Feb. 14, 1939. A. G. MURDOCH 2,147,105

APPARATUS FOR PRACTICING GOLF AND OTHER GAMES

Filed Jan. 25, 1937 2 Sheets-Sheet 1

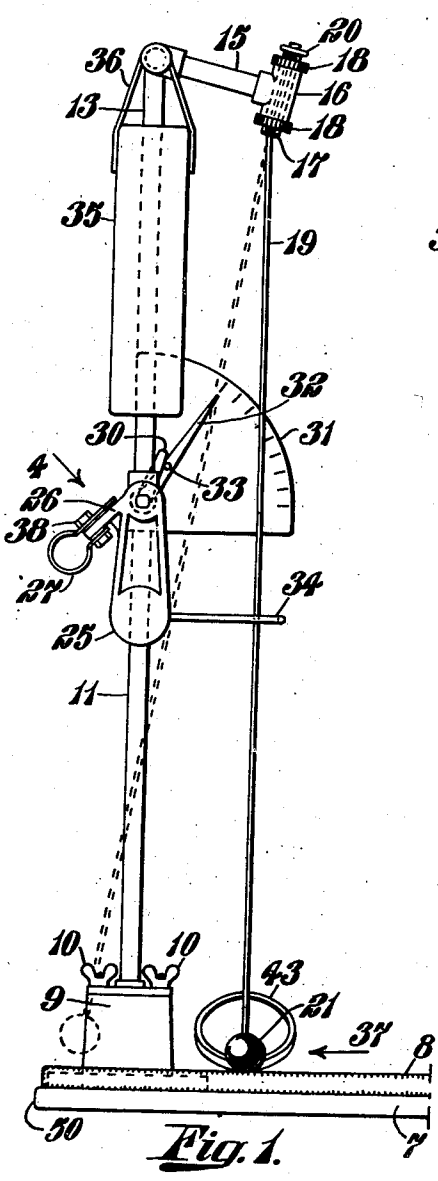


Fig. 1.

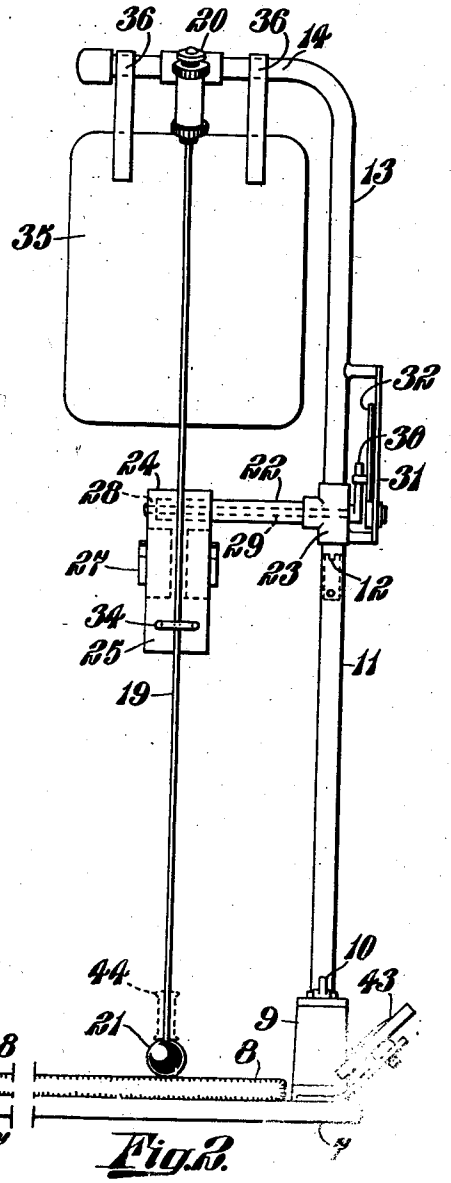


Fig. 2.

