Feb. 1, 1966 E. R. ABRAMS ETAL 3,232,623

DEVICE FOR INDICATING SWING CHARACTERISTICS OF A GOLF PUTTER

Filed July 30, 1963

2 Sheets-Sheet 1

Fig. 1.

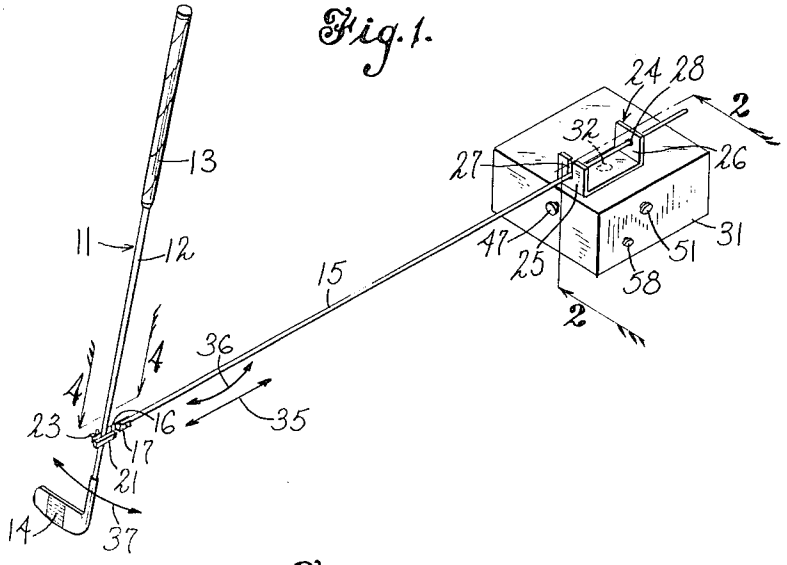
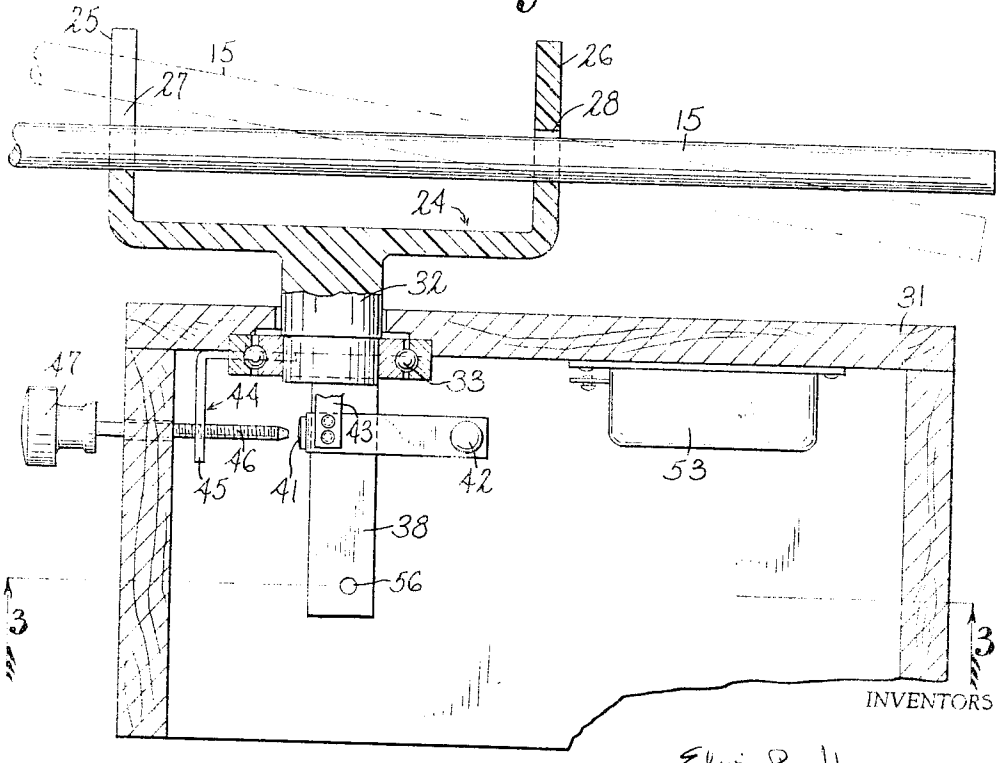


Fig. 2.



