PRACTICE GOLF DRIVING DEVICE

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11 Claims

ABSTRACT OF THE DISCLOSURE

A golf practice device which provides an indication of both the direction and distance which would have been imparted to an actual golf ball impacted by a golf stroke applied to a simulated ball, the simulated ball being rotatably mounted on a plate which is free to rotate in a plane transverse to the plane of rotation of the ball, the plate thus precessing to a limited degree as the ball rotates on the face of the plate. The apparatus is also characterized by easily repeatable and consistently true rotating action of the plate in the horizontal plane. A sturdy but free, accurately repeatable, and repeatedly true rotating action of the plate in the horizontal plane is accomplished by mounting the plate assembly through rollers or wheels in a track in the base of the entire device. A braking device limits the horizontal rotation of the plate assembly and also holds the final setting for a reading. The rotating movement of the ball assembly drives a calibrated disc indicator to record the distance the impact would have driven a ball, but the drive to the disc is interrupted beyond a predetermined point to protect against repeated actuation without resetting. The entire device can be reset for new distance and direction readings through a reset mechanism which both releases the brake and also disconnects the disc indicator from the ball assembly.

Accordingly, one object of the present invention is to produce a novel practice golf driving device of the impact monitoring type.

Another object of the present invention is to produce a novel practice golf driving device of the impact monitoring type having proper inertia characteristics to simulate a realistic feel of impact between the driving club and the target ball on the device.

Still another object of the present invention is to produce a novel practice golf driving device of the impact monitoring type capable of providing accurate and repeatedly true indications of distance and direction of a golf ball which would have traveled under a particular impact resulting from the swing of a golf club.

Still another object of the present invention is to produce a novel practice golf driving device of the impact monitoring type which has an easily operated and fast resetting mechanism.

Still another object of the present invention is to produce a novel practice golf driving device of the impact monitoring type which is capable of providing accurate and repeatedly true indications of distance and direction of a golf ball which would have traveled under a particular impact resulting from the swing of a golf club.

Still another object of the present invention is to produce a novel practice golf driving device of the impact monitoring type wherein both distance and direction monitors are reset through one easily operated and fast resetting mechanism.

Other objects and advantages will be apparent from the following detailed description and drawings.

In the drawings:

FIGURE 1 is a plan view of the practice golf driving device of the present invention.

FIGURE 2 is a side elevation view of the practice golf driving device of the present invention taken along line 2—2 of FIGURE 1.

FIGURE 3 is a sectional view of the practice golf driving device of the present invention taken along line 3—3 of FIGURE 2.

FIGURE 4 is a sectional elevation view of the practice golf driving device of the present invention taken along line 4—4 of FIGURE 3.

Referring now to FIGURES 1 and 2, the external appearance characteristics of the golf practice driving device of the present invention are shown. The device has a base 10 which has a circular opening 12. A circular plate 14 is rotatably mounted in opening 12, plate 14 rotating in a substantially horizontal plane substantially parallel to the ground or other surface on which the device is placed for use. A ball unit 16 has balls 18a and 18b on opposite ends of a shank member 20 (only ball 18a being visible in FIGURES 1 and 2). Ball unit 16 is rotatably mounted under plate 14 for rotation through an opening 22 in plate 14. Balls 18a and 18b are target balls simulating an actual golf ball. In the use of the device, either one of the balls 18a or 18b would extend above plate 14, and that ball would be struck with a golf club being
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A diagonal center line 24 extends across plate 14 in the plane in which ball unit 16 rotates with respect to plate 14. Before a simulated ball has been struck, center line 24 is aligned with a null marker 26 on base 10, and center line 24 indicates the direction in which a golf ball would travel if hit squarely by a club traveling in the direction of line 24 as indicated by the arrows in FIGURES 1 and 2, ball unit 16 rotating counterclockwise as also indicated by the arrows in FIGURE 2. If the ball is not hit squarely by the club, so that an angled direction of flight, hook or slice would have resulted, table 14 will rotate in its horizontal plane and center line 24 will register with deviation markers 28 on either side of null marker 26 to indicate the direction in which a ball would have traveled. The null marker 26 and deviation markers 28 can also be provided at the rear of the device as shown. The rotation of ball unit 16 is registered on an indicator 30 which is calibrated to record the distance a ball would have traveled and which is observed through an opening 32 in plate 14.

