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(54) SOUND AND PICTURE TOY

(57) Abstract:

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This invention relates to toys for young children and more particularly to toys having a sound-emitting device therein, such as a music box or the like, one object of the invention being to provide an improved toy which is so constructed that it has no sharp projections, rough or otherwise potentially dangerous parts, and therefore, is safe for use by young children.

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Another object of the invention is to provide a toy of the above character which is also provided with a series of pictures which are automatically and sequentially brought into view as the sound-emitting device operates.

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Another object is to provide a toy having the above advantages in which the means for energizing or winding up the sound-emitting device is so constructed that the toy may not be damaged by overwinding.

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Another object is to provide a toy of the above character in which the sound-emitting device is protected against damage by too rapid operation thereof as would normally result when the energizing or winding means is forcibly unwound.

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Another object is to provide a toy having the above advantages which is so constructed that the sound-emitting device is protected against damage from dropping or from being stepped upon even by a heavy adult.

A further object is to provide a toy of the above character which is durable, attractive to children, long-lasting and relatively inexpensive to manufacture.

5 A further object is to provide a toy having the above advantages which is highly reliable in operation and requires a minimum number of parts which may be readily and economically manufactured and assembled.

10 To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

15 In the drawings:

Fig. 1 is a front elevation of a toy embodying the present invention;

Fig. 2 is an enlarged sectional view substantially along the line 2--2 in Fig. 1;

20 Fig. 3 is a sectional elevation substantially along the line 3--3 in Fig. 2 showing the parts in their at-rest positions;

Fig. 4 is similar to Fig. 3, but shows the parts in an intermediate position after the winding mechanism has been rotated through about  $\frac{1}{2}$  of a revolution;

Fig. 5 is similar to Figs. 3 and 4, but shows the parts in their fully wound position;

Fig. 6 is a plan view of the body of the toy showing the cut-out portions therein;

5 Fig. 7 is similar to Fig. 6, but shows the cover for the sound-emitting device in assembled position;

Fig. 8 is an enlarged elevational view of the revolving member having a series of pictures thereon adapted for sequential view; and

10 Fig. 9 is a sectional elevation of the sound-emitting device substantially along the line 9--9 in Fig. 2.

The preferred embodiment of the present invention, herein disclosed by way of illustration, is in the nature of a toy portable television or radio receiver as shown generally at 20 (Fig. 1)). Toy 20 comprises a substantially rectangular body member shown generally at 22, a sound-emitting mechanism shown generally at 24 (Fig. 2), winding means shown generally at 26 (Fig. 2) for imparting energy to the sound-emitting mechanism, and movable means shown generally at 28 carrying a series of pictures or other similar material thereon which is adapted to be moved into a predetermined position of view during the operation of the sound-emitting mechanism.

25 Body member 22 is preferably formed from a block of wood or other suitable material and is designed

so that its length is greater than its height, and its height is greater than its depth, thereby giving the toy proportions similar to the conventional portable radio receiver. The front wall of the toy is designated at 30, the rear wall at 32, the top at 34, and the bottom at 36, as shown in Figs. 1 and 2.

In Fig. 6, we have shown the body member with the winding mechanism and sound-emitting device removed, and it will be seen that body member 22 is formed with a large circular opening or recess 38 which is adapted to receive the circular mounting board for the sound-emitting device as hereafter described.

Opening 38 is preferably formed with a lip 40 around the periphery thereof, which is substantially  $1/8$  of an inch wide and  $1/8$  of an inch thick for a purpose hereinafter described. Opening 38 is formed with a second opening 42 therein which is eccentrically located relative thereto and is of a suitable diameter and depth for receiving and accommodating sound-emitting mechanism 24 which is best shown in Fig. 9. Adjacent opening 42 is a second and smaller opening or recess 44, part of which lies within opening 38 and part of which extends therebeyond as shown in Fig. 6. Opening 44 is for the purpose of increasing the volume of the sound emitted by mechanism 24 and may or may not

be connected for its full depth directly with recess 42. In the present instance recesses 44 and 42 are connected together at their upper open ends due to the fact that both open into the bottom of opening 38. Opening 38 also has a small outwardly extending circular notch 46 formed along the periphery thereof. Opening 46 is formed by drilling a small hole into the body member substantially on the outer edge of opening 38 and to a depth equal to, or slightly greater than, the depth of said opening. Opening 46 serves to position the sound-emitting mechanism and to prevent rotation thereof when the same is being wound up, all as hereinafter more fully described.

Sound-emitting device 24 is preferably a music-box which when energized will play a predetermined musical tune or will produce a desired sound or series of sounds. The construction of the sound-emitting device does not in itself form part of the present invention except in relation to the means for energizing or winding up the same and except in relation to the means for causing a series of pictures to move sequentially and automatically into view when the sound-emitting device operates.

Device 24 comprises a rotary drum 48 (Fig. 9) provided with a plurality of radially extending prongs or projections 50 which when the drum is rotated engage

beneath the ends of a set of noise or music producing vibratory members or tines 52 which when vibrated produce a predetermined tone. Drum 48 is rotated by an energy storing mechanism 54 such as in the present instance, by a resilient spring motor which in turn has energy imparted or added thereto by the rotation of a threaded shaft 56 (Fig. 2) as well understood in the art. As spring motor 54 unwinds, the rotary action thereof is transmitted by a suitable chain of gearing shown generally at 58 to drum 48. The operation of the sound-emitting device is maintained at a substantially uniform speed by means of a rotary vane 60 which is connected into gearing 58 as shown in Fig. 9, and as well understood in the art.

