Oct. 28, 1930. B. HAYNES 1,779,541

BALL POSITIONING MACHINE

Original Filed Aug. 28, 1926

Fig. 1.

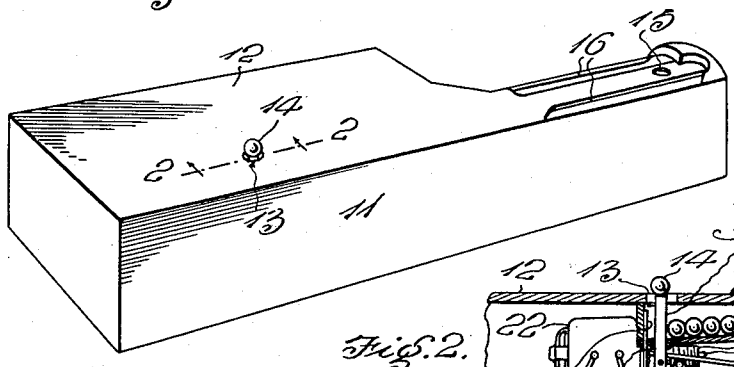


Fig. 2.

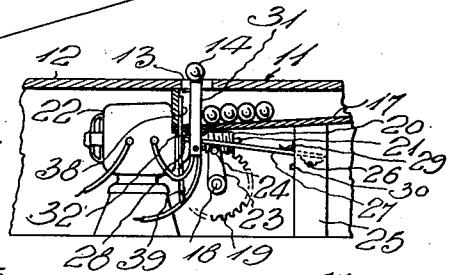


Fig. 4.

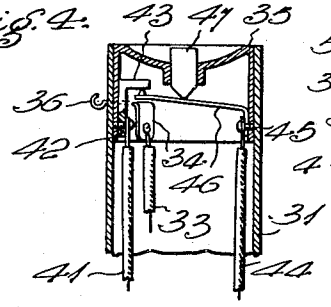
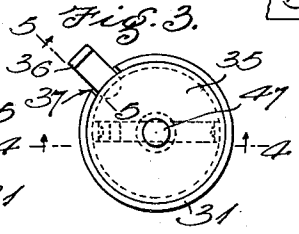


Fig. 3.



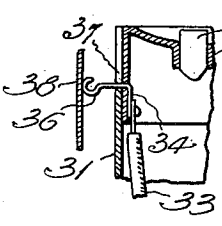
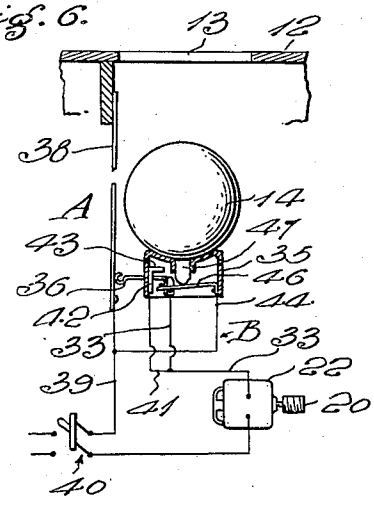


Fig. 5.

Fig. 6.



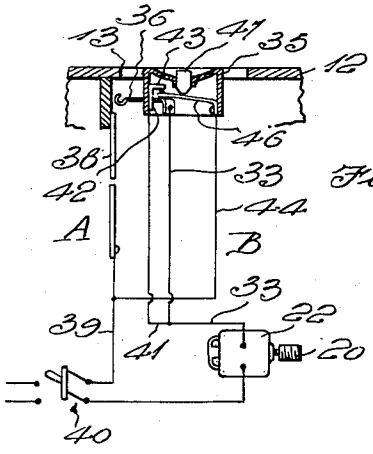


Fig. 7.

INVENTOR
BRYCE HAYNES,
BY Gordon & Sturat
ATTORNEYS

Patented Oct. 28, 1930

1,779,541

UNITED STATES PATENT OFFICE

BRYCE HAYNES, OF NEW YORK, N. Y.

BALL-POSITIONING MACHINE

Original application filed August 28, 1926, Serial No. 132,059. Divided and this application filed November 3, 1927. Serial No. 230,842.

This invention relates to a machine for automatically presenting a ball or a succession of balls in position to be impelled by an implement for example by a golf club and particularly the invention finds usefulness in practicing putting of the golf balls or again in testing the accuracy of the balls by observing their path of travel after being struck.

