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W. L. STRAUSS  
TOY RECORD PLAYER

3,401,942

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2 Sheets-Sheet 1

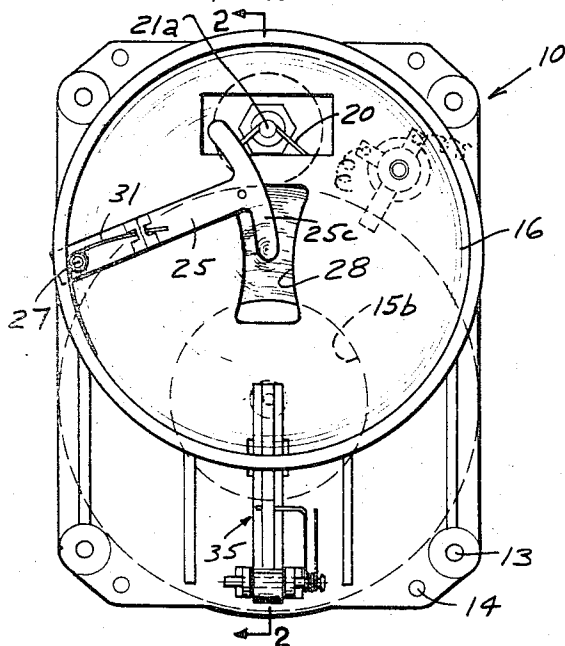


FIG. 1

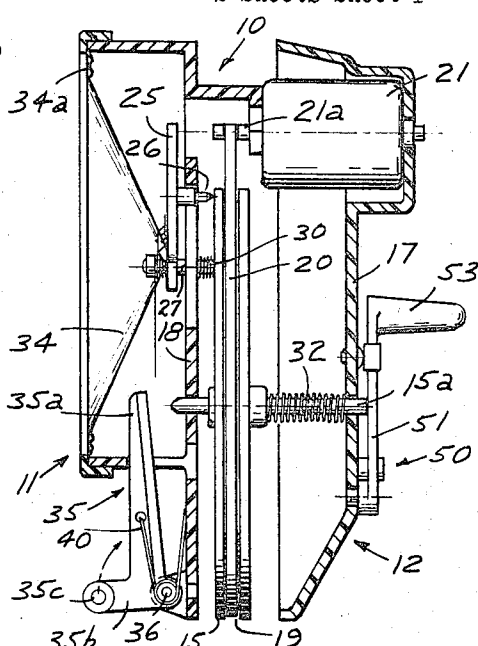


FIG. 2

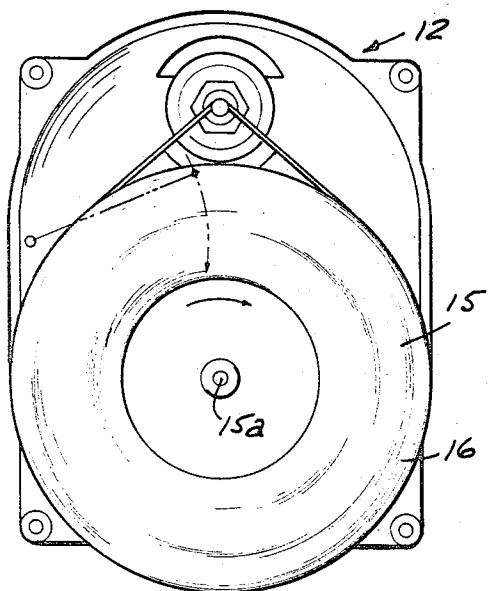


FIG. 4

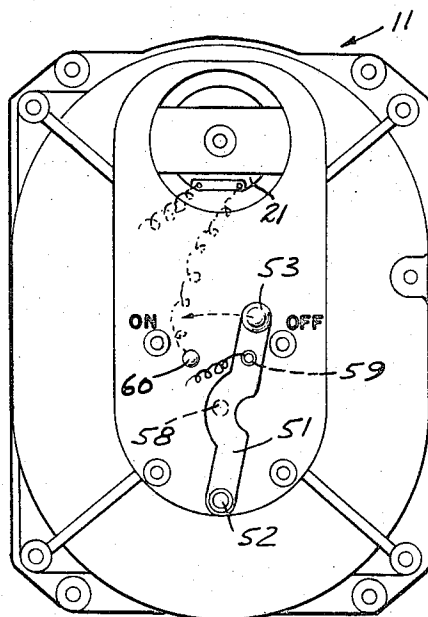


