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GOLFER'S AID

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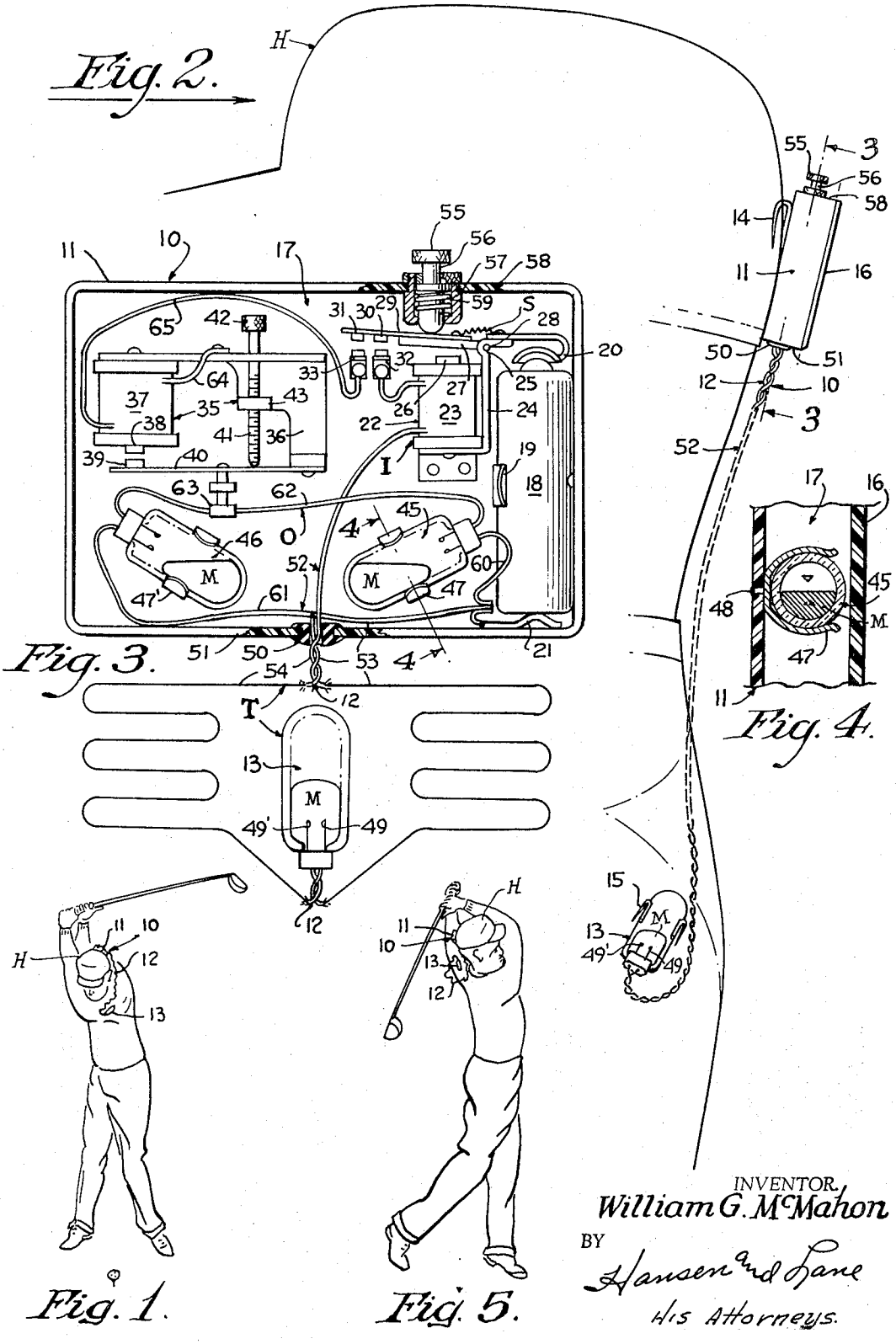


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 1.

Fig. 5.

INVENTOR.
William G. McMahon
BY
Hansen and Lane
His Attorneys.

