

March 3, 1970

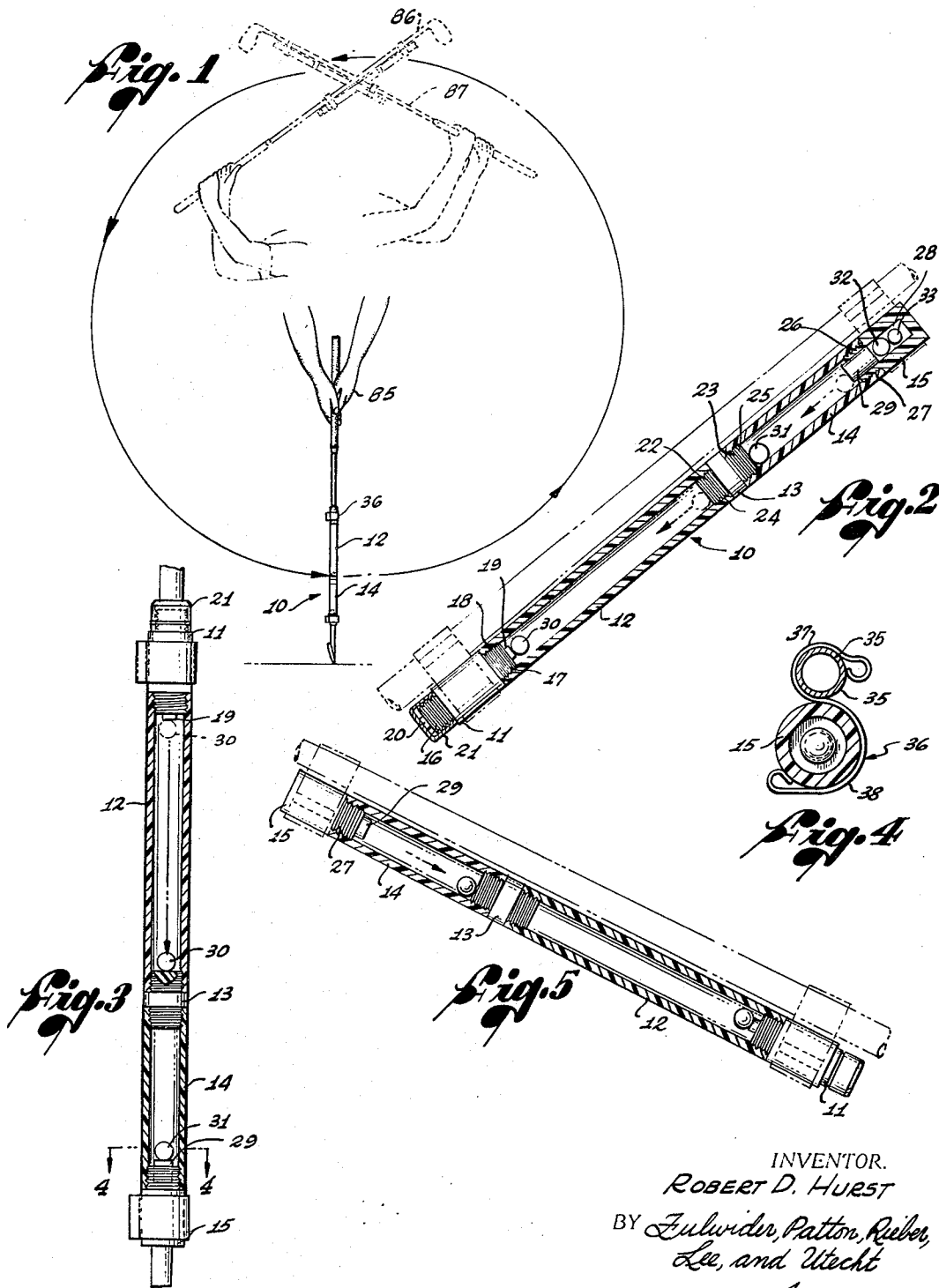
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3,498,616

