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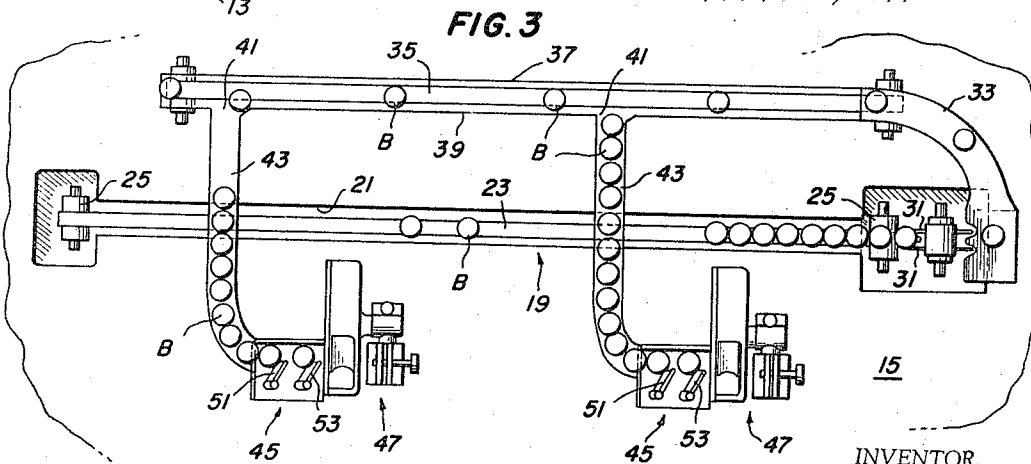
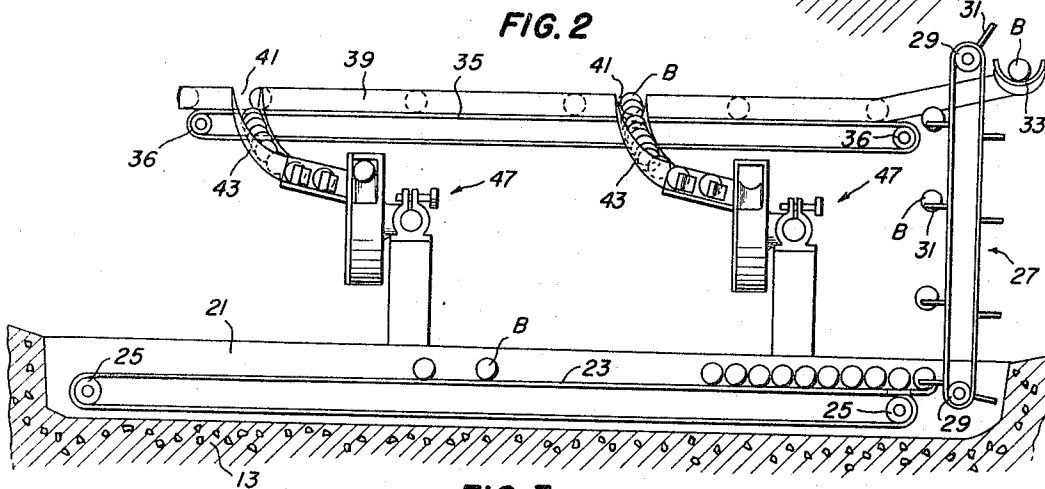
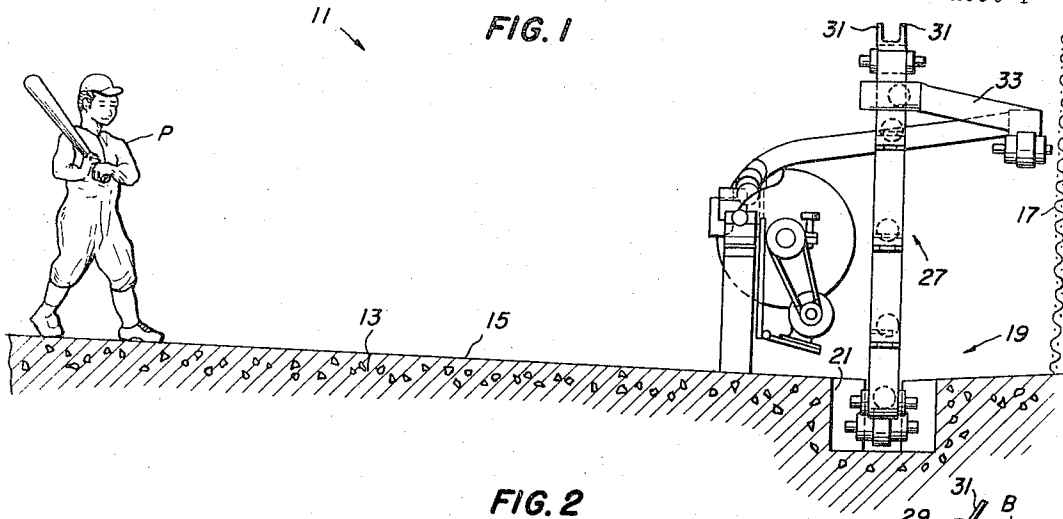
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BASEBALL BATTING PRACTICE RANGE WITH BALL RETURN MEANS