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GOLFER'S AID

William G. McMahon, 1307 Daphne Drive, San Jose, Calif. 95129

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This invention relates to a golfer's aid and more particularly to a device for detecting movement of a golfer's head during stance and swing of the club at a ball.

One of the most difficult problems confronting a golfer during the back stroke and swing of the golf club prior to its impact with a ball is to keep his head down. In addressing the ball the feet and head must be properly set relative to the ball. The head is the apex and the feet are at the base angles of a triangle and must be kept in such relative positions throughout the swing. The cardinal principle of all golf shot making is that if you move your head, you ruin body action. It requires more than just "keeping your eye on the ball" because you can still be looking at the ball even though your head has moved more than enough to ruin your body action during the swing.

The present invention proposes the provision of a device adapted to be attached to a cap, hat or band worn on the head and triggered to set off an alarm upon movement of the head beyond allowed limits.

It is an object of the present invention to provide a simple yet effective compact unit adapted to be attached to headgear to detect movement of the head. The invention further contemplates the provision of tilt actuated switches in an electrical circuit to energize the coil of a buzzer or other audible alarm.

It is another object to provide a head tilt alarm in a circuit controlled by a remote switch worn on the upper arm or shoulder for breaking the circuit upon completion of the swing of a golf club.

It is still another object to provide a head movement detecting device with an initiating circuit for setting up an alarm circuit actuated only upon movement of the head; and a terminating circuit for rendering the device dormant after the period during which the head must remain fixed.

It is yet another object to provide in an alarm circuit one or more movement sensitive switches and means for adjusting the same to a more or less sensitive disposition relative to the head of the person wearing the device.

It is a still further object to provide a two part device in which one part mounted on the head of the user is under the control of the other part worn on his body such that after the last mentioned part changes position terminating the need for an alarm the device is rendered dormant.

These and other objects and advantages of the present invention will become apparent from a reading of the following description and claims in the light of the drawings in which:

FIG. 1 is an illustration of a golfer wearing the device of the present invention during the initial stage of a stroke of a golf club.

FIG. 2 is an enlarged view of a golfer's head and shoulder with the device of the present invention in position thereon.

FIG. 3 is an enlarged detail view of the device of FIG. 2 and taken substantially along line 3—3 thereof.

FIG. 4 is an enlarged section through a portion of FIG. 3 taken substantially along line 4—4 thereof.

FIG. 5 is a view similar to FIG. 1 illustrating the golfer's stance upon completion of a stroke.

Referring to the drawings the device generally designated 10 includes a case 11 connected by a wire 12 to a body switch 13. The case 11 has a pair of prongs 14 on

its back face adapted to engage a hat, cap, hat band, head band or the like headgear H to position the case 11 on a person's head. The casing is mounted on the headgear in the back of the head and in vertical alignment with the person's spine. The body switch 13 has a pair of prongs 15 adapted to pierce the fabric at the lead shoulder or adjacent upper arm of the lead shoulder of the person wearing the casing 11 on the back of his head.

The casing 11 has a cover 16 adapted for snap fit over the hollow interior 17 of the casing 11. The casing and cover are made of material non-conductive to electrical current or energy. Within the casing 11 the chamber 17 houses a battery 18 suitably mounted in a spring clip 19 with its positive and negative poles in engagement with separate contact members 20 and 21.

Adjacent the battery is a holding relay 22 the coil 23 of which is mounted on a bracket 24 having a hinge sleeve 25 formed thereon adjacent the exposed core 26 of the coil. A relay arm 27 is hingedly connected to the hinge sleeve 25 by a hinge pin 28. A coil spring S on the hinge pin serves to maintain the relay arm 27 in normal position away from the core 26 of the relay coil 23. The relay arm 27 has a relay switch blade 29 mounted thereon and carrying a pair of contact points 30 and 31 at its end. These contact points 30 and 31 are disposed to engage a pair of contact posts 32 and 33, respectively, mounted in spaced relation on one wall of the casing 11.