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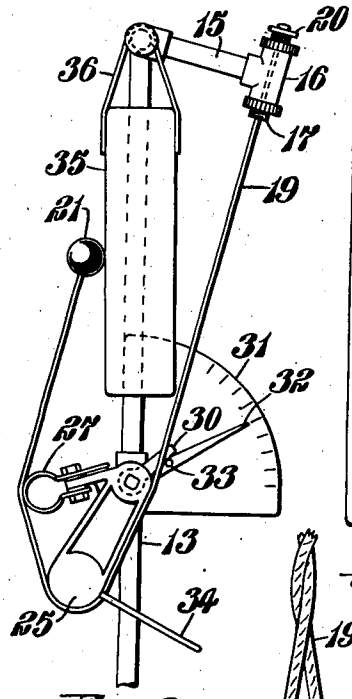


Fig. 3.

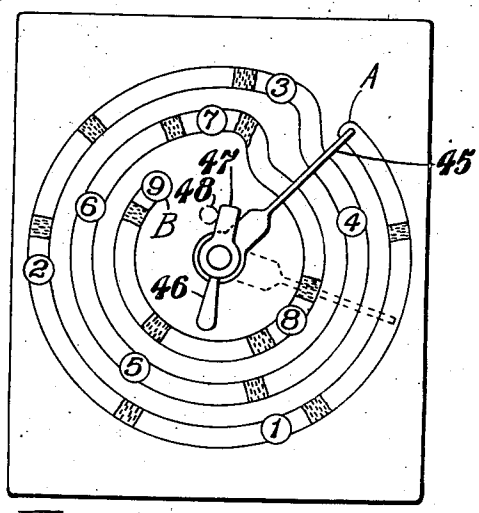


Fig. 5.

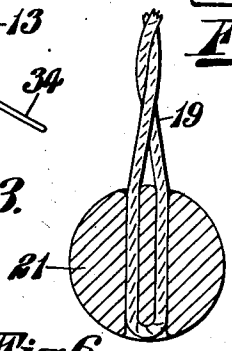


Fig. 6.

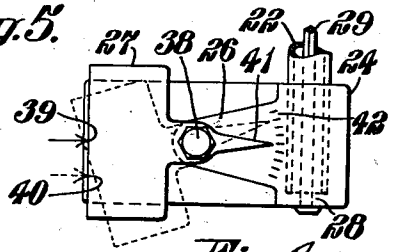


Fig. 4.

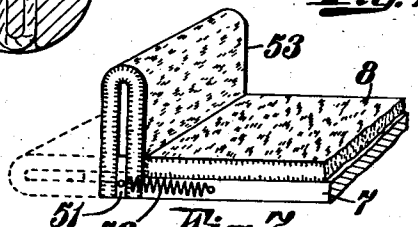


Fig. 7.

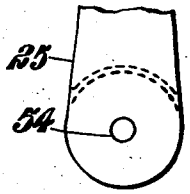


Fig. 8.

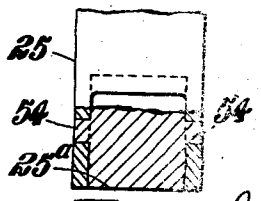


Fig. 9.

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Patented Feb. 14, 1939

2,147,105

UNITED STATES PATENT OFFICE

2,147,105

APPARATUS FOR PRACTICING GOLF AND OTHER GAMES

Alexander Gemmell Murdoch, London, England.

Application January 25, 1937, Serial No. 122,281
In Great Britain January 25, 1936

15 Claims. (Cl. 273—35)

This invention relates to apparatus for practicing golf and other games, of the type including a suspended ball adapted to be struck by the club or other playing implement and has for its object to provide such apparatus of particularly advantageous and efficient form, which moreover will stand up to the strain of repeated and strenuous use and can be used in a space within the range of the swing of a golf club or other implement.

In general, according to the invention a cord, cable or other flexible member is provided, to one end of which a golf or other ball is secured in any suitable manner. The other end is suitably connected to a point of suspension.

In a position between the point of suspension and the ball and a desired distance in front of the flexible member an impediment is arranged in the line of swing of the flexible suspending means, so that when the ball is struck, the flexible suspending means, after moving through a desired angle, contacts with the impediment which latter is thus subject to the effort imparted thereto by the said suspending means and may be utilised as a means for measuring the effort imparted. This impediment may be fixed or movable and further if desired, may include spring cushioning means. When movable it may be suspended somewhat in the manner of a pendulum. The employment of the impediment reduces the space required as in place of the full swing which the suspended ball would take about the point of suspension, its movement is limited and its anchored flight diverted.

