July 7, 1942. E. H. SERRANO 2,288,974

BASEBALL PROJECTING MACHINE

Filed Sept. 30, 1939 2 Sheets-Sheet 1

Fig. 6.

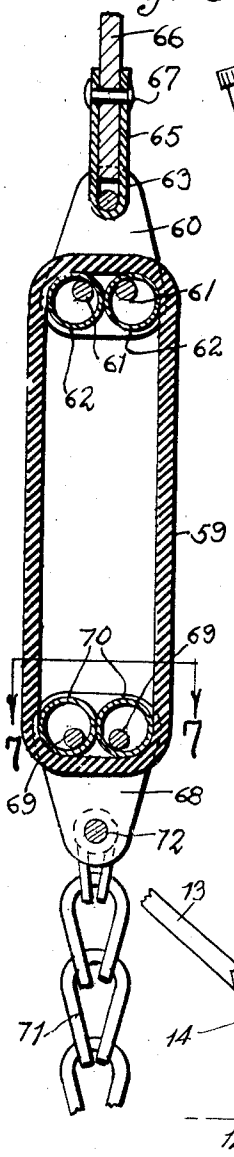


Fig. 1.

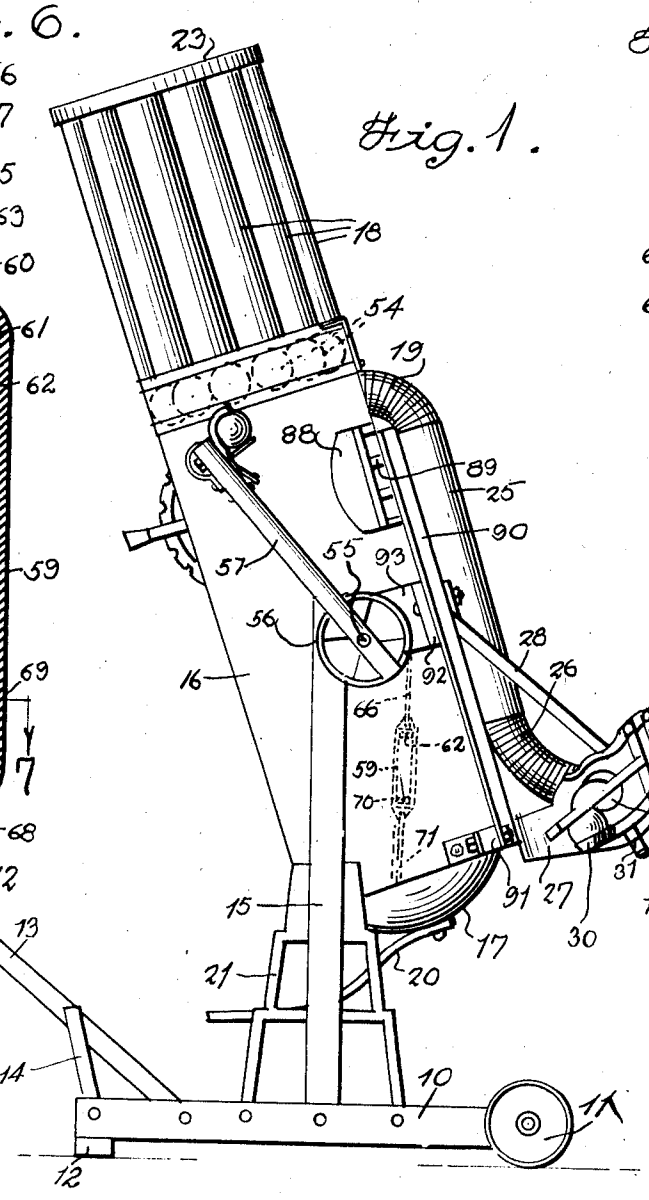


Fig. 5.

