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CENTRIFUGAL FORCE INDICATING MEANS FOR SHAFTS, GOLF CLUBS, AND THE LIKE

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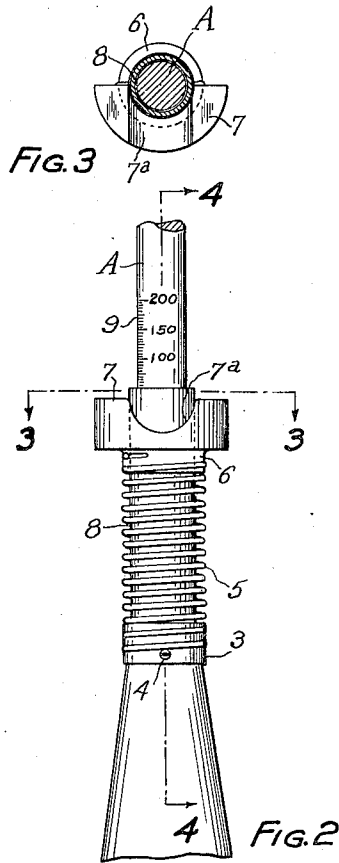
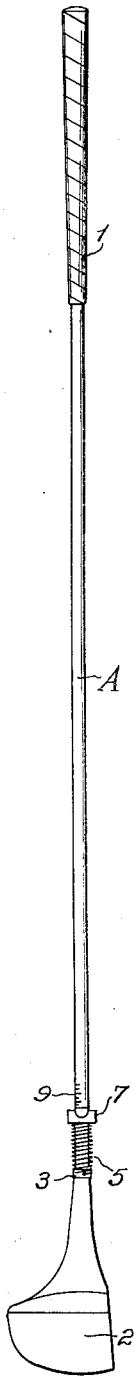
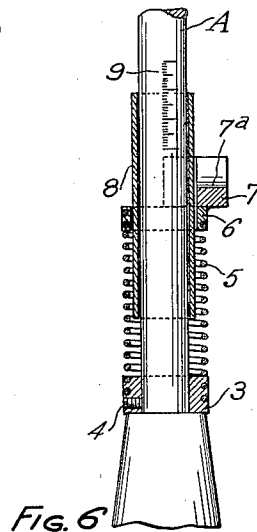
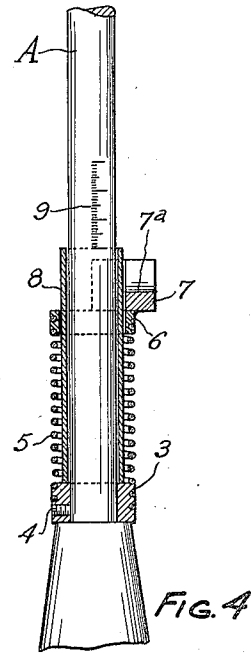
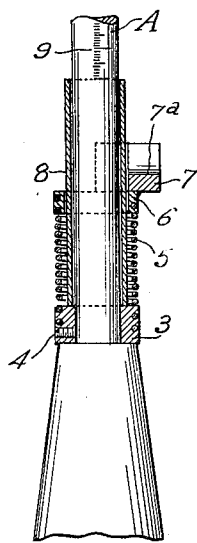
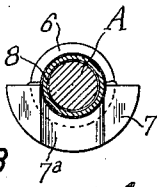


FIG. 3



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UNITED STATES PATENT OFFICE

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CENTRIFUGAL FORCE INDICATING MEANS
FOR SHAFTS, GOLF CLUBS, AND THE LIKE

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3 Claims. (Cl. 265—21)

The present invention relates to devices for measuring the centrifugal force of moving members such as the shaft of a golf club. The invention preferably takes the form of a practice golf club and comprises largely an indicating device by which the different swinging forces generated by movement of the club may be measured.

More specifically speaking, this invention in its relation to practice golf club use involves the employment of a centrifugally operated member mounted to slide longitudinally of the club preferably adjacent to the head end of the same and adapted to cooperate with an indicating member which is carried in a movable manner on the shaft of the club adjacent to the centrifugally operated member and adapted to be actuated by the latter different indicating distances as an incident to the shifting movement of the centrifugal member.