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2 Sheets-Sheet 1



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BASEBALL BATTING PRACTICE RANGE WITH BALL RETURN MEANS

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The present invention relates to a range for baseball batting practice, and particularly relates to the automatic mechanisms of such a range for automatically pitching the baseballs and for collecting and feeding the batted baseballs into the pitching mechanisms.

Thus, one of the objects of the present invention is to provide an automatic baseball batting practice range which is adapted to be actuated by the deposit of money in a coin-operated box and which is otherwise entirely automatic in the pitching and the subsequent collecting of the baseballs.

A further object is to provide a unique baseball pitching machine which trains the batter to keep his eye on the ball rather than on the arm of the pitcher or the machine.

A further object is to provide such a machine which does not have pitching arms as in previous machines of this type, but rather has a wheel which rolls the balls against a cylindrical surface and releases the balls without distracting the batter.

A further object is to provide such a machine which is versatile and can be set to throw any type of ball, as, for example, any type of curves, fly balls and ground balls.

A further object is generally to improve the design and construction of baseball batting practice ranges.

The means by which the foregoing and other objects of the present invention are accomplished and the manner of their accomplishment will be readily understood from the following specification upon reference to the accompanying drawings, in which:

FIG. 1 is a somewhat schematic longitudinal sectional view through the range of the present invention, with portions shown in elevation, and showing a batter in position to receive a ball from the pitching machine.

FIG. 2 is a transverse sectional view through the range of FIG. 1 and showing portions in elevation.

FIG. 3 is a top plan view of a portion of the range of FIG. 1.

FIG. 4 is a front elevational view of one of the pitching machines, showing a portion of the feeding mechanism.

FIG. 5 is a side elevational view of the machine of FIG. 4.

FIG. 6 is an enlarged fragmentary sectional view taken as on the line VI-VI of FIG. 5.

FIG. 7 is a top plan view of the machine of FIG. 5.

FIGS. 8-11 are diagrammatic views showing various settings of the pitching machine, with FIGS. 8 and 9 being side views and FIGS. 10 and 11 being front views.

FIG. 12 is a somewhat diagrammatic view showing portions of the actuating mechanism.

Referring now to the drawings in which the various parts are indicated by numerals, the batting range 11 of the present invention includes a foundation 13, preferably of concrete or the like, having an upper surface 15 upon which the batter, as batter P shown in FIG. 1, stands and which supports the other mechanisms of the batting range. A screen 17 or the like, only a portion of which is shown in FIG. 1, preferably is provided around foundation 13 in a well-known manner in order to keep the balls B from leaving the batting range. An accumulating area 19 for the balls B is provided in foundation 13 and depressed from upper surface 15. Accumulating area 19 preferably includes a trench 21 extending transverse of the batting range 11. Upper surface 15 is inclined to accumulating area 19 whereby the balls B will roll into

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trench 21 after being batted. A first continuous conveyor 23 is provided in trench 21 and extends over spaced rollers 25. Conveyor 23 is driven in a suitable well-known manner by suitable means, not shown, so that the upper flight of the conveyor moves to the right, as viewed in FIGS. 2 and 3, to carry the balls B towards one side of the batting range 11.

