Oct. 9, 1928. 1,687,315

W. J. ROCHE

AUTOMATIC TOY

Filed Feb. 21, 1927 2 Sheets-Sheet 1

Fig. 2.

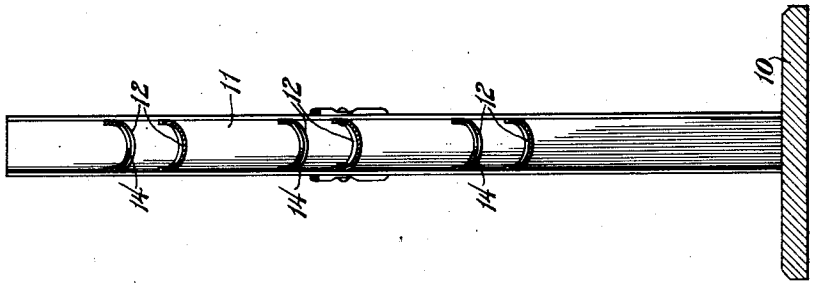
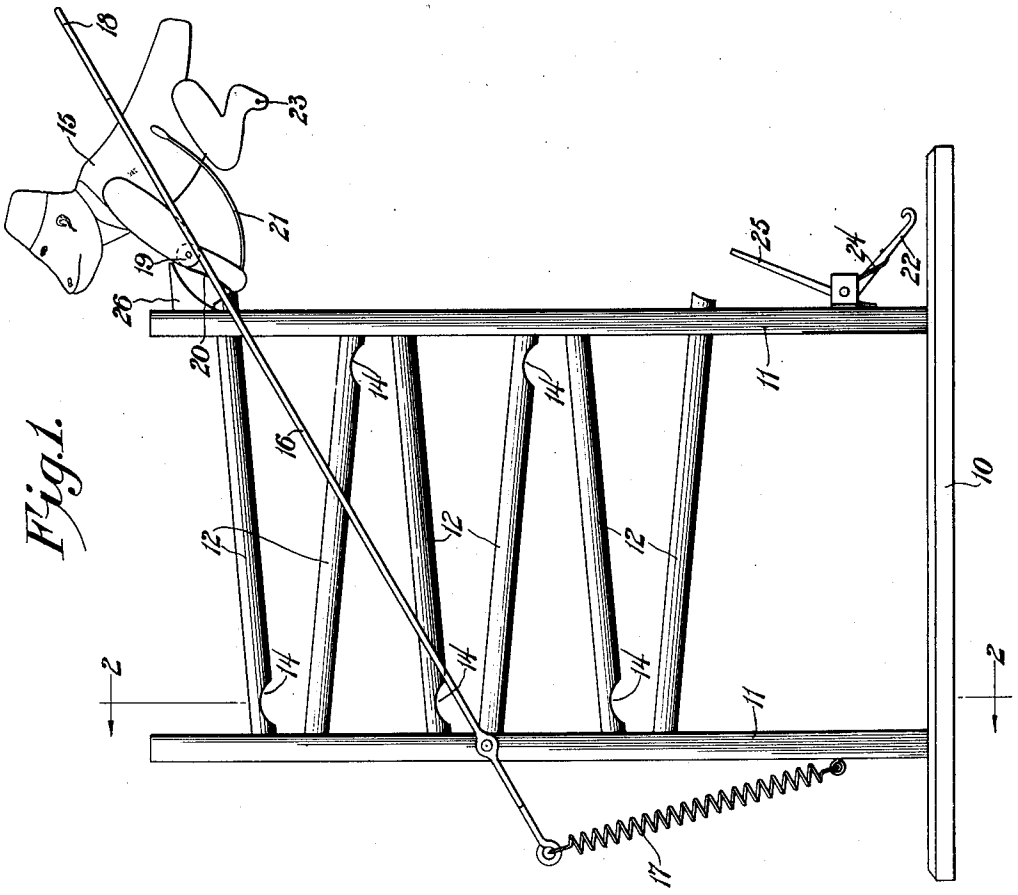


Fig. 1.