Sound-emitting mechanism 24 is preferably mounted on a substantially circular member or disk 62 of hardboard or other suitable material which is of proper diameter so as to closely fit within opening 38 and rest on lip 40, as shown in Fig. 2. Musical device 24 is preferably fastened to the under surface of mounting member 62 by means of a pair of rivets 64 and 66 (Figs. 7 and 9). Mounting member 62 is formed with an opening 68 (Fig. 7) for receiving threaded shaft 56 which is rotated to wind or energize spring motor 54. As shown in Fig. 7, mounting

member 62 is formed with an outwardly projecting lip 70 which is adapted to fit in notch 46 formed along the edge of opening 38. It will be readily seen that lip 70 and notch 46 cooperate to insure the proper positioning of mounting board 62 and musical means 24 relative to body member 22 and at the same time they prevent member 62 and music-box 24 from turning when spring motor 54 is wound or when the same is unwinding during the operation of the music-box.

The mechanism for winding spring motor 54 preferably comprises a rotatable member or knob 72 which is adapted to turn in a clockwise direction as viewed in Fig. 1, for increasing the energy stored in motor 54. Knob 72 is preferably formed with a central boss 74 (Figs. 2 and 3) which in turn is formed with a square recess or opening 76 (Fig. 2) extending for nearly the full depth thereof for receiving an adapter member 78 which is substantially square in cross-section, but which is provided with a longitudinally extending threaded opening for receiving the end of threaded shaft 56 as it extends upwardly from spring motor 54 through mounting board 62. Thus it will be seen that when knob 72 is turned in a clockwise direction energy is imparted or added to spring motor 54 and that when the winding action is terminated, motor 54 will actuate the music-box.



However, we have found that if a child is allowed to wind spring motor 54 to the limit of his strength, the child is very apt to overwind the mechanism and break the spring motor thereby ruining the toy. We have further found that if the child is allowed to accelerate the unwinding of the toy as by driving the winding knob in the reverse direction, the child may again damage the delicate mechanism of the music-box. In order to prevent the music-box from possible damage by being subjected to either of the above actions, we have devised a novel mechanism for limiting the amount of winding that can be done and at the same time preventing the rapid unwinding of musical device 24.

To this end, knob 72 is provided with a single radially extending part or web 80 (Fig. 3) which is substantially flush with the bottom of boss 74 and a flange 82 (Figs. 2 and 3) which extends around the periphery of the knob as shown in Fig. 2. An intermediate or idling member 84 (Figs. 2 and 3) is located directly beneath or inwardly of knob 72 and is provided with a circular central opening 86 (Fig. 3) which is of sufficient diameter to allow the idling member to rotate freely relative to square shaft member 78. Idling member 84 is provided with an upstanding part or projection 88 (Figs. 3-5) which is located substantially midway between the center and the edge thereof and lies in the path

of web 80 on knob 72 when the same is rotated relative to idling member 84. Idling member 84 has a second projection 90 which extends radially therefrom as shown in Fig. 3 and is adapted to engage the opposite sides of a fixed part or stop 92 (Figs. 1-5) which is located on the under surface of face plate 94 (Figs. 1-5) of the toy.

Starting with the winding mechanism in its at-rest position shown in Fig. 3, it will be seen that knob 72 may be wound in a clockwise direction for substantially a full revolution through its position shown in Fig. 4 until web 80 strikes against boss 88, after which further rotation of knob 72 will carry idling member 84 with it. This conjoint rotation of knob 72 and idling member 84 may be continued until part 90 on idling member 84 moves substantially through a full revolution and comes to rest against the upper or opposite surface of stop 92 as shown in Fig. 5. While we have described the movement of knob 72 relative to idling member 84 as occurring first, this may not occur first, since the movement of member 84 depends upon the amount of friction between it and knob 72 and between it and a picture wheel 96 (Figs. 2 and 8). In many instances we have found that during the first revolution of knob 72 from its position shown in Fig. 3, the idling member 84 rotates therewith. This conjoint movement of knob 72 and idling member 84 continues until parts 90 and 92 interengage as shown in Fig. 5, at which time web 80 on knob 72 is substantially

in contact with the lower or clockwise surface of boss 88 on idling member 84 which is the at-rest position of these latter two parts as shown in Fig. 3. Thereafter as knob 72 is rotated further in a clockwise direction, the knob will move relative to idling member 84 until web 80 comes to rest against the upper or counterclockwise surface of part 88, as shown in Fig. 5. Regardless of whether during the winding operation knob 72 first moves relative to idling member 84, whether the knob and idling member move conjointly, or whether it is a combination of both actions, the result is that knob 72 may be wound for nearly two complete revolutions before web 80 and part 88 and parts 90 and 92 reach their positions shown in Fig. 5 and limit the rotation of the knob in a clockwise or winding direction.