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Fig. 3.

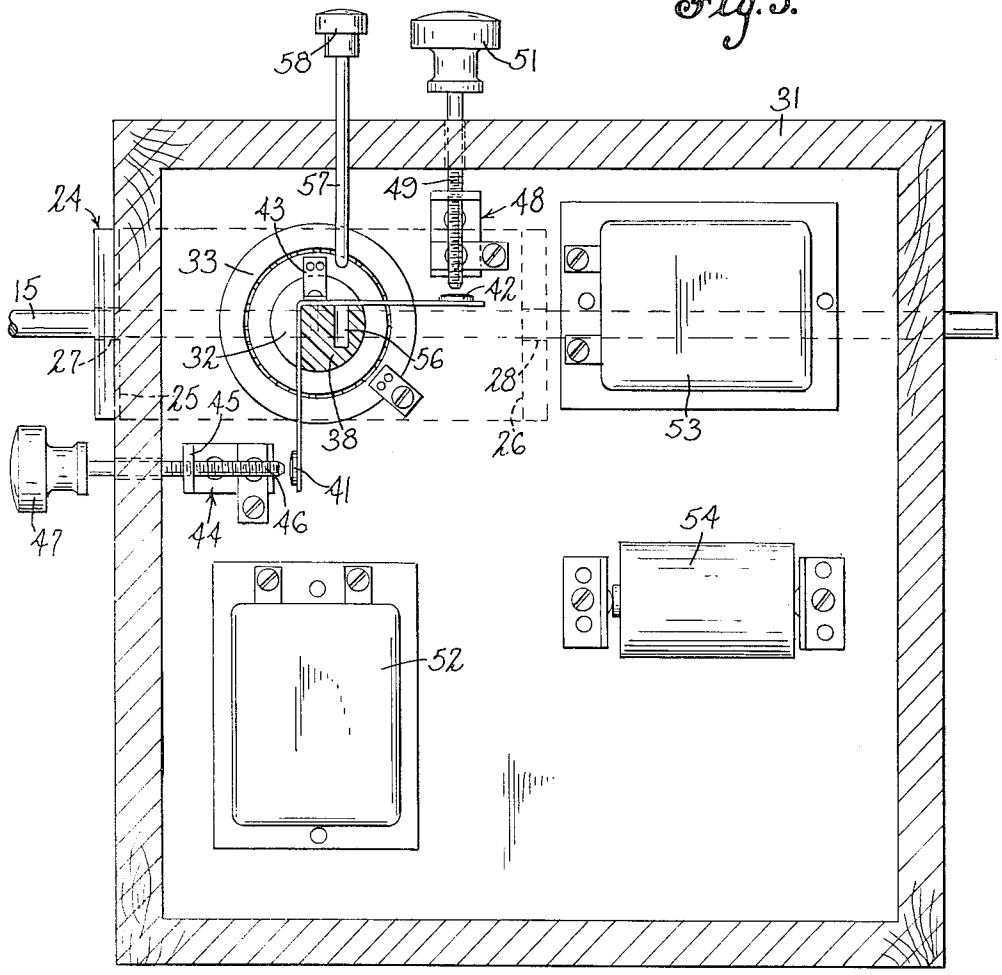


Fig. 5.