A vertical transfer conveyor 27, which is also preferably a continuous conveyor and extends over spaced rollers 29, is provided at the end of conveyor 23 to receive the balls B from conveyor 23 and lift them upwardly. Transfer conveyor 27 is driven by suitable means, not shown, to move the conveyor clockwise, as viewed in FIG. 2. Conveyor 27 preferably includes pairs of spaced fingers 31 along the length of the conveyor and arranged so that each pair of fingers 31 picks a ball from conveyor 23, carries it upwardly over the top of conveyor 27, and dumps it into a curved main chute 33 which is inclined slightly downwardly and through which the balls roll to an upper conveyor 35 spaced above upper surface 15 and supported by suitable means, not shown. Upper conveyor 35 is a continuous conveyor and extends over spaced rollers 36, with one of the rollers being rotatably driven by suitable well-known means, not shown. Also, upper conveyor 35 extends transversely of batting range 11 in parallel relation to conveyor 23 and moves in the opposite direction from the movement of the balls in the accumulating area 19. In other words, the upper flight of upper conveyor 35 moves to the left, as viewed in FIG. 2. Guide rails 37, 39 are provided on opposite sides of upper conveyor 35 to prevent the balls B from falling off the upper conveyor. Along the length of guide rail 39 are a plurality of spaced openings 41 respectively leading to the upper end of branch chutes 43 which respectively lead to release mechanisms 45 and then to ball pitching machines 47. Upper conveyor 35 is slightly inclined towards guide rail 39 so that when a ball reaches an opening 41 at which a chute 43 is not filled, the ball will roll down into the chute, as, for example, like the chute 43 to the left in FIG. 3, but when the ball comes to a chute which is filled, as the right one in FIG. 3, the ball passes on to the next chute. Then, if all of the chutes 43 are filled, the balls B will be carried off the end of the upper conveyor 35, i.e. that end to the left in FIGS. 2 and 3, so that the balls will drop down onto upper surface 15, and thence return to accumulating area 19 to continue the cycle. It will be understood that an oversupply of balls B greater than necessary for use by the machines 47 is preferably provided so that none of the machines will run out of balls.

The following description of one of the release mechanisms 45 and its associated ball pitching machine 47 will suffice for all, since they are substantially identical. Release mechanism 45 preferably includes a base plate 49, a guide rail 50 along one side thereof, a first gate 51 and a second gate 53 respectively fixedly attached to collars 55, 57 that, in turn, are pivotally mounted from base plate 49 on upstanding pins 59, 61. Also respectively fixedly attached to collars 55, 57 are arms 63, 65 and studs 67, 69. Springs 71, 73, which are respectively attached to base plate 49 at their ends and respectively attached to studs 67, 69 at the opposite ends, urge gates 51, 53 counterclockwise, as viewed in FIG. 12, against the respective stops 75, 77. A cam arm 79 is mounted on a vertical shaft 81 which is driven counterclockwise, as viewed in FIG. 12, by suitable means, as an electric motor 83 which runs for a given length of time when a coin-actuated mechanism 85 including a timer of suitable well-known construction, is initiated by the deposit of a coin in slot 87. Base plate 49 is sloped downwardly to the right, as viewed in FIG. 12, and is attached to machine 47 adjacent inlet opening 131, by a

hinge 88. It will be understood that as cam arm 79 is rotated counterclockwise, it will successively contact arms 65, 63 which will successively open gates 53, 51 and, in turn, will release the ball B to the right at gate 53, as seen in FIG. 12, to the ball pitching machine 47, and then release the ball to the left so that it rolls down to the place formerly occupied by the ball at gate 53, ready for the subsequent release thereof.

Each ball pitching machine 47 includes a stand 89 preferably fixedly attached to and supported by foundation 13. At the upper end of stand 89, a clamp 91 is provided which clamps a rod 93 in a selected position. Clamp 91 includes a thumb screw 95 that can be turned to loosen or tighten the clamp 91 so that the rod 93 can be rotated about its horizontal axis to a desired position and clamped in place, for a purpose later to be described. At the end of rod 93 is fixedly mounted another clamp 97 which is similar to clamp 91 but arranged perpendicular thereto and which clamps the hub 99 of a hollow circular housing 101. Clamp 97 includes a thumb screw 103 which can be turned to loosen and tighten clamp 97 so that the housing 101 can be moved to a desired position and clamped into place, for a purpose later to be described. Hub 99 extends concentric with the axis of housing 101 and to one side thereof, that is, to the right side as viewed in FIG. 6. A shaft 105 extends axially of hub 99 and housing 101 is rotatably supported therein by means of bearings 107, 109. The end portion 111 of shaft 105 extends into housing 101 and terminates therein. A wheel 113 is fixedly mounted on end portion 111 for rotation with shaft 105. Wheel 113 includes a concave rim 115 which is substantially semi-circular in cross-section, as best seen in FIG. 6. The inner concave surface 117 of rim 115 is smooth and has substantially the same arc as the outside circumference of a ball B adapted to be used in the machine 47, so that the rim 115 surrounds substantially one-half or one side of the ball. The remote side of the ball B from the rim 115 engages the smooth cylindrical inner surface 119 of housing 101, in the manner best seen in FIG. 6. Cylindrical surface 119 is concentric with wheel 113, and the distance between the inner surface 119 and the mid-portion of rim 115, that is, the portion as at 121 in FIG. 6, is less than the diameter of the ball B, whereby the ball is compressed when received between the rim 115 and cylindrical surface 119. The balls B are resilient and preferably have a covering of neoprene or the like and are compressed preferably approximately $\frac{1}{8}$ -inch when received between rim 115 and surface 119. In addition to the portions of housing 101 that have previously been described, the housing includes the annular side portion 123 integrally formed with hub 99 and the cylindrical portion 125, which latter portion is the portion of which cylindrical inner surface 119 is a part. In addition, housing 101 includes a circular side portion 127 opposite and spaced from side portion 123 and preferably removably attached as by screws 129 to cylindrical portion 125.