It is also an object of the invention to establish a dwell in the cycle of operation whereby a ball is brought into position to be struck and held there subject to the inclination of the operator, without his having to raise the ball into position or stop the machinery himself.

It is a further object of the invention to return each of the balls that have been driven away from the support so that they may again be successively presented by means which are set in motion simultaneously with the impelling of a ball from its support.

It will be evident that the means provided continue the motion of the lifting support as long as the manual switch is closed and until the presentation of a ball on the support in the upper position establishes a dwell in the cycle of operation.

Other advantages will be evident from the following description and the drawings in which latter,—

Figure 1 is a perspective view of the preferred form of my invention;

Fig. 2 is a fragmentary vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the ball-supporting member;

Fig. 4 is an enlarged vertical sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a similar view on the line 5—5 of Fig. 3;

Fig. 6 is a diagrammatic view of the ball and its supporting member in the lowermost position showing the electric circuits in operation, and

Fig. 7 is a similar view with the supporting member at its upper limit of movement with the ball removed.

Referring particularly to the drawings, the device is shown as comprising a casing 11, the upper surface of which forms a floor or runway 12. The runway 12 has an opening 13 of convenient size to allow the vertical passage therethrough of one of the balls 14, it being apparent that the ball indicated as a golf ball may be either larger or smaller as may be desired. The opposite end of the runway 12 is shown by way of example as having an opening 15 to receive the ball 14 when driven from the opening 13, provided that the ball is properly directed and follows an accurate path.

Two slots 16, 16 are provided at the sides of the runway from the openings 13 and 15 and these slots are substantially parallel to said runway. These slots will catch the balls impelled providing that they deviate from the straight path to the opening 15.

A passageway 17 is provided beneath the runway 12 and is adapted to receive the balls falling through the opening 15 or slots 16, 16. This passageway slopes to a point beneath the opening 13 so that the ball will gravitate back to a point substantially beneath the opening 13.

Suitable mechanism is arranged to lift a ball from the passageway 17 to a point above the opening 13. This mechanism consists of a shaft 18 rotatably mounted upon suitable standards within the casing and carrying rigidly secured thereto a gear wheel 19. This gear meshes with and is driven by a worm 20 directly mounted upon the driving shaft 21 of an electric motor 22. The shaft 18 carries rigidly secured to one end thereof a crank arm 23 provided with a roller 24 mounted for rotation upon an offset of the crank arm. This crank arm and roller are rotated in a counter-clockwise direction as shown in Fig. 2. A pair of standards 25 positioned within the casing carry pivoted between them on shaft 26 a lever 27. The free end of this lever is enlarged at 28 and the lower surface of the enlargement is curved and is adapted to be carried by the roller 24 during the upper portion of travel of the crank arm 23. A spring 29 normally presses downwardly upon the lever 27 and a stop 30 limits the downward movement of the lever. A crank shaped rod is rotatably secured at one end to the thickened portion of the lever 27 and

rotatably fastened at its other end to the base of a supporting cylinder or tube 31.

As shown in Fig. 2 the supporting cylinder or tube has a sliding fit in the bottom of the passageway 17 and extends in its uppermost position approximately level with the surface of the runway 12. By the train of connections just described, pivotal movement of the lever 27 causes vertical up and down movement of the supporting cylinder 31 in the fitting 32 in the bottom of the passageway. The supporting cylinder in its movement travels from the position in which its upper or ball carrying end lies just beneath the floor of the passageway 17 to a position in which this end presents the ball just above the surface of the runway 12. The amount of curvature of the thickened end 28 of the lever 27 corresponds to that of the circumference of a circle having a radius equal to the length of the crank arm 23. By reason of this fact the lever 27 with the supporting cylinder 31 secured thereto are both held in uppermost position for a prolonged period of time.

It will be evident that the passageway 17 is narrowed at its lower point to insure that the successive balls are delivered singly to the supporting cylinder 31.

The cylinder is then elevated vertically by engagement of the roller 24 with lever 27 and it carries a ball upwardly with it until the ball is passed through the opening 13 to a point above the runway 12. After the ball has been removed from the support 31 the latter will be retracted by the above described connections and again receive a ball from the passageway and elevate the same as before.

