No. 628,236. Patented July 4, 1899.

J. G. WARREN.

GOLF PRACTICING APPARATUS.

(Application filed Apr. 26, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

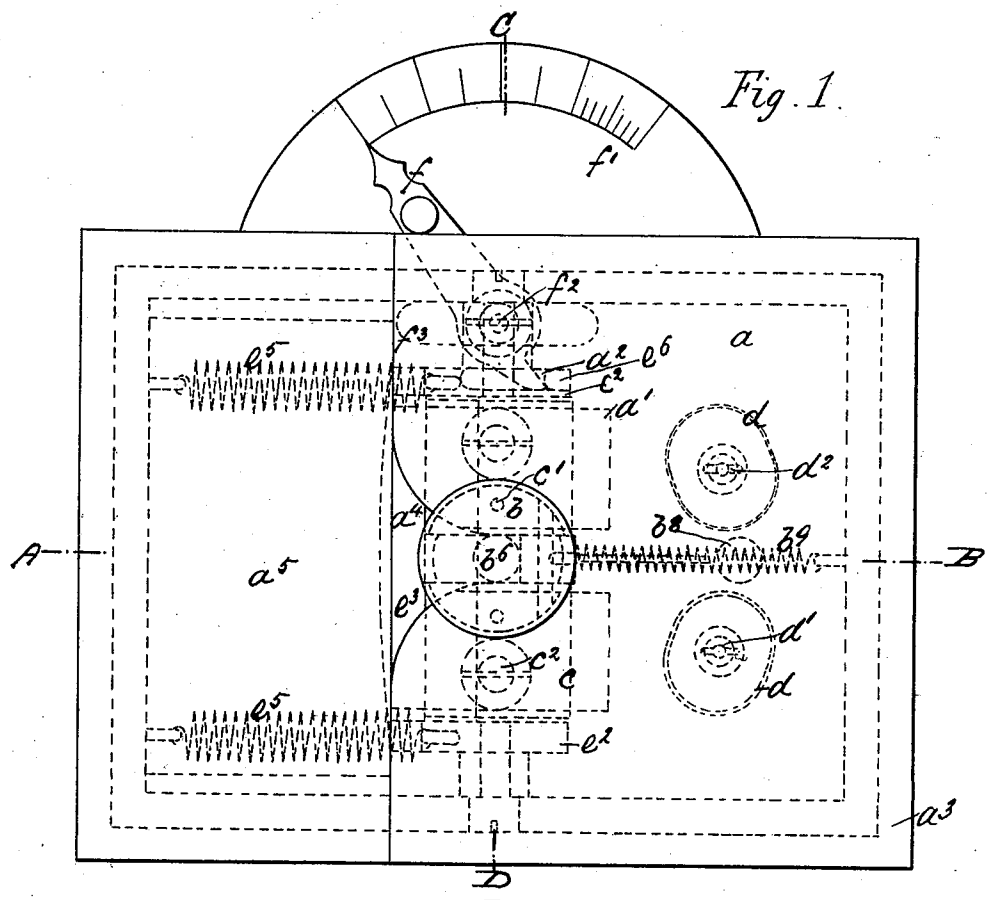
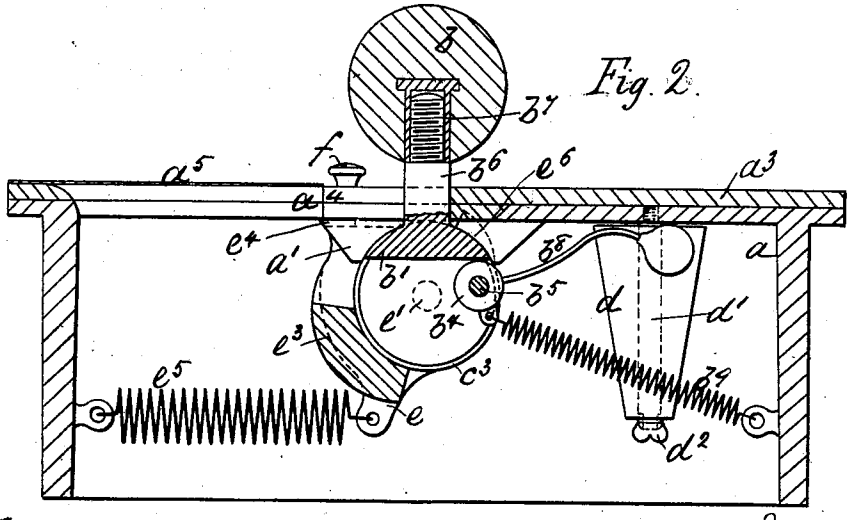


Fig. 2.



