March 12, 1963

G. LICITIS

TOY

3,080,675

Filed Aug. 15, 1960

Fig. 1

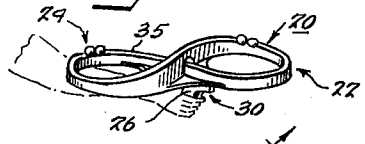


Fig. 2

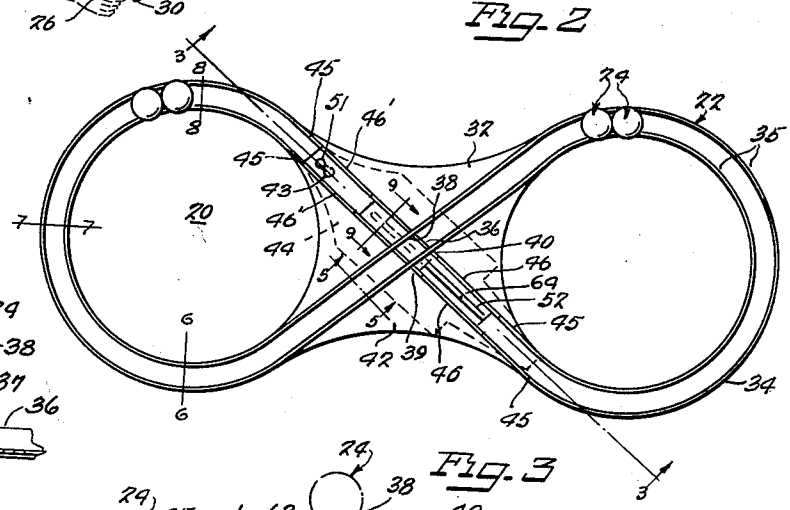


Fig. 5

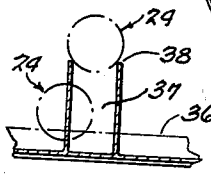


Fig. 6

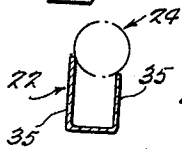


Fig. 7

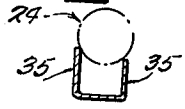


Fig. 8

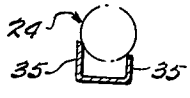


Fig. 9

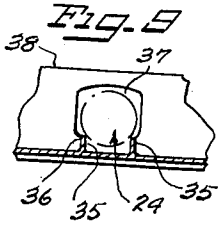


Fig. 3

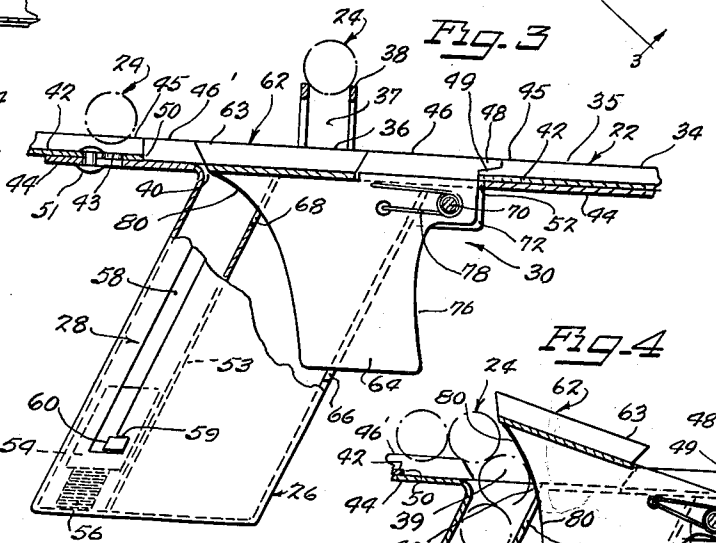
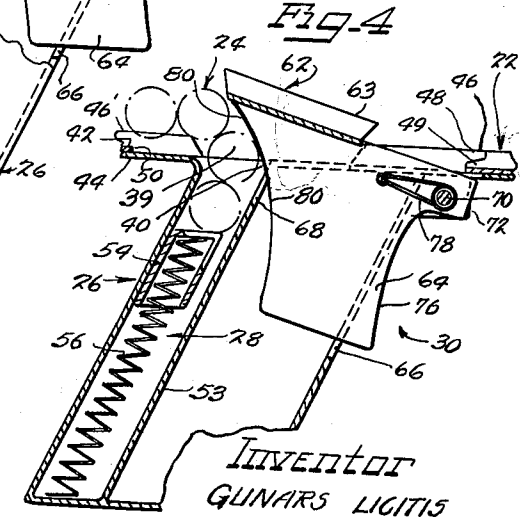


