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WEIGHTED PRACTICE GOLF CLUB INCLUDING IMPROPER SWING SENSING MEANS

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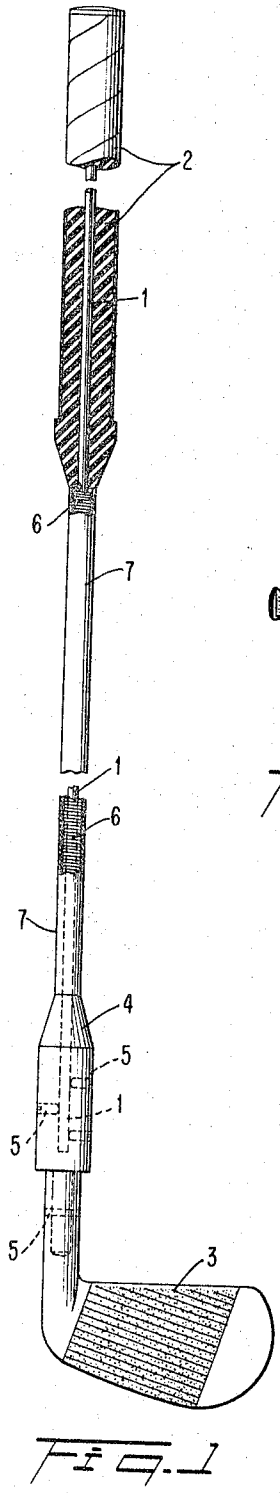


Fig. 1

Fig. 2

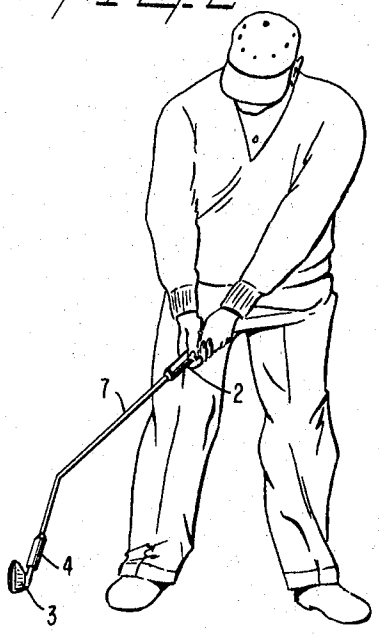


Fig. 3

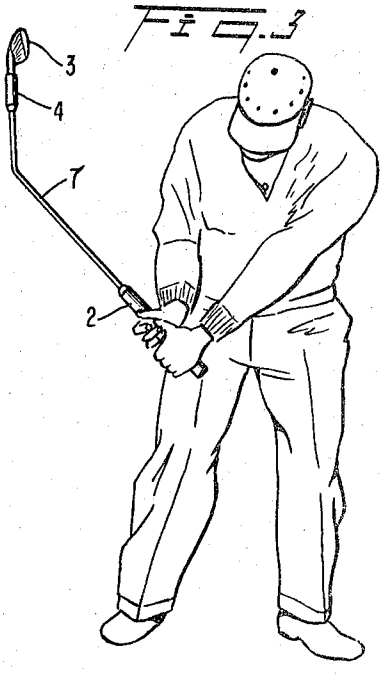


Fig. 4

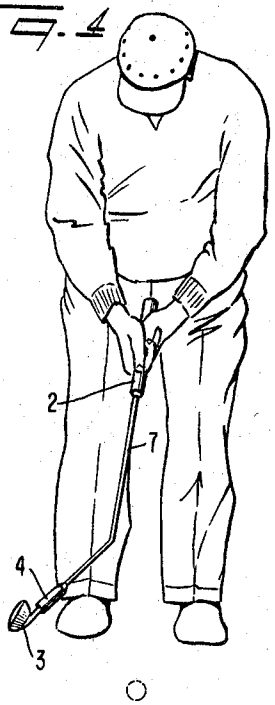
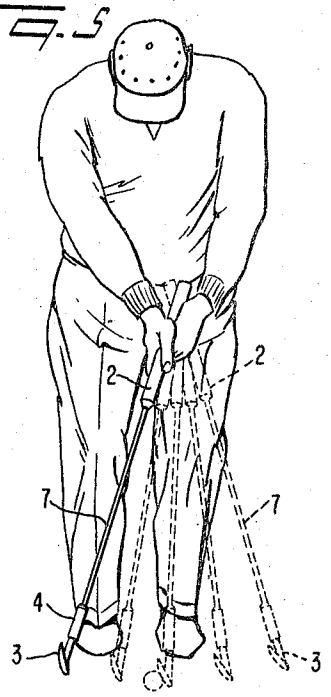


Fig. 5



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WEIGHTED PRACTICE GOLF CLUB INCLUDING IMPROPER SWING SENSING MEANS

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This invention relates to a practice golf club, and more particularly to a golf club designed to develop in the player a completely smooth swing by accentuating any irregularities in the swing and transmitting such irregularities through the hand-grip to the hands of the player.

