover being swingably connected thereto, said cover having an elongated pressure arm engaging said pickup and a spring acting on said pressure arm for acting therethrough on said pickup to press a stylus carried thereby against a record on the turntable, and a block carried by said cover for limiting the movement of said pressure arm toward said pickup to release the latter for return to its starting position when the cover is displaced from said closed to said open position.

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