Additionally a suitable cushioning or buffering device is provided, which preferably is movable and arranged to come in the line of flight of the ball, as diverted by contact of the flexible suspending means with the impediment. In this manner not only is the swing of the suspended ball limited but also its momentum is absorbed, preventing continued rotation about the point of suspension or the impediment and assuring the immediate return of the suspended ball to the striking position.

If required, guiding means may be provided to limit the possible movement, especially laterally, of the flexible suspending means.

Moreover, the impediment which co-operates with the flexible suspending means may be so formed as to indicate lateral movement or movements of the said suspending means. In other words the impediment itself or a portion thereof may be made so to respond to the movements of the flexible suspending means that it indicates the direction the ball would take if free.

Further, if required, a suitable mirror may be included, arranged so that the player taking the stroke can carry out necessary observations.

All the essential parts of the apparatus are suitably interconnected by a framework, base or otherwise, which further may include necessary features and if desired, be made to take apart.

In the general method of operating the device, the freely and preferably adjustably suspended ball (which latter may just touch the ground or a mat) after being struck, commences a line of flight as controlled by the point of suspension. After a short movement, but sufficient for the ball to leave the striking face of the implement, the flexible suspending means contacts with the impediment. This diverts the line of flight and the ball swings upwardly until it hits against the cushioning or buffering means, after which the ball falls and is returned to the original position due to the action of the flexible suspending means.

Many forms of apparatus may be provided in accordance with the invention but in order that the invention may be better understood, it will now be described with reference to the accompanying drawings, which show one embodiment and in which:—

Fig. 1 is a front elevation,

Fig. 2 a side view of Fig. 1,

Fig. 3 a similar view to Fig. 1 but of the upper portion of the apparatus,

Fig. 4 a fragmentary plan view to a larger scale, taken in the direction of the arrow 4, Fig. 1, and

Figs. 5 and 6 details hereafter referred to.

Fig. 7 shows a fragmentary perspective view of an addition or modification.

Figs. 8 and 9 show a further modification in front and side elevation, to be hereafter referred to.

In the drawings, 7 is a base plate of a suitable material, for example a casting, ply-wood or otherwise, which has disposed thereon a mat or the like 8 and which towards the rear edge at one corner has secured thereto a foot or pediment 9, for example in the form of a casting, to which a standard comprised by metal tubes, flanged at the base, is secured by nuts and bolts 10, the standard comprising a lower section 11 detachably jointed at 12 to an upper section 13, the latter having a bent-round horizontally extending portion 14 at the top.

The portion 14 has rearwardly and slightly

downwardly extending therefrom an arm 15 terminating in a socket 16 having adjustably positioned therein a tube 17 screw threaded on the exterior and held in any suitable adjusted position in the socket 16 by serrated nuts 18. Through the hollow interior of the tube 17 freely passes the upper end of a flexible member 19 secured at the upper end to a projecting washer or button 2. The lower end of the flexible member 19 has secured thereto a golf ball 21 and it will be understood by adjusting the position of the nuts 18, this ball can be brought into the correct position with relation to the surface of the mat 8.

Towards the lower end of the portion 13 of the standard a horizontally projecting tubular arm 22 is provided attached to a T socket 23.

This tubular arm 22 is of desired length and at the outer end has mounted to turn thereon the boss 24 of a downwardly extending pendulum-like mass 25 forming the main impediment. This mass is of somewhat cylindrical form and towards the front from the boss 24 has extending a lug or arm 26 for the pivotal attachment of a supplementary impediment 27 hereafter referred to. This supplementary impediment forms a portion of the main impediment and moves therewith but is capable of additional and separate movements as hereafter explained.

The outer end of the boss 24 is closed at 28 and has passing therethrough a headed spindle 29. This also passes through the interior of the tube 22 and through aligned apertures in the portion 13 of the standard and carries at the other end a lever or lug 30.