Almost from the beginning of golf, contrivances have been developed to improve one or another facet of the golfer's swing. Few of these devices have met with limited success, but most have been rejected either because of cost or inadequacy. For example, practice clubs have been devised with gauges located close to the head of the club for indicating the centrifugal force developed by the player. Other clubs have been designed with specially constructed shafts which mechanically react to give an indication of an improper swing. One such club shaft comprises a series of hinges which are locked as long as the attitude of the club remains correct. However, if the club is improperly twisted during the backswing, the hinges would collapse. Another practice club comprises a short length of leaf spring somewhere along the shaft length which produces a whipping action at the head of the club if the club is jerked during the backswing.

A shortcoming of all these known clubs is that at best each could correct only a single fault. For example, the club comprising the hinged shaft required only that the player properly rotate the club during the backswing and the shaft would remain locked. The player could make numerous other errors while swinging and the club would be incapable of producing any positive indication of such errors. The club comprising the leaf spring similarly was designed to correct only one fault in the player's swing; it was designed to indicate a "jerky" swing by producing a "whipping" reaction.

Accordingly, it is a primary object of this invention to provide a practice golf club which is capable of indicating physically and positively any of several errors in the swing of the player.

It is a further object of the invention to provide a club which is the mechanical equivalent of a pendulum comprising a mass at the end of a flexible shaft, with the mass being symmetrical relative to the shaft.

It is a further object of the invention to provide a unique practice club which is simple to manufacture and lends itself to mass production techniques.

It is another object of the invention to provide a practice golf club having a flexible shaft which buckles when subjected to a jerky motion, and which buckling is transmitted to the hands of the player through a novel grip which is capable of transmitting all vibrations to the hands.

In accordance with an aspect of the invention, there is provided a practice golf club having a shaft capable of buckling over its entire length, and a handle surrounding a portion of the shaft made of a material capable of transmitting any buckling in the shaft to the hands of the player.

The above mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawing, wherein:

FIG. 1 is a partial sectional view of the novel golf club;

FIGS. 2–4 are diagrammatic views of a player swinging a club erratically; and

FIG. 5 is a view showing successive portions of a player properly swinging the club.

As is well known to the golf expert, a correct golf swing must be free of any erratic, irregular or jerky motions in the back or forward parts of the swing. For example, in the start of the backswing, the club should be slowly brought back from the ball. This initial part of the swing should not be jerky or irregular but rather slow, deliberate and smooth. Similarly, at the top of the backswing and when the player is just going into the first part of the forward swing, that is, the transition from the backswing to the forward swing, must also be slow, smooth and deliberate. One of the greatest difficulties suffered by most beginners is in developing a smooth backswing and a smooth transitional movement from the backswing to the forward swing. My invention is characterized by a club having a shaft which is unitary but flexible so that any jerky movement, however slight, results in the club buckling or quivering. This positive indication of a fault in the swing is transmitted through a soft handle to the hands of the player, so that he immediately detects any fault or irregularity in his swing.

Referring now to FIG. 1, there is illustrated in cross-section the practice golf club. The club comprises a flexible, preferably, non-articulated spring steel rod shaft **1**. At one end of the shaft, a soft hand grip **2** is formed surrounding the shaft in tight engagement. It is essential that the hand-grip surround a part of the integral shaft **1** in order to obtain maximum efficiency of vibration transmission through the shaft to the hand-grip. Further, it is essential that the hand-grip be made of a resilient material which is capable of transmitting vibratory motion in the shaft to the hands of the player. It is also essential that the hand-grip be made of such soft material that the player in gripping the hand-grip is in effect applying the force of his grip to the shaft which passes through the grip. Preferably, the hand-grip is made of a rubber material having a durometer hardness not exceeding **65**. The rubber hand-grip is preferably vulcanized on the shaft **1**.