Fig. 4



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3,080,675

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The present invention relates generally to a manipulative toy and more particularly to a toy having a track adaptable to receive an object for movement therealong incident to the manipulation of the track.

Toys which require manipulative skill of one type or another on the part of the user have always attracted and interested a great many people by virtue of the challenge presented. When the user masters the device, or even develops a certain proficiency in its operation, he is left with a feeling of accomplishment and satisfaction. In addition, the interest in such devices may often be enhanced by having different people operate them in competition with each other.

One type of toy falling into this general group is the type wherein the device is manipulated to move an object along a track. Devices of this type, however, have heretofore generally been either so simple that they have failed to hold the interest of the user for any length of time, or they have been made quite cumbersome or unwieldy by the attempt to incorporate various additional features and mechanisms into their design.

The prime object of the present invention is to provide an improved manipulative toy capable of operating to arouse and hold the interest of the user. A further object is to provide an improved, compact manipulative toy which the user can hold in one hand to simultaneously manipulate and otherwise control. Another object is to provide such a toy which is readily disassembled for transporting, storage, and as an added enjoyment feature. A more specific object is the provision of a manipulative toy which includes a track for objects to move along, supported by a handle within which the objects are stored and from where they are selectively brought forth simultaneously with the manipulation of the track. Another specific object is the creation of a mystery effect in a toy having a track by providing means for moving a section of that track to allow an object to emerge onto and disappear from the track. Still another object is to provide an interest-holding and entertaining manipulative toy which at the same time is relatively simple and economical.

Other objects and advantages of this invention will become apparent from the following description and accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view of a manipulative toy including an over-and-under, figure-eight track and embodying various features of the present invention, the toy is shown held by the user and there are several objects positioned on the track for movement therealong;

FIGURE 2 is a plan view of the toy shown in FIG. 1;

FIGURE 3 is an enlarged side view taken generally along line 3—3 of FIG. 2, showing a portion of the toy with various parts broken away and in section, the toy being shown with the magazine empty and closed and the piston in the depressed position;

FIGURE 4 is generally similar to FIG. 3, with the magazine open and with the piston released and dispensing balls (shown in phantom) onto the track;

FIGURES 5 through 9 are enlarged sectional views at various points along the track of FIG. 2 taken, respectively, along the lines 5—5 through 9—9, showing the relative height of the track at these various points.

The invention relates generally to a manipulative toy. The preferred embodiment of the invention shown in

the drawings is a toy 20 comprising a track 22 adapted to receive an object 24 for movement therealong incident to manipulation of the track. The embodiment further includes a handle 26 which is connected to the track 22 for supporting it, and a magazine 28 on the handle 26 and adapted to receive the aforementioned object 24. The magazine 28 communicates with the track 22. As shown in the drawings, there is also a control means 30 associated with the handle 26 and connected with the magazine 28, which is adapted to selectively control movement of the object 24 between the magazine and the track. Thus, the user may hold the toy 20 by the handle, and operate the toy so as to control movement of the object both along the track and between the track and the magazine. The handle 26 is preferably detachably connected to the track 22 so that toy 20 may be disassembled when it is carried or stored.

The endless track 22 of the illustrated embodiment, seen best in FIGS. 1 and 2, includes a generally horizontal, flat base section 32 comprised of an upper plate 42 and a lower plate 44. The base section 32 is connected to the underside of a figure-eight shaped main track section 34. Base section 32 is located beneath the intersecting part of track section 34. At that intersecting part of the figure-eight, an underlying part 36 of the track 22 passes through an underpass 37 in the intersecting overlying part 38 of the track, as shown particularly by FIGS. 1, 5, and 9. The resulting difference in height of the track 22 at different points along its length is shown generally in FIG. 1, and more particularly in FIGS. 5 through 9.