Means are provided to carry out the above operations by the appropriate operation of the motor 22. In addition it is arranged that a dwell in the cycle of operation is caused when the support carrying the ball reaches the upper limit of its travel. This is accomplished by disconnecting the source of power operating the motor and maintaining the motor disconnected until the ball is removed. The tube is then automatically returned to the lower position where it receives a ball upon its cup-shaped end and is again raised to its upper position. Generally speaking this result is accomplished by two electric circuits connected in parallel between the motor and a source of electric energy.

One circuit marked as circuit A is completed through the following elements. Attached to the motor 22 is a wire 33 which extends through the tubular support 31 to a post 34 mounted on an insulating cup 35 made of fiber or any other suitable insulating material. This cup is firmly secured within the uppermost portion of the tube 31. A spring contact piece 36 leads therefrom, extending outwardly from the tube 31 through a slot 37. This contact piece 36 is adapted to make a sliding or wiping contact with a metal strip 38 fastened to the wall of the passageway 17 and parallel to the direction of travel of the tube 31. Strip 38 is connected by wire 39 and through switch 40 to a source of electric energy and thus to the other pole of the motor 22. The device is so arranged that when the electric current passes through this circuit the motor is driving the tube 31 upwardly.

The other circuit which is marked B is formed by a wire 41 which leads from the wire 33 to a post 42 mounted upon the cup 35. A contact member 43 is connected to this post. A wire 44 leads from the wire 39 to a post 45 mounted on the cup 35. A flat spring member 46 is attached to the post and normally presses a bearing point carried thereby against the contact member 43 thereby completing the circuit. The circuit is broken by means of a plunger 47 made of fiber or any other insulating material which plunger is normally pressed upwardly above the cup 35 but which is pressed downwardly by the weight of a ball placed thereon. With a ball in position the contact between the contact piece 43 and spring 46 is broken. The operation of the machine is so timed that this circuit is closed during the time the tube 31 is being moved through its downward path.

In place of the flat spring 46, for alternately closing and breaking the circuit, an alternate form of construction can be used. A support attached to the cup 35 can carry pivotally suspended thereon a lever, one end of which is attached to the plunger 47 and the other end of which carries a contact point. Contact member 43 is repositioned on the cup 35 so that the portion thereof to be engaged by the contact point of the pivoted lever is positioned at the lower portion of the cup 35. This arrangement permits the lever to pivot toward and away from the upper surface of member 43. The lever is normally held in contact with member 43 by a weight suspended from the lever between the fulcrum and the contact point. The weight of a ball upon plunger 47 overbalance the lever and raises the contact point thereof from the surface of member 43 thus breaking the circuit. The other portions of circuit B are exactly as previously described.

In starting the machine in operation, the switch 40 is closed manually. With the tube 31 at its lowermost position, a ball rolls upon the fiber cup 35 thereby depressing the plunger 47 and breaking circuit B. Circuit A still remains closed and the motor actuates the mechanism to raise the tube 31 to its uppermost position. During the movement of the tube upwardly circuit A is maintained closed by the sliding connection between contact piece 36 and the metal strip 38 until the tube reaches its top position at which point the

contact piece 36 has moved above the strip 38 and the circuit is broken. The movement of piece 36 above strip 38 is caused by the momentum of the machinery and also by the spring-like action of piece 36. Breakage of the circuit stops the motor and the tube 31 remains in elevated position until the ball is removed therefrom.

When the ball is driven off the tube 31 the spring 46 is raised closing the circuit B whereby the motor is again actuated and the tube is lowered to a point where it will receive another ball. By the weight of the ball, circuit B is again broken. Meanwhile circuit A has again been closed by the lowering of the tube 31 through contact of parts 38 and 36, and the motor continues operating to drive the tube 31 upwardly with the ball thereon until circuit A is broken at the upper position of the tube. At this position both circuits are broken and the motor is stopped. This completes the cycle of travel of the tube 31 which cycle is repeated as often as the ball is removed from the tube.

With the device as described there is provided mechanism which is excellently adapted for practice or for use in golf schools or the like. Golf balls upon being struck either drop through the opening 15 or fall into the passageway and then run back to the elevating mechanism by which they are raised to the position from which they are driven. This saves the labor of manually collecting the balls and placing them upon a tee. The person practicing is enabled to stand at all times adjacent the tee and, after having driven one ball, another ball will be presented immediately in position to be struck.

While the invention has been described specifically as applied to the use of a golf ball, it is obvious that it can be modified so as to use any type of round ball. If a larger ball is used obviously larger openings to receive the ball must be used throughout the machine. In like manner the device is independent of the manner in which the ball or other article is removed from the support.