By the utilization of the features of the invention including those parts above mentioned, it is possible to obtain an approximation of the effective force of the head of the club upon a ball as determined by the power applied to the handle or shaft of the club in generating necessary swinging force as required for the driving of a ball in golf practice.

The indicating means utilized for the purposes of the invention takes the form of an indicating member freely slidable upon the shank or shaft of the club or whatever other member is used, the swinging force of which is to be determined, together with the centrifugally movable weight that takes the form of a magnet, the indicating member being of ferrous metal or magnetizable substance so as to be actuated by magnetic attraction to the magnet or centrifugal weight member in the operation of the device.

One exemplification of the invention, that wherein the principles thereof are applied to golf clubs, is shown in the accompanying drawing, in which

Figure 1 is a front elevation of a golf club having the invention applied thereto.

Figure 2 is a fragmentary view of the lower portion of the club adjacent to the head showing in enlarged front elevation the indicating parts and actuating means therefor.

Figure 3 is a sectional view taken on line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a vertical sectional view showing the parts illustrated in Figure 2, but looking at the club from a right angle to the view of Figure 2, parts of the indicating means being illustrated in their normal unoperated condition.

Figure 5 is a view similar to Figure 4, but showing the relative positions of the centrifugal weight and magnet member with respect to the

indicating sleeve after movement of the centrifugal weight by centrifugal force and prior to the movement of the centrifugal weight and sleeve under the influence of the spring actuating device.

Figure 6 is a view similar to Figures 4 and 5, but illustrating the manner in which the indicating sleeve or member has been actuated by the magnet or weight after the swinging operation of the shaft has taken place and said shaft becomes stationary.

Describing the invention specifically in conjunction with the drawing, A denotes the shaft or shank of a golf club provided at its upper end with the usual handle 1 and at its lower end with the usual head 2. The golf club may be of different types, as for instance a driver, brassie, mashie, or the like, having in view particularly that the club is one requiring considerable swing, the force of which is desired to be measured at or adjacent to the head.

Near the lower portion of the shank or shaft A is attached an anchoring collar 3 secured by a set screw 4 or the like against displacement. This collar may be externally threaded a short distance so as to permit to be screwed thereon the lower end of a coil spring 5 to position the spring against displacement from connection with the collar 3. The spring 5 encircles the shaft A with some space between said parts, and the upper end of the spring is attached in a manner similar to the mode of attachment to the collar 3, to a small collar or bushing 6 which encircles the shaft and is freely movable longitudinally of the latter. The movable collar 6 is attached permanently to a horseshoe magnet 7 that constitutes a centrifugally movable weight adapted to slide along the shaft A and said collar 6 is externally grooved similarly to the stationary collar 3 so that the groove acts as a thread to receive the upper end portion of the spring 5.

The spacing of the parts 5, 6, and 7 on the shaft A is sufficient to enable an indicator in the form of an indicating sleeve 8 to be mounted between the shaft A and said parts 5, 6, and 7. The indicator 8 is made of magnetic substance such as ferrous metal capable of being attracted by the magnet 7 that constitutes the centrifugally movable weight member.

Upon the shaft A may be mounted indicia 9, the nature of which is such as to give an approximation of the extent of force imparted to the club or shaft A in swinging said shaft with the head 2, and likewise the extent of force that is caused to act at or adjacent to the head portion 2 of the shaft or club, said head of course being the driving member that strikes the ball in the practice use of the device.

The indicia 9 may be provided with indications in the nature of yardage measurements, as for

instance 200 yards, 150 yards, and 100 yards, or other equivalent measurement indications which may be determined approximately by tests of use of the club in actual play upon a regular golf ball. Under some conditions if the invention is utilized in relation to rotating shafts or members similar to the part A mounted to turn about a fixed axis, the measuring indications provided on the shaft A might be in terms of velocity, because the action of the centrifugal weight or magnet 7 would be useful to effect such determinations, as well as other kinds of measurement of centrifugal forces.

The magnet or member 7 is notched out as shown at 7a to provide a finger recess that facilitates the application of the finger or thumb to the indicating member 8 for normalizing the latter after its use in a measurement action of the practice golf club.

