

A. B. FERGUSON.
 OBJECT THROWING MACHINE.
 APPLICATION FILED FEB. 25, 1915.

1,237,625.

Patented Aug. 21, 1917.
 3 SHEETS—SHEET 1.

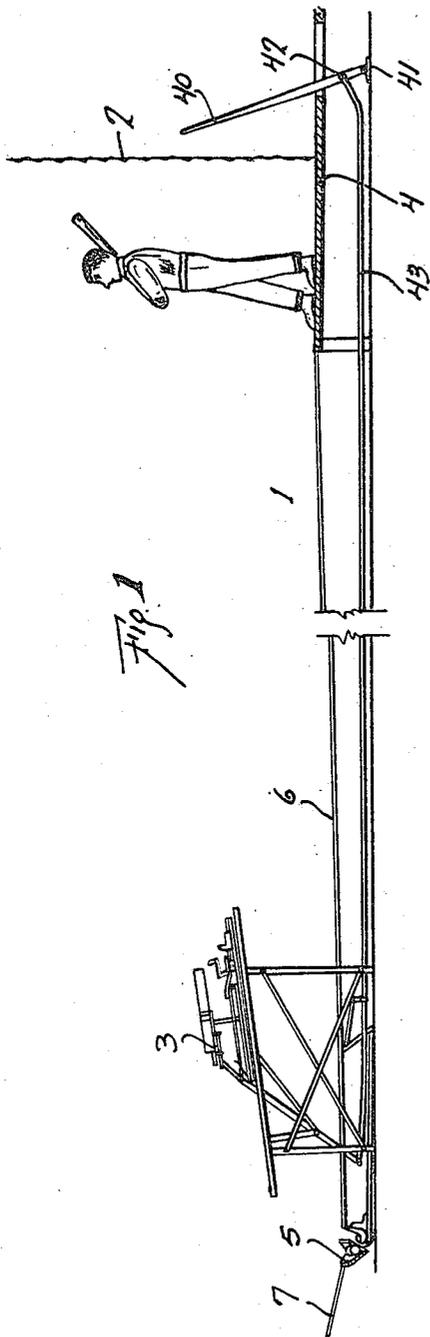


Fig. 1

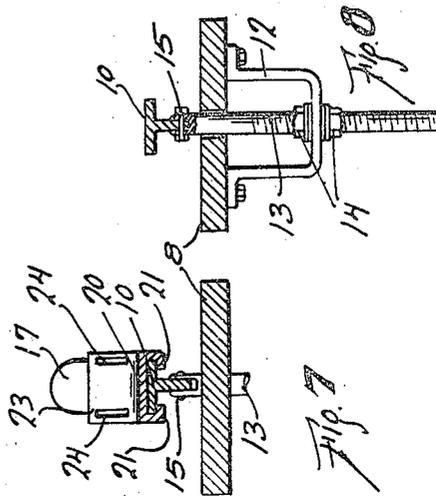


Fig. 7

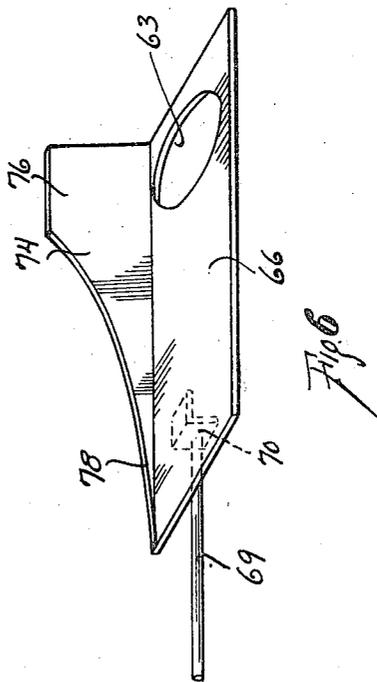


Fig. 6

Inventor

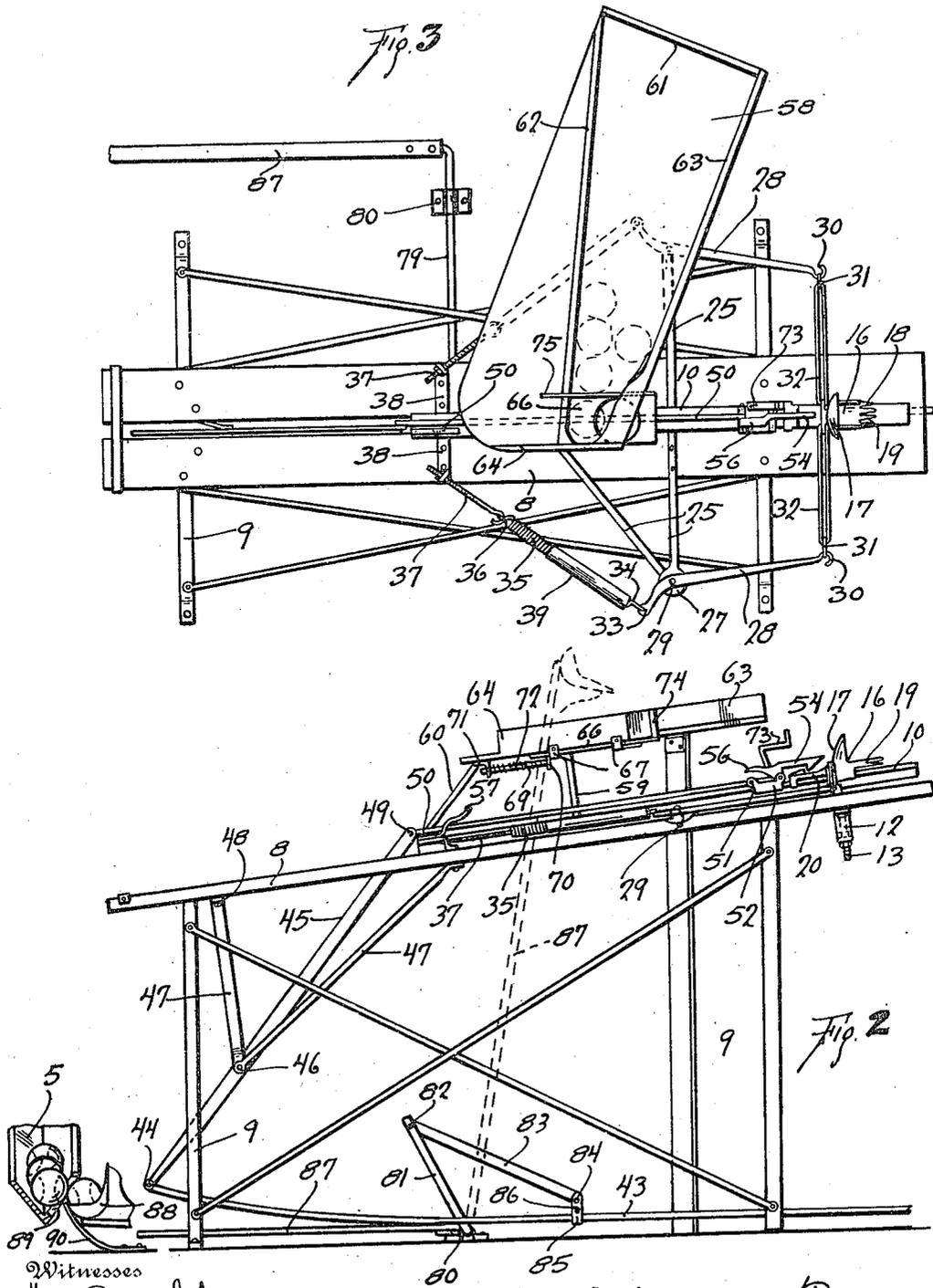
Witnesses
H. E. Scantling
Jesse Payne

By *Archibald Bruce Ferguson*

A. B. FERGUSON.
 OBJECT THROWING MACHINE.
 APPLICATION FILED FEB. 25, 1915.

Patented Aug. 21, 1917.
 3 SHEETS—SHEET 2.

1,237,625.



Witnesses
H. S. Seaman
Jesse Payne

Archibald Bruce Ferguson

A. B. FERGUSON.
 OBJECT THROWING MACHINE.
 APPLICATION FILED FEB. 25, 1915.

1,237,625.

Patented Aug. 21, 1917.