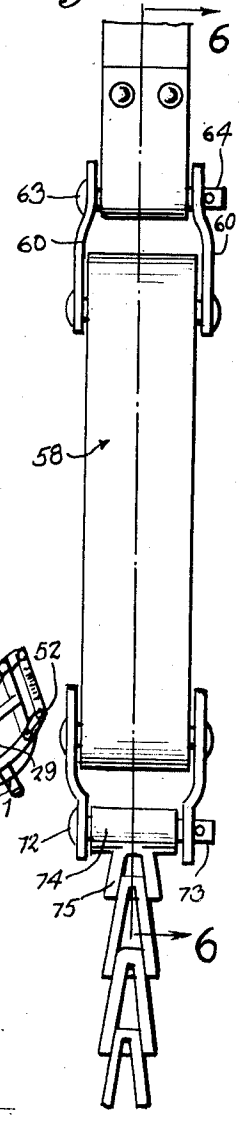
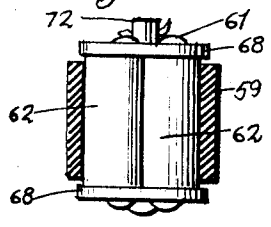


Fig. 7.



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July 7, 1942. E. H. SERRANO 2,288,974

BASEBALL PROJECTING MACHINE

Filed Sept. 30, 1939 2 Sheets-Sheet 2

Fig. 2.

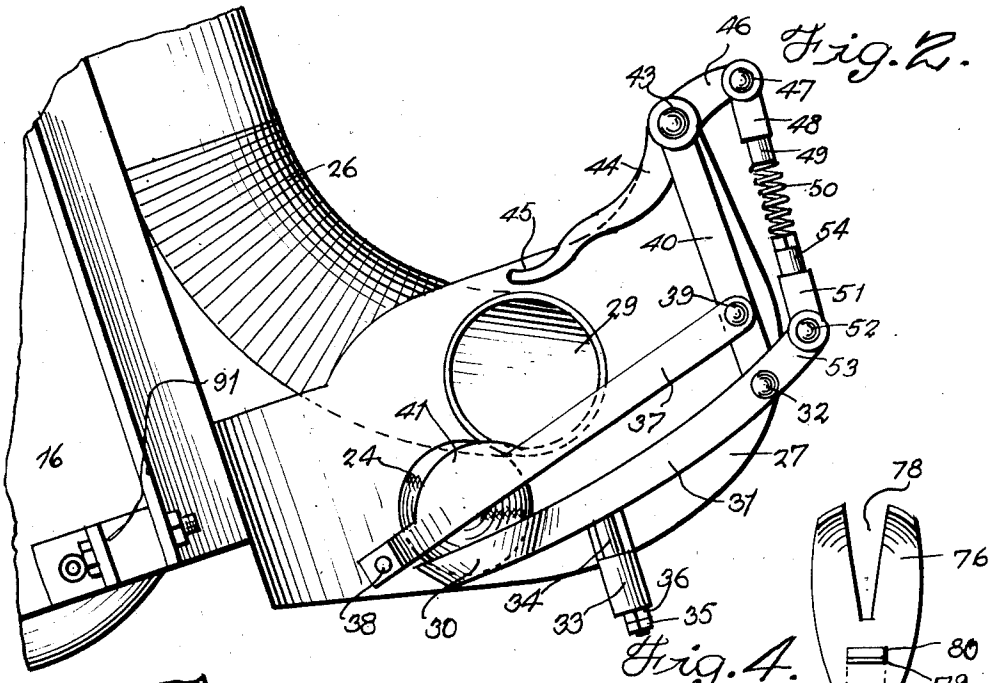


Fig. 4.

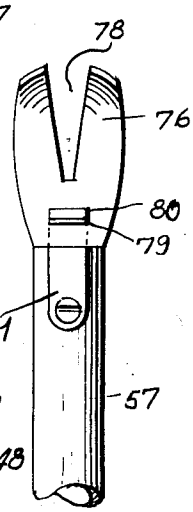


Fig. 3.

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BASEBALL PROJECTING MACHINE

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8 Claims. (Cl. 124—6)

This invention relates to improvements in baseball projecting machines.