The construction is such that when the impediment 25 swings on the arm 22, the spindle 29 moves therewith to cause the lever or lug 30 to be moved through the same angle. 31 is a quadrant having an indicating pointer 32 working thereover, the centre of rotation being in a line with the axis of the spindle 29. A pin 33 on the pointer 32 comes in the path of the lever 30 so that on the movement of the impediment 25 the pointer 32 is moved through the same angular distance. The mounting of this pointer 32 is such that it is retained in any position to which it is moved by friction. Moreover, such mounting permits the ready re-setting to zero.

The impediment 25 has a metal loop 34 extending rearwardly thereof through which the flexible member 19 passes. As will be appreciated from Figs. 1 and 2, this loop 34 acts to some extent as a guide to the said flexible member and also tends to limit lateral movement thereof.

The portion 14 of the standard also serves for the suspension of a buffering device. This comprises a pad or bag 35 of suitable material or materials suspended by straps or the like 36 from the portion 13. In some forms the pad or bag may comprise an inner thickness (such as a mat) of cocoanut fibre or the like enclosed in a fabric or other outer casing. It, however, may be made of any suitable material.

In operation of the device, thus far as described, when the ball 21 is struck by an implement or the like, it first of all passes to the position of the flexible member 19 shown in dotted lines in Fig. 1, that is to say the said flexible member contacts with the surface of the impediment 29. This diverts the line of flight and the ball swings upwardly until it hits against the cushioning or buffering means 35. This, however, (according to the force of the blow) causes the impediment 25 to swing through a certain angle about the end of the arm 22 and thus through the movement of the pointer 32 an indication of the probable flight of the ball (were it free) is given on the quadrant 31.

After this the ball falls back into the original position and the pointer 32 can be re-set to zero.

It will be appreciated if the ball were free to move about its point of suspension without the employment of an impediment in the path of the flexible suspending member, it would fly outwards to the full radius of the flexible suspending member. As, however, the impediment is employed, after the ball has left the club face, the flexible suspending member contacts with the impediment and diverts the flight. Thus the space in which the apparatus can be used is greatly lessened.

It should be realised that the relative dimensions of the parts are such that the ball when struck by the club has left the club face before the flexible member 19 contacts with the impediment 25.

Normally the face of the club travels in contact with the ball for a short distance of a few inches and preferably, according to the invention, the flexible member 19 does not contact with the impediment 25 until after the ball has moved a still further distance away from its normal position. Thus it is assured that the ball is entirely free from the club face and consequently only the momentum etc. acquired by the ball due to the stroke, affects the impediment 25 through the flexible member 19.

As will be realised, although the normal direction of flight when struck by the implement will be due to a blow in the direction of the arrow 37 (Fig. 1), yet if the ball is mishit the direction may be to one side or the other.

To obtain an indication of the degree to one side or the other in which the direction is off the true direction, the impediment 25 may be so constructed that a reading may be obtained.

In the drawings this is accomplished by the supplementary impediment 27 which in the example shown is comprised by a sheet metal cylinder bent with lugs as shown in Figs. 1 and 4 for connection by means of a pivot 38 to the lug 26 with a desired degree of friction.

Thus, if when the ball is hit the direction of flight is correct, the flexible suspending member contacts with the supplementary impediment 27 in the position generally indicated by the arrow 39 in Fig. 4. This would have no effect and would not turn the supplementary impediment 27 on its axis 38.

Should, however, the ball not be on the true line of flight but to one side thereof, then, for example, the flexible member 19 might contact with the supplementary impediment 27 in the position indicated by the dotted arrow 40 (Fig. 4). Consequently the stress in the said flexible member would have the effect of turning the supplementary impediment 27 on its axis 38, say to the position shown in dotted lines in Fig. 4.

A pointer 41 can be included in the structure working over a scale 42 so that according to the degree the ball is off the normal direction (to one side or the other) so the supplementary impediment 27 is moved.