We have found that the above construction of the winding mechanism is also well adapted to protect the spring motor from being driven or accelerated beyond its normal rate of speed as would occur when the winding knob 72 is forcibly unwound. To this end, we provide sufficient threads on adapter member 78 so that it requires considerably more than two revolutions to fully thread it on shaft 56, or unthread it therefrom. It will be observed that when the winding mechanism is in its at-rest position as shown in Fig. 3, knob 72 can not be turned further

in a counterclockwise direction so as to further unwind spring motor 54. That is, the interengagement of parts 90 and 92 limit the counterclockwise movement of idling member 84 while the interengagement of parts 80 and 88 limit or prevent further counterclockwise movement of knob 72 relative to idling member 84. Thus we have found that, if after the spring motor is fully wound, an attempt is made to accelerate the unwinding thereof, adapter shaft 78 quickly starts to unthread itself from motor shaft 56 and tends to move upwardly as viewed in Fig. 2. Recess 76 in knob 72 is of sufficient depth to accommodate this upward (as viewed in Fig. 2) movement of adapter 78. Since knob 72 can be rotated slightly less than two complete revolutions in a counterclockwise direction, and since it takes considerably more than two revolutions to disengage square shaft 78 from motor shaft 56, it will be appreciated that any attempt to forcibly unwind the music-box merely causes square shaft 78 to start to unwind and move upwardly in recess 76, but before this can be accomplished, the counterclockwise movement of knob 72 is terminated by the interengagement of the parts in their at-rest positions, shown in Fig. 3, all within less than two complete revolutions. With knob 72 and associated parts in their at-rest positions shown in Fig. 3, it will be readily appreciated that as motor shaft 56 unwinds it is turning in a counter-

clockwise direction which causes it to thread itself deeper into adapter shaft 78. This rethreading action will continue until shaft 56 returns to its original threaded position relative to shaft 78 at which point the unwinding action of the music-box will be stopped.

Front cover member 94 is formed with an aperture 98 for receiving knob 72 as shown in Figs. 1 and 2, and is further formed with a substantially truncated sector-shaped opening 100 (Figs. 1 and 3) directly thereabove. Opening 100 in effect simulates a television screen, and we preferably provide means rotating between motor mounting board 62 and face plate 94 which will bring a series of pictures automatically and sequentially into view in window 100. The picture producing means comprises essentially circular member or disk 96 which has a square opening adjacent the center thereof adapted to closely fit over square shaft member 78 as shown in Fig. 2. Member 96 is also preferably formed with a series of pictures, drawings, cartoons, writings or the like as at 102 (Fig. 8) which will be moved sequentially into view behind window 100 as square shaft 78 is turned in a clockwise direction during the winding operation and as shaft 78 is turned in a counterclockwise direction during the operation of the music-box. In the present instance we have selected a music-box which plays one verse of the nursery rhyme or tune "Jack and Jill", and accord-

ingly the pictures on member 96 are illustrations of the actions of Jack and Jill as described in the words of the nursery rhyme.

Rotatable member 96 is separated from motor mounting board 62 by a suitable spacing member or washer 104 which is of cardboard or other suitable low friction material. The upper surface of member 96 is engaged by idling member 84 as shown in Fig. 2. Knob 72 in turn engages the upper or outer surface of idling member 84 and holds these parts in assembled position. Knob 72 in turn is held in its position shown in Fig. 2 on shaft member 78 by means of face plate 94 which fits over knob 72 and which bears against the upper or outer surface of flange 82. Face plate 94 is in turn held in position on the body of the toy by means of nails 106 (Fig. 1) or other suitable fastening means. Stop 92 is positioned on the under surface of face plate 94 so as to be out of engagement with flange 82 of knob 72, but is so positioned that it will lie in the path of part 90 on idling member 84 as the same is caused to rotate, as described earlier. Face plate 94 is formed with a series of short depending flanges or fingers 108 which are of sufficient length so that they will contact the outer surface of motor mounting board 62 substantially as the peripheral flange 110 of face plate 94 engages the front surface of the body member 22 thereby holding plate 62 in position and transmitting

any force or weight which might be imparted on plate 94 around the music-box and directly to board 62 and the body of the toy.

With the parts assembled as above, it will be readily seen that the toy may be energized or wound by turning winding knob 72 in a clockwise direction. The winding action is limited to slightly less than two full turns of knob 72 by the interaction of idling member 84 and interengaging parts 90 and 92, and 80 and 88. Thereafter, if knob 72 is released, spring motor 54 will power the music-box causing it to play the predetermined tune or produce the predetermined noise for which it has been designed. During the operation of the music-box, threaded shaft 56 and square shaft 78 turn in a counterclockwise direction as viewed in Fig. 1, thereby causing knob 72 and picture member 96 to rotate in a counterclockwise direction throughout the operation of the music-box. This rotation of member 96 brings the various scenes or illustrations 102 automatically and sequentially into view through window 100. The music-box can not be made to operate at a greater speed than which it is designed, as by an attempt to forcibly unwind the same, because, as described earlier, such action merely initiates, but does not result in the separation of threaded shaft 56 and square shaft 78. Of course during the playing

of the music-box, idling member 84 is caused to rotate counterclockwise from its position shown in Fig. 5 to its position shown in Fig. 3.

Body member 22 is preferably provided with a suitable carrying means comprising a handle 112 which is attached to the upper surface thereof by means of suitable nails or rods 114, as shown in Fig. 1. In addition, we preferably provide a simulated antenna shown generally at 116 which comprises a length of coiled wire 118 having a knob 120 of wood, plastic or other suitable material secured to the upper end thereof as shown in Fig. 1. Knob 120 is securely fixed to member 118 which, in turn, is securely fastened at its lower end to body 22 as by means of a friction fit and/or suitable adhesive not shown. In order to further simulate the appearance of an operable radio, and to provide further parts which may be manipulated by small children and to thereby make the toy more attractive to them, we preferably provide a free turning knob 122 which is of wood or other suitable material and which is mounted on the front of the body member 22 by a nail 124 or other suitable means. Knob 122 is counterbored as at 126 to receive the head of the nail 124, as shown in Fig. 2.