GOLF SWING PRACTICE DEVICE

Filed Aug. 19, 1968

2 Sheets-Sheet 1



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Fig. 6

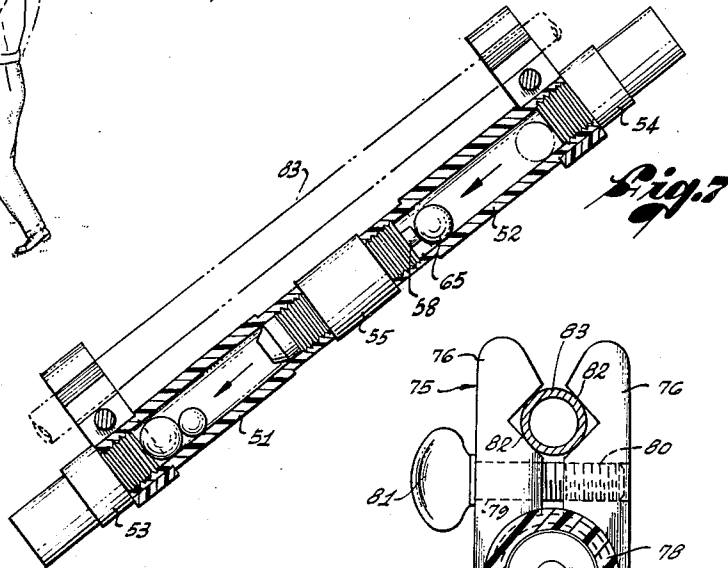


Fig. 7

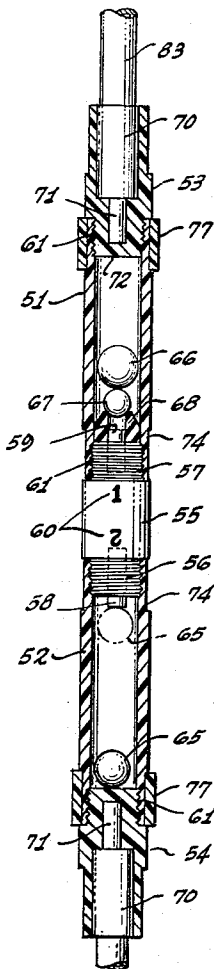


Fig. 8

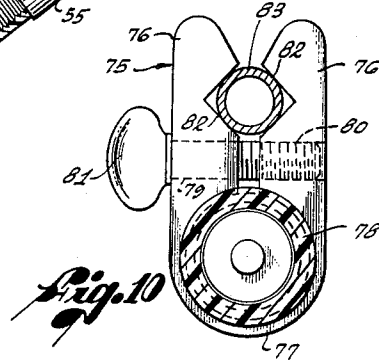


Fig. 10

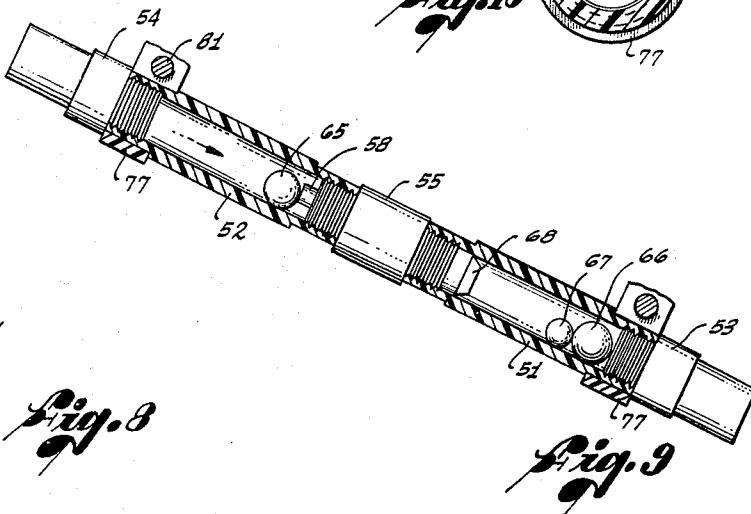


Fig. 9

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GOLF SWING PRACTICE DEVICE

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8 Claims

ABSTRACT OF THE DISCLOSURE

A golf club attachment of elongated tubular configuration provided with a spaced pair of attachment clips, the tubular member being divided into a pair of axially aligned chambers, one of which contains a ball or the like adapted to move freely and unimpeded in response to centrifugal and gravity forces, the other chamber containing a ball or the like that is normally held at one end of the chamber by magnetic means until sufficient centrifugal force is imparted to the ball by swinging of the club to which the attachment is mounted, the elements of the attachment cooperating to produce audible signals indicative of a proper backswing, stroke and follow through in response to a proper co-ordination of movements by the user. A sound dampening member, made from a material such as cork, is provided on one end of the chamber in which the ball is adapted to move freely and unimpeded. The chamber ends adapted to produce audible signals may include a sound amplifying tube. The device is adapted to be readily disassembled and reassembled to facilitate replacement of the balls with others of different diameters and masses, which others may be stored in a hollow plug secured to an end of the attachment.

BACKGROUND OF THE INVENTION

The present invention relates to golf practice devices and particularly an attachment for woods or irons that is responsive to the swing of the club to produce audible signals for a proper co-ordination of backswing, downswing and follow through.

A variety of devices have heretofore been devised and have come into use to aid golfers in the practice of their swings. Commonly, these take the form of an elongated chamber equipped at one end with magnetic or other means for retaining a ball, striker, clicker or the like in place at an upper end of the chamber, the holding force being overcome only upon sufficient centrifugal force being imparted by the swing of the club to dislodge the signalling element into contact with an anvil or the like at the other end of the chamber. By and large, such devices are of a relatively expensive construction. More importantly, however, these prior devices are incapable of functioning in all phases of the swing to produce signals which are useful in indicating when