The friction in the assembly of the axis 38 is such that some desired degree of resistance is imposed to the movement on its axis of this supplementary impediment 27. Further, such friction is sufficient to retain the said supplementary impediment 27 in its thus-moved position, so

that when the impediment **25** comes to rest, the position to which the supplementary impediment **27** has been moved would indicate the direction.

Obviously, this supplementary impediment **27** can readily be re-set to the zero position.

Fig. 3 shows the position where the ball **21** after being struck contacts with the pad **35** and also illustrates how the mass of the impediment **25** is moved under the action of the flexible member **19**, also how the said flexible member **19** wraps itself around the impediment **25** and contacts with the supplementary impediment **27**, finally to contact with the pad **35**, before falling back to its rest position.

In place of the supplementary impediment such as disclosed, other means may be utilised to record or indicate the lateral diversion of the flight of the ball that would have taken place were the ball free. For example, the main impediment as well as being pivoted to turn about a horizontal axis, could also turn about a vertical axis or another axis at right angles to the normal horizontal axis. The degree of turn about this extra axis could be indicated.

To enable the striker to carry out necessary observations, an angularly disposed mirror **43** (of desired form) adjustably may be mounted in connection with the base **7**. Further, to prevent the flexible member **19** being damaged by the striking implement, should the said member be mishit above the ball **21** in place of the said ball, there may be located on this flexible member in a position above the ball a sleeve **44** (indicated in dotted lines in Fig. 2) of resilient material. This sleeve may be fixed thereon or movable thereon as desired.

Fig. 7 shows a perspective view of the end or edge of the base indicated by the reference numeral **50**, Fig. 1. In this figure an extension portion **51** is indicated connected to the base **7** by tension springs **52**, one at each side (one only being shown in the drawing). This extension **51** has a mat or similar portion **53** thereon and normally comes in the horizontal position (shown dotted in the figure) simply to form an extension of the base. It can, however, by slightly being pulled out, turned and allowed to be pulled towards the base **7**, to be brought to the full-line position shown in Fig. 7. In this position it forms an impediment for the ball in its swinging flight, to surmount. In other words, in place of the ball being hit to swing normally about the point of suspension, the ball must be hit upwardly to clear this obstruction. It is thus somewhat in the nature of a shot equivalent to that which must be taken for getting out of a bunker, etc.

Obviously where required this member **51** may be made to have a variable or adjustable vertical height.

To eliminate, or lessen, any frictional drag there may be on the flexible suspending member **19**, by the action of the impediment **25** when this latter is caused to swing about its axis, the portion of the impediment against which the cord contacts may be made to turn about an axis. Such a construction is shown in Figs. 8 and 9 where **25a** is the portion of the impediment made to turn about its axis. Thus when the flexible suspending member contacts with the impediment, by the swing of this latter its thus axially mounted portion may move about its centre of rotation, still acting as the impediment and diverting member, to eliminate wholly or to a large extent any frictional slip between the flexible suspending member and the suspended impediment.

In some cases, in place of the quadrant **31** and the pointer **32** for indicating the probable length of the stroke, these may be replaced by an aggregate indicating device. Such aggregate indicating device may, for example, succesively add the angles of stroke and may be associated with the layout of the golf course or otherwise whereby the lengths to different bunkers or the like in relation to the length of the stroke, or successive strokes, may readily be indicated.

One such device is disclosed in Fig. 5 where a somewhat spiral-like course is indicated extending from A to B. This extends, as will be seen, for about three complete revolutions and on the spindle of the indicator is arranged a pointer **45**. **46** is a hand-set lever on the same spindle as the indicator having an arm **47** contacting with a fixed stop **48**. If desired the arm **47** could also be furnished with a pointer and in operation, through the action of the lever **46**, the arm **47** can be set back to contact with **48** after each stroke if the pointer **45** is held. Thus, after the first stroke, on the re-setting of the parts, the position could be as indicated in Fig. 5. On the next stroke, the pointer **45** and the arm **47** are both moved round through the angular distance due to the said stroke. Thereupon upon holding the pointer **45**, the lever **46** could be again set back to contact with the stop **48** and so on.

Thus to play a game the distance to the next hazard could be calculated and the power of the stroke varied for the purpose. Finally, as will be realised, the accumulative result of a series of strokes could be taken to represent the action of play on a golf course.