In the illustrated toy it is quite desirable that the object 24 move freely along the track 22, and, while there are any number of combinations of track construction and object configurations which would probably be adequate to accomplish this result, one very satisfactory combination is that shown in the drawings. The illustrated object 24 is a ball or sphere such as a marble or a gumball. It is desirable that the ball 24 have sufficient weight to maintain itself upon the track 22 as it moves along it. The illustrated construction of the main track section 34 for accommodating the ball 24 is a channel-shaped cross section with the legs of the channel extending upwardly so as to provide a pair of spaced-apart, parallel main rails 35 comprising aligned pairs of rail lengths 45, 46, and 46'. As shown in the drawings, the main rails 35 are spaced-apart sufficiently so as to support the ball 24 while allowing enough of it to extend downwardly between the rails 35 to maintain itself upon the track.

Thus, an effective, low-friction, rolling contact is provided between the track 22 and the ball 24. Of course, as already noted, other objects or tracks might be utilized, as for example a cylindrical object or a monorail arrangement. The illustrated track 22 is banked at the curves by making one rail 35 higher than the other so that the contact between the balls 24 and the rails 35 is higher at the outside of the track, as shown particularly in FIGS. 6 through 8. Thus, the balls 24 may be moved around the curves at a faster speed without becoming disengaged from the track 22.

While the main track section 34 is in the shape of a figure-eight, it does not completely close the figure, there being left a relatively short gap 39 between the ends of the section 34. As shown in the drawings, the gap 39 is located at the underlying part 36 of the track 22. There is an opening or aperture 40 in the base section 32 underlying and generally coextensive with the gap 39, and also a longitudinal slot 52 in section 32 extending forwardly from the opening 40. Generally the gap 39, the opening 40, and the slot 52 cooperate with various other parts, yet to be described, to provide movement of

the balls 24 onto and off of the track. Their full operation will become clear as the description proceeds.

In the illustrated toy 20, the handle 26 is detachably connected to the track. The structure of the illustrated toy which provides both the detachable connection and the herein above-mentioned elements, i.e., gap 39, opening 40 and slot 52, will now be described.

Generally, there is an aperture 50 in the upper plate 42 of the base section 32. The lower plate 44 of the base section 32 has the handle 26 fixed to its underside and is itself detachably secured to the underside of the upper plate 42 beneath the aperture 50 in the position shown by the broken lines in FIG. 2. As seen best in FIGS. 2 and 3, two pair of rail lengths, a forward pair 46 and a rearward pair 46', secured to the lower plate 44, extend upwardly through the aperture 50 and aligned with rail lengths 45 to comprise the main rails 35 and define the gap 39. The lower plate 44, which has the opening 40 and the slot 52, forms a wall across the aperture 50 except for the said opening and slot. The handle 26 is detachably held in place by virtue of an overhanging lip 48 on each of the forward rail lengths 46 which engages a shoulder 49 formed on the adjoining rail length 45, and a locking rivet 51 movably mounted on the lower plate 44 and received in a locking slot 43 in the upper plate 42. By moving the rivet 51 to the rearward end of the slot 43, so that the rivet overhangs the edge of the slot 43, the lower plate 44 is detachably fixed to the upper plate 42. To detach the handle 26 from the track 22, the rivet 51 is moved out of engagement with the edge of the slot 43. The flexibility of the lower plate 44 and the play between parts allowing a certain amount of rearward movement of that lower plate 44, enable the rearward end of plate 44 to be lowered and said lower plate 44 to be separated from the upper plate 42, thus detaching the handle 26 from the track 22.

In the preferred embodiment, the generally vertical, elongated magazine 28, as best seen in FIGS. 3 and 4, is located within the handle 26 beneath the opening 40 so as to communicate with the track 22. The magazine 28 is adapted to receive a plurality of the balls 24 in stacked or generally vertically aligned relationship longitudinally within the magazine.