the user has a proper backswing and follow through as well as a proper downswing. The prior devices are thus of limited utility since they are adapted to function only to produce a signal theoretically corresponding to a correct address of the club face against a ball at the moment of impact only. So far as I am aware, no prior worker has addressed himself to the problem of providing a golf club attachment of an inexpensive nature having a combination of functionally interrelated elements producing signals audible to the golfer to aid him in achieving a proper backswing and follow through as well as downswing.

SUMMARY OF THE INVENTION

The present invention achieves a simple, relatively inexpensive attachment for golf clubs, which may be either woods or iron, and including interchangeable combinations of magnets and striking balls by means of which the

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holding force for the ball may be altered to accommodate lady or men golfers, or golfers of different or varying abilities, or the same golfer as he increases his skill. The device comprises an elongated tubular member divided into a pair of axially aligned chambers, one of the chambers containing a holding magnet normally retaining a signalling ball or the like in place. The other chamber also contains at least one signalling ball that is freely movable longitudinally of the chamber, the latter chamber being provided at one end with a sound-dampening means so as to not produce any signal upon the ball coming into contact therewith. The plug or other means defining an end of one or more of the chambers may be hollow to provide a storage capacity for alternatively usable signalling balls having masses and sizes different from one another or from the balls utilized within the chambers. Another plug or the like defining an end of a chamber may be provided at opposite ends with magnets of varying strength. With this arrangement, a large number of possible combinations of magnet and ball are available to the golfer. The double chamber combination may include sound-amplifying means and the signalling elements contained therein are adapted to produce clearly audible signals in response not only to the velocity with which the club is swung, but also as a function of the plane or planes through which the club is swung in the backswing and in the follow through. A proper co-ordination of backswing, downswing and follow through produces audible signals to the golfer marking the top of the backswing, the theoretical moment of impact and proper completion of the follow through.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a schematic view showing one form of my invention attached to a golf club and its manner of use;