Witnesses:
C. Holloway
W. C. Pinckney

Inventor:
John Grant Warren,
By F. H. Bowen
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 628,236. Patented July 4, 1899.

J. G. WARREN.

GOLF PRACTICING APPARATUS.

(Application filed Apr. 26, 1898.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 6.

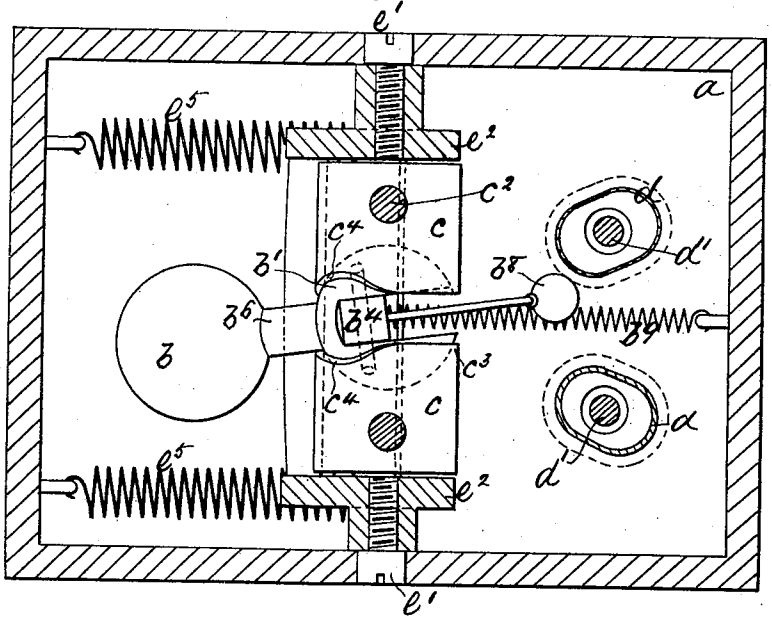
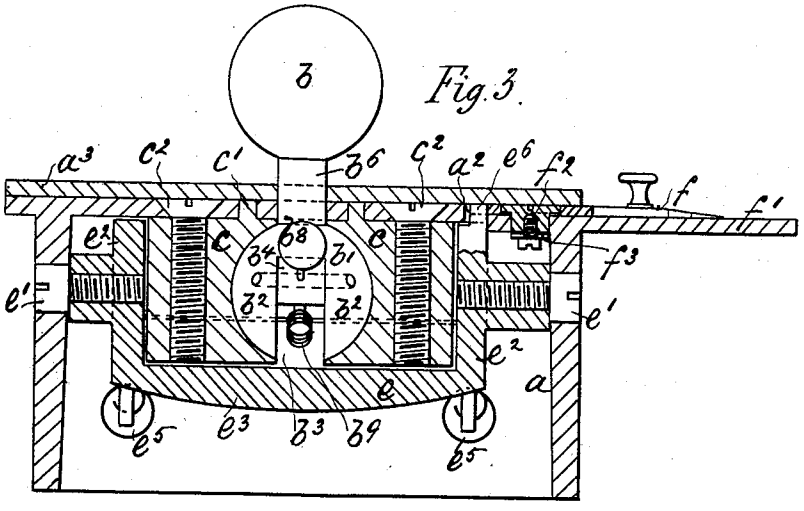


Fig. 3.



Witnesses:
C. Holloway
W. C. Pinckney

Inventor:
John Grant Warren,
By F. L. Bowen
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 628,236. Patented July 4, 1899.

J. G. WARREN.

GOLF PRACTICING APPARATUS.

(Application filed Apr. 26, 1898.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

