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SWING DEVICE INCLUDING A MEMBER ATTRACTED BY AN ECCENTRIC MAGNET AND MOVABLE BY CENTRIFUGAL FORCE

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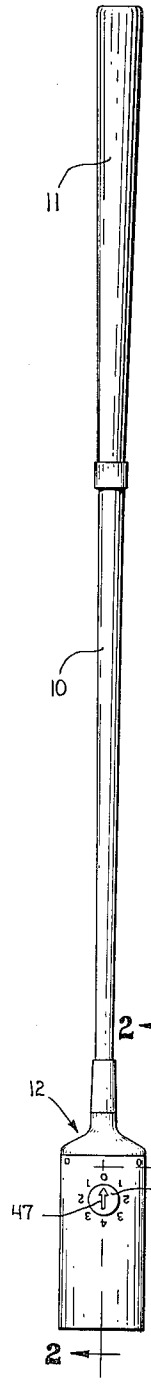


Fig. 1.

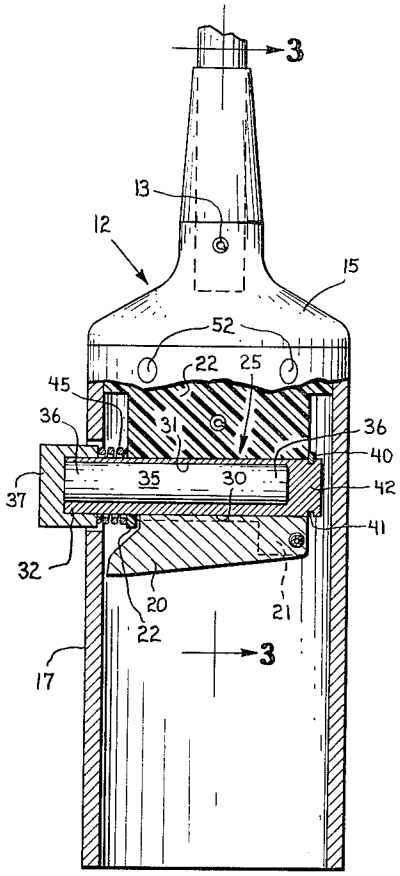
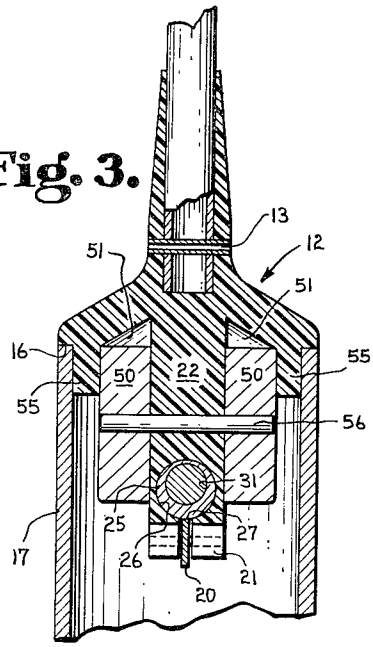


Fig. 2.

Fig. 3.



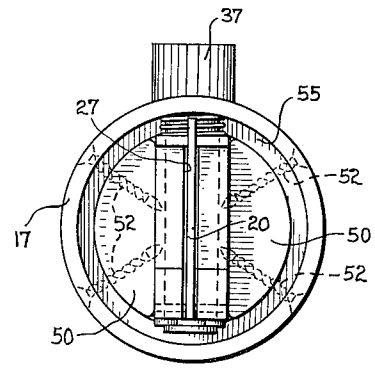


Fig. 4.

INVENTOR.
PAUL FREDERICK HAAS

BY
Lockwood, Woodard, Smith & Weikart
Attorneys

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SWING DEVICE INCLUDING A MEMBER ATTRACTED BY AN ECCENTRIC MAGNET AND MOVABLE BY CENTRIFUGAL FORCE

Paul Frederick Haas, Alexandria, Ind., assignor of one-half to Walter J. Reynolds, Anderson, Ind.

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The present invention relates to a practice club finding important utility as a golf practice club.

Many golfers can get on the course only on weekends or at extended intervals because of the relatively long period of time required for a round of golf. Also, in the wintertime, especially in the northern States, courses can be played only infrequently. In order to be proficient at golf, it is desirable that the golfer practice the proper swing. For the best results, such practice should be consistently repeated day after day. One important factor in a proper golf swing is that greatest force be exerted at the impact point by proper wrist action. A further important factor is proper follow-through to a completed full swing.