More specifically, the magazine 28 in the illustrated toy is formed by walling off the rearward portion of the handle 26 by means of a generally vertical transverse wall 53 which extends between the side walls of the handle. The balls 24 are urged upwardly in the magazine 28 and out onto the track through the opening 40 by means of a piston 54 which is slidable within the magazine and biased upwardly by a coiled compression spring 56 positioned between the piston 54 and the bottom of the magazine. The piston 54 may be releasably locked in a lower or depressed position, as shown in FIG. 3, against the force of the spring 56, to permit both loading of the magazine 28, and also entry of the balls into the magazine from the track. This releasable locking feature is provided by a generally vertical, slot 58 in a side wall of the magazine 28. The slot 58 extends longitudinally of the magazine 28 and has a forwardly extending notch at its lower end which provides a restraining shoulder 59. A button 60, secured to the piston 54, extends through the slot 58 for finger engagement. The piston 54 is smaller than the forward width of the magazine 28 and the slot 58 is so located that the piston can be moved forwardly when the button 60 is pulled to the lower end of the slot to seat the button under the shoulder 59. The button 60 will remain seated, maintaining the piston 54 in the depressed position, by virtue of the upward force of the spring 56 on the piston. The piston 54 may be released from this position by pushing the button 60 rearwardly so as to disengage it from the shoulder. The relationship of this feature to the entire operation of the device will become apparent in the light of the following disclosure.

In the illustrated embodiment, a short movable track section 62 is received in the gap 39 and over the opening 40, as shown in FIG. 3. The movable track section 62 is of generally similar, channel-shaped cross section as the main track section 34, having a pair of rails 63 which align with the main rails 35 to provide parallel rails forming the endless, figure-eight shaped track 22 of the illustrated device. Both rails 63 of the movable track section 62 are tapered outwardly toward their upper edge at both of their ends, and the adjacent edges of the main rails 35 are conversely tapered so that the movable rails 63 are received in mating engagement, facilitating their ready and correct placement when they are lowered.

As shown in FIGS. 3 and 4, in the illustrated toy 20, the control means 30 include a generally vertical plate 64, pivotally supported on the handle 26 and connected to the movable track section 62 so as to control the movement of the balls 24 into and out of the magazine 28.

More specifically, the rearward portion of the upper edge of vertical plate 64 is secured to the underside of the movable track section 62, and the plate 64 is pivotally mounted on a pin 70 supported between a spaced-apart pair of ears 72 extending forwardly from the upper end of the handle 26. The vertical plate 64 extends within a vertical slot 66 in the front wall of the handle 26 and another shorter vertical slot 68 in the transverse wall 53, which aid in locating and provide lateral support for the plate 64. The plate 64 is biased by a small hairpin spring 78 which winds around the pin 70, and has one end fixed to the plate 64 and the other end abutted against the underside of the base section 32. The spring 78 urges the plate 64 in the counterclockwise direction, toward the position shown in FIG. 3, wherein the track section 62 is seated and the magazine 28 is closed by the rear edge of the plate 64.

The forward edge of the vertical plate 64 extends outwardly from the handle 26 and serves as a trigger 76, while the rearward edge provides a smooth cam or guide surface 80 for closing the magazine 28 as noted above, and for directing the movement of the balls 24 onto the track 22 when the trigger 26 is pulled. The guide surface 80 is also adapted to direct the balls 24 back into the magazine. Pulling the trigger 76 rotates the plate 64 in the clockwise direction against the force of the spring 78 to a position such as that shown in FIG. 4, wherein the movable track section 62 is raised and the magazine is opened, allowing the balls 24 to emerge onto the track 22. When the plate 64 is rotated it moves slidably within vertical slots 66 and 68 and horizontal slot 52, which slots provide guidance and lateral support for the plate 64 and, thus, aid in properly aligning the rails 63.