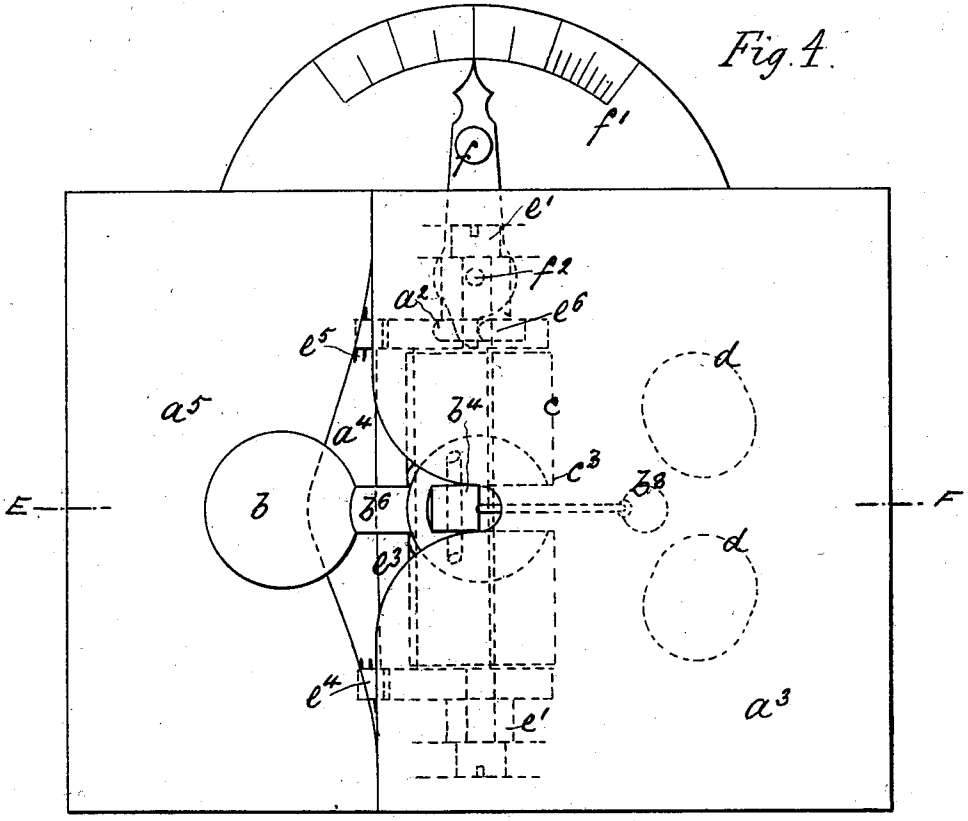
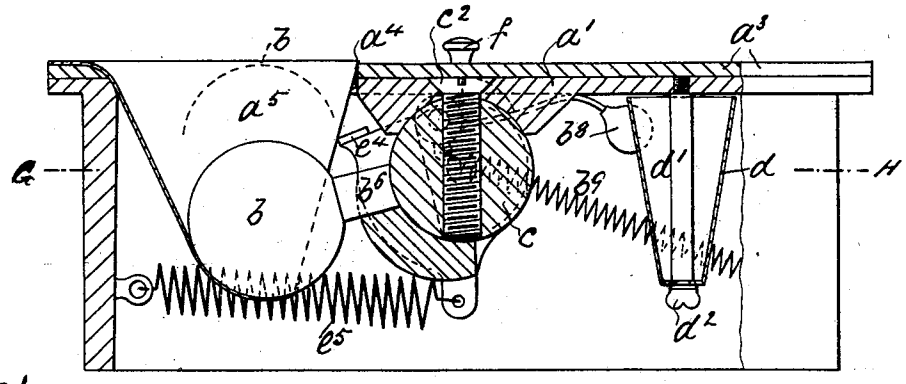


Fig. 5.



Witnesses:
C. Holloway
W. C. Pinckney

Inventor:
John Grant Warren,
By J. L. Norris
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN GRANT WARREN, OF GRAVESEND, ENGLAND.

GOLF-PRACTICING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 628,236, dated July 4, 1899.

Application filed April 26, 1898. Serial No. 678,841. (No model.)

To all whom it may concern:

Be it known that I, JOHN GRANT WARREN, a subject of the Queen of Great Britain and Ireland, and a resident of Gravesend, county of Kent, England, have invented certain new and useful Improved Golf-Practicing Apparatus, (for which I have filed an application for British patent, No. 2,178, dated January 27, 1898,) of which the following is a specification.

This invention relates to apparatus to be employed in practicing the strokes of the game of golf, and is especially suitable for practicing driving or brassy strokes or for iron-play with a teed ball.

The apparatus is designed to be of benefit both to beginners in learning the strokes and in qualifying themselves to play with skill and to those accustomed to the game in perfecting themselves in the trueness and energy with which they swing their clubs and deliver the strokes thereof on the ball and on which the trueness and extent of the flight of the ball are dependent and is of particular advantage in enabling any desired repetition of any desired stroke to be made without necessitating that the player should move from his position, so that he may accustom himself to any given position in relation to the ball to effect any given stroke and also in serving to indicate the direction of the stroke, whether straight ahead or "sliced" or "pulled"—that is to say, driven outward to the right or inward to the left—(so enabling the player to correct any natural tendency he may have to slice or pull the ball) and also the range or distance to which the ball, if free, would have been driven, so enabling the player to regulate the force with which he strikes the ball to propel the same any given distance

In the apparatus a tee or practice board, upon which the player stands or may stand, is adapted with a golf-ball so applied as that it may be set or may be replaced by other balls at different elevations above the tee-board, respectively, suitable for driving or for brassy strokes or level therewith in position suitable for iron-play and as that when struck by the club it will be caused by the impact of the blow to descend below the tee-board out of the path of and without interrupting the swing of the club and will then operate means by which the direction of the stroke, if not straight ahead, will be audibly indicated, and other means by which the range or distance the ball would, if free, have attained due to the impetus given by the blow of the club will be visibly indicated and will then be automatically and immediately returned to its normal position above the tee-board in readiness for another stroke of the club, so that following strokes may be made as quickly after one another as the player may wish.