Consequently, one object of the present invention is to provide a practice club which signals the user of proper wrist action and follow-through in a golf swing.

Another object of the invention is to provide a practice club including adjustable means to permit the user to dial a setting on the club so that the club indicates a proper very light swing such as for a chip shot or indicates a proper full swing such as for a drive.

A further object of the invention is to provide a practice club incorporating means for notifying the user of proper swinging action whether the user be practicing a golf swing, tennis swing, baseball or other type of swing.

Related objects and advantages will become apparent as the description proceeds.

This invention contemplates a practice club which teaches the user to time his swing by the use of audible sound. In one embodiment of the invention, a signalling sound is produced when the club is swung through the impact zone with maximum force, a second "reset" sound being produced when the follow-through is properly completed.

One embodiment of the present invention comprises a shaft having a handle at one end, a base fixedly mounted at the other end of said shaft, an elongated non-magnetic flux-permeable cylindrical member rotatably mounted on said base with said member's axis in perpendicular relation to said shaft, said cylindrical member having an eccentric bore opening into one end thereof the axis of which is parallel to but spaced from said member's axis, an elongated cylindrical magnet received in close fitting relation in said bore, said magnet having its opposite poles at opposite ends thereof, a handle press fitted over said one end and locking said magnet in said cylindrical member, a striker of magnetic material pivotally mounted on said base, a cylindrical sounding element fixed to said base and defining with said base a bell-shape having an open end opening away from said shaft, said striker being pivotal within said bell-shape between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet substantially from one pole to another and in a second of which said striker projects away from said base and shaft and engages said cylindrical sounding element.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

FIG. 1 is a side elevation of a practice club constructed according to the present invention.

FIG. 2 is an enlarged longitudinal section partially in elevation taken along the line 2—2 of FIG. 1 in the direction of the arrows.

FIG. 3 is a longitudinal section taken along the line 3—3 of FIG. 2 in the direction of the arrows.

FIG. 4 is a bottom plan view of the structure illustrated in FIG. 3.

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawing and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Referring more particularly to the drawings, there is illustrated a shaft 10 similar to the shaft of the conventional golf club and formed of either wood or metal in well known fashion. The shaft 10 has a handle 11 at the upper end thereof which may be composed of composition of conventional type having high frictional properties and which may have a non-circular cross-sectional shape if desired.

At the lower end of the shaft 10, there is mounted by means of a roll pin 13 a cast base 12. The base may be formed of any suitable non-magnetic material but preferably is formed of an easily molded plastic such as, for example, polyethylene. The base flares outwardly at 15 and has an annular shoulder 16 thereon which receives a cylindrical sounding element 17 formed of aluminum or the like. The base 12 and the sounding element 17 define a bell-shaped configuration within which is received a striker 20, the striker 20 being pivotally mounted upon a projecting clevis portion 21 of the base 12 and being adapted to swing downwardly and rightwardly as viewed in FIG. 2 to strike the sounding element 17 for producing an audible sound. In order that the sound will be audible, the sounding element 17 is preferably formed of a metallic material such as aluminum as above mentioned. The striker 20, however, should be formed of a magnetic material for a purpose that will become evident. The clevis portion 21 of the base is integral with and projects away from the distal end of an axially extending projecting portion 22 of the base. The base portion 22 rotatably mounts an elongated non-magnetic flux-permeable cylindrical member 25. It can be seen from FIGS. 2 and 3 that the member 25 projects through a cylindrical bore 26 which is open substantially along its entire length at 27. Thus, the striker 20 can move to the position of FIGS. 2 and 3 wherein the striker 20 is in engagement with the cylindrical member 25 along a substantial portion 30 of the length of the cylindrical member 25.

Formed within the cylindrical member 25 is a bore 31 which is eccentrically located relative to the axis of the member 25 and which has an axis parallel to but spaced from the axis of the member 25. The bore 31 extends nearly but not entirely the complete length of the member 25 and opens at the end 32 of the member 25. Received within the bore 31 is a permanent magnet 35 having its opposite magnetic poles located at the opposite ends 36 thereof.