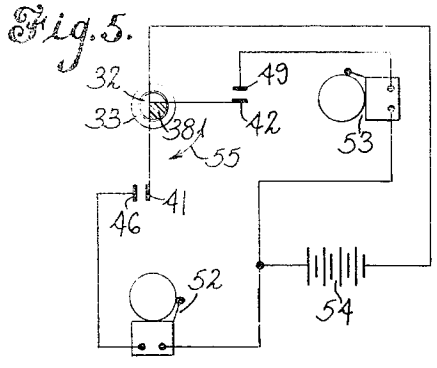
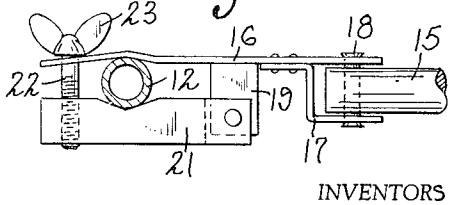


Fig. 4.



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DEVICE FOR INDICATING SWING CHARACTERISTICS OF A GOLF PUTTER

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1 Claim. (Cl. 273—186)

As golfers will readily agree, golf matches are quite often won or lost on the putting greens. One of the best ways to improve one's golf game, is to improve the "short game" and, particularly, one's putting. Improved putting can cut many strokes from one's game and improved putting, undoubtedly, has a great deal more effect on one's score than would improvement in fairway or tee shots, although all are desirable. Good putters spend many hours practicing on the putting green to sharpen their putting accuracy. Perhaps one of the biggest faults in putting is incorrect or improper swing which causes the ball to deviate from its planned path. The ideal swing in putting has become known as the "pendulum swing" where the putter swings in the arc of a pendulum which projects a straight line on the ground. A perfect pendulum swing assures that the ball will be hit along the line sighted by the golfer in aiming the putt.

Unfortunately, the avid golfer cannot practice and play as often as he would like. This is particularly true during inclement weather and the winter months when lay-offs cause one's game to become "rusty." Since the greatest degree of accuracy is required in putting, it is the putting part of one's game that is injured most by lay-offs. There are, of course, many devices on the market to aid in practicing putting in one's living-room, but since these devices simulate putting at a hole, they do no more to improve one's swing than does practice on the putting green. Hours and hours of practice on both the putting green and at home will not have beneficial results if the swing is incorrect.

Accordingly, it is an object of this invention to provide a practice device for improving one's putting swing.

Another object of the invention is to provide a device which will indicate to the golfer when he is swinging his putter incorrectly.

A further object of the invention is to provide a device which will signal the golfer when the arc of his swing is other than in the desired pendulum.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

Generally speaking, in accordance with the invention, a device is provided which will attach to the golfer's putter to control the device in response to movement of the putter. When practicing putting, the device will audibly or visibly indicate to the golfer if the putting stroke or swng is not following the desired line or arc.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claim.

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

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FIG. 1 is a perspective view of the device of the invention attached to the shaft of a golf club;

FIG. 2 is a sectional view, in elevation, of the control box portion of the invention taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a partial sectional view taken along line 4—4 of FIG. 1; and

FIG. 5 is a schematic diagram of the electrical circuit embodied in the control box.

Referring now to FIG. 1, a typical putter **11** is shown having a shaft **12**, a handle **13** and a blade **14**. Since putters are quite personal to the golfer, it is contemplated that the golfer will utilize his own putter in conjunction with the device to be hereafter described. A rod **15** extends between the putter and the device, the rod being removably attached to the putter by means more clearly shown in FIG. 4.

As shown in FIG. 4, rod **15** and shaft **12** are connected in such a manner that they lie in substantially the same plane. A plate **16** having a yoke **17** on one end thereof is pivoted to rod **15** by means of a pin **18** passing through the rod and the yoke. In this manner, rod **15** can pivot with respect to plate **16** in one plane only but is fixed with relation to the plate in other planes. A projection **19** may extend from plate **16** and have pivoted at the outer end thereof an arm **21** which is co-extensive with the end of plate **16** opposite yoke **17**. A bolt **22** having a thumb nut **23** secured to one end passes through the outer end of plate **16** and is threadedly engaged in arm **21**. In this manner, the shaft of the putter may pass through the space between plate **16** and arm **21** and tightening of thumb nut **23** rigidly secures the putter shaft to the connecting element. As shown, plate **16** and arm **21** may define V-shaped grooves for receiving the putter shaft. Referring again to FIG. 1, with the putter in the upright or putting position, it will be seen that rod **15** can move with relation to the putter only in a vertical plane. Movement of the putter in any other direction will necessarily cause the rod and putter to move together.