An alarm in the form of a buzzer unit 35 consisting of a base 36 having a coil 37 secured thereto with the exposed end of its core 38 disposed to attract one end 39 of a flexible arm 40 also mounted on the base 36. A screw shank 41 having a knurled knob 42 is threaded through an ear 43 formed on the base 36 to engage the flexible arm 40 for adjusting its normal position and sensitivity relative to the core 38 of the coil 37.

Below the buzzer unit 35 is a pair of tiltable mercury switches 45 and 46 each mounted on a spring clip 47 and 47' of identical design as seen in FIGS. 3 and 4. These clips 47–47' are mounted on a center rivet 48 to afford angular adjustment of the mercury switches 45–46 in the chamber 17 provided within the casing 11.

The body switch 13 previously mentioned is likewise a mercury switch having its two insulated poles 49–49' connected to separate strands of the wire 12 connecting the switch 13 to the casing 11. All three mercury switches are substantially alike. Each is a glass bulb of elongated shape housing a body of the metallic liquid in the form of mercury M of lesser quantity than the internal space provided within the bulb. One end of the glass bulb has a pair of poles insulated from each other but adapted to become electrically connected when the body of mercury surrounds them.

The wire 12 between the body switch 13 enters the casing 11 through a grommet 50 mounted in the lower wall 51 of the casing and is embodied in an electrical circuit now to be explained.

The circuit of the present invention consists of an initiating circuit I; a terminating circuit T and an intermediate or alarm circuit O all of which are related in a common overall circuit 52.

Assuming that the casing 11 is mounted on a person's head right side up and the body switch 13 secured to the person's shoulder or upper arm with the mercury engaging the two poles 49–49' thereof, the two mercury switches 45 and 46 are disposed as shown in FIG. 3 with their separate poles spaced from the mercury within.

The initiating circuit runs from the ground side of the battery 18 which engages the contact member 21 and has one strand 53 of the wire 12 connected thereto. The other strand 54 of wire 12 is connected to one lead of the coil 23 of the holding relay 22. The other lead from the coil 23 is connected to the contact post 32 which is disposed

to be engaged by the contact point 30 on the relay switch blade 29.

An initiating button 55 has a plunger 56 disposed to press against the relay arm 27. This plunger is mounted in a sleeve grommet 57 extending through the upper wall 58 of the casing 11. A spring 59 within the grommet sleeve 57 normally urges the plunger 56 outwardly, i.e. away from the relay arm 27. However, when the button 55 is depressed the initiating circuit I from the battery 18 is completed to the coil 23. This causes the arm 27 to be attracted toward the core 26 of the coil 23 and closes the gap between contact point 30 and contact post 32 thus maintaining the electrical connection between the coil 23 and the battery 18. The circuit to the holding relay 22 is thus set up and held despite release of the button 55 on elevation of the plunger 56 by its return spring 59.

The intermediate or alarm circuit O runs from the ground side of the battery 18 via the contact member 21 and thence via separate wires 60 and 61 to one pole of each of the respective mercury switches 45 and 46. The opposite pole of each mercury switch 45 and 46 is connected to a common wire 62 soldered to a binding post 63 carried by the flexible arm 40 of the buzzer. This arm 40 being secured to the base 36, the latter becomes part of the alarm circuit by having a lead entering one end 64 of the winding of the coil 37. The other lead from the coil winding 37 is connected by wire 65 to the contact post 33 associated with the holding relay 22. This post 33 is engaged by the contact point 31 on the switch blade 29 of the arm 27 of relay 22. In this manner the intermediate circuit O is set for immediate delivery of current from the battery 18 to the coil 37 of the buzzer unit 35 should the mercury in either switch 45 or 46 engage the separate poles therein.

It will be appreciated that both mercury switches 45 and 46 can be set at any desired angle about the axis of the rivet 48 holding its respective spring clip and mercury switch. Consequently should the golfer wearing the casing 11 move his head relative to its fixed position above the ball the mercury in one or the other mercury switch 45 or 46 will flow into contact with the poles therein and complete the intermediate circuit O to the buzzer unit 35. It should be noted that the buzzer unit 35 may be energized intermittently by flow of the mercury into and out of contact with the poles in the switch 45 or 46. Thus each time the buzz occurs the golfer will be apprised of the fact that he has moved his head and can avoid a stroke at the ball by starting all over.