With respect to FIGURE 1, it will be observed that plate 16 is shown in two positions. One position, shown in solid lines, is the null position in which plate 14 would be if the device is not being operated or if ball unit 16 were squarely struck by a blow along line 24. The other position, shown by the dotted lines for center line 24, opening 22 and opening 32 show a rotation of plate 14 indicating an angled drive, hook or slice.

Referring now to FIGURES 3 and 4, details of the mechanism described in FIGURES 1 and 2 are shown. Ball unit 16 is a piece unit having shank 20 with balls 18a and 18b at opposite ends of the shank. The unit is a molded plastic and is formed by cementing together two halves, each comprising one half of the shank with one half of a spherical ball at each end of the half of the shank. The two halves are cemented or ultrasonically welded together along line 34 (see FIGURE 2) to form ball unit 16. Either after or prior to joining together of the ball halves, a spring 50 extending between a support bar 52 and a support post 54 is engaged. Ball unit 16 is supported in its position in engagement with worm 44 by a spring 50 and a spring 50 is engaged with the upper end of plate 14 so that the reset mechanism will not be damaged by a directed blow which might strike tubing 64. When it is desired to reset the device, a downwardly directed force is delivered to tubing 64 such as by pressing downwardly with a golf club or by stepping on tubing 64. Since the bottom end or shoulder of tubing 64 is below the upper surface of plate 14, the downwardly directed force moves indicator disc 30 downwardly against spring 50 and disengages teeth 46 from worm 44. Since the ends of spring 50 are secured to support bar 52 and indicator disc 30, the previous rotation of indicator disc 30 would have caused spring 50 to be wound, and the wound spring is released for unwinding when gear teeth 46 are disengaged from worm 44. Thus, indicator disc 34 is rotated in a reverse direction to its zero yardage reading. When indicator disc 40 returns to its zero position, a tongue like downward extension 68 from the bottom edge of disc 30 contacts an upwardly extending finger 70 from support bar 52 to halt the return rotation of indicator disc 30 and prevent oscillations or hunting about the zero point.

As has been stated above, plate 14 is mounted for rotation in a horizontal plane to indicate direction of drive hook or slice. The mounting of plate 14 for rotation is accomplished by suspending a plurality of wheels from plate 14. Each wheel 72 is housed on a bearing 74 screwed to the underside of plate 14, and the wheels run in a circular track 76 in base 10. The use of three or more wheels 72 provides a sturdy, free moving and accurate rotating motion the repeatability of which is not upset by a strong hard blow because the rotational forces are well distributed around the periphery of the base. A brake mechanism 78 inhibits rotation of the plate 14 and also holds the setting of the indicator 30 after the rotation has been completed so that the amount of rotation can be observed. The brake mechanism includes a leat spring 80 mounted by a nut 82 on screw 56 and held separated from nut 58 by spring 84. A brake shoe 86 is normally held in frictional engagement with track 76 by the spring force of spring 80, and the drag between brake shoe 86 and track 76 stops the rotational motion of plate 14 and also holds plate 14 in position after rotation has been completed.

The release of the brake mechanism 78 is accomplished by the same mechanism used for the resetting of indicator disc 30. The downward movement of tubing 64

Disc 30 is supported in its position in engagement with worm 44 by a spring 50 extending between a support bar 52 and indicator 30, one end of spring 50 being secured in a hole in indicator 30 and the other end of spring 50 being secured in a hole in support bar 52. Support bar 52 is secured at one end to one of the bearings 40, and the other end of support bar 52 is spaced from plate 14 by spacer 54 and is secured by countersunk screw 56 and nut 58. A bushing 60 secured to support bar 52 houses a shaft 62 which passes through a central opening in indicator disc 30 and is secured to a rubber tubing or button 64. The lower end of tubing 64 forms a shoulder and is in contact with the top of an antifriction bearing 65, the bottom of bearing 65 being in contact with indicator disc 30, and the upper end of tubing 64 passes through an opening 67 in plate 14 and extends above plate 14. A lock washer 66 snaps onto shaft 62 immediately below bushing 60. Bushing 60 provides vertical stability for shaft 62, and spring 50, shaft 62, lock washer 66, bearing 65 and the lower shoulder of tubing 64 cooperate to position disc 30 for engagement with worm 44 to record the rotation of ball unit 16.