It can be seen that the striker 20, when in the position of FIGS. 2–4, acts as a keeper for the magnet 35. Preferably, the cylindrical member 25 is formed of aluminum which has a permeability many times that of air but which is non-magnetic. As mentioned, the striker 20 is formed of magnetic material and normally is held in the position of FIGS. 2–4 by the magnet 35.

Press fitted upon the end 32 of the cylindrical member 25 is a cap 37 which preferably is knurled as shown in FIG. 4. The cylindrical member 25 is retained within the bore 26 by a snap ring 40 received within an annular groove 41 in the end 42 of the cylindrical member 25. In

order that the cylindrical member 25 will retain the position to which it is rotated by rotation of the cap 37, a coil compression spring 45 is received upon the member 25 between the cap 37 and the projecting portion 22 of the base. As shown in FIG. 1, the cap 37 has an arrow 47 thereon by means of a decal or similar method in order to indicate the angle to which the member 25 is rotated. It will be noted that because of the eccentricity of the magnet 35, it is relatively far away from the striker 20 when in the position of FIGS. 2 and 3. If the dial or cap 37 is rotated 180° from the position of FIGS. 2 and 3, then the magnet is relatively closely positioned to the striker 20.

The position illustrated in FIGS. 2 and 3 corresponds to the arrow pointing to the numeral 0. Various other numerals shown about the dial or cap 37 in FIG. 1 indicate intermediate positions of the magnet. When the arrow 47 points to the numeral 4, the striker 20 is held against the cylindrical member 25 with a maximum amount of force and a maximum amount of swinging or centrifugal action on the striker is necessary in order to cause it to be pulled away from the member 25 and to strike the sounding element 17. The various other settings 1, 2 and 3 shown in FIG. 1 are appropriate to simulate an approach shot to the green or a relatively short iron shot while the setting 4 is appropriate to simulate a drive or a long iron shot. As is best shown in FIG. 3, a pair of lead weights 50 are received within suitable recesses 51 on either side of the central portion 22 of the base. The lead weights 50 are fixed in place by screw nails 52 which extend through an annular flange 55 of the base 12 and into the lead weights 50. The weights are further secured in place by means of a roll pin 56 which extends through suitable apertures in the portion 22 and the weights 50. The purpose of the weights is to balance the club and to more closely approximate the feel of a conventional golf club.

The device is used by swinging it in the same manner that a golf club is swung. The striker is retained in the position shown in FIGS. 2 and 3 by means of the magnet 35. The user starts his downward swing in a smooth manner and increases the speed of the club until it reaches a maximum speed in the hitting area. This effect can be accomplished by a proper wrist action so that the greatest amount of centrifugal force is exerted upon the striker 20 as the club moves through the hitting zone. If the swing is properly executed, the striker will hit the sounding element 17 in the hitting zone. A proper golf swing further includes a follow-through. If the cap 37 is up when standing as though addressing the ball, the striker will be tilted in such a manner that gravity pulls it downwardly toward the magnet 35 at the end of the follow-through. The magnet, itself, will complete the pulling of the striker toward the magnet causing the striker to snap against the cylinder 25 and to give a further audible sound notifying the user that the follow-through has been properly completed. If the user does not properly complete the follow-through, the striker will remain in engagement with sounding element 17 and this latter audible sound will not be heard. Depending upon the type of shot which the user is practicing, the cap 37 can be dialed to a setting making it more or less difficult to draw the striker away from the magnet by the use of centrifugal force.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention and the scope of the claims are also desired to be protected.

The invention claimed is:

1. In a practice club including a shaft having a handle at one end and a base fixedly mounted at the other end of said shaft, the improvement which comprises an elongated non-magnetic flux-permeable cylindrical member rotatably mounted on said base and extending therethrough with said member's axis in perpendicular relation to said shaft, said cylindrical member having an eccentric bore opening into one end thereof, the axis of which is parallel to but spaced from said member's axis, an elongated cylindrical magnet received in close fitting relation in said bore, said magnet having its opposite poles at opposite ends thereof, a handle press fitted over said one end of said member and locking said magnet in said cylindrical member, a snap ring received about the other end of said member, a coil compression spring received about said member and acting against and between said handle and base to frictionally resist rotation of said member, a striker of magnetic material pivotally mounted on said base, a cylindrical sounding element fixed to said base and defining with said base a bell-shape having an open end opening away from said shaft, said striker being pivotal within said bell-shape between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet substantially from one pole to another and in a second of which said striker projects away from said base and shaft and engages said cylindrical sounding element.