Numerous changes in minor details of construction and arrangement may be made within the scope of my invention as disclosed above and in my companion application Serial No. 132,059 of which this application is a division.

What I claim is:

1. A golf machine comprising a runway, a movable support adapted to be positioned so that a ball carried thereby can be driven therefrom along the runway, a trough for receiving the ball, means for moving the support to a position to take the ball from the trough and for moving the support back to its first mentioned position, means for automatically stopping the machine at this position and means for automatically starting the machine when the ball is removed from the support.

2. A device of the class described comprising a passageway, a support adapted when in one position to receive a ball from said passageway and to move into a second position, means for moving the support from one position to the other and back to the first position, a power element for operating said means in both directions and means for interrupting the power element with the support in one of said positions.

3. A device of the class described comprising a passageway, a support adapted when in one position to receive a ball from said passageway and to move into a second position, means for moving the support from one position to the other and back to the first position, a power element for operating said means in both directions and means for interrupting the power element with the support in said second position.

4. A device of the class described comprising a passageway, a support adapted when in one position to receive a ball from said passageway and to move into a second position, means for moving the support from one position to the other, an electric motor for said means, an electric circuit for said motor and a circuit interrupter operated by the received ball while on said support.

5. A device of the class described comprising a passageway, a support adapted when in one position to receive a ball from said passageway and to move into a second position, means for moving the support from one position to the other, an electric motor for said means, an electric circuit for said motor and a circuit interrupter actuated by the movement of said support.

6. A device of the class described comprising a passageway, a support adapted when in one position to receive a ball from said passageway and to move into a second position, means for moving the support from one position to the other, an electric motor for said means, parallel electric circuits for said motor, an interrupter in one circuit operated by the received ball and an interrupter in another circuit actuated by the movement of said support.

7. A device of the class described comprising a runway, a passageway, leading therefrom, a support adapted to receive a ball from said passageway when in one position and to move into a second position so that the ball can be driven therefrom over the runway, means for moving the support from one position to the other position and back to the first position, a power element for operating said means in both directions and means to interrupt the power element with the support in one of said positions.

8. A device of the class described comprising a runway, a passageway leading there-

from, a support adapted to receive a ball from said passageway when in one position and to move into a second position so that the ball can be driven therefrom over the runway, means for moving the support from one position to the other position and back to the first position, a power element for operating said means in both directions and means to interrupt the power element with the support in the second position.

9. A device of the class described comprising a runway, a passageway leading therefrom, a ball, a support adapted when in one position to receive said ball from said passageway and to move into a second position so that the ball can be driven therefrom over the runway, means for moving the support from one position to the other position, and means operated by the ball to cause the support to stop in said second position.

10. A device of the character set forth, comprising a ball feeding member adapted to be associated with a playing field for bringing a golf ball from a supply thereof to a position approximately in horizontal alignment with said field, and within a certain definite area of said field, and means to actuate said member, including a device actuated by the weight of a ball upon said member for automatically causing said member to be moved from said position to the supply of balls and back to said position.

11. A device of the character set forth, comprising a ball feeding member adapted to be associated with a playing field for bringing a golf ball from a supply thereof to a position approximately in horizontal alignment with said field, and within a certain definite area of said field, and means to actuate said member, said means including a motor device, means driven thereby to move said member and a controlling member to stop the operation of said motor upon the completion of one full movement of said member from and to said position.

12. A device of the character set forth, comprising a ball feeding member adapted to be associated with a playing field for bringing a golf ball from a supply thereof to a position approximately in horizontal alignment with said field, and within a certain definite area of said field, and means to actuate said member, said means including a motor device, means driven thereby to move said ball feeding member, a controlling member to stop the operation of said motor upon the completion of one full movement of said ball feeding member from and to said position, and a second controlling member for again starting the operation of said motor device.

13. A device as set forth in claim 12, in which the operation of the second controlling member is governed by the weight of a ball upon said ball feeding member.

14. A device of the character described, comprising a platform upon which a player is adapted to stand, said platform including a playing field, a target associated with said platform, a positioning member for moving a golf ball from a supply thereof to a definite predetermined position with respect to said platform, said member being movable relatively to said platform from and to said definite predetermined position to and from a position adjacent to a supply of balls, and means to return the ball from the playing field to a position adjacent to said positioning member.

In witness whereof I have hereunto affixed my signature.

BRYCE HAYNES.