The operation of my device as above described is relatively simple. Normally the parts are in the position of Figures 1 and 2. When the club is swung by the action of grasping the handle 1 and effecting the swing in the ordinary manner of use of a golf club, it will be evident that the greater the force imparted to the shaft A in effecting the swing the greater will be the centrifugal movement of the weight or magnet 7 in the direction of the head 2 of the club. The view of Figure 5 illustrates the effect of the movement of the weight 7 centrifugally caused by the swing of the club in the manner stated, the part 7 being shown as having shifted toward the head end of the club to compress the spring 5 toward the collar 3 and to slide toward the head externally of and along the indicating member or sleeve 8. As soon as the swing imparted to the shaft A has ceased or has come to the completion of the stroke, the natural action of the compressed spring 5 is to expand as shown in Figure 6, and since the member 7 is a magnet and the sleeve 8 is magnetically attracted toward it, the spring 5 will return the weight 7 to its normal position of Figures 1, 2, and 4 and will carry the sleeve 8 upwardly on the shaft A a distance corresponding with the distance of movement of the magnet or weight 7 through its centrifugal action in shifting toward the head 2 during the swing of the club or shaft A. Obviously, this distance of movement of the indicating member 8 will correspond always with the degree of force imparted to the shaft A in the swing, or at least will approximate with a fair amount of closeness to such degree of force and sufficiently for measuring distance or velocity effects of movement of the head 2 and shaft A.

After the user has read the indication opposite which the upper end of the sleeve or indicator 8 stops upon completion of the swing of the club, by a simple pressure of the finger or thumb upon the sleeve 8 it may be returned to its normal position as shown in Figures 1, 2, and 4.

It would be possible, of course, to employ in conjunction with the parts 7 and 8 a mechanical connection instead of a magnetic connection that would be effective to accomplish the same results, and therefore I do not wish to be limited to the specific means and mode of operation illustrated since my invention contemplates the employment of any suitable connecting means between the parts 7 and 8 that will be efficient for the purposes of the invention.

It is also notable that the shaft A might be the radial spoke of a wheel and the measurement of the velocity of the rotating member determined by the use of the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. Indicating means of the class described, comprising, in combination, a shaft adapted to be swung about an axis, said shaft constituting the shank of a golf club, an anchoring collar secured to said shank, an indicating sleeve slidably mounted on said shaft and abutting against said collar when in zero indicating position, a centrifugal weight mounted on said sleeve, a spring connected to said collar and weight for holding said weight in a normal position and permitting movement thereof relative to said sleeve to an indicating position with respect thereto by centrifugal force, and means connecting said weight to said sleeve after movement of said weight by centrifugal force from its normal position whereby said sleeve will be picked up by said weight and moved out of abutting relationship with and away from said collar when said weight is returned to its normal position under the influence of said spring.

2. Indicating means of the class described, comprising, in combination, a shaft adapted to be swung about an axis, said shaft constituting the shank of a golf club, an anchoring collar secured to said shank, an indicating sleeve slidably mounted on said shaft and abutting against said collar when in zero indicating position, a centrifugal weight comprising a magnet mounted on said sleeve, and a spring connected to said collar and weight for holding said weight in a normal position and permitting movement thereof relative to said sleeve to an indicating position with respect thereto by centrifugal force, said sleeve being formed of material having properties of magnetic attraction whereby movement of said magnet by centrifugal force relative to said sleeve will be resisted by the magnetic field between said magnet and sleeve and said sleeve will be connected to said magnet and moved out of abutting relationship with and away from said collar when said weight is returned to its normal position under the influence of said spring.

3. An indicating unit for measuring the centrifugal force of a shaft adapted to be swung about an axis comprising an anchoring member attached to said shaft, a movable indicating member shiftable on the shaft and adapted to abut against said anchoring member when in zero indicating position, a centrifugal weight mounted on said indicating member for movement relative thereto, a spring connected to said anchoring member and said centrifugal weight for holding said weight in a normal position and permitting movement thereof relative to said indicating member to an indicating position with respect thereto by centrifugal force, and means connecting said weight to said indicating member after movement of said weight by centrifugal force from its normal position whereby said indicating member will be picked up by said weight and moved out of abutting relationship with and away from said anchoring member when said weight is returned to its normal position under the influence of said spring.

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