Witnesses
C. L. McDonald.
A. D. Adams

Inventor
William J. Roche

By
E. G. Siggers
and
Philip E. Sigger
Attorneys

Oct. 9, 1928. 1,687,315

W. J. ROCHE

AUTOMATIC TOY

Filed Feb. 21, 1927 2 Sheets-Sheet 2

Fig. 4.

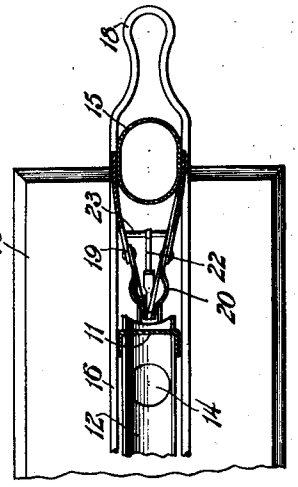


Fig. 5.

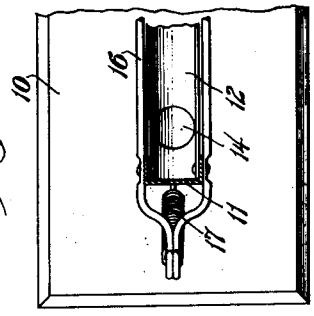
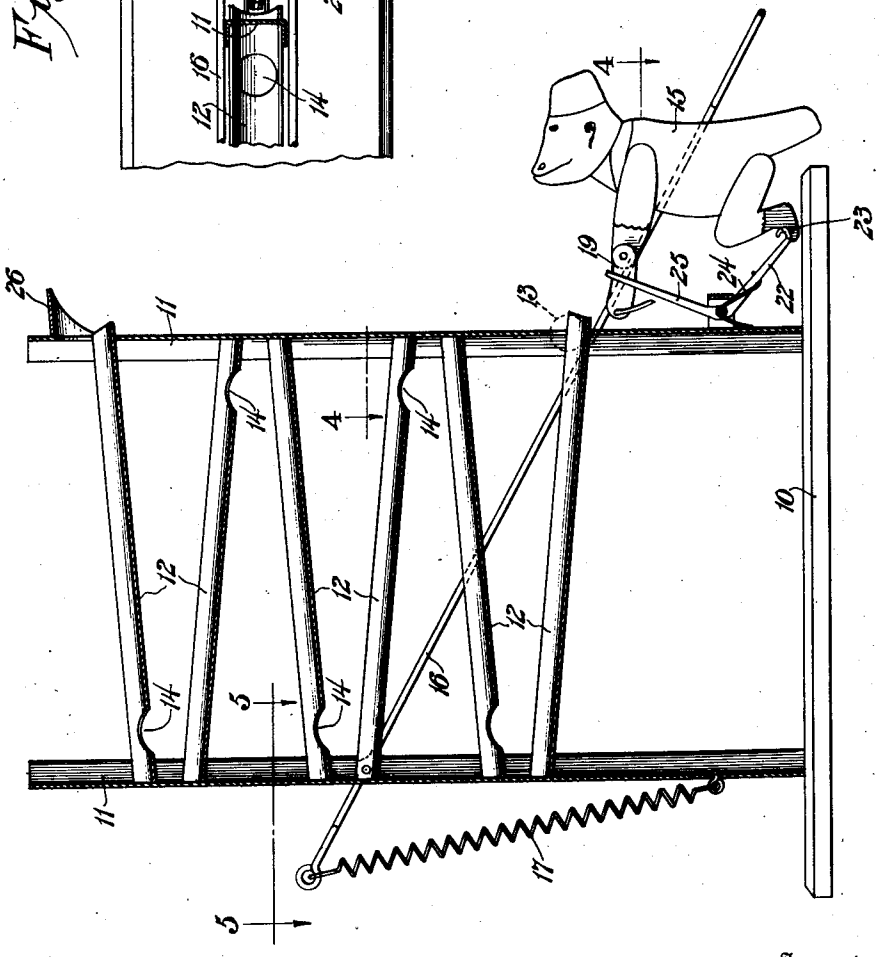


Fig. 3.



