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SIMULATED BOWLING PIN ELEVATING AND RESETTING MECHANISM

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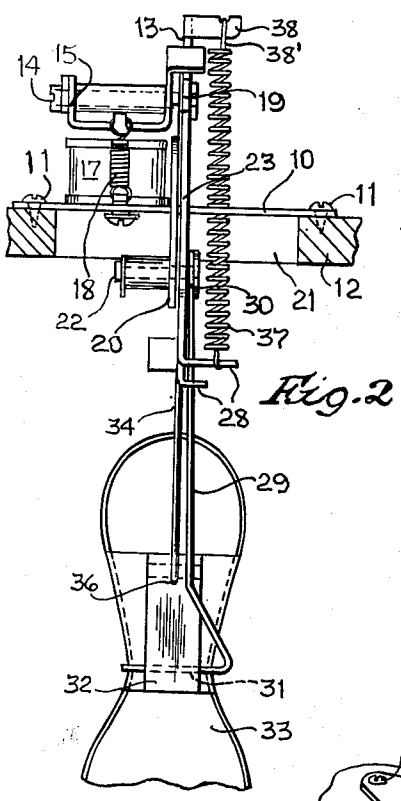


Fig. 2

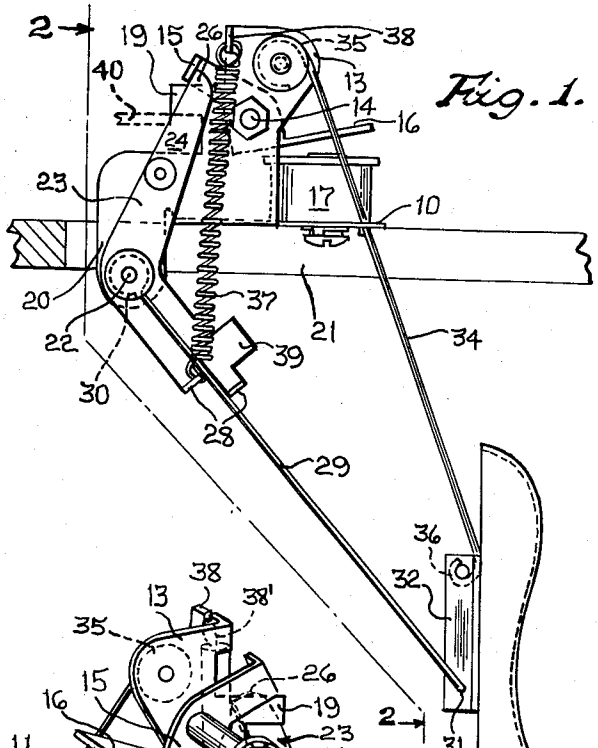


Fig. 1.

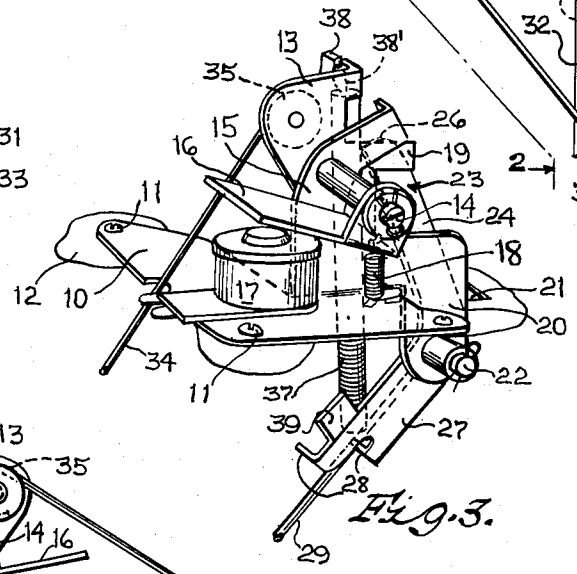


Fig. 3.