The primary object of this invention is to project a baseball or the like by means of an oscillatory arm having gripping means for picking up the ball from a hopper feed device while the projecting arm is at the end of its wind-up stroke.

A further object of this invention is to provide a machine of the above-mentioned character in which the balls are automatically fed to a ball receiver and gripper adapted to hold the ball in position for being engaged by the projecting arm, which positioning means is released by the contacting movement of the projecting arm therewith.

A still further object of this invention is to provide a baseball projecting machine in which the balls are fed automatically to a releasable gripper capable of being swung into and out of the path of the projecting arm during the end of its oscillating stroke.

A still further object of this invention is to provide a novel spring construction adapted to cause the rotation of the projecting arm during its throwing motion and to provide a ball throwing machine in which the ball is given a curve according to the random position of the seam when picked up by the projecting arm.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein,

Figure 1 is a side elevational view of the ball projecting machine embodying the invention;

Figure 2 is an enlarged fragmentary side elevational view of the ball receiver illustrating the manner in which the ball is dispensed into position for being picked up by the projecting arm;

Figure 3 is an enlarged fragmentary side elevational view of the ball receiver illustrating the projecting arm at the termination of its wind-up stroke and illustrating the manner in which the ball is picked up by the gripping arms carried by the projecting arm;

Figure 4 is an enlarged fragmentary top elevational view of the ball projecting arm illustrating the gripping fingers on the end thereof;

Figure 5 is an enlarged fragmentary plan view of the spring device for rotating the projecting arm during its throwing stroke;

Figure 6 is a vertical cross-sectional view taken on line 6—6 of Figure 5, looking in the direction of the arrows and illustrating in detail a spring device; and

Figure 7 is a horizontal cross-sectional view taken on line 7—7 of Figure 6, looking in the direction of the arrows, and further illustrating in detail the construction of the spring device.

In the drawings, wherein for the purpose of illustrating the invention and wherein like reference characters will be employed to designate like parts throughout the same, the reference character 10 will be employed to generally designate a base including a rectangular frame supported by wheels 11 at one end and a ground engaging rest 12 at the other end. A pair of parallel bars 13 are secured to one end of the wheeled frame 10 forming a handle and are braced by side bars 14.

Secured to the base 10 is a pair of vertical standards 15 between the upper ends of which is pivotally mounted a cylindrical casing 16 having the lower end closed by a convex wall 17 while the upper end is provided with a series of ball receiving racks 18 capable of being rotated to bring a single ball into registry with an opening communicating with the elbow 19. The lower convex wall 17 is provided with a curved arm 20 which may extend through a suitable locking device carried by the framework 21 of the vertical standards 15. The upper ends of the ball receiving racks 18 are closed by a cover 23 detachably held in place so that the balls 24 may be inserted in the tubular racks 18.

After the balls have been fed to the elbow 19 at interrupted intervals, they pass downwardly through a tube 25 on the lower end of which is provided an elbow 26 connected to a vertical plate 27 secured to the cylindrical casing 16 by means of a brace bar 28. An opening 29 is formed in the vertical plate 27 for allowing the passage of the ball 24 therethrough so that they will come to rest on a ball receiving member 30 pivotally attached by means of the arm 31 to the vertical plate 27 as at 32. Formed on the plate 27 is a boss 33 in which is operably mounted a spring pressed plunger 34 having its opposite end projecting through the boss 33 and being threaded as at 35 for receiving retaining nuts 36.

A bowed ball guard 37 has one of its ends as at 38 secured to the vertical plate 27 while the opposite end is secured by means of a rivet 39 to a vertical bar 40 which passes therethrough and has its end anchored in the vertical plate 27. An enlarged sector-shaped portion 41 is formed on the guard bar 37 and is adapted to engage the ball 24 to retain the same in position while being moved upwardly to its pick-up position.