FIGURE 2 is a longitudinal sectional view of the device, the view being disposed in an attitude at least approximately corresponding to the extreme backswing position;

FIGURE 3 is a view similar to FIGURE 2 but showing the relative position of the elements at the theoretical moment of impact of the club face with the ball;

FIGURE 4 is a sectional view on the line 4—4 of FIGURE 3;

FIGURE 5 is a view similar to FIGURES 2 and 3 but showing the attachment or device in an attitude approximately corresponding to completion of the follow through;

FIGURE 6 is a three-quarter front perspective view of a golfer indicating his backswing, downswing and follow through positions approximately at the moments of production of a signal by a second preferred embodiment of the invention;

FIGURE 7 is a longitudinal sectional view of the second embodiment, the device being positioned in an attitude approximately corresponding to completion of the backswing;

FIGURE 8 is a view similar to FIGURE 7 but with the device being positioned in a vertical attitude such as at the moment of theoretical impact of club face with the ball;

FIGURE 9 is a view similar to FIGURES 7 and 8 but with the device positioned in an attitude approximating completion of the follow through; and

FIGURE 10 is a transverse sectional view showing details of an attachment clamp.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiment illustrated in FIGURES 1 through 5 is indicated generally by the numeral 10. This embodi-

ment includes an upper end plug 11, an upper tube 12, a median plug 13, a lower end tube 14, and a bottom end plug 15, all of which may be made of a suitable synthetic plastic material and all of which are arranged in coaxial alignment. While the plugs 11, 13 and 15 may be of an opaque material, the tubes 12 and 14 are preferably, although not necessarily, of a transparent material whereby the user may determine at a glance the identity of the particular magnets and balls being utilized at the moment.

The upper end plug 11 is formed at its opposite ends with coaxial threaded extensions 16 and 17, each adapted for threaded engagement with a tapped upper end 18 of upper tube 12. As is best shown in FIGURE 2, each of the threaded extensions 16 and 17 terminates in a flat face in which there is fixedly secured one of a pair of magnets 19 and 20. These magnets are of different flux strength and either may optionally be disposed within the upper end of the tube 12 by connecting either one or the other of the threaded ends 16 and 17 within the tapped upper end 18 of the sleeve 12. As is also shown in FIGURE 2, a threaded cap 21 of metal or other suitable material and formed with internal screw threads may be secured over the one of the threaded end 16 and 17 which is not in use thus preventing contamination and corrosion of the non-used magnet.

The median plug 13 is also formed at opposite ends with a pair of threaded extensions 22 and 23, the former of which is threadedly engaged with a tapped lower end portion 24 of the upper tube 12 and the latter of which is threadedly engaged in a tapped upper end of the lower tube 14. The lower end of the lower tube 14 is also interiorly tapped, as indicated at 26, to threadedly receive a threaded end of the bottom plug 15. As is shown in FIGURE 2, the bottom plug 15 is hollow thus defining a pocket 28 that is normally closed by a plug 29 made of cork or other cushioning material that is disposed within the lower end of the lower tube 14.

As is shown in FIGURE 2, a ball 30 is disposed within the upper tube 12, ball 31 is disposed in the lower tube 14, and a pair of balls 32 and 33 are disposed within the pocket 28 of the bottom end plug 15. Each of these balls is of a different mass than any of the other balls. Since all of the parts of the device 10 can be disassembled from one another, it will readily be apparent that the user may dispose any one of the balls 30, 31, 32 and 33 within either one of the chambers defined within the tubes 12 and 14 and the particular ball put into the upper tube 12 may be used with either one of the magnets 19 and 20 carried by the upper end plug 11.