Thus, it will be seen that our invention

provides a novel toy which is attractive and interesting to a child, both from an audio and visual standpoint. As in the present illustration, the toy produces a pleasant and easily recognizable tune while at the same time it brings into view a series of pictures representing various scenes suggested by the tune.

The toy is so constructed that the delicate parts of the music-box are protected from damage by either overwinding or rapid unwinding. In addition, since recess 76 in knob 72 is deeper than square shaft 78 any force or pressure applied to knob 72 will be transmitted through idling member 84, picture member 96, and washer 104 directly to motor mounting board 62 which not only is of very rugged construction, but which is securely mounted on the body member. This construction protects the mechanism of the music-box from a sharp blow as would be occasioned by the toy falling or from someone stepping directly on knob 72. Similarly, any blows or pressure exerted against face plate 94 are transmitted through flange members 108 to the motor mounting board, and thus to the body of the toy, without affecting the music-box.

Not only does our construction protect the rather delicate music-box, but the toy is extremely durable and is not subject to failure or damage even when repeatedly abused as by dropping or stepping

on the same. There are no sharp edges or parts on which the child could injure himself, and the few external parts, such as the knob 122, antenna 116 and handle 112 are securely fastened to the body of the toy so that the toy may be safely used by children of various ages without fear of injury to the child or damage to the toy.

It will thus be seen that the invention accomplishes its objects and while it has been herein disclosed by reference to the details of a preferred embodiment, it is to be understood that such disclosure is intended in an illustrative, rather than a limiting sense, as it is contemplated that various modifications in the construction and arrangement of the parts will readily occur to those skilled in the art, within the spirit of the invention and the scope of the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering the same, manually operable means rotatable in a first direction for transmitting energy to said storing means and rotatable in a second, opposite direction by said energy storing means upon operation of said sound-emitting device, a rotatable display member that has a series of pictures thereon and that is mounted for rotation upon rotation of said manually operable means, a masking member that is fixed to said body member and that has an opening therein that is at least the size of one of said pictures, said display member and said masking member being disposed so that the pictures upon said display member are brought successively into alignment with the opening in said masking member upon rotation of said display member, and means limiting the rotation of said manually operable means in said first direction short of the capacity of said storing means, to restrict the amount of energy stored therein below said capacity.

2. A toy in accordance with claim 1 including means limiting the rotation of said manually operable means in said second direction before the expenditure of all of the energy in said storing means.

3. A toy in accordance with claim 1 wherein said means limiting the rotation of said manually operable

means in said first direction comprises means associated with said body member and fixed against movement relative thereto, and interengaging means interposed between said manually operable means and said fixed means.

4. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering said device, manually operable means rotatable in a first direction for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, idling means rotatable with said manually operable means relative to said fixed means and rotatable relative to said manually operable means, a set of interengaging means on said idling means and said manually operable means for limiting the relative rotation therebetween when said manually operable means is rotated in said first direction thereof, and a set of interengaging means on said idling means and said fixed means for limiting the rotation of said idling means in said first direction relative to said fixed means and thereby limiting the amount of energy added to said storing means to less than its full capacity.

5. A toy comprising a body, a sound-emitting device that is mounted in said body, a coil spring that is mounted to drive said device, shaft means coupled to said spring for rotation in a first direction to coil said spring and for rotation in

a second, opposite direction upon uncoiling of said spring to drive said device, idling means mounted for rotary movement relative to said shaft means and relative to said body, a first set of interengaging means mounted for movement upon movement of said idling means and of said shaft means respectively for limiting the relative rotation therebetween, a second set of interengaging means on said idling means and fixed relative to said body for limiting the rotation of said idling means relative to said body, thereby to limit the rotation of said shaft means, in said first direction short of the capacity of said spring, to restrict the extent to which the spring can be coiled to less than its complete capacity.

6. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering said device, manually operable means rotatable in a first direction from its at-rest position for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, idling means rotatable with said manually operable means relative to said fixed means and rotatable relative to said manually operable means, a set of interengaging means on said idling means and said manually operable means for limiting the relative rotation therebetween to substantially one revolution when said manually operable means is rotated in said first direction thereof, and a set of interengaging means on said idling means and said fixed means for limiting to substantially one revolution

the rotation of said idling means in said first direction thereof relative to said fixed means whereby said manually operable means is limited to substantially two full rotations in said first direction thereof, to restrict the amount of energy stored to less than the full capacity of said storing means.

7. A toy comprising a body, a sound-emitting device that is mounted in said body, a coil spring that is mounted to drive said device, a shaft that is coupled to said spring for rotation in a first direction to coil said spring and for rotation in a second, opposite direction upon uncoiling of said spring to drive said device, idling means mounted for rotary movement relative to said shaft and relative to said body, a first set of interengaging means mounted for movement upon movement of said idling means and of said shaft respectively for limiting the relative rotation therebetween to substantially one revolution when said shaft is rotated in said first direction, a second set of interengaging means on said idling means and fixed relative to said body for limiting the rotation of said idling means relative to said body substantially to one complete rotation in said first direction, thereby to limit the rotation of said shaft in said first direction substantially to two complete rotations in said first direction, and to restrict the extent to which the spring can be coiled to less than its complete capacity.