Pivotally secured to the upper end of the bar 40 as by means of a pivot pin 43 is a kick lever 44 having one end curved slightly as at 45 for being engaged by the ball projecting arm which will be hereinafter more fully described. An extension 46 formed on the kick lever 44 has pivoted to its end as at 47 a link 48 having a reduced portion 49 for receiving one end of a coil spring 50. The opposite end of the coil spring 50 engages a link 51 pivoted as at 52 to an extension 53 formed on the ball receiver 31. The link 51 is reduced as at 54 for the purpose of anchoring the spring 50 in place.

Extending through the cylindrical casing 16 as at 55 is a drive shaft on the end of which is provided an escapement wheel 56 to which is attached a ball throwing or projecting arm 57.

The shaft 55 and escapement wheel 56 are operated in substantially the same manner as shown in the Tennis practice machine, patented October 13, 1936, No. 2,057,599 and the escapement wheel 56 and projecting arm 57 are rotated in an anti-clockwise direction by a motor until the arm 57 reaches the end of its wind-up stroke adjacent the ball receiver 30, at which time a clutch disengages the motor from the shaft 55 and escapement wheel 56 to allow the spring device 58 to rotate the projecting arm 57 in a clockwise direction.

The spring device 58 comprises an elastic band 59, one end of which is provided with a pair of triangular plates 60 having transverse pins 61 looped through the rubber band 59. Floating cylinders 62 are mounted on the transverse pins 61 and present a larger curve surface for the inner wall of the elastic band. The opposite end of the triangular plate 60 is provided with a transverse pin 63 held in place by a cotter key 64 and said pin 63 extends through a strap loop 65 attached to one end of a strap 66 by means of rivets 67.

The strap 66 is passed around a pulley carried by the shaft 55 as shown in Figure 1 in dotted lines, while the opposite end of the elastic strap 59 is anchored within the cylindrical casing 16 by means of a chain or other fastening means including a pair of opposed triangular plates 68 having transverse pins 69 which extend through the elastic band 59 similar to the pins 61. Floating cylinders 70 are mounted on the transverse pins 69 and engage the inner wall of the elastic band 59 to present a larger curved surface therefor. A chain 71 has its end connected to a transverse pin 72, held in place by a cotter key 73 extending between the triangular plate 68 and pivotally mounted on the transverse pin 72 is a bushing 74 having a chain link 75 for coupling with the chain 71. As mentioned above, the chain 71 may be anchored in an adjustable manner to the framework supporting the mechanism within the interior of the cylindrical casing 16.

Mounted on the free end of the projecting arm 57 is a ball gripping claw 76 having a bifurcated portion 78 and said claw 76 is curved to conform to the curvature of the ball 24. Cooperating with the claw 76 is a spring jaw 79 extending through an opening 80 in the claw and fulcrumed therein. The spring finger 79 is adapted to engage the ball 24 as shown in Figure 3 and the opposite end of the spring finger 79 as at 81 projects rearwardly from the end of the projecting arm 57 where it is connected to a bolt 82 extending through the projecting arm and forming a guide for the free swinging end 81. A coil spring 83 encircles the bolt 82 and has one end engaging the projecting arm while the opposite end engages the free swinging end 81 of the gripping finger 79.

Also secured to the free end of the projecting arm 57 is a leaf spring 84 by means of a bolt 85 and nut 86 and the free end of the leaf spring 84 is received in a notch 87 formed in the extreme end of the projecting arm 57 so that said leaf spring 84 will engage the free end 45 of the kick lever 44 at the end of its stroke in a counter-clockwise direction to project one of the balls 24 into position between the claw 76 and gripping finger 79. As stated, anti-clockwise swinging movement imparted to the spring arm 57 causes the spring 84 carried thereby to strike the kick lever 44 to move it on the pivot 43 and with the tensioned link connection between the levers 44 and 31, the latter is moved upon its pivotal mounting 32 to cause the inner end carrying the ball supporting cup 30 with the ball 24 therein to be moved upwardly and forcibly placing the ball 24 into engagement with the fingers 79 and claw 76 of the projecting arm. After the ball has been projected in position by means of the upward movement of the receiver lever 31, the shaft 55 is released from the motor drive so that it may be rotated in the opposite direction by means of the spring device 58. Rotation of the projecting arm 57 in a clockwise position by means of the spring device 58 imparts centrifugal force to the ball 24 which force is adapted to project the ball when the projecting arm 57 engages a buffer 88 supported by a suitable bracket 89.