FIG. 3

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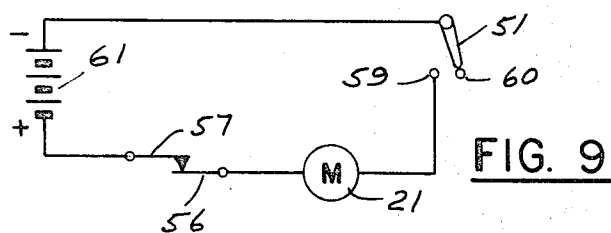
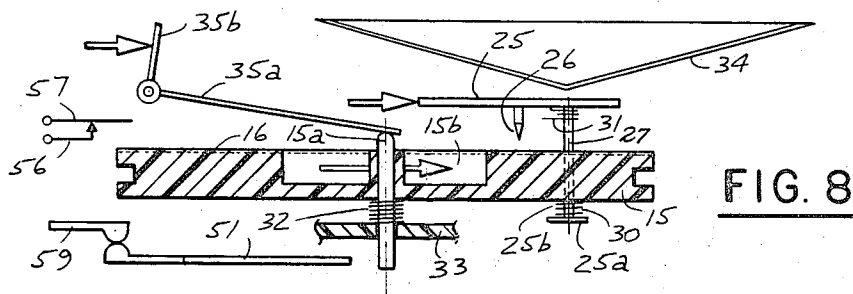
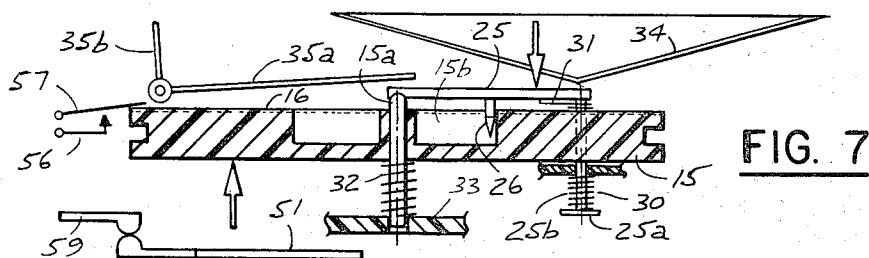
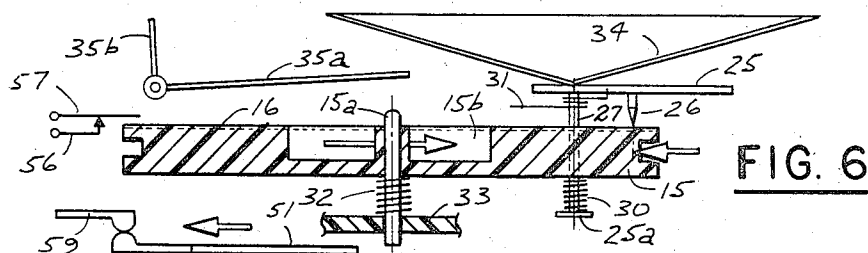
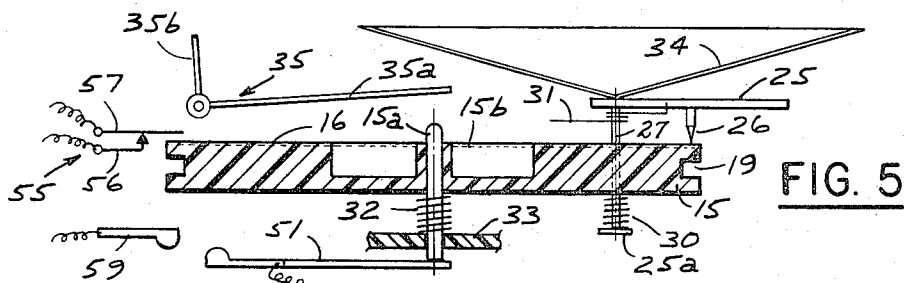
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TOY RECORD PLAYER