Referring to FIGURE 1, there is schematically indicated a golfer holding a club, in this case an iron, having a shank 35 to which the device 10 is secured by means of a pair of spring clips 36, the device being secured to the club shank adjacent the club head and with the lower tube 14 adjacent the club head. Referring to FIGURE 4, it will be seen that each of the clips 36, which are preferably of metal, is generally S-shaped having a smaller diameter portion 37 adapted to clamp around the club shank 35 and having a larger diameter portion 38 adapted to clamp around the upper end plug 11 or the lower end plug 15, as the case may be. The pair of clamps 36 may of course be positioned at other places lengthwise of the device 10 but their location at the opposite end plugs 11 and 15 is preferred since such positions avoid dampening of the signals produced by the movement of the balls within the device.

FIGURES 7 through 10 show an alternative embodiment 50 which is presently conceived to be the best mode of putting the invention into use. The device 50 comprises a pair of tubes 51 and 52, a pair of end caps 53 and 54, and a median plug 55. While the pair of tubes 51 and 52 and the end plugs 53 and 54 are identified by different numerals for convenient identification, it will be seen that the tubes are identical to one another, as are the end plugs, thus reducing the number of different parts entailed in the

manufacture of the device. The parts, however, have been differently numbered for convenience of description, particularly with reference to the location of parts at "upper" or "lower" ends.

Referring to FIGURE 8, the median plug 55 has threaded opposite end portions 56 and 57, each terminating in a preferably flat end face in which there is mounted one of a pair of magnets 58 and 59. The magnets 58 and 59 are of different flux strengths, the magnet 59, for example, being weaker than the magnet 58. In order to identify to the user the relative strength of the magnets, the exterior cylindrical surface of the median plug 55 is provided with indicia 60, here taking the form of the numbers 1 and 2, the number 1 indicating the weaker magnet. In the particular orientation of parts shown, the threaded end 56 of the median plug 55 bearing the stronger magnet adjacent the numeral 2 is threadedly engaged with an adjacent tapped end 61 of the tube 52, opposite ends of both the tubes 52 and 51 being thus formed with a tapped end 61. It will be understood that all threaded connections have the same thread size and, accordingly, the opposite end plugs 53 and 54 are similarly threadedly engaged with corresponding ends of the tubes 51 and 52.

The lower tube 52 contains a ball 65 while a pair of balls 66 and 67 are disposed within the upper tube 51. As in the case of the previously described embodiment, the balls 65, 66 and 67 are all different from one another as regards their diameter and mass. While the ball 65 in the lower tube 52 is normally held at one end of the tube by the magnet 58, the magnet 59 disposed in the upper tube 51 is provided with a nonmetallic hollow cap 68 which surrounds and surmounts the magnet 59 thus normally keeping the balls 67, 66 out of contact with the magnet 59 and its field.

Referring to FIGURE 8, it will be seen that each of the identical end caps 53 and 54 is of a hollow counter-bored configuration. Thus, the outer ends of each of these plugs has a relatively large diameter chamber 70 whose inner end communicates with a relatively small diameter blind hole 71 terminating against an inner end wall 72 defining one end wall of the chambers within the tubes 51 and 52. This hollow construction provides an amplifying chamber at each end of the device 50 so as to make more distinctly audible to the user any contact of the balls contained within the device with either one of the walls 72.

In order to mount the device 50 on a golf club, each of the tubes 51 and 52 at its opposite ends is formed with a circumferentially extending groove 74 so that a clamp 75 may be seated therein. Thus, as is shown in FIGURE 10, the clamp 75 may have a body molded from a single piece of a synthetic plastic material that is bifurcated to define a symmetrical pair of legs 76 that are joined by an integral yoke portion 77. A relatively large diameter opening 78 is defined in the yoke portion 77 of a diameter adapted to seat the clamp in one of the grooves 74 on the tube 51 or the tube 52. The pair of legs 76 are formed with coaxially aligned bores 79 and 80, the bore 80 being tapped for threadedly receiving the shank of a headed screw fastener 81, the bores being positioned adjacent the opening 78. Outwardly from the fastener 81, the pair of legs 76 are formed with a confronting pair of V-block surfaces 82 adapted to receive a shank 83 of a golf club 83 therein. As will be apparent, the fastener 81 may be removed thus permitting spreading apart of the pair of legs 76 of the clamp sufficiently to permit a placing or removing a club shank into and out of the V-block portions 82. Upon the fastener 81 being tightened, both the club shank and the device 50 are firmly held in place relative to one another. Further, by disposing the pair of clamps 75 within the grooves 74, the device 50 is held against displacement axially relative to the club shank, upon the device being swung with the club.