Housing 101 is cut away or open for a segment thereof, preferably a substantially 90 degree segment, at cylindrical portion 125 so that rim 115 is exposed for a substantially 90 degree portion thereof, which establishes an inlet opening 131 into housing 101 in the space between the rim 115 and cylindrical portion 125, and establishes an outlet opening 133 between the rim and the cylindrical portion, substantially 90 degrees from inlet opening 131. In other words, in traveling through machine 47, the ball B rolls down from gate 53, enters the housing at 101 at inlet opening 131, travels substantially 270 degrees through the housing between rim 115 and cylindrical portion 125, and then exits through outlet opening 133 substantially tangentially relative to wheel 113. It will be understood that the ball B, as it travels through the housing 101 as described above, is rolled along cylindrical portion 125, and when the ball exits, it will have

a reverse spin, that is, as viewed in FIG. 5, the ball will spin clockwise. The spin will continue during a portion of the flight of the ball or for the whole flight, depending upon the speed setting of machine 47 and the distance to the batter. If the set-up is such that the ball stops spinning during its flight, it will take a drop at the place it stops spinning to give a so-called drop ball. The reason that the ball will be urged through housing 101 in a rolling manner on portion 125 is because the area of the ball contacted by rim 115 is greater than the area of the ball contacted by portion 125.

The means for rotatably driving shaft 105 is preferably as follows: A motor 135 is mounted on a plate 137 which, in turn, is preferably pivotally supported as by suitable hinge means 139 from a support 141 fixedly attached to rod 93 and clamp 97 so that rotation of the rod 93, as heretofore described, to a selected place will carry motor 135 therewith. Plate 137 is held at a selected angle relative to support 141 by means of the adjustable link 142 extending between support 141 and plate 137. The shaft 143 of motor 135 carries a pulley 145 which is connected to a variable speed pulley 147 of conventional construction by a continuous belt 149. Variable speed pulley 147 is mounted on the end of shaft 105 remote from end portion 111. Variable speed pulley 147 is of a well-known type which will cause the speed of shaft 105 to be slowed down or increased relative to the speed of shaft 143, depending upon whether pulley 145 is moved towards or away from variable speed pulley 147. Thus, to make shaft 105 rotate faster, plate 137 is adjusted to move pulley 145 away from variable speed pulley 147, which causes belt 149 to ride closer to the center of pulley 147; and to make shaft 105 rotate slower, the plate is adjusted to move pulley 145 towards variable speed pulley 147, which causes belt 149 to ride farther away from the center of pulley 147. It will be understood that to throw a fast ball, the device is set so that shaft 105 is rotating at a fast rate, and to throw a slow ball, the device is set to cause the shaft 105 to rotate at a relatively slower speed.

For a fly ball, the housing 101 is set at a selected inclined position by the means heretofore described, so that the ball B will leave the outlet opening 133 at an inclined angle, as shown in FIG. 8. In other words, the housing 101 is set so that the tangent line of wheel 113 at outlet opening 133 is inclined upwardly.

For a ground ball, the housing 101 is set so that the ball B exits downwardly, as shown by the arrow in FIG. 9. In other words, with this setting, the tangent to wheel 113 at outlet opening 133 is inclined downwardly.

To throw a curve ball, as, for example, a left-hand curve ball, the housing 101 is set in the manner shown in FIG. 10 by means heretofore described, so that the housing is inclined as shown. To cause the ball B to curve in the opposite direction, that is, a right-hand curve, the housing 101 is inclined in the opposite direction, as shown in FIG. 11.

From the foregoing it will be understood that the ball pitching machine 47 can throw any type of ball and is very versatile. Thus, the housing 101 can be inclined at a large angle to give a greater curve, or at a lesser angle to give a smaller curve, and can be positioned at a selected rotational position to give the desired elevational angle of release of the ball; and combinations of inclination, elevation and speed can be made. In addition, it will be understood that since there are no moving arms or the like and since the ball exits from one particular place, i.e. outlet opening 133, there is no distraction to the batter. In using a plurality of the pitching machines 47, as, for example, as a paid amusement device, the different ball pitching machines can be set for different types of balls so that the customer can take his choice. Also, when used as a paid amusement batting range, the overhead is cut down greatly over previous devices of this type since the batting range is entirely automatic and is initiated

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merely by the customer depositing his coin in the slot.