The flexible member **19** can be constructed in any suitable manner. It may be formed from a suitable cord or cords, rope or ropes, metallic chain or chains, multi-stranded metallic cable, or any suitable combination thereof to secure the desired results. The actual attachment to the ball can be as required but in a preferred form the attachment of the lower end is by the flexible member which can be doubled and located in two adjacent passages through the ball **21**, as indicated in Fig. 6.

If the flexible suspending member is multi-stranded, or of other twisted or helical formation on the exterior, its grip in the passages through the ball is enhanced.

Although the invention has been particularly described in connection with an impediment capable of movement, yet the impediment may be fixed to cause the necessary diversion in the flight of the ball or the like. In this case, or in the case previously described, or in any case, expansive, extensible or other means may be included in or provided in conjunction with the flexible suspending member or the mounting of said flexible member be of such nature that resilience is imparted to the connection, permitting any necessary movement.

Such resilience, or the degree thereof, may be indicatable and constitute a measure of the power of the stroke.

Again, where required the mounting on the flexible suspending member or the said flexible member itself may include resilient means to permit any necessary stretch. Similarly, the actual mounting or the point of suspension may be made of a movable nature.

The invention is not limited to the precise forms or details of construction described, as these may be varied to suit particular cases.

What I claim and desire to secure by Letters Patent of the United States of America is:—

1. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, an impediment mounted to move on said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically.

2. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent the base, an impediment formed and disposed to act as a pendulum mounted on a horizontal axle attached to said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically.

3. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, an impediment mounted to move on said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically, said impediment being arranged in front of the flexible ball-suspending member in such a position that the said flexible ball-suspending member only contacts with the impediment after the suspended ball leaves the striking face of the club.

4. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, an impediment mounted to move on said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically, said impediment being arranged in front of the flexible ball-suspending member in such a position that the said flexible ball-suspending member only contacts with the impediment after the suspended ball leaves the striking face of the club and means provided in conjunction with said impediment for indicating the strength of the blow.

5. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, an impediment mounted to move on said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically, said impediment being arranged in front of the flexible ball-suspending member in such a position that the said flexible ball-suspending member only contacts with the impediment after the suspended ball leaves the striking face of the club and means provided in conjunction with the impediment for indicating the strength of the blow on an indicator operatively connected with the movable impediment.

6. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, an impediment mounted to move on said support in a position much nearer to the base than to the upper end of the flexible ball-suspending member and located to come in the path of the swing of the flexible ball-suspending member when the ball is struck but spaced a substantial distance in front of said flexible ball-suspending member when it is hanging vertically, an absorbing means attached to the support and located to receive and absorb the blow of the diverted ball subsequent to its diversion and upward movement due to the impediment, the parts being of such character and so disposed that the ball is left free automatically to return to the starting position.

7. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a ball-suspending member fixed at its upper end to the support, a golf ball attached to the lower end of said ball-suspending member, an impediment mounted to move on said support to indicate how hard the ball is hit, said impediment having means operatively connected thereto and moving therewith when contacted by the ball-suspending member to indicate the lateral diversion of the ball after it has been struck.

8. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a ball-suspending member fixed at its upper end to the support, a golf ball attached to the lower end of said ball-suspending member and a main impediment mounted to move on said support to indicate how hard the ball is hit, said main im-

pediment has a lateral diversion indicator operatively connected thereto which moves therewith when contacted by the ball-suspending member to indicate the lateral diversion of the ball after it has been struck, said lateral diversion indicator consisting of a supplementary impediment pivotally attached to the main impediment which is influenced by the ball-suspending member according to whether it comes to one side or the other of its pivot.

9. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a ball-suspending member fixed at its upper end to the support, a golf ball attached to the lower end of said ball-suspending member, an impediment mounted to move on said support to indicate how hard the ball is hit, said impediment having means operatively connected thereto and moving therewith when contacted by the ball-suspending member to indicate the lateral diversion of the ball after it has been struck, said last named means consisting of a supplementary impediment pivotally attached to the main impediment which is influenced by the ball-suspending member according to whether it comes to one side or the other of its pivot, and means to indicate the degree of movement of the supplementary impediment.