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2 Sheets-Sheet 2



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3,401,942

## TOY RECORD PLAYER

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### ABSTRACT OF THE DISCLOSURE

A toy record player for playing back sound recorded on a rotatably and axially mounted turntable which is spring-biased against the stylus arm of the record player which in turn is biased into sound-transmitting contact with a loudspeaker cone. Means are provided for releasably retaining the stylus arm in an OFF position separated from the sound track to prevent damage to the sound track and the stylus arm when the player is not in use. In addition, safety means are provided which are movable between the OFF position in which the sound track on the turntable, the stylus arm and the loudspeaker cone are held in tight mutual engagement and the ON position in which the sound track on the turntable, the stylus arm and the loudspeaker cone are held in yieldable sound-transmitting engagement. These safety means permit storage shipment of the record player in any position without danger to the components of the record player. Moreover, the safety means when in the OFF position disconnect the battery of the record player thereby preventing drainage on the same.

The present invention relates to a toy record player for playback from a spiral-shaped grooved sound track on a carrier, and more particularly to an electrically operated toy record player suitable for incorporation into a toy body, such as a doll, a toy animal, etc.

It is an object of the invention to provide a novel and improved toy record player of the general kind above referred to which is capable of playing in any position of tilt.

It is also an object of the invention to provide a novel and improved toy record player of the general kind above referred to, the stylus or needle of which is automatically disengaged from the sound track upon playback of the message recorded on the track and is firmly held in its disengaged position so that the record player can be shipped and stored in any position of tilt without danger of damage.

Another object of the invention is to provide a novel and improved toy record player including a safety means operable for disconnecting the battery for rotating the turntable and for substantially immobilizing the stylus of the record player when the same is not in use, to prevent drain on the battery and damage to the stylus or the sound track due to the normal handling of a toy enclosing the record player, said safety means being operable from the outside of the toy.

A further object of the invention is to provide a novel and improved toy record player which is capable of repeating, partly or completely, a message recorded on the sound track by simply operating an actuating member accessible from the outside of the toy in which the record player is enclosed.

A still further object of the invention is to provide a novel and improved toy record player which is compact, sturdy and inexpensive to manufacture, and the operation of which does not require skill or dexterity beyond the capabilities of a young child.

Other and further objects, features and advantages of the invention will be pointed out hereinafter and set forth

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in the appended claims constituting part of the application.

In the accompanying drawing, a preferred embodiment of the invention is shown by way of illustration, and not by way of limitation.

In the drawing:

FIG. 1 is an elevational front view of a toy record player according to the invention;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is a rear elevational view of the record player;

FIG. 4 is a front elevational view of the record player, part of the assembly being removed for the sake of clarity of illustration;

FIGS. 5 through 8 are diagrammatic illustrations of the mechanism of the record player showing the mechanism in several operational stages; and

FIG. 9 is a circuit diagram of the record player.

Referring now to the figures in detail, the exemplified toy record player comprises a housing 10 composed of a front assembly 11 and a rear assembly 12. The two assemblies are detachably secured to each other by means of suitable fastening means, such as screws and nuts, inserted into holes 13. These holes and additional holes 14 may be used for mounting the record player within a toy for which sound capability is desired, such as a doll, an animal, a robot, a railroad station, etc.