Inventor
William J. Roche

Witnesses
C. L. McDonald.
A. H. Adams

By
E. G. Siggers
and
Philip E. Siggers
Attorneys

Patented Oct. 9, 1928. 1,687,315

UNITED STATES PATENT OFFICE.

WILLIAM JANSON ROCHE, OF COCHRANTON, PENNSYLVANIA.

AUTOMATIC TOY.

Application filed February 21, 1927. Serial No. 169,969.

My invention relates to mechanical toys, and aims particularly to provide an improved gravity toy in which a marble or roller is made to traverse an inclined trackway, and is automatically returned to the entrance end thereof by means of a manikin, which is released automatically by the marble.

Other objects and advantages of the invention will appear in the following specification when considered in connection with the accompanying drawings, wherein I have shown the preferred embodiment of the invention by way of illustration.

In the drawings:

Figure 1 is a side elevation of a toy embodying my invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a side elevation, partly in section, showing the toy in set position ready to be actuated.

Figures 4 and 5 are fragmentary sectional views taken on the lines 4—4 and 5—5 respectively, of Figure 3.

Referring specifically to the drawings and to the embodiment of my invention shown therein, I have shown a framework comprising a base 10, on which is mounted a pair of uprights or supports 11, herein in the form of channels. Between the supports 11, I provide a trackway 12 for a rolling toy in the form of a marble 13, so arranged that the marble will roll from the top, or entrance end of the trackway, to the bottom, or exit end. In the present instance, the trackway 12 comprises a series of trough-shaped track sections arranged in zig zag fashion, one above the other, so that the marble 13 will roll in a zig zag path. At the lower ends of the intermediate track sections, I provide openings 14, large enough to permit the marble to drop through.

The upper end of the upper track section projects through the outer wall of one of the uprights 11, and the lower track section likewise projects through the same upright to deliver the marble into the transfer mechanism now to be described, suitable openings being provided in the web of the upright to receive the marble, or to permit it to pass through.

My improved transfer mechanism is shown as comprising a movably mounted manikin 15, in the form of a monkey. To support the monkey in position to transfer the marble from the exit end to the entrance end of the trackway, I have shown a pivoted lever 16 connected to one of the uprights 11, and normally held under spring tension by a coiled spring 17. Referring to Figures 1 and 4, it will be noticed that the lever 16 comprises a U-shaped wire or rod straddling the uprights and the trough. A handle portion 18 projects beyond the point of attachment to the manikin 15, and a spring hook or eye is formed on the other end.

As best shown in Figures 1 and 3, the manikin has jointed or pivoted forearms 19, presenting at their forward ends cooperating portions to provide a marble cup 20 (Fig. 4) adapted to be positioned below the exit end of the lower trough. Secured to the forearms and to the body of the manikin, I have shown a spring member 21, normally to hold the cup-shaped marble receiving portion in a substantially horizontal position to avoid spilling the marble while it is being transferred from the exit end of the lower track section to the entrance end of the upper track section.

To hold the manikin in marble receiving position below the lower track section, I have shown a trigger mechanism, arranged to be tripped by the marble. Herein, my improved trigger mechanism comprises a trigger arm 22, pivotally mounted on the upright 11 below the lower trough, and cooperating with a cross arm or wire 23 between the legs of the manikin. This trigger preferably has a hooked end to engage over the top of the wire 23, and is normally urged to swing outwardly into engaging relation with the wire by means of a spring 24, conveniently wound about the pivot pin. Connected to the trigger 22, I have shown a trip arm 25 projecting upwardly with its upper end slightly below the exit end of the lower trough. This trip arm is received between the outstretched forearms of the manikin behind the cup-shaped marble receiving portion 20, when the manikin is held in receiving position. As will be seen in Figure 3, the marble 13, in its descent, will strike the upper end of the releasing arm 25, and move the trigger 22 toward the left, disengaging the hook-shaped end from the wire 23, thereby permitting the spring 17 to raise the manikin to marble dumping position at the entrance end of the upper track section 12.