An angle bar 90 is secured to the cylindrical casing 16 as at 91 and 92 for supporting the shaft bracket 93 and the buffer bracket 89.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the sub-joined claims.

I claim:

1. A ball projecting machine comprising a hopper for receiving balls in stacked relation, a ball receiver, a conduit connection between the hopper and ball receiver for singly delivering balls to the receiver, and a projecting arm pivotally carried by the machine and having ball gripping fingers for picking the balls out of the receiver and projecting the same at the desired trajectory, said receiver comprising a pair of superposed and vertically spaced substantially horizontal levers having a resilient connection at their outer ends with the inner end of the lower lever constituting a ball support and the inner end of the upper lever being positioned for operative engagement by said projecting arm whereby the lower ball supporting lever is pivotally moved for placing a ball supported thereon into gripping engagement with the finger carried by the projecting arm.

2. A ball projecting machine comprising a hopper for receiving balls in stacked relation, a ball receiver, a conduit connection between the hopper and ball receiver for singly delivering balls to the receiver, and a projecting arm pivotally carried by the machine and having ball gripping fingers for picking the balls out of the receiver and projecting the same at the desired trajectory, said receiver comprising a pair of superposed and vertically spaced substantially parallel levers having a resilient connection at their outer ends with the inner end of the lower lever constitut-

ing a ball support and the inner end of the upper lever being positioned for operative engagement by said projecting arm whereby the lower ball supporting lever is pivotally moved for placing a ball supported thereon into gripping engagement with the fingers carried by the projecting arm, said resilient connection between corresponding ends being operative to cushion the transfer movement of the ball from the supporting lever to the gripping fingers of the projecting arm.

3. A ball projecting machine as specified in claim 1 wherein the projecting arm swings in a counterclockwise direction toward the ball receiver for receiving a ball with the lower lever of the ball receiver being normally disposed out of such path of movement of the projecting arm, and said lower lever adapted to be moved into the clockwise path of movement of said projecting arm when the projecting arm is engaged with the upper lever of said ball receiver.

4. A ball projecting machine as specified in claim 1, wherein the ball gripping fingers are tensioned and laterally extend from the outer end of the projecting arm and said ball supporting lever being moved by said projecting arm to positively place a ball thereon within the gripping fingers.

5. A ball projecting machine comprising a hopper for receiving balls in stacked relation, a ball receiver, a conduit connection between the hopper and ball receiver for singly delivering balls to the receiver, and a projecting arm swingingly carried by the machine and having a ball gripping end for picking the ball out of the receiver and projecting the same, said receiver comprising a pair of superposed and vertically spaced substantially parallel pivoted levers with the upper lever having its inner end constantly in the path of movement of the ball gripping end of the projecting arm and operative connections between the outer ends of said levers whereby a ball supported on the inner end of the lower lever will be moved by said other lever into positive griping engagement with the ball gripping end of the projecting arm upon movement of said levers by the projecting arm.

6. A ball projecting machine as specified in claim 5, wherein the connection between said levers comprises a resilient element to cushion movement of the lever supporting the ball toward the projecting arm.

7. A ball projecting machine as specified in claim 5, wherein the connection between said levers comprises a resilient element to cushion movement of the lever supporting the ball toward the projecting arm, and a spring device carried by the projecting arm for cushioning its engagement with the inner end of the upper lever.

8. A ball projecting machine as specified in claim 5, wherein the connection between said levers comprises a resilient element to cushion movement of the lever supporting the ball toward the projecting arm, and a guide arm associated with the ball supporting arm of the ball receiver for retaining the ball on the ball supporting lever prior to movement of the ball supporting lever toward the projecting arm.

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