3 SHEETS—SHEET 3.

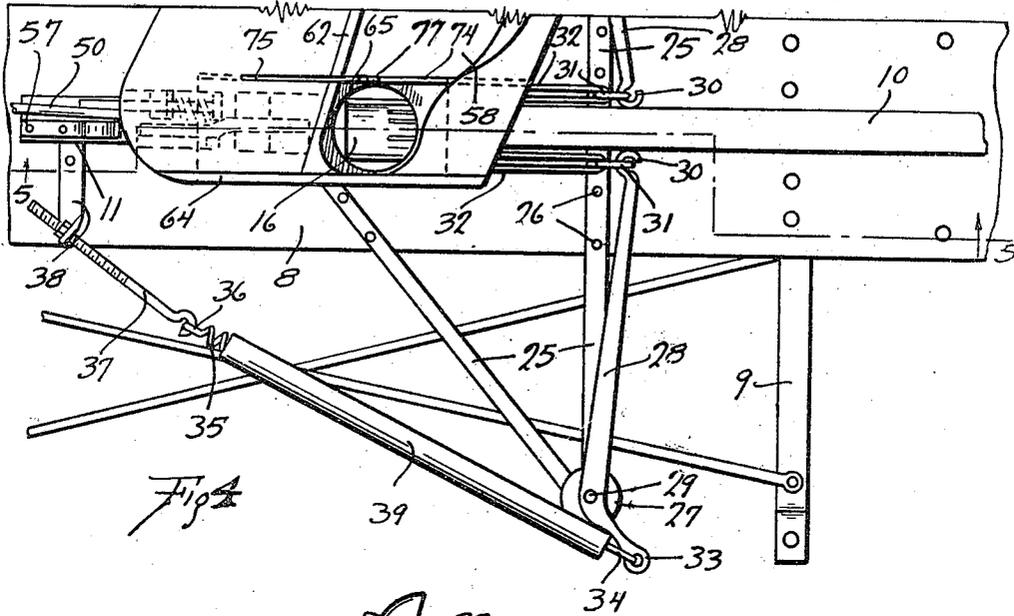


Fig. 4

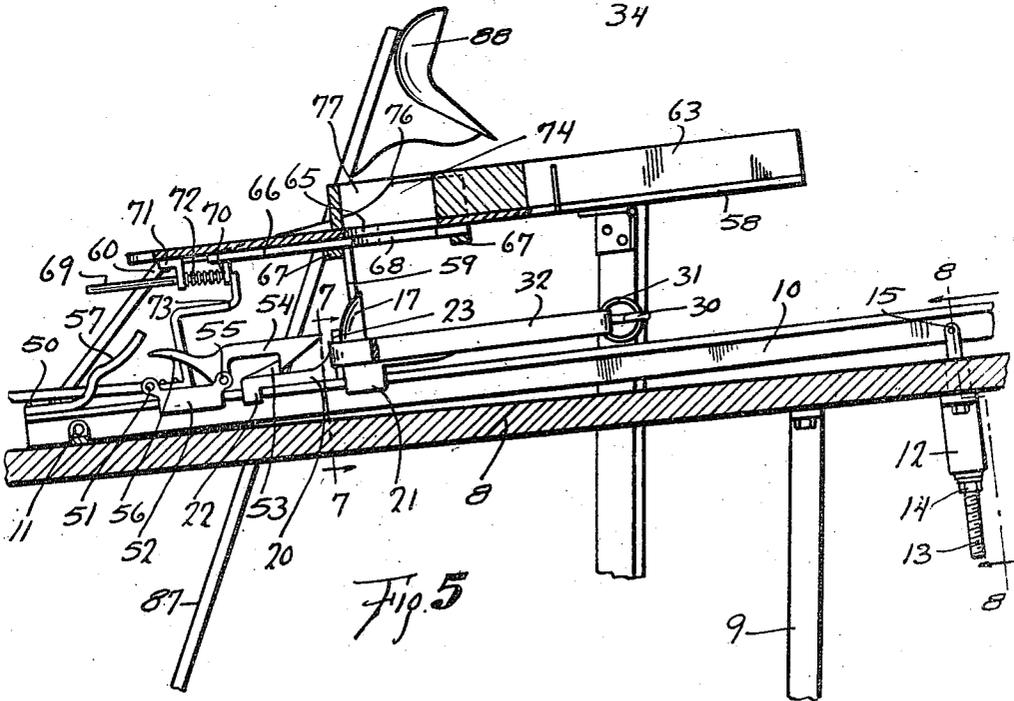


Fig. 5

Inventor

Witnesses
H. E. Scantlebury
Jesse Payne

Archibald Bruce Ferguson

UNITED STATES PATENT OFFICE.

ARCHIBALD BRUCE FERGUSON, OF SPOKANE, WASHINGTON, ASSIGNOR TO ARROW MANUFACTURING COMPANY, OF SPOKANE, WASHINGTON, A CORPORATION OF WASHINGTON.

OBJECT-THROWING MACHINE.