8. A toy comprising a body, a sound-emitting device that is mounted in said body, a coil spring that

is mounted to drive said device, shaft means coupled to said spring for rotation in a first direction to coil said spring and for rotation in a second, opposite direction upon uncoiling of said spring during the driving of said device, first means associated with said body and fixed against movement relative thereto, idling means mounted for rotary movement relative to said shaft means and relative to said body, and second means mounted for rotation upon rotation of said shaft means and fixed against movement relative to said shaft means, said idling means being interposed between said first means and said second means and being formed with interengaging means disposed for cooperation therewith for limiting the rotation of said shaft in said first direction short of the capacity of said spring, to restrict the extent to which the spring can be coiled to less than its complete capacity.

9. A toy in accordance with claim 8 wherein said interengaging means are disposed to cooperate with said first means and with said second means for limiting the rotation of said shaft means in said second direction to stop the uncoiling of the spring while the spring is still partially coiled for delivering energy to drive said device.

10. A toy comprising a body, a sound-emitting device that is mounted in said body, a coil spring that is mounted to drive said device, shaft means coupled to said spring for rotation in a first direction to coil said spring and for rotation in a second, opposite direction upon uncoiling of said spring to drive said device, means limiting the rotation of said shaft means in said first

direction short of the capacity of said spring, to restrict the extent to which the spring can be coiled to less than its complete capacity, a disk that is mounted for rotation upon rotation of said shaft means and that has a plurality of pictures arranged thereon, and a masking member that is secured to said body and that is formed with an opening therein that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of said shaft.

11. A toy in accordance with claim 10 including a governor to control the rate of uncoiling of said spring, and means limiting the rotation of said shaft means in said second direction to stop the uncoiling of the spring while the spring is still partially coiled for delivering energy to drive said device, while permitting at least one substantially complete rotation of said shaft means and disk.

12. A toy in accordance with claim 11 wherein said means limiting the rotation of said shaft means in said second direction limits said rotation to substantially complete rotations of said shaft means about its axis.

13. A toy in accordance with claim 11 wherein said limiting means are arranged so that a predetermined picture is in registry with the opening in said masking member and is displayed therethrough at each of the limit positions of said shaft means and disk.

14. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for



powering the same, knob means connected with said storing means and rotatable in a first direction from its at-rest position for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, an annular member rotatable with said knob means relative to said fixed means and rotatable relative to said knob means, a set of interengaging parts on said annular member and said knob means for limiting the relative rotation therebetween to substantially one revolution when said knob means is rotated in said first direction thereof, and a set of interengaging parts on said annular member and said fixed means for limiting to substantially one revolution the rotation of said annular member in said first direction thereof relative to said fixed means whereby said manually operable means is limited to substantially two full rotations in said first direction thereof, to restrict the amount of energy stored to less than the full capacity of said storing means.

15. A toy comprising a body member, a sound emitting device associated with said body member, said sound-emitting device having energy storing means for powering the same, knob means connected with said storing means and rotatable in a first direction from its at-rest position for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, an idling member rotatable with said knob means relative to said fixed means and rotatable relative to said knob means, a projecting part on said idling member, a part on said knob means adapted

to engage said projecting part on said idling member when said knob means is rotated relative to said idling member for limiting the relative rotation therebetween to substantially one revolution, a second projecting part on said idling member, and a part on said fixed means lying in the path of movement of said second projecting part on said idling member for limiting to substantially one revolution the rotation of said idling means in the first direction thereof whereby said manually operable means is limited to substantially two full rotations in said first direction thereof, to restrict the amount of energy stored to less than the full capacity of said storing means.

16. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering said device, manually operable means rotatable in a first direction for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, idling means rotatable with said manually operable means relative to said fixed means and rotatable relative to said manually operable means, a first set of interengaging means on said idling means and said manually operable means for limiting the relative rotation therebetween when said manually operable means is rotated in said first direction thereof, and a second set of interengaging means on said idling means and said fixed means for limiting the rotation of said manually operable means and said idling means in said first direction relative to said fixed means for limiting the amount of energy added to said storing means to less

than its full capacity, said manually operable means being releasable from operative engagement with said storing means when operated in a second direction opposite to said first direction, said first set of interengaging means limiting the rotation of said manually operable means relative to said idling means when said manually operable means is rotated in the second direction thereof, said second set of interengaging means limiting the rotation of said idling means and said manually operable means relative to said fixed means in said second direction for preventing said manually operable means from becoming detached from said storing means.

17. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering the same, manually operable means rotatable in a first direction for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, idling means rotatable with said manually operable means relative to said fixed means and rotatable relative to said manually operable means, a first set of interengaging means on said idling means and said manually operable means for limiting the relative rotation therebetween when said manually operable means is rotated in said first direction thereof, a second set of interengaging means on said idling means and said fixed means for limiting the rotation of said manually operable means and said idling means in said first direction relative to said fixed means and thereby limiting the amount of energy added to said storing means, said manually

operable means being driven in a direction opposite to said first direction thereof by said energy storing means as said sound-emitting device operates, a rotatable member having a series of pictures thereon, and a member fixed to said body member and having an opening therein substantially the size of one of said pictures, said rotatable member being rotatable in opposite directions with said manually operable means for bringing said pictures into alignment with said opening in said fixed member as the amount of energy in said energy storing means is increased and as said sound-emitting device operates.