The club is provided with a head **3** made of a lightweight material such as aluminum for reasons which will be explained later. The alumina head **3** is secured to a counterweight **4**, which is preferably made of steel. The head is secured to the counterweight preferably by means of a pin **5**.

As shown in FIG. 1, the counterweight **4** is bored to accommodate in tight fit engagement an end of the shaft **1**. The shaft is secured tightly in the counterweight preferably by means of Allen head set screws **5**. The weight of the counterweight **4** is selected to give the club approximately the weight of a standard club.

As shown, the counterweight is located at the end of, and symmetrical to the shaft. In principle, therefore, the shaft and counterweight operate as a pendulum. The weight and shaft move together in pendulum motion providing the motion is smooth. If the motion becomes irregular or jerky, the pendulum shaft will buckle or vibrate.

If in place of the counterweight a standard weight head were used, the center of gravity of the club would practically be at the head, which would give the club a materially different balance or fulcrum point from the standard club. Further, since the weight would effectively be concentrated at the end of the club, the shaft would require stiffening to prevent buckling when the club is simply held straight out. The counterweight, of course, moves the center of gravity to the shaft, thereby

permitting use of a shaft more sensitive to buckling forces.

From the preceding discussion it is evident that buckling in the shaft is essential. The extent of buckling, however, need not be large. Indeed, it is desirable to restrict or limit the extent of buckling to prevent permanent bend in the shaft and to permit rapid restoration of the straight shaft. To limit the extent of buckling, a coil spring **6** is provided around the shaft **1**, extending between the counterweight and the hand-grip. The inside diameter of the coil spring is only slightly larger than the outside diameter of the shaft, and the adjacent coils of the spring are in contiguous relationship. Accordingly, bending of the shaft causes the coils to become compressed along one side thereof, and stretched under tension along the opposite side thereof. The effect of these opposing forces, therefore, limits the extent of buckling and tends more rapidly to restore the shaft to its original shape.

The coil spring is protected against fouling by dirt and inclement weather conditions by a plastic sleeve **7** surrounding the coil spring **6**. The length of the sleeve **7** is sustantially co-extensive with the spring **6**. The material of the plastic sleeve is preferably at least as resilient as the combined coil spring shaft assembly, so as not to restrict the buckling capabilities of the shaft and coil spring combination.

By way of example, in FIG. 2 there is illustrated a player who has started his backswing too rapidly as distinct from a gradual, slow and smooth motion which is required to prevent buckling.

In FIG. 3, the player is shown as having begun his forward swing with a jerky or too rapid motion. In FIG. 4, the club is shown in a position which indicates to the player that he is attempting to push the ball and buckling has resulted.

In FIG. 5, successive positions of a correct swing are illustrated and as shown, the shaft is free of any buckling. In effect, the club acts as a pendulum with a smooth and gradual motion.

While the foregoing description sets forth the principles of the invention in connection with specific apparatus, it is to be understood that this description is made only by way of example and not as a limitation of the scope of the invention as set forth in the objects thereof and in the accompanying claims.

What is claimed is:

1. A practice golf club for use with light weight practice golf balls, comprising a shaft capable of buckling over substantially its entire length, handle means surrounding an end portion of said shaft and firmly secured thereto, weighting means attached at one end to the opposite end of said shaft, and a light-weight head attached to the opposite end of said weighting means, the weight of said weighting means being selected to give the golf club an overall weight approximately equal to a standard golf club, and the weighting means being spaced from the light-weight head so as to place the club center of gravity further up on the shaft and thereby reduce the normal flexure of the shaft when swinging the club.

2. The club according to claim **1**, and further comprising a coil spring surrounding said shaft between said handle means and said weighting means and being more resilient than said shaft, the inside diameter of said spring being slightly larger than the outside dimension of said shaft, and the adjacent coils of said spring being substantially in contiguous relationship, whereby said coil spring serves to limit the extent of buckling of said shaft and tends more rapidly to restore the shaft to its original shape.

3. The club according to claim **2**, and further comprising a plastic sleeve surrounding the entire length of said coil spring and being substantially as resilient as said shaft, whereby the sleeve protects said spring against dirt, inclement weather, and the like.

4. The club according to claim **2**, wherein said handle means consists of a material bonded to said shaft and having a durometer hardness rating not greater than 65.

5. The club according to claim **4** in which said material is rubber,

said rubber being vulcanized to said shaft.

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