1,237,625.

Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed February 25, 1915. Serial No. 10,647.

To all whom it may concern:

Be it known that I, ARCHIBALD BRUCE FERGUSON, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Object-Throwing Machines, of which the following is a specification.

This invention relates to improvements in projectile throwing machines and has to do more particularly with machines of this class for use in connection with games such for instance as baseball, the device of my invention being used more particularly for practice batting purposes.

It is one of the objects of this invention to provide a throwing device which is linearly movable from a ball taking toward and to a ball discharging position.

A further object of the invention is to provide a reserve feed device for gravity delivery of one ball at a time to the throwing device, the reserve feed device holding a reserve quantity or number of balls whose discharge therefrom, one by one, is automatically controlled by movement of the throwing device.

A further object of the invention is to provide a supply device with a transfer means for automatically transferring baseballs or other game projectiles from the supply device to the reserve device, automatically, during operation of the throwing device.

A further object of the invention is to provide a ball throwing device which is capable of grasping the ball in such a manner as to curve the same when it is thrown.

Further objects and features of the invention will be more fully described in connection with the accompanying drawings, and will be more particularly pointed out in and by the appended claims.

In the drawings:—

Figure 1 is a side elevation, partly in section, showing the device of my invention on a reduced scale,

Fig. 2 is a view in side elevation on an enlarged scale showing the transfer device taking a ball from the supply device for delivery to the reserve device,

Fig. 3 is a plan view thereof with the parts in the position shown in Fig. 2.

Fig. 4 is an enlarged plan view of a portion of the reserve feed device and showing the throwing device in a receiving position with respect to the reserve feed device.

Fig. 5 is a sectional view on line 5—5 of Fig. 4,

Fig. 6 is a detached perspective view of a controlling slide for controlling delivery of balls from the reserve feed device to the ball throwing device,

Fig. 7 is a sectional view on line 7—7 of Fig. 5,

Fig. 8 is a sectional view on line 8—8 of Fig. 5.

Like characters of reference designate similar parts throughout the different figures of the drawings.

As illustrated, 1 designates a court provided with a stop screen 2 at one extremity thereof, the device of my invention, indicated as a whole at 3, being disposed at the other extremity. A platform 4 is incorporated in the structure and disposed adjacent the screen 2 and leading from the platform 4 to a delivery or supply trough 5, is an inclined run way 6 which is in the form of a flooring on which the balls arrested by the screen 2 rebound and roll backwardly into trough 5 by gravity. Trough 5 may be provided with an oppositely inclined feed board 7, delivering to the trough.

Referring more particularly to Figs. 2 to 5, 8 designates a supporting table mounted upon suitable uprights 9 and supported at an elevation with respect to the run way 6 and inclined upwardly toward the batting platform 4. Mounted upon the table 8 is a track 10 which is shown T-shaped in cross section. The track 10 is pivotally mounted on the table at 11 and I provide means for adjusting the track at the throwing point so as to vary the inclination of the track for the purpose of altering the trajectory of the ball and also to vary its elevation of delivery to the batter.

As shown, a U-shaped bracket 12 is mounted to depend from the table 8 and is bored to loosely receive a threaded rod 13 for adjustment therethrough. The rod 13 is not only adjusted but is held in adjusted positions by nuts 14 which are threaded on the rod and which engage opposite faces of the bracket 12, as will be seen by reference to

Fig. 8. The rod 13 projects through a suitable opening in the table 8 and is pivotally connected at 15 with the track 10.

Slidably mounted on the track 10 for linear reciprocating movement thereon is a ball throwing device comprising a trough like supporting portion 16 and a cupped backing 17, in which the ball is held and from which it is thrown. The supporting portion 16 terminates in bottom and laterally disposed marginally disposed fingers 18 and 19. The fingers 19, as well as the fingers 18, are bendable for the purpose of grasping the ball with unequal pressure at different peripheral points so as to impart a curved path to the ball when the same is thrown, dependent upon the flexure of the fingers. Thus it will be seen that I not only can throw the ball, with my improved machine, at different elevations, but I can also impart different characters of curvature thereto.

The throwing device includes a carriage 20 which is slidable on track 10 and which is provided with underhung lips 21 and 22 to hold the carriage upon track 10. Disposed rearwardly of the cup shaped back 17, is an upright 23 having marginally slotted portions 24.

The improved actuating means for the throwing device is shown in the form of the following specific construction.