The record player further comprises a turntable 15 which supports a sound track 16. The sound track is a conventional spiral-shaped sound track of the groove type. The track may be either cut directly into one side of the turntable, or a record disk on which the track is recorded may be fixedly or detachably secured to the turntable for rotation in unison therewith. The shaft 15a of the turntable is rotatably and axially displaceably supported in wall portions 17 and 18 of the housing. The turntable has a peripheral groove 19 in which is fitted a transmission member, such as a belt 20, by means of which the turntable is coupled to the drive shaft 21a of an electric motor 21. A stylus arm 25 mounting a stylus 26. The arm is secured to an arbor 27 which is rotatably and axially displaceably supported by housing wall 18. A cut-out 28 in housing wall 18 permits a pivotal movement of the stylus arm between a first angular position in which stylus 26 is engageable with the beginning of sound track 16 at the outer end thereof and a second angular position in which the stylus is off the inner end of the sound track adjacent thereto, as can best be seen in FIG. 1.

A first axially acting spring 30 biases the stylus arm 25 in the direction toward engagement with sound track 16 on the turntable by means of a collar 25a on the arbor 27 for the stylus. A second rotationally acting spring 31 biases the stylus arm toward its first angular position; that is, into the position in which the stylus is positioned to begin playback. A third axially acting spring 32, which at one end abuts against a housing wall portion 33 and at the other end against turntable 15, biases the latter toward the stylus; that is, into a position in which the stylus and the sound track are in coacting engagement.

The turntable includes a preferably annular recess 15b into which the stylus drops by the combined action of springs 30 and 32 when it passes beyond the inner end of sound track 16, for a purpose which will be more fully explained hereinafter.

The end of the stylus arm coacts with a mechanical amplifier 34, shown as a cone. This cone is peripherally held on a wall portion of housing part 11 by means of a corrugated flexible ring 34a. The stylus arm is engageable with the apex of the cone. To assure that the arm remains in engagement with the apex of the cone for the entire pivotal movement of the arm between the begin-

ning and the end of the sound track, the stylus arm terminates in a cross-head-shaped portion 25c.

The record player further comprises an actuating means shown as a bellcrank lever 35. This lever is pivotal about a pivot axis 36. Arm 35a of the lever is engageable with turntable shaft 15a to effect an axial displacement of the turntable, for a purpose which will be more fully explained hereinafter, and the other arm 35b, serves to pivot lever 35 about its axis 36. Pivoting of the lever may be effected manually or by a remote control means, such as a Bowden cable. A mounting eye 35c is provided to connect such cable. Arm 35b of the lever, whether actuated directly or by remote control, should be so placed that it is accessible from the outside of the toy body in which the record player is enclosed. A spring 40 biases lever 35 into the position shown in FIG. 2, in which lever arm 35a is separated from the respective end of turntable shaft 15a.

The toy record player also includes a safety means 50, shown as comprising a lever 51 pivotal about a pin 52 secured to housing wall portion 17. A handle or grip 53 may be provided to facilitate manipulation of lever 51. The lever is pivotal between two positions, marked "ON" and "OFF" in FIG. 3. In the OFF position the lever is disengaged from the respective end of turntable shaft 15a, but in the ON position the lever abuts against the end of the shaft, thereby preventing axial displacement of the turntable toward the right as seen in FIG. 2, displacement toward the left being impeded by stylus arm 25 loaded by spring 30.

The energizing circuit for motor 21 is controlled by two switches. One of the switches, to wit, switch 55, is normally closed. It comprises a stationary contact 56 and a movable contact 57. The latter contact is controllable by the axial movement of turntable 15. The second switch is formed by lever 51, which is wired into the energizing circuit, as is indicated at 58, and a contact button 59 engaged by lever 51 when the same is in its OFF position. The lever rests in its ON position on a button 60 connected to motor 21. As is evident from the circuit diagram of FIG. 9, the motor is connected to a battery 61 as the source of current when both switches are closed.

The toy record player as hereinbefore described will now be explained in connection with FIGS. 5 through 8.