Referring now to FIGS. 2 and 3, rod **15** engages a guide **24** which supports the rod and responds to the movement thereof. The upper part of guide **24** is the shape of a yoke and is provided with two upstanding legs, **25** and **26**. Forward leg **25** is provided with a vertically extending slot **27** whose width is approximately equal to the diameter of the rod. Rear leg **26** is provided with an aperture **28** whose diameter is substantially equal to the diameter of rod **15**. Aperture **28** is in approximate horizontal alignment with the lowermost portion of slot **27**. Aperture **28** is slightly elongated in the vertical direction so that rod **15** may freely move in the vertical plane such as to the position shown in phantom in FIG. 2, without binding on the walls of aperture **28**.

The main operational elements of the device are carried by and enclosed in a housing **31** to which guide **24** is rotatably mounted. Guide **24** is provided with a downwardly extending shaft portion **32** which freely passes through housing **31** and which is received in the inner race of a ball bearing **33**. The outer race of the bearing is received in the housing and is secured thereto by any

suitable means. The ball bearing mounting of guide 24 in the housing permits the guide to freely rotate with respect to the housing in the horizontal plane.

Referring again to FIG. 1, it will now be seen that with the housing resting on the golfer's livingroom carpet, for example, the golfer can freely swing the putter along the line indicated by arrow 35 and through the arc indicated by arrow 36 without affecting the position of guide 24. Thus, if the swing is correct, guide 24 will not move while the golfer is putting. However, if the golfer fails to maintain the putter in the proper pendulum plane, but moves the putter out of position in the directions indicated by arrow 37, guide 24 will respond to such movement by rotating with respect to the housing through bearing 33. When this incorrect motion of the swing occurs, means are provided to alert the golfer to his error. Such means will now be described.

Referring again to FIGS. 2 and 3, shaft 32 extends downwardly within the housing and defines an end portion 38 which may have a cross section of approximately one-quarter circle. Mounted to end portion 38 is a pair of contacts 41 and 42 which are electrically interconnected and which extend at right angles to one another. End portion 38 and shaft 32 may either consist of electrically conductive material to electrically connect contacts 41 and 42 with bearing 33, or, if the shaft and end portion are fabricated from an insulating material, a strap 43 may be provided to electrically connect the contacts to the bearing.

A first adjustable contact 44 is mounted to the housing opposite contact 41, thereby forming a switch. The adjustable contact 44 may comprise a metallic plate 45 threadedly engaged by a screw 46 which may be adjusted toward and from contact 41 by means of a knob 47 carrying the screw 46 outside of the housing for easy accessibility and adjustment. A second adjustable contact 48 identical in structure to adjustable contact 44 is carried by the housing at right angles to contact 44. Adjustable contact 48 includes a screw 49 disposed opposite contact 42 and also includes a knob 51 for adjustment of the position of screw 49.

In the preferred embodiment of the invention, two buzzers or bells, 52 and 53, are mounted within the housing for audibly signaling to the golfer when an error in swing has been made. Preferably, the buzzers or bells are of different pitch so that the golfer can readily determine whether the error occurred by moving the putter closer to his body or away from his body. While the preferred embodiment of the invention utilizes buzzers or bells, or a combination thereof for audibly signaling the golfer when an error has occurred, it will be readily understood that any other sensible means, such as visually identifiable lights of different colors or brightness may be used. A self-contained battery 54 is mounted within the housing to supply the power for operating the buzzers or bells. The battery is preferably mounted so that it may be readily removed and replaced when it becomes discharged after extensive use.