After the rotation of ball unit 16 in response to a blow from a golf club has been recorded, the mechanism should be reset to prepare the unit for the next drive. Tubing 64 and shaft 62 are part of the reset mechanism for this purpose, and it will be observed at the point of junction between shaft 62 and tube 64 is below the upper surface of plate 16 so that the reset mechanism will not be damaged by a directed blow which might strike tubing 64. When it is desired to reset the device, a downwardly directed force is delivered to tubing 64 such as by pressing downwardly with a golf club or by stepping on tubing 64. Since the bottom end or shoulder of tubing 64 is below the upper surface of plate 14, the downwardly directed force moves indicator disc 30 downwardly against spring 50 and disengages teeth 46 from worm 44. Since the ends of spring 50 are secured to support bar 52 and indicator disc 30, the previous rotation of indicator disc 30 would have caused spring 50 to be wound, and the wound spring is released for unwinding when gear teeth 46 are disengaged from worm 44. Thus, indicator disc 34 is rotated in a reverse direction to its zero yardage reading. When indicator disc 40 returns to its zero position, a tongue like downward extension 68 from the bottom edge of disc 30 contacts an upwardly extending finger 70 from support bar 52 to halt the return rotation of indicator disc 30 and prevent oscillations or hunting about the zero point.

As has been stated above, plate 14 is mounted for rotation in a horizontal plane to indicate direction of drive hook or slice. The mounting of plate 14 for rotation is accomplished by suspending a plurality of wheels from plate 14. Each wheel 72 is housed on a bearing 74 screwed to the underside of plate 14, and the wheels run in a circular track 76 in base 10. The use of three or more wheels 72 provides a sturdy, free moving and accurate rotating motion the repeatability of which is not upset by a strong hard blow because the rotational forces are well distributed around the periphery of the base. A brake mechanism 78 inhibits rotation of the plate 14 and also holds the setting of the indicator 30 after the rotation has been completed so that the amount of rotation can be observed. The brake mechanism includes a leaf spring 80 mounted by a nut 82 on screw 56 and held separated from nut 58 by spring 84. A brake shoe 86 is normally held in frictional engagement with track 76 by the spring force of spring 80, and the drag between brake shoe 86 and track 76 stops the rotational motion of plate 14 and also holds plate 14 in position after rotation has been completed.

The release of the brake mechanism 78 is accomplished by the same mechanism used for the resetting of indicator disc 30. The downward movement of tubing 64
and shaft 62 closes a normally small gap between the end of shaft 62 and leaf spring 80 so that shaft 62 bears against leaf spring 80 and rotates leaf spring 80 counterclockwise about its support on screw 56 to rock brake shoe 86 out of track 76. A return spring (see FIGURE 3) has one end attached to base 10 and the other end attached to the underside of plate 14, and return spring 88 is extended by the rotational motion of plate 14. Upon the release of brake device 86 from track 76, the force in return spring 88 causes plate 14 to be returned to its null position.

Since a golf club can deliver a powerful blow, a number of safety features, some of which have already been discussed, are present to prevent damage to the mechanism. Ball unit 16 is preferably made of a tough, semirigid plastic that will bend under the strong impact of a golf club. A blow striking ball unit 16 from the side causes mounting plate 14 to rotate and evenly distribute the blow for absorption around base 10. The securing of Shank 20 to shaft 38 through O-rings 36 allows a slight amount of initial slippage between ball unit 16 and shaft 38 upon the initial impact of the golf club on the ball unit to absorb some of the initial impact without shock loading shaft 38. The O-ring mounting between ball unit 16 and shaft 38 also allows for easy replacement of a ball unit by loosening indicated screw 30 from worm 44 and pulling shaft 38 to disengage it from bearings 42 and O-rings 36. To prevent inadvertent movement of shaft 38, the shaft can be retained in its position by locating a screw through the bottom of one or both bearings to register with a circumferential key slot in shaft 38. As previously pointed out, blank portion 48 provides protection against repeated striking of ball unit 16 without resetting, and the reset mechanism is protected by the fact that the protruding part, button 64, is flexible rubber.