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The manner of use of the devices 10 and 50 is substantially the same. In either case, of course, the device is first attached to the shank of the golf club with which the golfer wishes to practice his swing. However, it will be observed that in the case of the device 10, the tube 12 which contains the operative bell-magnet combination is disposed uppermost while in the case of the device 50, the lower tube 52 containing the operative ball-magnet combination is disposed lowermost.

Comparing FIGURES 1 and 6, FIGURE 1 is a view directly facing the golfer on a line normal to the plane of the golfer's legs. By contrast, FIGURE 6 is a perspective view facing the golfer on a line at about 45° to the plane including the golfer's placement of his feet. By comparison of these figures, it will be appreciated that the plane or planes through which the club is swung are disposed obliquely with respect to the plane of FIGURE 1. For a proper appreciation of the mode of operation of my invention, this obliqueness of the planes through which the club is swung should be borne in mind.

Assuming that the device 10 of the FIGURES 2 through 5 is attached to the golf club, the sequence of signals emitted by the device is as follows. First, assuming that the golfer is addressing the ball in the position 85 of FIGURE 1, the device 10 is positioned in the attitude indicated in FIGURE 3. Thus, the ball 30 in the upper chamber is in the position indicated in phantom outline at the upper end of the chamber being held in place by the magnet 19. The ball 31 in the lower chamber is resting on the cork 29 at the lower end of the tube 14. Now, as the golfer moves through his backswing to the backswing position 86 of FIGURE 1, the device 10 is inverted. As a consequence, the ball 31 in the tube 14 will drop gravitationally into contact with the corresponding end of the median plug 13, making an audible sound. However, it will be appreciated that the moment at which the ball 31 strikes the median plug 13 to produce this sound is a function not only of gravity, but also of the angular velocity with which the club is moved in the backswing and, further, a function of the obliqueness of the plane through which the club is swung during the backswing. Desirably, the club is swung during the backswing in such a plane and with such speed that the ball 31 does not come into contact with the median plug 13 until the top of the backswing, i.e., approximately the position indicated at 86 in FIGURE 1. If the club is taken back too fast, around too flat a plane, the desired click will be delayed or in some cases no click may be produced at all.

In the downswing, if the club is swung with the proper force and the wrists uncocked at the right time, the centrifugal force produced on the ball 30 in the upper chamber defined by the upper tube 12 will effect release of the ball 30 to travel as indicated by the directional arrow in FIGURE 3 to impact on the corresponding end of the median plug 13 at the moment theoretically corresponding to impact of the club face with the ball. This position, of course, also corresponds with the position 85 shown in FIGURE 1. At the same time, the ball 31 is thrown downwardly but as it impacts on the cork 21 no audible click is produced. If the downswing is properly co-ordinated, the click of the ball 30 on the median plug 13 will be indicated at the bottom of the swing. If the downswing is unco-ordinated, this click will be heard either before or after the bottom of the swing.

In the follow through, while the club moves from the position 85 to the position 87 indicated in FIGURE 1, the moment at which both of the balls 30 and 31 return to the opposite ends of their chambers is once again the function of the plane of the swing as well as of the arcuate velocity of the club. At the end of the backswing, the ball 30 will, of course, be in a reset position, firmly held by the magnet 19 again. The moment at which clicks are produced by the return of the balls 30 and 31, if at all, is once again indicative of whether or not the fol-

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low through has been proper. Obviously, if the follow through is aborted before the club swings upwardly beyond a substantially horizontal position, no resetting or clicking sounds of these balls will be heard. On the other hand, if the follow through is proper, the clicking of these balls will not be audible until substantially at the moment of completion of a full follow through after the club has progressed upwardly beyond a horizontal attitude. But if a follow through is too flat, there will be an undue delay in the clicking of the balls.