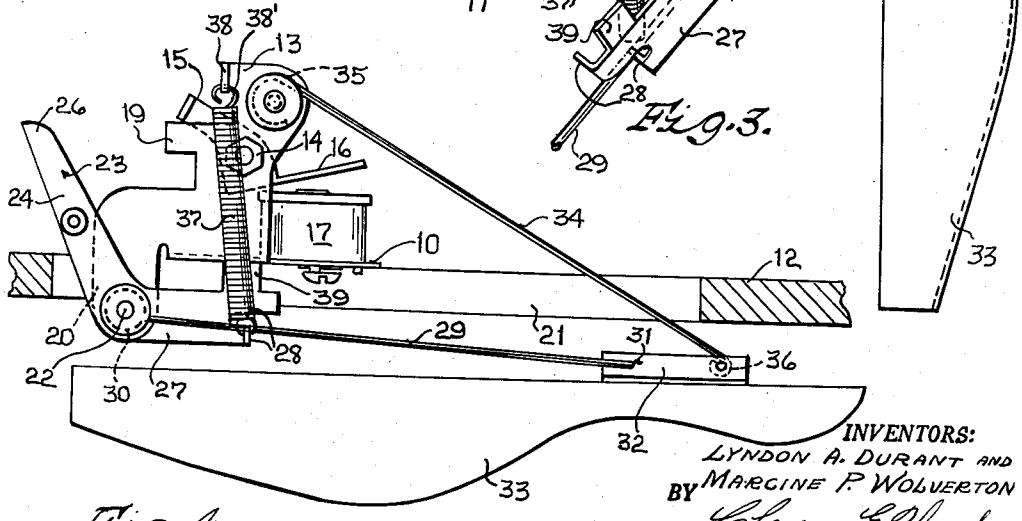


Fig. 4.

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SIMULATED BOWLING PIN ELEVATING AND RESETTING MECHANISM

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2 Claims. (Cl. 340—373)

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The mechanism constituting our invention is especially designed for association with a simulated bowling game in which there is employed a plurality of simulated bowling pins arranged upon a field in a formation such as is employed in a conventional bowling alley.

Viewed in this aspect the invention has for one of its objects the provision of an arrangement for elevating and resetting each simulated bowling pin in a manner such as will permit the employment of simulated bowling pins of a size larger than those now used in connection with simulated bowling game apparatuses without increasing the area or field to be occupied by such pins.

The present invention constitutes an improvement over that shown in our companion pending application filed on even date hereof now Patent 2,652,557, granted September 15, 1953 and an object of the present invention over that disclosed in such pending application is to provide a mechanism wherein the elevating and resetting of the simulated bowling pin or other target is accomplished without the employment of gears.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a side elevational view of the invention;

Fig. 2 is a fragmentary view taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary perspective view showing the latching mechanism embodied in the invention; and

Fig. 4 is a side elevational view similar to Fig. 1 but showing the parts thereof in different positions.

As in our pending application hereinbefore mentioned, a principal object of this present invention is to provide a mechanism which will elevate and reset a bowling pin in a manner such that a relatively large bowling pin may be employed without increasing the area of the playing field or alley usually occupied by such pins. This object is accomplished by our present invention by the provision of a mounting plate 10 secured as at 11 to a suitable support 12. The plate 10 provides an upstanding arm 13 to which is pivotally connected as at 14, a latch arm 15. This latch arm 15 is formed as an integral part of an armature plate 16 actuated by an electro-magnetic coil 17. The latch arm 15 is pivoted in one direction by a spring 18 and is limited in such pivotal movement by an extension 19 provided by the arm 13.

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The arm 13 provides a depending extension 20 which extends through a slot 21 formed in the support 12. Pivotally connected to this extension as at 22 is a bell crank 23. One arm 24 of this bell crank provides a latch head 26 which is adapted to have latched engagement with the latch arm 15. The other arm 27 of the bell crank provides spaced lugs 28 between which a rod 29 is arranged. One end of this rod 29 is connected as at 30 to the pivot pin 22. The opposite end portion of the rod 29 is pivotally connected as at 31 to a back plate 32 carried by a target 33. This target 33 in the present instance is in the form of a simulated bowling pin. A second rod 34 has one end portion pivotally connected as at 35 to the upper end portion of the arm 13 in a plane above the pivot point between the arm 29 and the extension 20. The rods 29 and 34 extend in substantially the same longitudinal direction in spaced relation with respect to each other. The lower end portion of this arm 34 is pivoted as at 36 to the back plate 32 in a plane above the pivot point 31 between the rod 29 and the target 33 substantially on the long axis of the target.