Although the invention has been described and illustrated with respect to a preferred embodiment thereof, it is to be understood that it is not to be so limited since changes and modifications may be made therein which are within the full intended scope of this invention as herein-after claimed.

I claim:

1. In a ball batting range, a surface for receiving the batted balls, an accumulating area for the balls depressed from said surface, said surface being inclined to said accumulating area whereby the balls will roll into said accumulating area, first conveyor means in said accumulating area for conveying the accumulated balls towards a side of said range, a vertical transfer conveyor means for receiving the balls from said first conveyor means and lifting them upwardly, an upper conveyor means spaced above said surface for receiving the balls from said transfer conveyor means and moving them above and across said surface, a plurality of laterally spaced ball pitching machines supported from said surface in front of said upper conveyor means, a plurality of chute means respectively leading from said upper conveyor means along the length thereof to receive balls therefrom and to carry them to an associated one of said ball pitching machines, a plurality of selective release means respectively interposed between said chute means and its associated one of said ball pitching machines for releasing the balls one at a time to its associated one of said ball pitching machines, coin-actuated means coupled to said release means for operating said release means a pre-determined length of time upon deposit of a coin; each of said ball pitching machines comprising a hollow circular housing having a cylindrical inner surface, a wheel rotatably mounted in said housing in concentric relationship with said inner surface, means coupled to said wheel for rotating said wheel, said housing being open for a segment thereof to provide an inlet opening to receive between said wheel and said inner surface the ball to be pitched and to provide an exit opening through which the ball is adapted to exit, said wheel including a concave rim substantially semi-circular in cross-section and adapted to receive one side of the ball with the remote portion of the ball engaging said inner surface, the distance between said inner surface and the mid-portion of said rim being less than the diameter of the ball to be pitched whereby the ball is compressed when received between said wheel and said inner surface and is rolled around said inner surface from said inlet opening to said exit opening where it flies free of said machine.

2. The machine of claim 1 which includes means for positioning said housing at a selected rotational position to give the desired elevational angle of release of the ball.

3. The machine of claim 1 which includes means for positioning said housing at a selected inclined position to give the desired curve to the ball.

4. A machine for pitching a ball comprising a hollow circular housing having a cylindrical inner surface, a wheel rotatably mounted in said housing in concentric relationship with said inner surface for rotation about an axis extending through said wheel and housing, means

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mounting said wheel and housing for conjoint pivotal movement about a point on said axis of rotation and wherein said point is located outside said housing, means coupled to said wheel for rotating said wheel, said housing being open for a segment thereof to provide an inlet opening to receive between said wheel and said inner surface the ball to be pitched and to provide an exit opening through which the ball is adapted to exit, said wheel including a concave rim substantially semi-circular in cross section and adapted to receive one side of the ball with the remote portion of the ball engaging said inner surface, the distance between said inner surface and the mid-portion of said rim being less than the diameter of the ball to be pitched whereby the ball is compressed when received between said wheel and said inner surface and is rolled around said inner surface from said inlet opening to said exit opening where it flies free of said machine, and means for positioning said housing at a selected inclined position in which said axis of said wheel is inclined relative to the horizon to give the desired curve to the ball.

5. A machine for pitching a ball comprising circular means having a circular ball-engaging surface, a wheel rotatably mounted in said circular means in concentric relationship with said circular ball-engaging surface for rotation about an axis extending through said wheel and housing, means mounting said wheel and housing for conjoint pivotal movement about a point on said axis of rotation and wherein said point is located outside said housing, means coupled to said wheel for rotating said wheel, said circular means being provided with an inlet opening to receive between said wheel and said ball-engaging surface the ball to be pitched and being provided with an exit opening through which the ball is adapted to exit, said wheel including a rim adapted to receive one side of the ball with a remote portion of the ball engaging said circular ball-engaging surface, the distance between said circular ball-engaging surface and said rim being less than the diameter of the ball to be pitched whereby the ball is compressed when received between said wheel and said ball-engaging surface and is rolled around said ball-engaging surface from said inlet opening to said exit opening where it flies free of said machine, and means for positioning said circular means at a selected inclined position in which said axis of said wheel is inclined relative to the horizon to give the desired curve to the ball.

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