The terminating circuit T functions only after the ball has been struck when it is no longer necessary for the golfer to keep his head fixed. In other words, after he hits the ball he will naturally look up to see where the ball is going. At that time movement of his head will no longer set off the buzzer due to the fact that his arm or shoulder upon which the body switch 13 is mounted will have changed such as to invert the mercury switch 13. In this manner the mercury in switch 13 will fall away from its poles 49–49' thus breaking the circuit between them. This breaks the circuit to the coil 23 of holding relay 22 releasing its relay arm 27 from the magnetic influence of the core 26 and for movement away from the core under the influence of the return spring S. All current is now shut off and the device 10 dormant but ready for use when the golfer addresses the ball and takes his stance for the next stroke.

From the foregoing it will be appreciated that I have devised a simple yet effective golfer's aid of light weight such as to be worn on the head and shoulder or upper arm without inconveniencing the golfer, his body action or agility. He takes his stance upon addressing the ball and with his head properly fixed, presses the button 55 initiating the circuit 52. He then executes the swing of the golf club and only if he moves his head during the back swing will an alarm occur. After striking the ball the lead shoulder or arm upon which the body switch 13 is mounted will have executed a change such as to invert the switch 13 thus effecting the terminating circuit T by which the holding relay is de-energized.

Having thus described my golfer's aid in specific detail it will be appreciated by those skilled in the art that the same may be susceptible to variations, alterations and/or modifications without departing from the spirit of my invention therein. I therefore desire to avail myself of all variations, alterations and/or modifications as fairly come within the purview of the appended claims.

What I claim as new and desire to protect by Letters Patent is:

1. A device for detecting movement of a golfer's head during back swing and stroke of a golf club relative to a golf ball in combination with the headgear and wearing apparel of such golfer,

a casing secured to said headgear,

a pair of mercury switches mounted in said casing in diverging disposition with the mercury therein out of touch with the contact points therein,

an audible alarm in said casing having a coil electrically connected to one side of said battery through said mercury switches and electrically connected to the other side of said battery through a relay switch,

a body switch of the mercury type secured to the lead arm and shoulder of said wearing apparel with the mercury in said body switch contacting the contact points therein,

a holding relay having a coil electrically connected to said battery through said body switch, said holding relay having a relay switch and a holding switch each normally disposed in non-contacting position,

manually operable means on said casing engaging said relay arm to move said relay switch and holding switch to contacting position to thereby energize the coil of said holding relay and maintain said relay switch in condition to energize the coil of said audible alarm upon touching of the mercury in either of said pair of mercury switches in said casing with the contact points thereof,

and said body switch being disposed to be inverted by the disposition of said wearing apparel at the lead arm and shoulder after impact of the golf club with the ball for breaking the ground connection from said battery to the coil of said holding relay for releasing the relay arm.

2. A device for detecting movement of a golfer's head during back swing and stroke of a golf club relative to a golf ball in combination with the headgear and wearing apparel of such golfer,

a casing secured to said headgear,

a pair of mercury switches mounted in said casing in diverging disposition with the mercury therein out of touch with the contact points therein,

an audible alarm in said casing having a coil electrically connected to one side of said battery through said mercury switches and electrically connected to the other side of said battery through a relay switch,

a body switch of the mercury type secured to the lead arm and shoulder of said wearing apparel with the mercury in said body switch contacting the contact points therein,

a holding relay having a coil electrically connected to said battery through said body switch, said holding relay having a relay switch and a holding switch each normally disposed in non-contacting position,

a spring loaded plunger extending through said casing for engaging said relay arm and manually operable exteriorly of said casing for depressing said relay arm to close said relay and holding switches for energizing said relay coil and for holding the holding switch in circuit making condition ready to energize the coil of said audible alarm in the event of move-

ment of said headgear, casing thereon and mercury switches therein,

and said body switch being disposed to be inverted by the disposition of said wearing apparel at the lead arm and shoulder after impact of the golf club with the ball for breaking the ground connection from said battery to the coil of said holding relay for releasing the relay arm.