Connected to one of the lugs 28 is one end portion of a spring 37, the opposite end portion of the spring being connected as at 38' to a hook 38 provided by and at the upper end portion of the arm 13.

A stop lug 39 is provided by the arm 27 of the bell crank 23 and is adapted to engage the underside of the plate 10 to limit the pivotal movement of the bell crank by action of the spring 37.

When the target 33 is in a vertical position, as viewed in Fig. 1, the latch arm 15 will be in engagement with the arm 24 of the bell crank 23. In this position of the target 33 the spring 37 will be under tension. When the coil 17 is energized during the operation of the game, the armature plate 16 will be pivoted in a direction to disengage the latch arm 15 from the latch head 26, thus releasing the bell crank for pivotal movement in an anticlockwise direction as viewed in Fig. 1 under the action of the spring 37. This pivotal movement of the bell crank 23 will through the medium of the rod 29 pivot the target 33 relative to the pivot connection 36 of the rod 34. Simultaneously with the pivotal movement of the target 33 about the pivot 36 the rod 34 will be pivoted in an anticlockwise direction and thereby cooperate with the rod 29 to position the target 33 in a

horizontal position beneath the support 12. The target 33 will be held in this position by the action of the spring 37. To reset the target a suitable reset bar 40 is brought into engagement with the arm 24 of the bell crank 23 to pivot the bell crank in a clockwise direction as viewed in Fig. 1. This pivotal movement of the bell crank will act upon the rod 29 to pivot the same in a clockwise direction. Simultaneously with this pivotal movement of the rod 29, the rod 34 will be likewise pivoted in a clockwise direction and during such pivotal movement will cooperate with the rod 29 to dispose the target in a vertical position as seen in Fig. 1. The target will be releasably retained in this position by reason of the engagement of the latch head 26 with the latch arm 15.

The reset bar 40 may be of any construction such as that shown in Fig. 2 of United States Patent Number 2,572,456.

From the foregoing description, it will be apparent that we have provided a mechanism capable of accomplishing the foregoing objects and one which comprises the minimum number of parts permitting the same to be manufactured at an economical cost.

It will be also apparent that by reason of the path of movement of the target 33, the same may be moved from and into vertical position through a relatively small area thus permitting employment of targets of a larger size than those now commercially in use.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A mechanism for moving a simulated bowling pin from simulated bowling position and for resetting said pin in said position comprising a mounting plate, means for supporting said pin in said simulated bowling position and for simultaneously rotating and elevating said pin from said simulated bowling position to a horizontal position with respect to said mounting plate, said means comprising a pair of rods extending in substantially the same longitudinal direction in spaced relation with respect to each other, means for pivotally connecting corresponding end portions of said rods to said mounting plate in spaced relation with respect to each other, means for pivotally connecting the opposite corresponding end portions of said rods to said pin in spaced relation with respect to each other in a direction with respect to the long axis of said pin, means for latching said rods to said mounting plate with the pin supported by said rods in said simulated bowling position, and means for imparting said simultaneous rotating and elevating movement of said pin from said simulated bowling position to said horizontal position when said latch means is effective to release said rods for said movement.

2. A mechanism for moving a simulated bowling pin from simulated bowling position and for resetting said pin in said position comprising a mounting plate, means for supporting said pin below the mounting plate in said simulated bowling position and for simultaneously rotating said pin about a horizontal axis and elevating said pin in a vertical plane from said simulated bowling position to a horizontal position beneath said mounting plate, said means comprising a pair of elongated members extending in substantially the same longitudinal direction in spaced relation with respect to each other, means for pivotally connecting corresponding end portions of said members to said mounting plate in spaced relation with respect to each other, means for pivotally connecting the opposite corresponding end portions of said members to said pin in spaced relation with respect to each other in a direction with respect to the long axis and above the transverse axis of said pin, means for latching said members to said mounting plate with the pin supported by said members in said simulated bowling position, and means for imparting said simultaneous rotating and elevating movement of said pin from said simulated bowling position to said horizontal position when said latch means is effective to release said members for said movement.

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