In the use of the device 50, the sequence of production of signals is substantially the same. However, I have found that the use of the amplifying chambers defined in the opposite ends of the device makes the signals produced much more distinctly audible. Further, by positioning the magnet-ball combination in the lower chamber the ball 65 strikes against the sounding wall 72 which directly communicates to the atmosphere through the amplifying chamber.

While I have shown and described two embodiments of the invention, it will be apparent that variations therefrom may be made by those skilled in the art without departing from the spirit and scope of the following claims.

I claim:

1. In a swing-responsive golf practice device, the combination comprising:

rigid means defining an axially elongated chamber that is closed by a pair of opposite end walls;

a striker element disposed in said chamber having size and shape characteristics adapted for free unimpeded movement of said striker element in said chamber between said end walls;

the normally upper end wall of said rigid means being adapted to respond to being struck by said striker element to cause an audible sound upon said device being inverted, as upon a backswing of said device;

and a sound-dampening means on the inside of the normally lower end wall of said chamber that is adapted to acoustically insulate said lower end wall from contact with said striker element to attenuate sound resulting from contact of said striker element with said dampening means, as from centrifugal force generated in a downswing of said device.

2. A device as in claim 1 in which:

said rigid means also defines a second, axially elongated chamber that is closed by a pair of opposite end walls;

and a second striker element is disposed in said second chamber having size and shape characteristics adapted for free movement of said second striker element in said second chamber between said end walls;

the normally upper end wall of said second chamber mounting a holding means adapted to yieldably retain said second striker element at said upper end of said second chamber within a predetermined range of centrifugal force generated by a downswing of said device;

the normally lower end of said second chamber being adapted to respond acoustically to being struck by said second striker element when said device is swung with sufficient force to free said second striker element from said holding means to throw said second striker element against said lower end wall of said second chamber.

3. A device as in claim 2 in which:

said rigid means comprises a pair of tubes that are detachably interconnected by a median plug, the opposite ends of said plug defining an upper end wall of one of said chambers and the lower end wall of the other of said chambers;

the pair of said striker elements being of different masses whereby upon disassembly and reassembly of said tubes and plug, said striker elements may be ex-

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changed between said chambers to alter said range of centrifugal force.

4. A device as in claim 2 in which:

said rigid means comprises a pair of tubes that are detachably interconnected by a median plug, the opposite ends of said plug defining an upper end wall of one of said chambers and the lower end wall of the other of said chambers;

said median plug mounting a pair of magnets of different flux strengths on the opposite ends of said plug, whereby upon disassembly and reassembly of said tubes and plugs said plug may be reversely oriented to alter said range of centrifugal force.

5. A device as in claim 2 in which:

at least one end wall adapted to respond acoustically to contact by a striker element comprises one end of an amplifier tube whose other end is open to the atmosphere.

6. A device as in claim 1 in which:

the end wall adapted to respond acoustically to contact by a striker element comprises one end of an amplifier tube whose other end is open to the atmosphere.

7. A device as in claim 1 in which:

said device is an attachment for a golf club having a spaced pair of clamp means each adapted at one end for releasably clamping a shank of a club,

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the other ends of said pair of clamp means and portions of said device contacted thereby being shaped and adapted to define abutment means preventing relative axial movement of said device and club shaft upon a downswing of said club.

8. In a swing-responsive golf practice device of the type in which a striker element is movable in an elongated tubular member to cause a sound upon coming into contact with one end wall of the member, the improvement comprising:

a sound-amplifying chamber comprising an amplifier tube having one end open to the atmosphere and having its other end in communication with said end wall of the tubular member.

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U.S. Cl. X.R.

73—379; 273—194