Nov. 24, 1953 M. J. BINKS 2,660,157

BALL PROJECTOR

Filed April 25, 1951 2 Sheets-Sheet 1

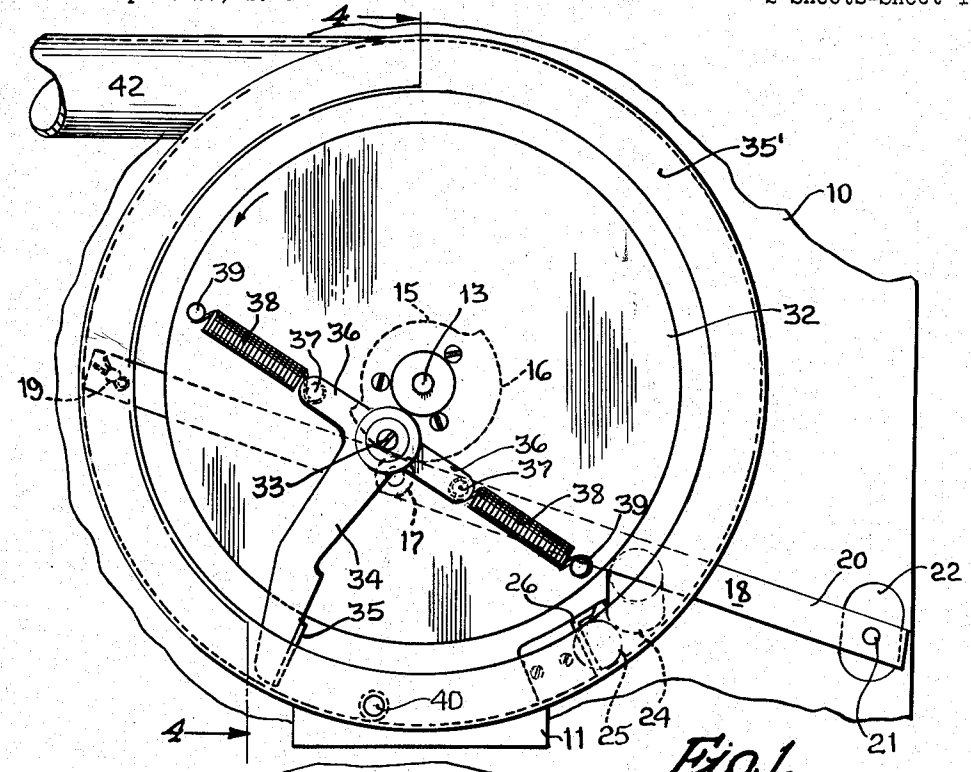


Fig. 1.

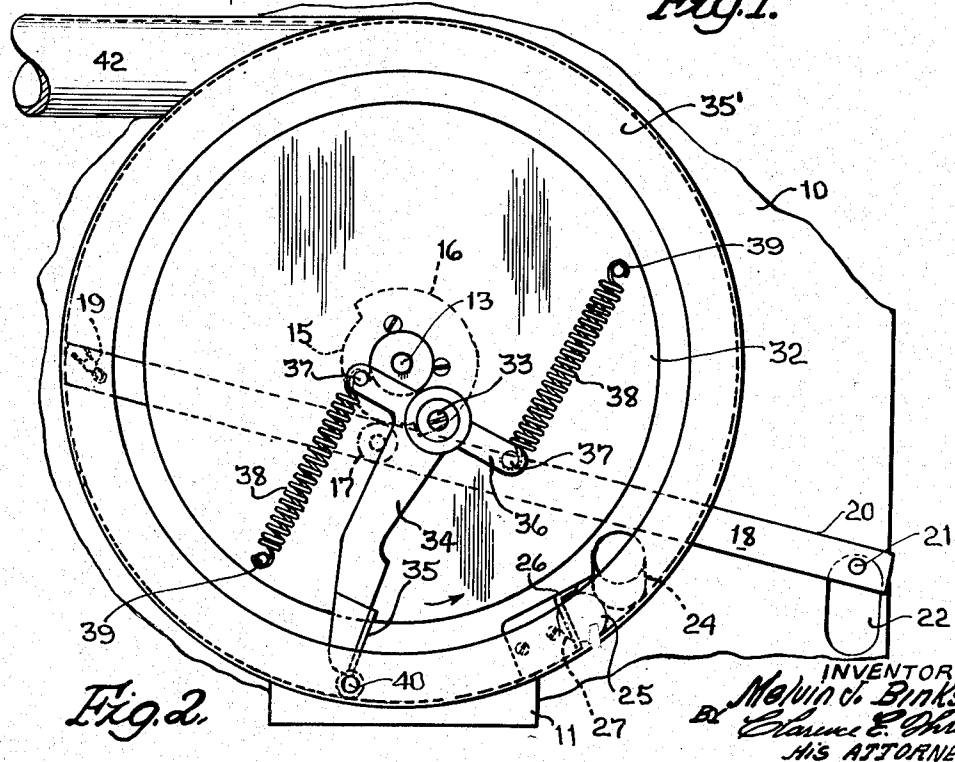


Fig. 2.