Oppositely disposed pivot brackets 25 extend in opposite directions from their points of mount 26, on the table 8, and terminates in pivot ends 27. Arms 28 are mounted on the ends 27 by pivots 29, at points between the ends of said arms and in such a manner as to dispose the shorter ends outwardly and the longer ends inwardly. The inner or longer ends terminate in hooks 30 provided with rings 31. Endless straps 32 are connected with rings 31 and with the slotted portions 24. The outer ends of said arms 28 terminate in eyes 33 to which the ends 34 of springs 35, are connected. The remaining ends 36, of said springs, are connected with adjusting rods 37 having threaded connection with brackets 38. If desired, the springs 35 may be covered by rubber hose or like flexible tubular material as indicated at 39.

Now it will be clear that when the carriage 20 is retracted to the position shown in Figs. 4 and 5, the springs 35 will be under tension, and after the carriage has been released, the springs 35 will project the latter into the position shown in Figs. 3 and 4, to throw the ball.

I will next describe the means for setting or retracting the carriage into a ball receiving position and thereafter releasing the carriage for actuation by springs 35.

An operating lever 40 is pivotally mounted at 41 and is connected at 42 with a shifting rod 43. The remaining end of said rod

43 is connected at 44 with one end of a lever 45. Lever 45 is pivoted at 46 to a suitable brace comprising brace rods 47 herein shown connected with the table 8, at 48. The remaining end of lever 45 is connected at 49 with a link or rod 50. The remaining end of said link rod 50 is connected at 51 with a detent carriage 52 which is slidable upon track 10, independently of the ball device carriage 20. The latter is shown provided with a latch like detent lug 53 over which a detent 54 is adapted to project, into the position shown in Fig. 5 for connecting said carriages during retractive movement. Detent 54 is pivoted at 55 to detent carriage 52 and is provided with a rearwardly projecting releasing end 56.

Now when the ball carriage is in the position shown in Fig. 3, and it is desired to retract said carriage to a set position, lever 40 is shifted to the left of Fig. 1 to engage detent 54 with lug 53 and then lever 40 is shifted to the right of Fig. 1 to retract carriage 20. A preferably fixed releaser 57 is disposed in the path of the releasing end 56, for engagement thereby, to release the detent from engagement with lug 53 after the carriage has been retracted to a predetermined point, such release freeing the carriage 20 for forward movement under the action of springs 35.

I will next describe the reserve feed device for gravity delivery to the ball throwing device of the base ball or other objects to be thrown.

In the specific form, I have shown a receiver comprising a bottom board 58 disposed on an incline above table 8 and mounted upon supports 59 and 60. The receiver is provided with inclosing sides 61, 62, 63 and 64, and near one end of the receiver is an opening 65 for delivery therethrough of the baseballs. A sliding closure 66 is mounted in supports 67 to be reciprocated abreast of the bottom of the receiver board 58, and said sliding closure is provided with an opening 68 for registry with opening 65. An operating rod 69 is mounted upon the sliding closure at 70, and said rod extends through a bearing 71 mounted on the bottom board 58. An expansively acting spring 72 is interposed between 71 and 70 to normally shift the sliding closure in a forward direction to close opening 65. Rod mount 70, is adapted for engagement with a retractor 73, mounted upon detent carriage 52, so as to retract said sliding closure into the position shown in Fig. 5, when the ball carrying carriage 20 is being moved toward a set position to be tripped and it will be seen that the sliding closure 66 will have been retracted into a ball delivery position prior to release of detent 54 from lug 53 for actuation of the ball carrying carriage 20. This insures delivery by gravity of a

ball into the carriage 20 prior to release of the latter. The inclination of the reserve receiver is downwardly from 61 to 64 so that the ball therein will gravitate toward opening 65. In order to prevent more than one ball from entering said opening, at a time, the sliding closure 66 is provided with a ball arrester 74 which projects upwardly through a suitable slot 75, in bottom board 58, the highest point 76 serving to close passage 77 when the closure is in the position shown in Fig. 5, and the reduced or lower portion 78 serving to open said passage when the slide is in the position shown in Fig. 2. Rod mount 70 will act as a stop against the rearmost bearing strap 67 to limit forward movement of the slide. It will be seen that the receiver is capable of holding a reserve number of balls so that as balls are fed therefrom others will automatically take the place of the displaced balls.

I will next describe the transferring means for transferring balls from the supply device or trough 5 to the reserve receiver.