The wiring of the signaling device has been omitted from FIGS. 2 and 3 for the sake of clarity and is schematically shown in FIG. 5 where the contacts and other elements are indicated by numerals identical to those used in connection with FIGS. 2 and 3. An arrow 55 indicates the possible direction of movement of shaft 32 and end portion 38 when the golfer moves the putter through an arc which deviates from the proper arc. Since contacts 41 and 42 are fast to end portion 38, they will move therewith. If the shaft 32 moves in a clockwise direction, as shown in FIG. 5, contact 41 will engage screw 46, thereby closing the series circuit through battery 54 and bell 52 to operate the bell and audibly signal the golfer. The circuit connection from the contacts 41 and 42 directly to the battery is preferably made by connecting the line from the battery to the outer race of bearing 33 and having the circuit completed through the bearing ball's inner race, and strap 43 to the contacts. In this way, the line need not move with shaft 32 thereby reducing the likelihood of line breakage due to flexing. On the other hand, if shaft 32 moves in a counterclockwise direction, contact 42 will engage screw 49 to close the series circuit through battery 54 and bell 53 again to audibly indicate to the golfer that an error in the swing has occurred. Of course, when one of contacts 41 or 42 move closer to one of screws 46 or 49, the other contact moves further from the other screw so that only one bell or buzzer will operate at any particular instant of time. As indicated before, if the bells or buzzers are of different pitch or if differently colored lights are used, the golfer can, with a little experience, immediately tell in which direction the error in swing has occurred. Again, it is emphasized that the correct straight line or pendulum swing will have no effect on shaft 32. Thus, if the swing is correct, no signal will result.

The sensitivity of the device may be adjusted through knobs 47 and 51. In other words, the golfer can control the amount of allowable deviation in his swing before the device will signal an error. This is effected by individually adjusting screws 46 and 49 through their respective knobs toward or from their respective contacts to vary the amount that the contacts must move with shaft 32 before a circuit will be completed.

When practicing to groove one's swing or for storing or setting up the device, it may be desirable to lock the device to make the guide immovable or to prevent inadvertent operation of the signals. This may be accomplished by means of an aperture 56 in end portion 38 with a mating shaft 57 slidably mounted in the housing. Shaft 57 may be provided with a knob 58 at the outer end thereof so that the position of the shaft may be manually adjusted. When the device is to be locked, the operator merely moves shaft 57 into aperture 56 through knob 58, thereby preventing rotation of shaft 32 and the end portion thereof carrying the contacts. By pulling shaft 57 out of the aperture by means of knob 58, the device is released for operation. With the guide locked, the golfer may practice grooving his swing and may get the "feel" of the grooved swing with the guide locked. Then it may be released for practicing his putting.

The above described device can be used to practice one's putting swing and it has the advantage of advising the golfer when his swing is improper. Devices that merely simulate the golf cup so that the golfer can putt the ball into the cup, are deficient in that they do not tell the golfer why he may be missing the cup. The present device helps the golfer "groove" his swing and may be used in conjunction with devices that simulate the golf cup. This device has the particular advantage of being very light and the proper mounting of rod 15 and the bearing mounting of guide 24 assure that the golfer will not be hindered or distracted by the device.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also understood that the following claim is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

A practice device for golfers for use with a putter, comprising a control rod, means for securing said control rod at one end thereof to a shaft of a putter, guide means for supporting and guiding said control rod intermediate its ends, a housing, means mounting said guide

means on said housing for free rotation in a horizontal plane, signal means within said housing and operative in response to arcuate movement of said guide means to signal the golfer when the putter deviates from its desired path during the swing thereof, said guide means comprising a central shaft rotatably supported in said housing, and a yoke having spaced upstanding legs, one of said legs being provided with an elongated slot whose width is substantially the width of said control rod and whose length in the vertical direction extends substantially the length of said leg, the other leg being provided with a substantially oval aperture whose minor diameter is substantially the same as the diameter of said control rod, said control rod being freely received in the apertures of said yoke.

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