2. In a practice club including a shaft having a handle at one end, the improvement which comprises a flaring base fixedly mounted at the other end of said shaft, said base having a projection at its distal end extending away from said shaft, said projection having a cylindrical recess therein extending perpendicularly of said shaft, an elongated non-magnetic flux-permeable cylindrical member rotatably mounted in said recess with said member's axis in perpendicular relation to said shaft, said cylindrical member having an eccentric bore opening into one end thereof, the axis of said bore being parallel to but spaced from said member's axis, an elongated cylindrical permanent magnet received in close fitting relation in said bore, said magnet having its opposite poles at opposite ends thereof, a handle press fitted over said one end of said member and locking said magnet in said cylindrical member, a striker of magnetic material pivotally mounted on said base, a cylindrical sounding element fixed to said base and defining with said base a bell-shape having an open end opening away from said shaft, said striker being pivotal within said bell-shape between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet substantialuly from one pole to another and in a second of which said striker projects away from said base and shaft and engages said cylindrical sounding element.

3. In a practice club including a shaft having a handle at one end and a base fixedly mounted at the other end of said shaft, the improvement which comprises an elongated non-magnetic flux-permeable cylindrical member rotatably mounted on said base with said member's axis in perpendicular relation to said shaft, said cylindrical member having an eccentric bore opening into one end thereof, the axis of said bore being parallel to but spaced from said member's axis, an elongated cylindrical magnet received in close fitting relation in said bore, said magnet having its opposite poles at opposite ends thereof, a handle press fitted over said one end of said member and locking said magnet in said cylindrical member, a striker of magnetic material pivotally mounted on said base, a cylindrical sounding element fixed to said base and defining with said base a bell-shape having an open end opening away from said shaft, said striker being pivotal within said bell-shape between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet substantially from one pole to another and in a second of which said striker projects away from said base and shaft and engages said cylindrical sounding element.

4. In a practice club including a shaft having a handle at one end and a base fixedly mounted at the other end

of said shaft, the improvement which comprises an elongated non-magnetic flux-permeable cylindrical member rotatably mounted on said base, said cylindrical member having an eccentric bore opening into one end thereof, an elongated cylindrical magnet received in close fitting relation in said bore, said magnet having its opposite poles at opposite ends thereof, a striker of magnetic material pivotally mounted on said base, a cylindrical sounding element fixed to said base and defining with said base a bell-shape having an open end opening away from said shaft, said striker being pivotal within said bell-shape between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet substantially from one pole to another and in a second of which said striker projects away from said base and shaft and engages said cylindrical sounding element.

5. In a practice club including a shaft having a handle at one end and a base fixedly mounted at the other end of said shaft, the improvement which comprises an elongated non-magnetic cylindrical member rotatably mounted on said base with said member's axis in perpendicular relation to said shaft, said cylindrical member having an eccentric bore opening into one end thereof, an elongated cylindrical magnet received in close fitting relation in said bore, a striker of magnetic material pivotally mounted on said base, said cylindrical member being rotatable to vary the intensity of the magnetic flux acting on said striker, a sounding element fixed with relation to said shaft and positioned for striking by said striker when centrifugal force acting thereon overcomes the magnetic force of said magnet.

6. In a practice club including a shaft having a handle at one end, the improvement which comprises a non-magnetic cylindrical member rotatably mounted with respect to said shaft on the other end thereof, said cylindrical member having an eccentric bore therein, a cylindrical magnet received in said bore, a striker of magnetic material pivotally mounted relative to said shaft and a sounding element fixed relative to said shaft, said striker being pivotal between two positions in a first of which said striker engages said cylindrical member and extends in parallel relation to said magnet and in a second of which said striker projects away from said shaft and engages said sounding element.

7. A magnet arrangement comprising a base, a cylinder of non-magnetic flux-permeable material rotatably mounted on said base, a cylindrical magnet received eccentrically within said cylinder having its longitudinal axis parallel to that of the cylinder and spaced therefrom, a magnetic element movably mounted on said base laterally of such magnet so that centrifugal force acting thereon can overcome the magnetic force of said magnet acting thereon, said cylinder being rotatable to vary the intensity of magnetic flux acting on said magnetic element.

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DELBERT B. LOWE, *Primary Examiner.*

GEORGE J. MARLO, *Assistant Examiner.*