June 10, 1941. L. T. STUMPF 2,244,972

STROKE INDICATING DEVICE

Filed April 27, 1940

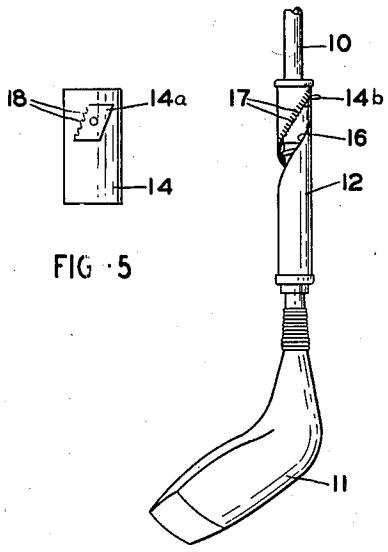


FIG. 5

FIG.-1

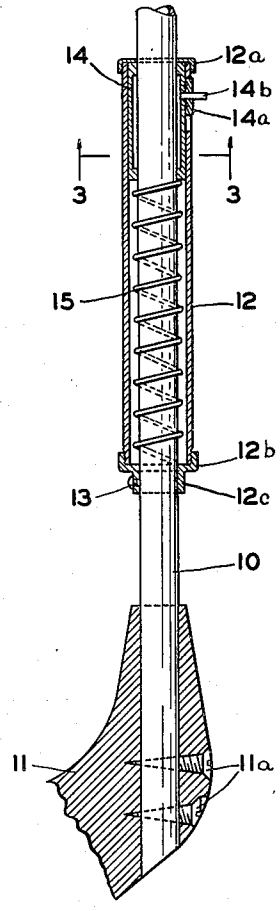


FIG.-2

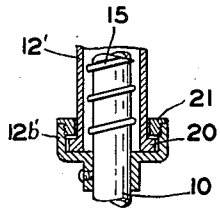


FIG.-6

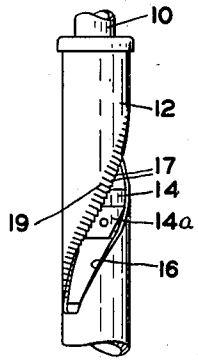


FIG.-4

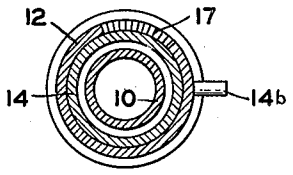


FIG.-3

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Patented June 10, 1941 2,244,972

UNITED STATES PATENT OFFICE

2,244,972

STROKE INDICATING DEVICE

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Application April 27, 1940, Serial No. 332,027

4 Claims. (Cl. 265—21)

This invention relates to improvements in practice apparatus for use with playing clubs which are adapted to be swung. The invention relates to mechanism for measuring the intensity of a swing imparted to the club.

My improved apparatus has been shown in conjunction with a golf club but I do not desire to be limited in the application of the improvement here disclosed except as required by the appended claims.

One of the objects of the present invention is to provide a simple apparatus for attachment to a club shaft wherein a weight is adapted to be moved against a spring by the centrifugal force generated while swinging the club, together with means for holding the weight in the farthest position to which it is moved so that its relative position on a scale may be determined thereby indicating the intensity of the swing.

Another object of the present invention is to provide a device which is cheaply and easily constructed and preferably also one which may readily be attached to an existing golf club, thus not requiring a special club.

Other objects and advantages of the invention will be apparent from the accompanying drawing and description and the essential features thereof will be set forth in the claims.

In the drawing, Fig. 1 is an elevational view of the lower end of a golf club equipped with my invention; Fig. 2 is an enlarged sectional view of the club of Fig. 1 showing the arrangement of the parts; Fig. 3 is a further enlarged transverse sectional view taken along the line 3—3 of Fig. 2; Figs. 4 and 5 show details of the weight and ratchet mechanism for holding the same after the club has been swung; while Fig. 6 is a detail view of the connection of the lower end of the sleeve to the shaft, showing a modification of a similar structure shown in Fig. 2.