18. A toy comprising a body member, a sound-emitting device associated with said body member, said sound-emitting device having energy storing means for powering the same, manually operable means rotatable in a first direction for increasing the energy in said storing means, means associated with said body member and fixed against movement relative thereto, idling means rotatable with said manually operable means relative to said fixed means, and rotatable relative to said manually operable means, a first set of interengaging means on said idling means and said manually operable means for limiting the relative rotation therebetween to substantially one revolution when said manually operable means is rotated in said first direction thereof, a second set of interengaging means on said idling means and said fixed means for limiting to substantially one revolution the rotation of said manually operable means and said idling means in said first direction thereof relative to said fixed means, whereby said manually operable means is

is limited to substantially two revolutions in said first direction thereof, said manually operable means being driven in a direction opposite to said first direction thereof by said energy storing means as said sound-emitting device operates, a rotatable member having a series of pictures thereon, and a member fixed to said body member and having an opening therein substantially the size of one of said pictures, said rotatable member being rotatable in opposite directions with said manually operable means for bringing said pictures into alignment with said opening in said fixed member as the amount of energy in said energy storing means is increased and as said sound-emitting device operates.

19. A toy comprising a body that is formed with a recess and with a surface portion that is disposed about said recess and that provides a bearing area, a board that is mounted on said surface portion and that extends across said recess and that is secured against rotation relative to said body and that is formed with a generally central aperture therein, a sound-emitting device that is mounted on said board and that is disposed in said recess, energy storing means for powering said device and that is mounted in said recess with said device, a shaft that is mounted to project from said recess through the aperture in said board and that is coupled to said energy storing means for rotation to store energy in said energy storing means for driving said device, a knob that is secured to the shaft over the projecting end of the shaft for rotation upon rotation of the shaft, said knob being formed with a flanged rim, at least one spacer means mounted

about said shaft and interposed between the flanged rim of the knob and said board for face to face, sliding engagement therewith, said flanged rim and spacer means being formed and disposed to transmit axially-directed forces, that are applied to the knob in the direction of said body, to said board over a relatively broad bearing area thereof, whereby an axially-directed force that is exerted on the knob in the direction of the body is transmitted from the flanged rim of the knob to said spacer means, and by said spacer means to said board and said body.

20. A toy in accordance with claim 19 wherein said sound-emitting device is a music box movement, and wherein one of said spacer means comprises a disk that is mounted on said shaft for rotation upon rotation of the shaft and that has a plurality of pictures arranged in angularly spaced relation on the surface thereof that is remote from said board, and wherein a masking member is secured to said body and is formed with an opening therein that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of said shaft.

21. A toy in accordance with claim 20 wherein said masking member is formed with a second, central opening therein through which said knob projects but through which the flanged rim of the knob cannot pass, said flanged rim being disposed intermediate said masking member and said board.

22. A toy in accordance with claim 19, wherein said energy storing means is a coil spring, and including

means limiting the rotation of the knob in a first direction to limit the rotation of the shaft in said direction short of the capacity of the spring, to restrict the extent to which the spring can be coiled to less than its complete capacity.

23. A toy in accordance with claim 22, including means limiting the rotation of the knob in a second, opposite direction to limit rotation of the shaft in said second direction to stop the uncoiling of the spring while it is still partially coiled for delivering energy to drive said device.

24. A toy in accordance with claim 20 wherein said energy storing means is a coil spring, and including means limiting the rotation of the knob in a first direction to limit rotation of the shaft in said first direction short of the capacity of the spring, to restrict the extent to which the spring can be coiled to less than its complete capacity, and means limiting the rotation of said knob in a second, opposite direction to limit the rotation of said shaft in said second direction to stop the uncoiling of the spring while the spring is still partially coiled for delivering energy to drive the music box movement, while permitting at least one substantially complete rotation of said knob, shaft and pictorial disk.

25. A toy in accordance with claim 24 wherein said limiting means are arranged so that a predetermined picture on said pictorial disk is disposed to be in registry with the opening in said masking member and is displayed therethrough at each of the limit positions of said pictorial disk.

26. A toy comprising of a body that is formed with a surface portion that is disposed about said recess and that provides a bearing area, a board that is mounted on said surface portion and that extends across said recess and that is secured against rotation relative to said body and that is formed with a generally central aperture therein, a sound-emitting device that is mounted on said board and that is disposed in said recess, energy storing means for powering said device and that is mounted in said recess with said device, a shaft that is mounted to project from said recess through the aperture in said board and that is coupled to said energy storing means for rotation in a first direction to store energy in said energy storing means and for rotation in a second, opposite direction when driving said device, a disk that is mounted on said shaft for rotation upon rotation of shaft and that is mounted to transmit axially-directed forces, that are applied thereto in the direction of said body, to said board over relatively broad bearing areas thereof, and that has a plurality of pictures arranged for display thereon, a knob that is secured over the projecting end of said shaft and that is mounted for rotation upon rotation of the shaft, said knob being formed with a rim that is mounted to transmit axially-directed forces, that are applied thereto in the direction of said body, to said disk over relatively broad bearing areas thereof, whereby an axially-directed force that is exerted on said knob in the direction of said body is transmitted to and taken up by said disk, board and body, a masking member that is secured to said body and that is formed with an opening therein that is at least the size of

one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of said shaft, and means limiting the rotation of said shaft in said first direction short of the capacity of said energy storing means.