FIG. 5 shows the same operational condition of the record player as is shown in FIG. 2, but in a diagrammatic fashion. The stylus 26 is in the position for the beginning of a playback; that is, it is engaged with the sound track at the beginning thereof. The stylus arm is in sound-transmitting engagement with the apex of cone 34. Lever 51 is in the position of FIG. 2 or FIG. 3; that is, in its OFF position, which constitutes a safety position for the device. Accordingly, the switch contact represented by lever 51 is disengaged from second switch contact 59. Hence the energizing circuit of motor 21 is open. Arm 51 neutralizes the action of spring 32 by pressing the turntable into an axial position in which stylus arm 25 and stylus 26 thereon are wedged between the stationary abutment formed by the apex of cone 34 and the turntable. As a result, the stylus arm will not easily move in reference to the turntable, and more specifically, the sound track thereon, when the record player is shipped or stored in an upside down or sidewise position, and also when the record player is moved into a variety of positions of tilt during normal handling of the toy body in which the record player is enclosed.

It should be understood that the stylus arm and the stylus thereon are not positively secured in the described and illustrated position due to the presence of springs 30 and 31, but the retention of the stylus arm is firm enough for all practical purposes to prevent damage to the record player.

To start the record player, lever 51 is placed in the ON position of FIG. 3. As a result, the motor circuit is closed via contact button 60, and the motor will begin

to spin the turntable. The recorded message will now be played back, cone 34 responding linearly by reason of the yielding at its accordion suspension formed by corrugated ring 34a.

The playing position is illustrated in FIG. 6.

As the stylus reaches and passes the inner end of the sound track, it will drop into recess 15b. Spring 32 will push the turntable upwardly, whereby spring contacts 56 and 57 become disengaged. As a result, the motor circuit is interrupted, and the turntable comes to a standstill. This operational condition of the record player is shown in FIG. 7.

In order to repeat playback of the message, lever 35 is pivoted from the position of FIGS. 5, 6 or 7 into the position of FIG. 8. Such pivoting of lever 35 depresses turntable 15 against the action of spring 32. As a result, switch contacts 56 and 57 will re-close and stylus 26 is clear of recess 15b and will be snapped back into the position of FIG. 5 by the action of spring 31. As soon as this is accomplished, lever 35 is released. Turntable 15 will be lifted by the action of spring 32 into the position in which the sound track thereon is in engagement with stylus 26. All the components are now returned to the position of FIG. 5, and the repeat of the playback of the message will begin.

As is evident, lever 35 may be released before the stylus arm has fully returned into its initial position in the event it is desired to repeat only part of the recorded message.

What is claimed is:

1. A toy record player mounted on a support, said record player comprising in combination:

a turntable supporting a spiral-shaped, grooved sound track on one surface thereof;

first mounting means supporting said turntable for rotation and for axial displacement between a depressed position, an intermediate playing position and an elevated retaining position;

mechanical amplifying means fixed relative to said support and spaced from said turntable on the same side thereof as said surface;

a stylus arm mounting a stylus;

second mounting means supporting the stylus arm between the amplifying means and the turntable surface for pivotal movement in a plane parallel to the turntable surface for playing said sound track;

first spring means pivotally biasing the stylus arm from a second angular position at the end of the sound track into a first angular position in which the stylus is engageable with the beginning of the sound track;

second spring means axially biasing said turntable from said depressed position toward said playing position in which said stylus and stylus arm are in operative contact with said amplifying means and said sound track, and from said playing position toward said retaining position, during play of said record said stylus and stylus arm being in operative contact with said amplifying means and said sound track thereby retaining the turntable in said playing position against the bias of said second spring;

means at said second angular position for cooperation with the stylus to free said turntable for movement from said playing position to said retaining position, in which position said stylus is out of contact with said sound track, said turntable freeing means further functioning, when the turntable is in its retaining position, to retain said stylus in said second angular position against the action of said first spring means; and

manually actuable means coacting with said turntable to displace the same into said depressed position in which the stylus is disengaged from said turntable freeing means and out of contact with said sound track and thus free to be returned to said first angular position by the action of said first spring means.