On the accompanying drawings, Figure 1 represents a plan view of the apparatus, showing in dotted lines the incased parts in their normal position in readiness for a stroke. Fig. 2 represents a vertical section through A B, Fig. 1. Fig. 3 represents a like section through C D, Fig. 1. Fig. 4 represents a like view to Fig. 1, showing the position of the parts immediately after a stroke straight ahead. Fig. 5 represents a vertical section through E F, Fig. 4. Fig. 6 represents a horizontal section through G H, Fig. 5, but shows the position of the parts immediately after a pulled stroke.

a is the tee or practice board, which is made as a casing adapted to contain and support the several parts of the apparatus and to be inserted into a suitable recess made in the flooring in the grass or wherever else the apparatus is required to be used.

b is the practice-ball to be struck by the golf-club. To enable the ball to receive right-ahead or forward and also laterally-deviating movements, it is mounted on a ball-joint having a spherical center b', having two opposite segments b^2, respectively adapted to engage with two opposite parti-spherical bearings c, which are located by blocks a', cast with the tee-casing a, and by set-pins c' and screws c^2, or may be located in any other convenient manner. The segment of the spherical center b', intermediate of the segments b^2, is cut away, as at b^3, and is fitted with a roller b^4, which is mounted on a pin b^5 and fits snugly between said segments, projecting sufficiently beyond the same to engage with the edges c^3 of the bearings c and to act therewith as a guide to the center b' and to prevent any rotation of the latter about the axis of its stem b^6, on which the ball b is mounted. The aforesaid lateral movements of the ball,

together with the ball stem and center b', are, however, provided for the gradual widening apart, as at c^4, of the edges c^3 of the bearings c within the range of movement of the ball-stem b^6. (*Vide* Fig. 6.) The rollers b^4 thus partakes of all movements of the center b', and in its return movement guides the latter back to its normal position, so that the blow of the club is always delivered on the same part of the ball.

The ball is connected to the ball-stem by being cast with a screw-threaded socket b^7, into which the screwed end of the stem is inserted; but the ball may be otherwise connected to the stem in any convenient manner. Its elevation in relation to the tee may be altered by screwing the ball up or down the ball-stem or by fitting to the stem other balls having projecting screw-threaded bosses of different lengths.

The roller b^4 is fitted with a bell-hammer b^8 and is connected to a spring b^9, which tends to retain the ball b in its normal position. (*Vide* Fig. 2.) The hammer b^8 in its normal position lies intermediate of and equidistant from a pair of elliptical bells d, which are of the same external dimensions, but are of different thicknesses and serve to give two distinguishing sounds, respectively, adapted to indicate whether the ball has been struck with a pulling or with a slicing stroke. The bells are located by studs d', screwing into the tee-casing a and nuts d^2, or may be located by any other convenient means. They are made of an elliptical form, so that a beginner may set them both with their minor axes in alinement, (*vide* Fig. 6,) so that there will then be the greatest space between them, as he probably will more often slice or pull a ball than drive it right ahead, and so that as he perfects his stroke he may set the bells with the major axes more and more in alinement (*vide* Fig. 1) until practice and the indications which the respective bells afford him enable him to perfect his stroke, when the bell-hammer will at each actuation clear the two bells.