In the various views 10 indicates a golf club shaft to which is secured the head 11 in the usual manner. Surrounding the shaft and spaced from it is a sleeve 12 which is closed at its upper end by a fitting 12*a* which is threaded or welded to the cylindrical portion 12 and provided with a central opening through which the shaft 10 extends. The lower end of the sleeve 12 is closed by a fitting 12*b* which has an opening in flanged extension 12*c* to accommodate the shaft 10. A set screw 13 holds the sleeve in fixed position on shaft 10 although the same result might be accomplished in many ways. For instance a spot weld or a bit of solder would serve to anchor the sleeve 12. Within the sleeve 12 and slidable longitudinally in the annular space between the sleeve and the shaft is a weight 14 which in the present embodiment is a small cylindrical piece having openings in its opposite ends for sliding engagement with the shaft 10. A helical spring 15 embraces the shaft 10 lying between the shaft and the sleeve 12. This spring is engaged between the member 12*b* and the weight 14 so as to hold the weight normally in its uppermost position as viewed in the drawing.

Ratchet means is provided for holding the weight 14 in the farthermost position to which it is moved by a swing of the club against the action of the spring 15 tending to return it. The means here shown comprises a slot 16 formed in the sleeve 12 and bearing teeth 17 on its upper edge adapted to engage with teeth 18 on a small projection 14*a* which is fixed to the weight 14 in position to project into the slot 16. The weight is provided with an extension piece 14*b* for manually resetting the device. It will be noted that the teeth 17 and 18 are so arranged that the teeth 18 easily pass over the teeth 17 as the weight moves downwardly along the shaft against the spring 15, whereas the coacting teeth mutually engage to hold the weight when the spring tends to return the weight to its uppermost position.

As best seen in Figs. 4 and 5, the slot 16 is inclined at an angle to the axis of the shaft 10 for reasons that will appear. This inclined position of the slot permits the provision of a greater number of teeth 17 in a given vertical length of the sleeve 12 so as to permit a finer calibration of the device. The ratchet part 14*a* carries teeth 18 on the side toward the teeth 17 of the slot but the opposite side of part 14*a* is smooth to coact with the smooth or lower side of the slot 16. As shown in Fig. 4, the part 14*a* is of less width than the slot 16 so that as the weight 14 moves downwardly during a swing of the club, the teeth 18 move away from the teeth 17 permitting the smooth side of part 14*a* to ride along the smooth side of slot 16, thus reducing the friction of the parts as the weight 14 moves downwardly. Obviously the moment the weight 14 begins to move upwardly under the influence of spring 15, the teeth 17 and 18 will re-engage and hold the weight.

As shown in Fig. 6, the sleeve 12' similar in other respects to the sleeve 12 already described, may have a shoulder 20 formed at its lower end. A collar 21 is provided having sliding engage-

ment with the sleeve 12' and abutting the shoulder 20, there being a threaded engagement between the collar 21 and the part 12b' which is in all respects analogous to the part 12b already described. In this construction the part 12b' holds the sleeve 12' against movement longitudinally of the shaft while the construction of Fig. 6 permits relative rotation of sleeve 12' relative to the shaft 10. If necessary or desirable, a small amount of lubricant may be placed between the shoulder 20 and the collar 21 and such lubricant will be held there by the member 12b'. When the device constructed according to Fig. 6 is in place and the club is swung, the engagement between the smooth side of the ratchet part 14a and the smooth side of slot 16 will tend to rotate the sleeve 12' and I find that this adds to the sensitiveness of the device.