A rock shaft 79 is mounted in suitable bearings 80 and is provided with an arm 81 which is connected at 82 with a link 83, at one end of the latter. The other end of said link 83 is connected at 84 with a clip 85 which is adjustable on the operating rod 43 by means of a screw 86. This adjustment permits of readily setting the transfer device in the desired timed operative relation with rod 43. Rock shaft 79 is provided with a transfer arm 87 which is provided on its one end with a ball carrying cup 88. Trough 5 is provided with an opening 89 of sufficient size to permit of passage therethrough of one ball at a time. Means such as a spring 90, normally acts to prevent passage of the lowermost ball through said opening 89, the trough 5 being inclined for gravitation of the balls therein toward said opening 89. Now when the rod 43 is moved to the left the carriage 52 is moved in the same direction to engage the ball carriage 20, the transfer arm 87 then being moved from the dotted-line position to the full-line position of Fig. 2, when the cup 88 will engage the spring 90, allowing the latter to retract and ball to be discharged through the opening 89 into the cup 88. The presence of the ball in the cup however will hold the next ball against discharge from trough 5 until cup 88 has been elevated. Immediately upon elevation of cup 88, spring 90 will follow and return to a normal position and prevent the next ball from dropping out through opening 89. When the detent carriage is moved into the position shown in Fig. 5, the transfer arm 88 will be moved into the delivery position shown in this figure and will deliver its balls to the re-

ceiver for reserved balls. Thus as each ball is discharged from the reserve receiver, the supply will be replenished by the transfer mechanism. Furthermore, as each thrown ball strikes the screen 2, it will rebound and roll down the run way 6, by gravity, into supply trough 5.

It is believed that the device of my invention will be wholly understood from the foregoing description and while I have herein shown and described one specific form of my invention, I do not wish to be limited thereto except for such limitations as the claims may import.

I claim:—

1. In an object throwing mechanism, a track bar, means for adjusting said bar into different positions, an object throwing carriage, a trip carriage mechanism slidable on said bar and having means for engagement with said throwing carriage to retract the latter, and automatically acting means for engagement with said trip carriage mechanism to release said throwing carriage means upon retraction of the latter to a predetermined point, substantially as described.

2. In an object throwing mechanism a track-bar, an object-throwing carriage, a trip-carriage mechanism slidable on said track-bar, and having means for engagement with said object throwing carriage to retract the latter, and automatically actuating means for engagement with said trip-carriage mechanism to release said object throwing carriage means upon retraction of the latter to a predetermined point.

3. In an object throwing mechanism, a track-bar, a detent carriage slidable on said track-bar, a slide having an object-receiving opening, an object throwing carriage, mounted upon said track-bar, a retractor on said detent-carriage for moving said slide into a ball or object delivery position, said detent carriage having means for engagement with said object-throwing carriage to retract the latter, and automatically actuating means for engagement with said trip-carriage mechanism to release said object-throwing carriage means upon retraction of the latter to a predetermined point.

4. In an object throwing mechanism, a track-bar, an object-throwing carriage and a trip-carriage slidably mounted on the track-bar, a spring controlled slide having an object receiving opening, a depending member carried by said slide, an upwardly extended retractor carried by said trip-carriage adapted to engage said depending member, connecting and releasing elements carried by said trip-carriage and said object-throwing carriage, means for retracting said carriages, and means for actuating said releasing elements to release said object-throwing carriage upon retraction thereof

to a predetermined point upon said track-bar.

5 In an object throwing mechanism, a track-bar, an object-throwing carriage
10 mounted upon said track-bar and having a lug, a trip-carriage slidable upon said track-bar and having a detent engaging said lug, a spring returned slidable member having an object-receiving opening, said trip-carriage being equipped with a retractor arranged to engage and move said slidable member into its object delivery position, and automatically actuating means for engagement with said trip-carriage mechanism to
15 release said object throwing carriage-means upon retraction of the carriage to a predetermined point.

6. In a ball throwing machine, ball holding and throwing means comprising bend-
20 able fingers for engagement with varying

pressures of contact with respect to different spherical portions of the ball to curve the latter, substantially as described.

7. In a ball throwing machine, a ball supply trough provided with an opening, a
25 spring normally preventing discharge of balls through said opening, a ball throwing means, a reserve receiver for delivering balls to said throwing means, and transfer means for transferring the balls from said supply
30 trough to said reserve receiver and co-acting with said spring to receive balls from said trough, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ARCHIBALD BRUCE FERGUSON.

Witnesses:

J. J. LAVIN,
STELLA LOMBARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."