27. A toy comprising a body that is formed with a recess and with a surface portion that is disposed about said recess and that provides a bearing area, a board that is mounted on said surface portion and that extends across said recess and that is secured against rotation relative to said body and that is formed with a generally central aperture therein, a music box movement that is mounted on said board and that is disposed in said recess, a coil spring for powering said movement and that is mounted in said recess with said movement, a shaft that is mounted to project from said recess through the aperture in said board and that is coupled to said spring for rotation in a first direction to coil said spring and for rotation in a second, opposite direction upon uncoiling of the spring to drive the movement, a disk that is mounted on said shaft for rotation upon rotation of the shaft and that is mounted to transmit axially-directed forces, that are applied thereto in the direction of said body, to said board over relatively broad bearing areas thereof, and that has a plurality of pictures arranged for display thereon, a knob that is secured over the projecting end of said shaft and that is mounted for rotation upon rotation of the shaft, said knob being formed with a flanged rim that is mounted to transmit axially-directed forces, that are applied thereto in the direction of said body, to said disk over relatively broad

bearing areas thereof, whereby an axially-directed force that is exerted on said knob in the direction of said body is transmitted to and taken up by said disk, board and body, a masking member that is secured to said body and that is formed with an opening therein that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of said shaft, and that is formed with an opening through which the knob projects but through which the rim of the knob cannot pass, to prevent removal of the knob from the shaft, and means limiting the rotation of the knob in said first direction to limit rotation of the shaft short of the capacity of the spring, to restrict the extent to which the spring can be coiled to less than its complete capacity.

28. A toy in accordance with claim 27 including a governor to control the rate of uncoiling of the spring and the rate of operation of the music box movement, and means limiting the rotation of the shaft in the second direction to stop uncoiling of the spring while it is still partially coiled for delivering energy to drive the music box movement.

29. A toy in accordance with claim 28 wherein the limits of rotation of the shaft are selected to permit the repetitious playing of a preselected musical repertoire by said music box movement.

30. A toy in accordance with claim 27 wherein the limit of rotation of the shaft in the first direction is selected so as to display a particular picture on the

disk at the commencement of operation of the toy.

31. A toy in accordance with claim 29 wherein the limits of rotation of the shaft are arranged so that a predetermined picture is in registry with the opening in the masking member and is displayed therethrough at each of the limit positions of said shaft.

32. A toy comprising a body that is formed with a recess and with a surface portion that is disposed about said recess and that provides a bearing area, a board that is mounted on said surface portion and that extends across said recess and that is secured against rotation relative to said body and that is formed with a generally central aperture therein, a sound-emitting device that is mounted on said board and that is disposed in said recess, a coil spring that is mounted in said recess to drive said device, a shaft that is mounted to project from said recess through the aperture in said board and that is coupled to said spring for rotation in a first direction to coil said spring and for rotation in a second, opposite direction upon uncoiling of the spring to drive said device, a knob that is secured to the shaft over the projecting end of the shaft for rotation upon rotation of the shaft, said knob being formed with a flanged rim, a plurality of spacer means mounted about said shaft and interposed between the flanged rim of the knob and said board for face to face, sliding engagement therewith, said flanged rim and spacer means being formed and disposed to transmit axially-directed forces, that are applied to the knob in the direction of the body, to said board over relatively broad bearing areas

thereof, whereby an axially-directed force that is exerted on said knob in the direction of said body is transmitted from the flanged rim of the knob to said spacer means, and by said spacer means to said board and said body, one of said spacer means comprising idling means mounted for rotary movement relative to said shaft and relative to said body, and a set of interengaging means mounted for movement upon movement of said idling means and of said knob and shaft respectively for limiting the relative rotation between said idling means and said shaft, and a set of interengaging means on said idling means and fixed relative to said body for limiting the rotation of said idling means relative to said body, thereby to limit the rotation of said shaft in said first direction short of the capacity of said spring, to restrict the extent to which the spring can be coiled to less than its complete capacity.

33. A toy in accordance with claim 32 wherein said first set of interengaging means is mounted to limit the relative rotation between said idling means and said shaft substantially to a single revolution when said shaft is rotated in said first direction, and said second set of interengaging means is mounted to limit the rotation of said idling means relative to said body substantially to a single rotation in said first direction, thereby to limit the rotation of said shaft in said first direction substantially to two complete rotations in said first direction.

34. A toy in accordance with claim 32 wherein said sound-emitting device is a music box movement, and including means limiting the rotation of said knob and said shaft in the second direction to stop uncoiling of the spring

while it is still partially coiled, and wherein the limits of rotation of the knob and of the shaft are selected to permit the repetitious playing of a preselected musical repertoire by said music box movement.

35. A toy in accordance with claim 32 wherein one of said spacer means comprises a disk that is mounted on said shaft for rotation upon rotation of the shaft and that has a plurality of pictures disposed in angularly spaced relation relative to each other on the surface thereof remote from said board, and including a masking member that is secured to said body and that is formed with an opening therein that is at least the size of one of said pictures and that is disposed so that the pictures are displayed therethrough in succession upon rotation of said shaft.

36. A toy in accordance with claim 35 wherein the limit of rotation of the shaft in the first direction is selected so as to display a particular picture on the pictorial disk at the commencement of operation of the toy.

37. A toy in accordance with claim 35 wherein the limits of rotation of the shaft are arranged so that a predetermined picture is in registry with the opening in the masking member and is displayed therethrough at each of the limit positions of the shaft.