It is thought the operation of my device will now be apparent and it occurs as follows: With the parts in the position shown in Figs. 1 and 2, the club is swung in the usual manner and the centrifugal force generated causes weight 14 to move downwardly against spring 15 until the point of maximum centrifugal force is reached. As that force decreases, spring 15 tends to return the weight 14 toward its uppermost position and at such time the teeth 18 engage the teeth 17 and hold the weight in the lowermost position to which it has been moved by the centrifugal force generated. If desired, a scale may be provided along the upper edge of slot 16 as indicated at 19, Fig. 4.

Since a device of this sort is of greatest interest to a golfer in connection with a club with a wooden head, such as is generally used for driving a ball from a tee, I have provided a device which is particularly easy to install in a club of this sort. By removing the screws 11a, the head 11 may be slipped off the shaft 10 and my indicating device may be slipped upward on the shaft and secured in position by set screw 13 after which the head may be again secured to the shaft. Thus the device may be applied to a standard club by anyone without special tools or without changing the standard club in any way. When the device is used on a driving club it may be desirable to mark the scale 19 in terms of approximate yardage which would be produced by a swing of the intensity indicated.

My indicating device may also be attached to irons by simply driving out the brass pin or other fastening means which holds the head on the shaft, placing the device in proper position on the shaft as shown in Fig. 2, and then replacing the club head. In such use with irons a golfer may readily determine the proper indication on the scale to drive the ball a desired distance with the iron.

It will be noted that the slot 16 is helical in form as I find this gives more accurate indications. Therefore the teeth 18 on the weight 14 are arranged at the helix angle and the portion 14a extends into the slot 16 and slides easily along this slot when the club is swung.

What I claim is:

1. In combination with a club shaft, a sleeve mounted concentrically on said shaft and rigidly secured thereto against longitudinal movement therealong, said sleeve having an internal diameter greater than the external diameter of said shaft, an annular weight slidably embracing said shaft in the space between said shaft and sleeve, a helical spring surrounding said shaft in the space between said shaft and sleeve and urging said weight toward one end of said sleeve, said sleeve being provided with a slot, and a ratchet device comprising parts on said weight and on said sleeve at the edge of said slot arranged to permit free movement of said weight away from said one end of said sleeve and arranged to hold said weight against the action of said spring tending to move said weight toward said one end of said sleeve.

2. In combination with a club shaft, a sleeve slipped on said shaft and rigidly secured thereto against longitudinal movement therealong, said sleeve having an internal diameter greater than the external diameter of said shaft, an annular weight slidably embracing said shaft in the space between said shaft and sleeve, a helical spring surrounding said shaft in the space between said shaft and sleeve and urging said weight toward one end of said sleeve, said sleeve being provided with a helical slot having ratchet teeth along the edge thereof nearer said one end, a ratchet member secured to said weight and extending into said slot, and the teeth of said slot and said ratchet member being arranged to permit free movement of said weight away from said one end of said sleeve and arranged to hold said weight against the action of said spring tending to move said weight toward said one end of said sleeve.

3. In combination with a club shaft, a sleeve mounted concentrically on said shaft and rigidly secured thereto against longitudinal movement therealong, said sleeve having an internal diameter greater than the external diameter of said shaft, an annular weight slidably embracing said shaft in the space between said shaft and sleeve, a helical spring surrounding said shaft in the space between said shaft and sleeve and urging said weight toward one end of said sleeve, said sleeve being provided with a slot inclined at an angle to the axis of said shaft, there being ratchet teeth on said sleeve along the side of said slot nearer said one end of said sleeve, the sleeve along the other side of said slot being smooth, a ratchet part on said weight and extending into said slot, said part having ratchet teeth along its side nearer the tooth-bearing side of said slot, said part being smooth on its opposite side, and said ratchet part being of less width than said slot, whereby said ratchet part may move out of contact with said ratchet teeth of said slot when moving away from said one end.

4. The combination of claim 3, wherein said sleeve is mounted for rotative movement relative to said shaft, whereby bearing of the smooth side of said ratchet part against the smooth side of said slot, during movement of said weight against the urge of said spring, may turn said sleeve.

LEWIS T. STUMPF.