Now that the structure of the toy 20 has been set forth its operation may be readily understood. To load the top, the piston 54 may be moved to the depressed position and the trigger 76 pulled, raising the movable track section 62 and opening the top of the magazine 28. A plurality of balls 24 may then be dropped into the magazine, and after the trigger 76 is released to close the magazine and the piston 54 is released, the device is ready to operate. The user grips the handle 26 and by pulling the trigger 76 rotates the vertical plate 64, raises the track section 62, and opens the magazine 28, allowing the spring 56 to urge the balls 24 upwardly so that they will emerge, one at a time, out of the magazine 28 and onto the track 22. By tilting the track 22 the user may control the rolling of the balls 24 along the track, and by operating the trigger at the same time he may simultaneously allow additional balls to be discharged onto the track while controlling the movement of those already on the track.

Of course, the operation may be generally reversed in that the balls 24 are initially placed upon the track 22, the piston 54 releasably locked in the depressed position, and the track tilted in coordination with the pulling of

the trigger 76 so as to "catch" or swallow the balls i.e., cause them to drop into the open magazine 28.

When the toy 20 is not in use, or is being transported, it may be readily disassembled by disengaging the handle 26 from the track 22 for easier handling, conservation of space, minimizing the risk of damage, etc.

Thus, the preferred embodiment presents a very entertaining and interest-sustaining toy which the user can hold in one hand and operate, not only controlling movement of the balls along the track, but also, and simultaneously, controlling their entry and exit onto and off of the track. Storing the balls within the handle makes for a very compact unit, but also of great importance, since we are in the area of imaginative and entertaining toys, is the rather mysterious illusion created by having the balls virtually emerge or be swallowed up by the track itself. Also, aside from the practical advantages of being able to detach the handle, being able to take something apart and reassemble it provides its own degree of fascination. Thus, a novel toy possessing a number of highly interesting and entertaining features is presented.

This invention is not limited to any particular embodiment, and obviously various of the details of the illustrated device may be changed without departing from the scope of the invention. For example, the particular configuration, construction, or arrangement of the track may be changed without departing from the invention.

Various features of the invention are set forth in the following claims.

I claim:

1. A manipulative toy comprising a plurality of objects, a track adapted to receive said plurality of objects for movement therealong incident to the manipulation of said toy, said track having an aperture therethrough, a handle connected to the underside of the track and extending downwardly therefrom for supporting said track, a magazine within said handle adapted to receive said plurality of objects in aligned relationship to one another, the upper end of said magazine being positioned adjacent said track and communicating with said track through said aperture through said track, means in said magazine adapted to urge said objects out of said magazine through said aperture in the order of their alignment, and control means associated with said handle and connected to said magazine, said control means being adapted to selectively block said aperture so as to control movement of said objects between said magazine and said track.

2. A manipulative toy comprising a track adapted to receive an object for movement therealong incident to the manipulation of said toy, said track having an aperture therethrough, a handle connected to the track for supporting said track, a magazine on said handle adapted to receive the object, said magazine communicating with said aperture through the track, means in said magazine adapted to urge the object out of said magazine through said aperture, and movable means associated with said handle and connected to said magazine, said movable means including a movable length of track and being adapted to selectively either block said aperture and provide a complete track or unblock said aperture, thereby controlling the movement of the object between said magazine and said track.

3. A manipulative toy comprising a plurality of spherical objects, a generally horizontal, tiltable, endless track for receiving a plurality of said objects for movement therealong incident to the manipulation of said toy, said track including a main track section which has a gap between its ends, said track also having an aperture therethrough underlying said gap, a handle connected to and extending downwardly from said track for supporting said track, a magazine within said handle adapted to receive a plurality of said objects in aligned relationship to one another, the upper end of said magazine being positioned adjacent said track and communcating with the aperture therethrough, spring means in said magazine urging said objects out of said magazine through said aperture in their order of alignment, movable means including a movable section of track and adapted to be received in said gap and over said aperture so as to block the aperture, trigger means connected to said movable section of track and located adjacent said handle so as to be operable by the hand of the user gripping said handle for selectively moving said movable means to unblock said aperture, and guide means connected to said trigger means and adapted when the trigger means are operated to guide said objects moving between said magazine and said tracks, whereby the user may grip the handle and control the movement of objects between the magazine and the track while simultaneously controlling the movement of objects along the track.

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