\*

FIG. 1

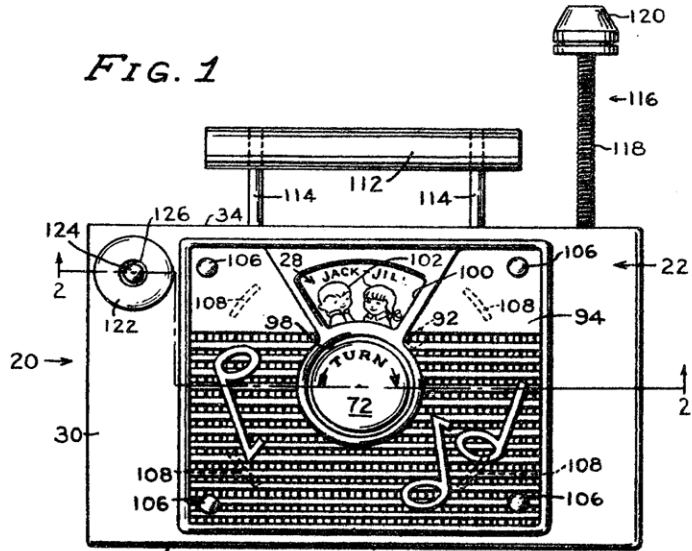


FIG. 6

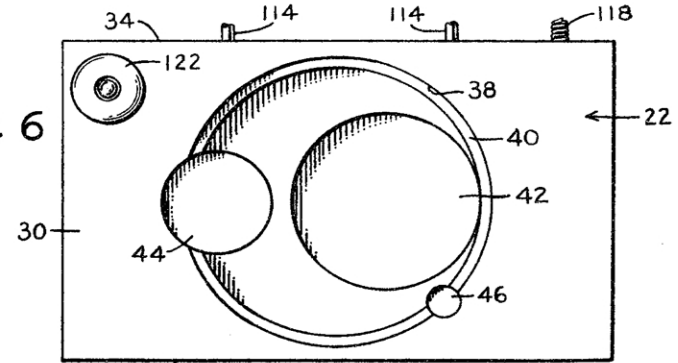


FIG. 7

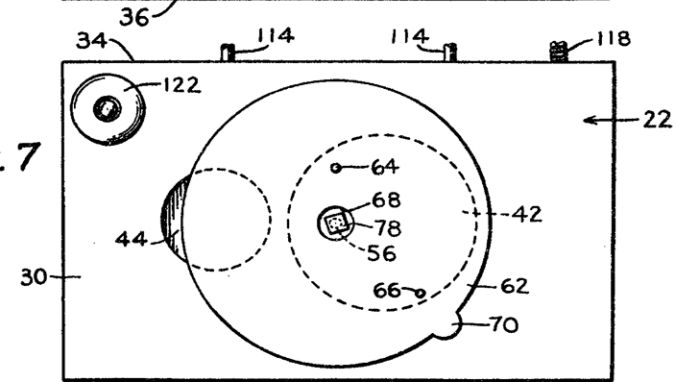


FIG. 8

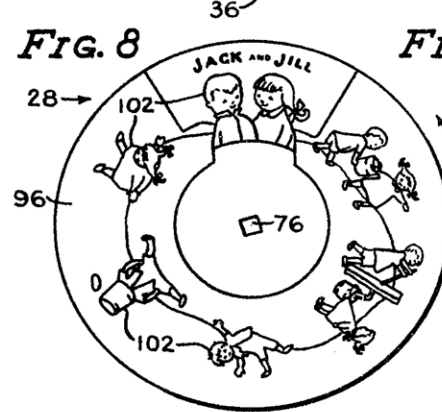
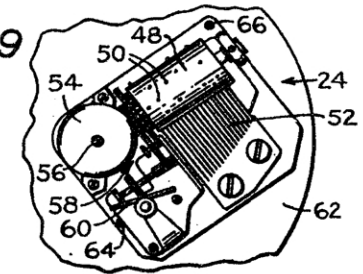


FIG. 9



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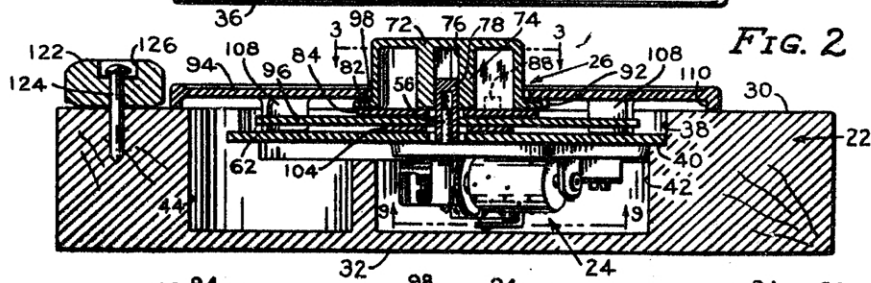


FIG. 2

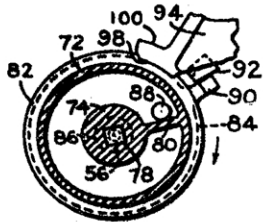


FIG. 3



FIG. 4

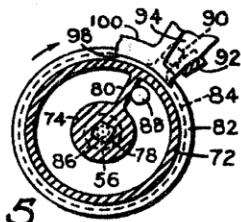


FIG. 5