To insure that the marble will be delivered into the entrance end of the trackway, I make the forearms of such length that the forward

ends thereof will strike the projecting end of the upper track section, so that the forearms will swing about their pivots overcoming the compression of the spring 21, and spill the marble directly into the trackway. Moreover, to avoid the possibility of the marble being thrown upwardly, due to its momentum, missing the entrance end of the upper track section, and to provide a stop for holding the manikin in dumping position, I have shown a hood 26 providing, in effect, a bumper for the marble to strike and rebound into the arms of the manikin before being spilled or dumped into the trackway.

As soon as the marble is started on its downward journey, the child immediately resets the manikin 15 to receive it at the exit end of the lower track section by depressing the handle portion 18 of the lever, and then watches the marble descend. Thus, the child has only to manipulate the handle to gratify its desire for amusement.

It will be seen from the foregoing description that I have provided a novel toy that is eminently adapted to amuse, as well as to instruct children. Moreover, it can be manufactured very economically of sheet metal made by stamping and cutting operations.

Having thus described one illustrative embodiment of my invention, but with the understanding that the invention is capable of embodiment in various forms and modifications without departing from the spirit thereof, what I claim and desire to secure by Letters Patent is:

1. A gravity toy comprising, in combination, a frame presenting an inclined track adapted to receive and guide a rolling toy from the entrance to the exit thereof, toy carrying means releasably held in position at the exit end of said track to receive the rolling toy, trigger mechanism arranged to be tripped by said rolling toy to release said toy carrying means, pivotal arms on said means in which said rolling toy is lodged, a spring arm connected to raise said toy carrying means to the entrance end of said track, means normally holding said arms in toy carrying position, and means automatically to spill said rolling toy in the trackway.

2. A gravity toy of the character described, comprising, in combination, a frame including a pair of uprights, a plurality of inclined track sections arranged in zig zag fashion between said uprights, the upper and lower inclined track sections projecting through one of the uprights and providing entrance and exit ends for a rolling toy, a movable manikin adapted to be releasably held in rolling toy receiving position below the exit end of the lower track section, trigger mechanism to hold the manikin in such position, means normally tending to move the manikin into position to dump the rolling toy in the entrance end of the upper track section, and means permitting the rolling toy to trip the trigger mechanism upon its exit from the lower trough section.

3. A toy of the character described comprising, in combination, a framework carrying a plurality of trough-shaped, inclined track sections, the upper end of the upper trough section and the lower end of the lower trough section presenting an entrance and exit respectively for a rolling toy, the lower portions of each intermediate track section presenting an opening permitting the rolling toy to drop through to the next section, means for receiving and transferring the rolling toy from the exit end of the lower trough to the entrance end of the upper trough section, said means including a manikin presenting jointed arms having a rolling toy receiving cup, spring means normally acting to raise the manikin, and trigger mechanism including a releasing arm adapted to be actuated by the rolling toy when it leaves the exit end of the lower trough section to permit said spring means to move the manikin into rolling toy dumping position.

4. A toy of the character described comprising, in combination, an inclined trackway including a plurality of track sections arranged in zig zag fashion, the upper end of the upper track section and the lower end of the lower track section presenting entrance and exit ends respectively, a rolling toy adapted to descend in the track sections, a manikin carried on a spring-urged pivoted lever arranged to automatically raise the manikin bodily to the entrance end when released, said manikin having a rolling toy receiving cup adapted to be positioned below the exit end of the lower track section, said receiving cup carried by horizontally pivoted arms arranged normally to rest in a horizontal position, releasable means for holding the manikin in toy-receiving position at the exit end and releasable by the rolling toy to permit it to rise to rolling toy dumping position, said cup carrying arms arranged to strike the entrance end of the upper track section to dump the rolling toy therein, and a hood-like member above the entrance end of the upper track section arranged to prevent the rolling toy from being thrown upwardly and to stop the manikin in dumping position.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

WILLIAM JANSON ROCHE.