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Filed April 25, 1951 2 Sheets-Sheet 2

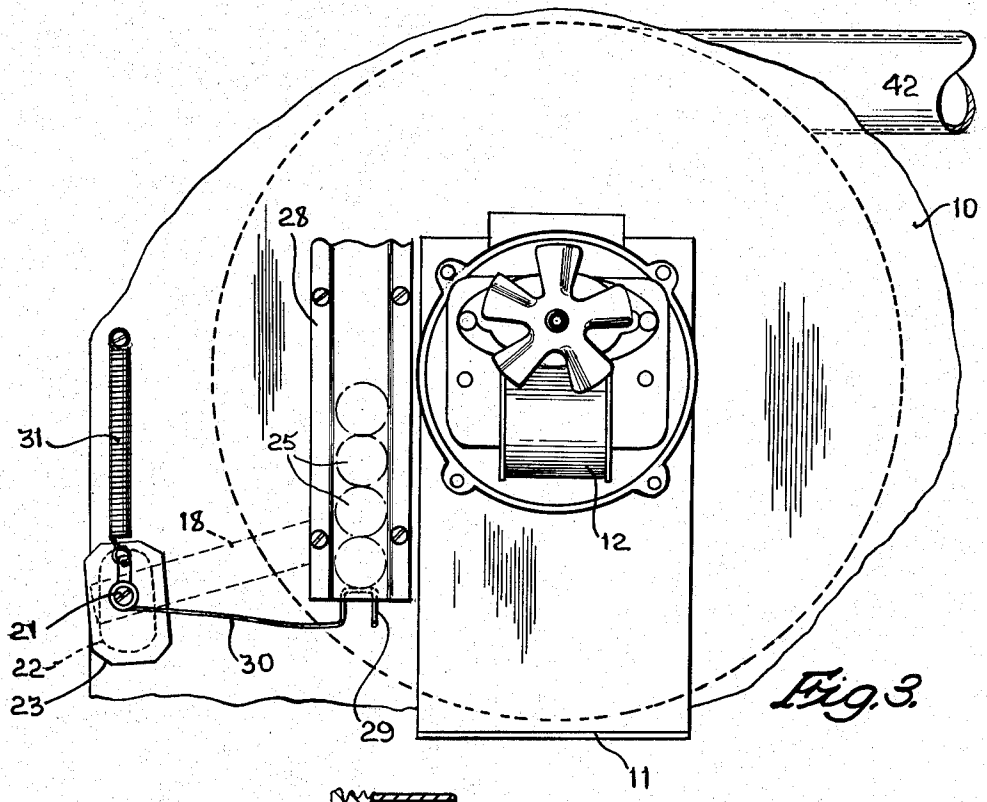


Fig. 3.

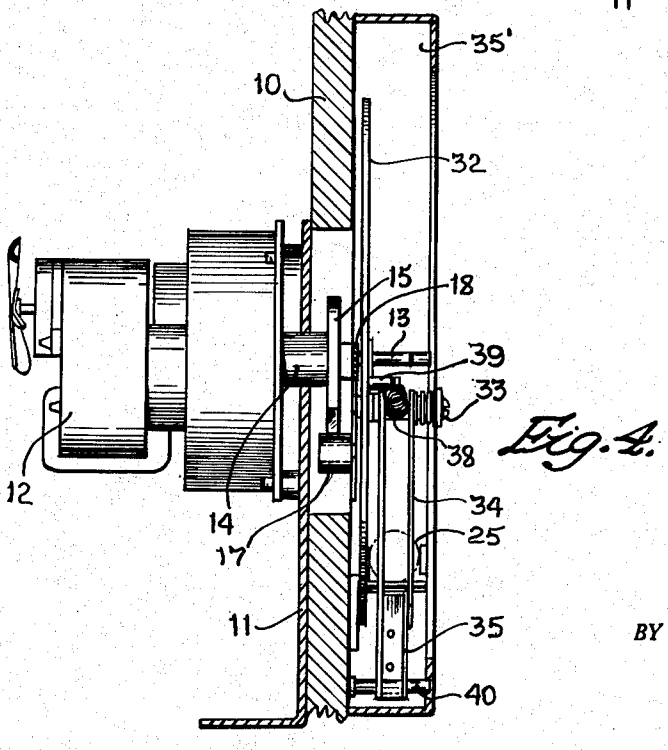


Fig. 4.