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2. A toy record player according to claim 1, wherein said mechanical amplifying means comprise a cone and a mounting means including an accordion suspension peripherally supporting said cone, said stylus arm being engageable with the apex of the cone.

3. A toy record player according to claim 1 and further comprising safety means movable between an OFF position in which the sound track on said surface of the turntable, the stylus arm and the amplifying means are held in tight mutual engagement to impede sound transmitting movement of the sound track and the stylus relative to each other and the amplifying means, and an ON position in which the sound track, the stylus arm and the amplifying means are held in yieldable sound transmitting engagement by the action of the second spring means.

4. A toy record player according to claim 3 and comprising electrically operated drive means for rotating the turntable, said safety means in the ON position thereof closing an energizing circuit for said drive means.

5. A toy record player comprising in combination:  
a housing;

a turntable rotatably mounted in said housing and axially displaceable between a normal playing position and a depressed position, said turntable having a sound track carrying surface;

an electrically operated drive means for rotating said turntable in said housing;

a stylus arm including a stylus mounted in said housing for pivotal movement in a plane parallel to said turntable surface for playing the sound track, and for displacement in a direction perpendicular to said turntable surface, said stylus arm being pivotal between a first angular position in which the stylus is engageable with the beginning of the sound track and a second angular position in which the stylus arm is off the sound track adjacent to the end thereof;

a mechanical amplifying means mounted in said housing;

first spring means biasing the stylus arm in a direction perpendicular to said turntable surface toward a limit position which is between the position of the turntable surface when the turntable is in its playing position and the position of said surface when the turntable is in its depressed position, said first spring means biasing the stylus against said turntable surface when said turntable is in its playing position;

second spring means pivotally biasing the stylus arm into said first angular position;

third spring means biasing the turntable into its playing position in which the stylus is in engagement with the sound track and in sound transmitting engagement with the amplifying means, said turntable including a recess spaced apart from the sound track

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adjacent the end thereof for receiving the stylus therein in the second angular position of the stylus arm;

said first spring means biasing the stylus into said recess when the stylus arm reaches the second angular position, said recess thereby retaining the stylus arm in said second angular position against the action of the second spring means; and

actuating means coacting with the turntable to depress the same against the action of the third spring means into its depressed position in which the stylus is released from said recess and out of engagement with said sound track thereby freeing the stylus arm for return into said first angular position by the action of the second spring means.

6. A toy record player according to claim 5, wherein said actuating means comprises a lever pivotal between an inactive position and an active position, in which latter position the lever engages the turntable to displace the same against the action of the third spring means.

7. A toy record player according to claim 6, wherein said lever is operable from the outside of said housing.

8. A toy record player according to claim 5, wherein said mechanical amplifying means comprises a cone capable of oscillating, and a corrugated flexible ring securing the periphery of said cone to the housing, said stylus arm being engageable with the apex of the cone.

9. A toy record player according to claim 5 and comprising safety means operable to coact with the turntable for locking the same in an axial position in which the stylus is tightly pressed against the sound track and the stylus arm against the amplifying means to impede sound-transmitting movement of the stylus arm and the stylus in reference to the sound track and the amplifying means, respectively.

10. A toy record player according to claim 9, wherein said safety means comprises an actuating lever pivotal between an OFF position and an ON position, in which latter position the actuating lever locks the turntable in said axial position in which the stylus is pressed against the sound track and the stylus arm against the amplifying means.

11. A toy record player according to claim 10, wherein said drive means comprises an energizing circuit including a normally open switch, said actuating lever of the safety means in its ON position closing said switch.

12. A toy record player according to claim 11, wherein said actuating lever of the safety means is operable from the outside of the housing.

#### References Cited

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