3. A device for detecting movement of a golfer's head during back swing and stroke of a golf club relative to a golf ball comprising:

a casing adapted to be secured to the golfer's head,

a pair of mercury switches in said casing with the mercury in such switches out of touch with the contact points therein,

an audible alarm in said casing having a coil grounded to said battery through said mercury switches,

a body switch of the mercury type adapted to be secured to the lead arm and shoulder of the golfer's wearing apparel with the mercury in the body switch contacting the contact points therein,

a holding relay in said casing having a coil connected to said battery through said body switch, and having a relay arm and a pair of switches thereon normally disposed in noncontacting position, one of said pair of switches controlling flow of current to said audible alarm coil and the other controlling flow of current to the coil of said holding relay,

manual means operable exteriorly of said casing for moving said relay arm and said relay and holding switches into contacting position for energizing said relay coil and for holding the holding switch in circuit making condition ready to energize the coil of said audible alarm in the event of movement of the golfer's head and mercury switches in said casing,

and said body switch being disposed to be inverted by the disposition of said wearing apparel at the lead arm and shoulder after impact of the golf club with the ball for breaking the ground connection from said battery to the coil of said holding relay for releasing the relay arm.

4. A device for detecting movement of a golfer's head during back swing and stroke of a golf club relative to a golf ball in combination with a headgear and wearing apparel of such golfer,

a casing secured to said headgear,

a pair of mercury switches in said casing,

means for adjustably mounting said mercury switches in said casing in diverging disposition with mercury therein out of touch with the contact points therein,

an audible alarm in said casing having a coil connected to one side of said battery through said mercury switches and controlled by electrical connection to the other side of said battery through a relay switch,

a body switch of the mercury type secured to the lead arm and shoulder of said wearing apparel with the mercury therein contacting the contact points therein,

a holding relay having a coil connected to said one side of said battery through said body switch, said holding relay having a relay arm forming a part of said relay switch and having a holding switch thereon and normally disposed to maintain said relay and holding switches in non-contacting position,

a spring loaded plunger extending through said casing

for engaging said relay arm and manually operable exteriorly of said casing for depressing said relay arm to close said relay and holding switches for energizing said relay coil to thereby hold the holding switch in circuit making condition ready to energize the coil of said audible alarm in the event of movement of said headgear casing thereon and mercury switches therein,

and said body switch being disposed to be inverted by the disposition of said wearing apparel at the lead arm and shoulder after impact of the golf club with the ball for breaking the ground connection from said battery to the coil of said holding relay for releasing the relay arm.

5. A device for detecting movement of a golfer's head during back swing and stroke of a golf club relative to a golf ball in combination with a headgear and wearing apparel of such golfer,

a casing,

means on said casing for securing the latter to said headgear,

a pair of mercury switches in said casing each electrically connected to one side of said battery,

means for mounting said mercury switches in said casing for adjustment into diverging disposition with mercury therein out of touch with the contact points therein and movable with said casing into contact with said contact points upon movement of the golfer's head,

an audible alarm in said casing having a coil,

means for electrically connecting the coil of said audible alarm to each of said mercury switches,

a body switch of the mercury type secured to the lead arm and shoulder of said wearing apparel with the mercury therein contacting the contact points therein,

a holding relay in said casing having a coil electrically connected to said one side of said battery through said body switch, said holding relay having a relay arm normally urged away from the coil of said holding relay, a relay switch and a holding switch operatively associated with said relay arm and normally disposed in non-contacting position,

a spring loaded plunger extending through said casing and engaging said relay arm for manually depressing said relay arm to close said relay and holding switches for energizing said relay coil and for holding the holding switch in circuit making condition ready to energize the coil of said audible alarm in the event of movement of said headgear, casing thereon and mercury switches therein,

and said body switch being disposed to be inverted by the disposition of said wearing apparel at the lead arm and shoulder after impact of the golf club with the ball for breaking the ground connection from said battery to the coil of said holding relay for releasing the relay arm.

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THOMAS B. HABECKER, *Acting Primary Examiner.*

D. L. TRAFTON, *Assistant Examiner.*