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UNITED STATES PATENT OFFICE

2,660,157

BALL PROJECTOR

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Application April 25, 1951, Serial No. 222,913

4 Claims. (Cl. 124—7)

1

My invention relates to ball projector for projecting a ball through a firing tube and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

Among the several objects of this invention is to provide a device of this character which is capable of successively projecting balls at a high rapidity thereby to simulate the effect of machine gun operation.

It is another object of this invention to accomplish the foregoing result by a device which is simple in construction, easy of operation, and one which comprises the minimum number of parts.

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 fragmentary side elevational view of a mounting structure showing my invention associated therewith;

Fig. 2 is a view similar to Fig. 1 but showing parts thereof in different positions;

Fig. 3 is a side elevational view of the reverse side of Fig. 1; and

Fig. 4 is a sectional detail view taken substantially on line 4—4 of Fig. 1.

It is contemplated that the preferred form of construction for accomplishing the several objects of my invention comprise a mounting structure 10 which may be a wall or partition of a cabinet or housing with which the device is associated.

Mounted on this wall 10 is a bracket structure 11 carrying a motor 12, preferably of the electrical type although the motor may, if desired, be spring-driven. The shaft 13 of this motor 12 is journaled in a suitable bearing 14. Fixed to this shaft for rotation therewith is a cam 15 having a hill 16 of substantial length. This hill 16 is adapted to have engagement with a roller 17 carried by an arm 18. One end portion of this arm 18 is pivoted as at 19 to the mounting structure 10. The opposite end portion 20 of this arm carries a pin 21 which projects through an elongated opening 22 formed in the mounting structure 10. On this pin 21 is an enlarged washer 23 which serves to prevent lateral displacement of the pin with respect to the opening 22.

Formed in the mounting structure 10 is a downwardly tapered opening 24 through which a

2

ball 25 is delivered to a ball seat 26 bifurcated so as to permit a portion 27 of the ball to be disposed beneath the seat for engagement with a striker arm hereinafter referred to. The arm 18 normally is positioned to permit a ball to pass through the delivery opening 24 from a feed tube 28 mounted on the mounting wall 10. Projecting into the bottom portion of the feed tube 28 is a blocking finger 29 formed as an integral part of a wire length 30 secured to the pin 21 as shown in Fig. 3. The arrangement is such that when the hill of the cam 16 is disposed from engagement with the roller 17, a spring 31 will pivot the arm 18 upwardly about its pivot connection to the mounting wall 10 to dispose the arm from blocking position with respect to the opening 24. In this position the blocking finger 29 is disposed in a position to block passage of balls from the feeding tube 28 to the opening 24. However, when the hill engages the roller 17 the arm 18 will be moved downwardly into blocking position as shown in Fig. 1 to block passage of a ball through the opening 24 to the seat 26. In this position of the arm 18 the blocking finger 29 is moved from ball blocking position to permit the lowermost ball in the tube 28 to gravitate into the opening 24 where it is held until released by the arm 18. The tube 28 may be of any length and may communicate with a suitable hopper (not shown) from which balls gravitate into the tube 28.

The means for projecting the ball from the seat 26 comprises a disc 32 mounted upon the shaft 13. Carried by this disc 32 adjacent and off-center with respect to the shaft 13, is a stud shaft 33. On this stud shaft 33 is mounted, for movement relative thereto, a striking finger 34. The striking end 35 of this finger 34 projects into and moves through a track 35' mounted on the wall 10. The width of the striking end 35 is sufficient to pass through the bifurcated ball seat 26.

Opposite the striking end 35 of the finger 34 are laterally extending arms 36 arranged in alignment with respect to each other. To the ends of these arms are secured, as at 37, springs 38. The opposite end portions of these springs 38 are secured as at 39 to the disc 32.

Spaced from the ball seat 26 and arranged in the path of the striking end 35 of the finger 34 is a laterally extending blocking pin 40. The arrangement is such that, as the disc 32 is rotated by rotation of the shaft 13, the striking end 35 of the finger 34 will engage the blocking pin 40, with the result that as the disc is rotated

the finger **34** will be momentarily held against rotation to place the springs **38** under tension as shown in Fig. 2. These springs will remain under tension until the striking end **35** rides off of the blocking pin **40** at which time the springs **38** will act upon the finger **34** and violently pivot the finger **34** into striking engagement with the ball **27** with such force as to drive the ball along the track **35'** to a position where it will pass through a firing tube **42** communicating with the track **35'** at the upper end thereof.