The spring b^9 should be only of just sufficient strength to retain the ball b in its normal position, so as not to offer any appreciable resistance or impediment to the swing of the club, it being an especial object of the apparatus to reproduce the conditions of actual play as completely as possible. To this end the ball when struck by the club meets with no appreciable resistance until it has wholly descended below the level of the tee-board. (*Vide* the dotted lines, Fig. 5.) Thereupon the ball connections immediately meet with the resistance of the means by which the force of the blow (expressed in terms of the distance which the ball, if free, would have been driven by the blow) is registered and of the means by which the ball and its connections and such registering means are immediately after the passing of the club returned to their normal positions, the range-indicator alone maintaining its position for subsequent inspection and requiring to be reset by hand or otherwise in any convenient manner. To this end there is mounted in the tee-casing a a cradle e, adapted to reciprocate about end bearings e', mounted in the casing sides. The cradle is formed with end disks e^2 and a connecting cross-piece e^3 and with rubber-covered stops e^4, adapted to bear against the under side of the casing-top, and is connected to springs e^5, which tend to maintain the cradle in its normal position. (*Vide* Fig. 2.) Upon the ball being struck by the club its stem at the moment the top of the ball descends below the board comes into contact with the cradle cross-piece e^3 with the effect of turning the cradle about its axis of movement to an extent determined by the force of the blow of the club on the ball and by the resistance of the springs e^5. One of the end bosses of the cradle is formed with a projection e^6, which extends through an aperture a^2 in the tee-casing a, and when the cradle e is thus actuated serves to actuate a pointer f, so as to cause the latter to indicate on a scale f' the range of the ball due to the blow of the club.

The pointer f is mounted on a center pin f^2, which is held down by a spring f^3, so arranged as to cause a sufficient friction between the pointer and the dial-plate or its center pin to prevent the pointer from receiving any motion except when positively moved by the actuating projection e^6 or by hand in being reset.

The top of the case a is covered by a thick pad a^3, of rubber, serving to offer a yielding resistance should the club be swung into forcible contact therewith, that part of the tee-casing and of the rubber pad through which the ball descends being made open, as at a^4, and covered by a thin rubber membrane a^5, serving to close the opening and to yield and descend with the ball without offering any material resistance thereto and to immediately return to its normal position as the ball is returned to its position.

I claim as my invention—

1. In golf-practice apparatus the combination of a tee or practice board having a covered cavity below its level in advance of the normal position of the ball to be struck, a practice-ball adjustably mounted in relation to its distance from the tee, and so mounted in relation to its center of movement as to be adapted to receive both right-ahead and laterally-deviating movements according to the direction of the blow of the club by which it is struck, and as to be caused when struck by the club to descend into the cavity below the level of the tee and out of the path of the club, opposite parti-spherical bearings applied to the practice-board and adapted to locate the ball-center and to permit of the practice-ball receiving both right-ahead and laterally-deviating movements, a spring-controlled roller fitted with a bell-hammer and pivotally mounted in the ball-center and serving to

cause the bell-hammer to audibly indicate laterally-deviating movements of the practice-ball and to cause the ball to return to its normal position and to retain the ball therein ready for actuation, a spring-controlled cradle adapted to take up the impetus of the ball from the moment it descends below the level of the tee, a dial and a pointer by which the range of the ball due to the blow of the club is visibly indicated, the said cradle actuating the pointer and operating to automatically return the ball to the normal position.

2. In an apparatus of the character described, the combination of a ball movable forward and laterally, a spring normally holding the ball in position but adapted to yield to allow forward and lateral movements of the ball, means for indicating the extent of forward movement, and means for indicating lateral deflection of said ball.

3. In an apparatus of the character described, the combination of a practice-board, a ball, a stem therefor supporting the ball above the board, extending below said board, a ball-joint therefor below said board, a spring normally holding the ball-stem upright but allowing free movement of the ball, and springs e^5 resisting movement of the ball after it has partly moved forward.

4. In an apparatus of the character described, the combination of a practice-board, a ball, a stem therefor supporting the ball above the board, extending below said board, a ball-joint therefor below said board, a spring normally holding the ball-stem upright but allowing free movement of the ball, a cradle e, springs e^5 resisting movement of the cradle and of the ball after it has partly moved forward.

5. The combination of a practice-board, a practice-ball movable forward and laterally, a stem extending above the board and supporting the ball, a pointer for indicating extent of forward movement, and bells for showing lateral deflection.

6. The combination with a practice-ball movable forward and laterally, a spring resisting movement of the ball, a bell-hammer operated by lateral movements, and bells in the path of the hammer.

7. The combination with a practice-ball movable forward and laterally, elliptical adjustable bells, a spring resisting movement of the ball, a bell-hammer operated by lateral movements, said bells being in the path of the hammer.

8. The combination of a practice-board with an opening in its top, a practice-ball b, stem b^6, and a rubber membrane a^5 closing the opening but yielding before the ball.

9. The combination of a practice-board with an opening in its top, a practice-ball b, stem b^6, and yielding pad a^3.

10. The combination of a practice-board, ball b stem b^6, spherical segments b^2, b^2 connected as at b' and separated by a central removed segment, roller b^4, hammer b^3 and bells in reach of the hammer.

Signed at London, England, this 12th day of April, 1898.

JOHN GRANT WARREN.

Witnesses:

CHARLES AUBREY DAY,

ALFRED CHARLES DAY.