While a preferred embodiment has been shown and described, various modifications and substitutions may be made without departing from the spirit and scope of this invention. Accordingly, it is to be understood that this invention has been described by way of illustration rather than limitation.

1 claim:

1. A golf practice device comprising:
   a base;
   an apertured plate movable in a first plane with respect to said base;
   first mounting means for mounting said plate for motion with respect to said base;
   a ball unit, said ball unit having a shank section and a ball member at each end of said shank section;
   shaft means rotatably supported from said plate on the underside of said plate, said shaft means being juxtapositioned to a first aperture in said plate;
   second mounting means for mounting said ball unit on said shaft means and in alignment with said first aperture, said second mounting means permitting rotational motion of said ball unit in a second plane perpendicular to said motion plane of said plate, said ball members passing through said first aperture and extending above said plate during rotation;
   disc means rotatably mounted under said plate, said disc means having distance indicia thereon and registering with a second aperture in said plate, the periphery of said disc means having gear teeth thereon and a blank portion to protect said disc means against damage from repeated impact of said ball unit by a striking force without resetting said disc means, said disc means being normally at a null position;
   gear means on said shaft means and engaging said gear teeth on said disc means whereby rotation of said ball unit in said second plane in response to a striking force impacting on a ball on said ball unit will be transmitted through said shaft means and said gear means to said disc means to rotate said disc means commensurate with the distance a ball would travel under the impact of the striking force; and
   means for resetting said disc means to said null position after impact of a striking force.

2. A golf practice device as in claim 1 wherein said resetting means includes:
   a support bar supported from said plate means;
   first spring means extending between said support bar and said disc indicating means, said first spring means being wound by rotation of said indicating means;
   and
   plunger means extending from above said plate means through said plate means to engage said disc indicating means, depression of said plunger means disengaging said disc indicating means from said gear means whereby said first spring means returns said disc indicating means to said null position.

3. A golf practice device as in claim 2 wherein said plunger means above said plate means is resilient.

4. A golf practice device as in claim 2 wherein said support means has a first upwardly extending projection thereon and said disc means has a second downwardly depending projection, said first and second projections engaging in said null position of said disc indicating means.

5. A golf practice device as in claim 1 wherein said disc indicating means is calibrated to indicate the distance a golf ball would travel under the impact of said striking force, and wherein motion of said plate unit in said first plane indicates the direction a golf ball would travel under the impact of said striking force.

6. A golf practice device as in claim 1 wherein said base means includes a track thereon, and wherein said first mounting means includes roller means suspended from said plate means and riding in said track.

7. A golf practice device as in claim 6 wherein said brake means includes a friction surface normally riding in said track and including release means for disengaging said friction surface from said track.

8. A golf practice device as in claim 9 including resetting means for said disc indicating means, and wherein said release means includes plunger means extending from above said plate means to said disc indicating means and to said brake means, depression of said plunger means actuating said resetting means and said release means.

9. A golf practice device as in claim 7 wherein said plate means is normally in a null position, and including second spring means extending between said plate means and said base means, said second spring means returning said plate means to said null position after motion of said plate means upon disengaging said friction surface from said track.

10. A golf practice device as in claim 1 wherein said second mounting means includes O-ring means embedded in said shank section, said shaft means passing through and being engaged by said O-ring means.

11. A golf practice device as in claim 1 including:
   brake means for inhibiting motion of said plate means in said first plane whereby said plate moves in said first plane commensurate with the direction a ball would travel under the impact of said striking force on a ball on said ball unit.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION


Inventor(s) Herbert H. Loeffler

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 8, line 1, change "claim 9" to --claim 7--

SIGNED AND SEALED
JUN 23 1970

(SEAL)

Attest:

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Commissioner of Patents

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