In target practicing apparatuses or in other amusement game apparatuses where it is desired to project successively balls at a target or other object, it is of importance that the projection of the balls be with substantial rapidity so as not to delay the playing of the apparatus and also to hold the attraction and amusement of the player of the apparatus. By the employment of a construction such as is herein described a projectile device is provided which will accomplish this object.

My improved projectile device may be mounted in a game apparatus in any approved manner such as, for example, upon a swivel support which will permit the device to be adjusted for aiming in various directions.

My projectile device is especially useful for employment in amusement game apparatuses.

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

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

1. A ball projector comprising a circular runway, a rotatable member arranged within and concentrically with respect to said runway, means for rotating said member, a striker pivotally carried by said member and rotatable therewith and extending radially therefrom and having an end portion movable through said runway, spring means arranged at right angles with respect to said striker for balancing said striker in one position with respect to said member, said striker at its point of pivotal connection with said member provided with oppositely related laterally extending arms arranged in substantially the same plane with respect to said spring means, a stationary ball seat arranged in said runway, a fixed blocking member arranged in said runway in advance position with respect to said ball seat for engagement with the end of said striker to pivot said arms out of the plane of said spring means to a position at substantially right angles thereto to place said spring means under tension during rotation of said rotatable member and to effect striking of said finger against a ball on said seat by said spring means when said end portion of said striker rides off said blocking member to project said ball from said seat through said runway.

2. A ball projector comprising a circular runway, a rotatable member arranged within and concentrically with respect to said runway, means for rotating said member, a striker pivotally carried by said member and rotatable therewith and extending radially therefrom and having an end portion movable through said runway, spring means arranged at right angles with respect to said striker for balancing said striker in one position with respect to said member, said striker at its point of pivotal connection with said member provided with oppositely related laterally extending arms arranged in substantially the same plane with respect to said spring means, a stationary ball seat arranged in said runway, a fixed blocking member arranged in said runway in advance position with respect to said ball seat for engagement with the end of said striker to pivot said arms out of the plane of said spring means to a position at substantially right angles thereto to place said spring means under tension during rotation of said rotatable member and to effect striking of said finger against a ball on said seat by said spring means when said end portion of said striker rides off said blocking member to project said ball from said seat through said runway, and a firing tube communicating with the runway and through which the projected ball is adapted to be projected from said runway.

3. A ball projector comprising a circular runway, a rotatable member arranged within and concentrically with respect to said runway, means for rotating said member, a striker pivotally carried by said member and rotatable therewith and extending radially therefrom and having an end portion movable through said runway, spring means arranged at right angles with respect to said striker for balancing said striker in one position with respect to said member, said striker at its point of pivotal connection with said member provided with oppositely related laterally extending arms arranged in substantially the same plane with respect to said spring means, a stationary ball seat arranged in said runway, a fixed blocking member arranged in said runway in advance position with respect to said ball seat for engagement with the end of said striker to pivot said arms out of the plane of said spring means to a position at substantially right angles thereto to place said spring means under tension during rotation of said rotatable member and to effect striking of said finger against a ball on said seat by said spring means when said end portion of said striker rides off said blocking member to project said ball from said seat through said runway, and means for successively delivering balls to said ball seat.

4. A ball projector comprising a circular runway, a rotatable member arranged within and concentrically with respect to said runway, means for rotating said member, a striker pivotally carried by said member and rotatable therewith and extending radially therefrom and having an end portion movable through said runway, spring means arranged at right angles with respect to said striker for balancing said striker in one position with respect to said member, said striker at its point of pivotal connection with said member provided with oppositely related laterally extending arms arranged in substantially the same plane with respect to said spring means, a stationary ball seat arranged in said runway, a fixed blocking member arranged in said runway in advance position with respect to said ball seat for engagement with the end of said striker to pivot said arms out of the plane of said spring means to a position at substantially right angles thereto to place said spring means under tension during rotation of said rotatable member and to effect

striking of said finger against a ball on said seat by said spring means when said end portion of said striker rides off said blocking member to project said ball from said seat through said runway, a firing tube communicating with the runway and through which the projected ball is adapted to be projected from said runway, and means for successively delivering balls to said ball seat.

MELVIN J. BINKS.

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