10. Apparatus for practicing golf of the kind having a ball suspended vertically from a fixed point and adapted to be struck by a club, comprising a support, a base carrying said support, a flexible ball-suspending member fixed at its upper end to the support, a golf ball fixed to the lower end of the flexible ball-suspending member and coming adjacent to the base, means to adjust the effective length of said flexible ball-suspending member, a delayed-action impediment mounted to move on said support upon being engaged by said flexible-ball suspending member after the ball has been struck, means to guide said flexible-ball suspending member to said impediment, and means cooperating with said impediment for indicating the strength of the blow.

11. In apparatus for practicing golf, a stationary support, a flexible ball-suspending member, means immovably securing the upper end of said ball-suspending member to said support, a golf ball secured to the lower end of said ball-suspending member and located adjacent the bottom of said support in position to be struck by the club of a player, a pendulous impediment mounted on said support at a level intermediate the ends of said ball-suspending member and spaced a substantial distance horizontally in front of the ball-suspending member when hanging vertically, by virtue of which the initial movement of the struck ball will be uninterrupted for a short interval while the ball-suspending member passes the space between its vertical position and that occupied by said impediment, for purposes described.

12. In apparatus for practicing golf, a stationary support, a flexible ball-suspending member, means immovably securing the upper end of said ball-suspending member to said support, a golf ball secured to the lower end of said ball-suspending member and located adjacent the bottom of said support in position to be struck by the club of a player, a pendulous impediment mounted on said support at a level intermediate the ends of said ball-suspending member and spaced a substantial distance horizontally in front of the ball-suspending member when hanging vertically, by virtue of which the initial movement of the struck ball will be uninterrupted for a short interval while the ball-suspending member passes the space between its vertical position and that occupied by said impediment, and means cooperating with said impediment for indicating the movement of the impediment imparted to it by the contact and action of the flexible ball-suspending member.

13. In apparatus for practicing golf, a stationary support, a flexible ball-suspending member, means immovably securing the upper end of said ball-suspending member to said support, a golf ball secured to the lower end of said ball-suspending member and located adjacent the bottom of said support in position to be struck by the club of a player, a pendulous impediment mounted on said support at a level intermediate the ends of said ball-suspending member and spaced a substantial distance horizontally in front of the ball-suspending member when hanging vertically, by virtue of which the initial movement of the struck ball will be uninterrupted for a short interval while the ball-suspending member passes the space between its vertical position and that occupied by said impediment, and an indicator for indicating the degree of movement of said impediment.

14. In apparatus for practicing golf, a stationary support, a flexible ball-suspending member, means immovably securing the upper end of said ball-suspending member to said support, a golf ball secured to the lower end of said ball-suspending member and located adjacent the bottom of said support in position to be struck by the club of a player, a pendulous impediment mounted on said support at a level intermediate the ends of said ball-suspending member and spaced a substantial distance horizontally in front of the ball-suspending member when hanging vertically, by virtue of which the initial movement of the struck ball will be uninterrupted for a short interval while the ball-suspending member passes the space between its vertical position and that occupied by said impediment, and a cushion mounted on said support above said impediment and free thereof so that after the ball strikes said cushion it will be returned by gravity to its starting position.

15. In apparatus for practicing golf, a stationary support, a flexible ball-suspending member, means immovably securing the upper end of said ball-suspending member to said support, a golf ball secured to the lower end of said ball-suspending member and located adjacent the bottom of said support in position to be struck by the club of a player, a pendulous impediment mounted on said support at a level intermediate the ends of said ball-suspending member and spaced a substantial distance horizontally in front of the ball-suspending member when hanging vertically, by virtue of which the initial movement of the struck ball will be uninterrupted for a short interval while the ball-suspending member passes the space between its vertical position and that occupied by said impediment, an indicator for indicating the degree of movement of said impediment, and a cushion mounted on said support above said impediment and free thereof so that after the ball strikes said cushion it will be returned by gravity to its starting position.

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