

Oct. 8, 1963

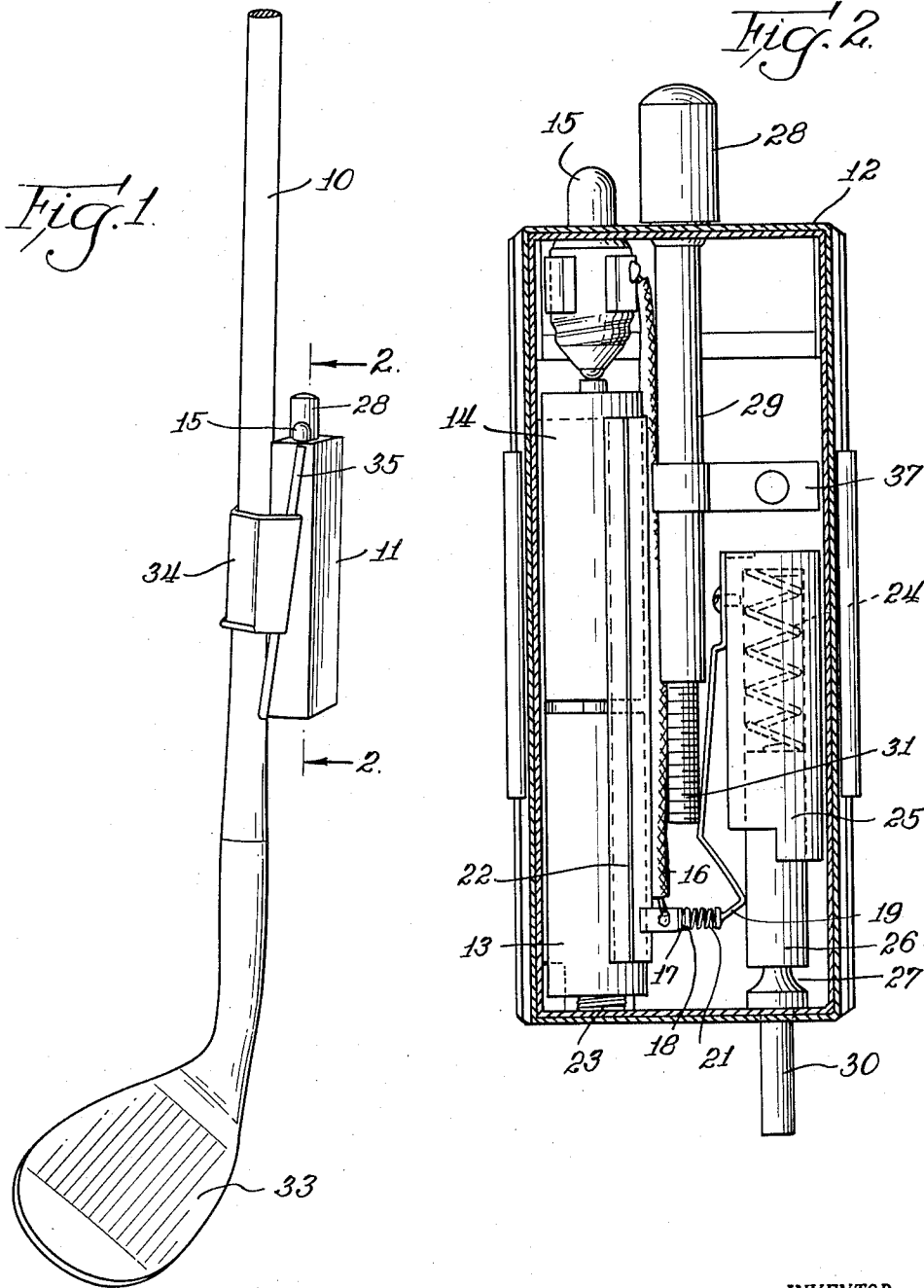
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3,106,403

CLUB SWING MOMENTUM INDICATOR

Filed Jan. 23, 1961

2 Sheets-Sheet 1



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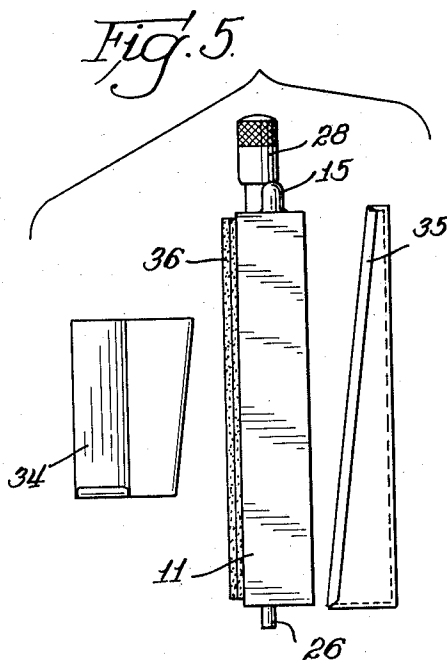
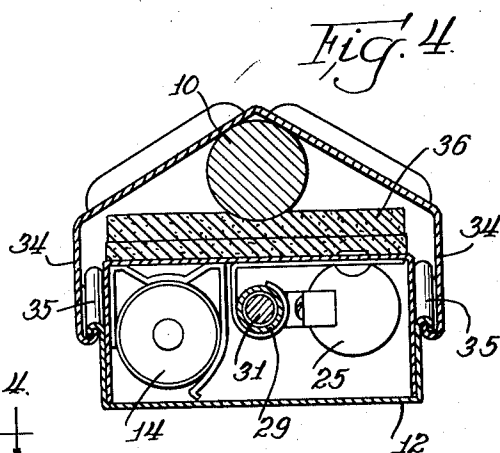
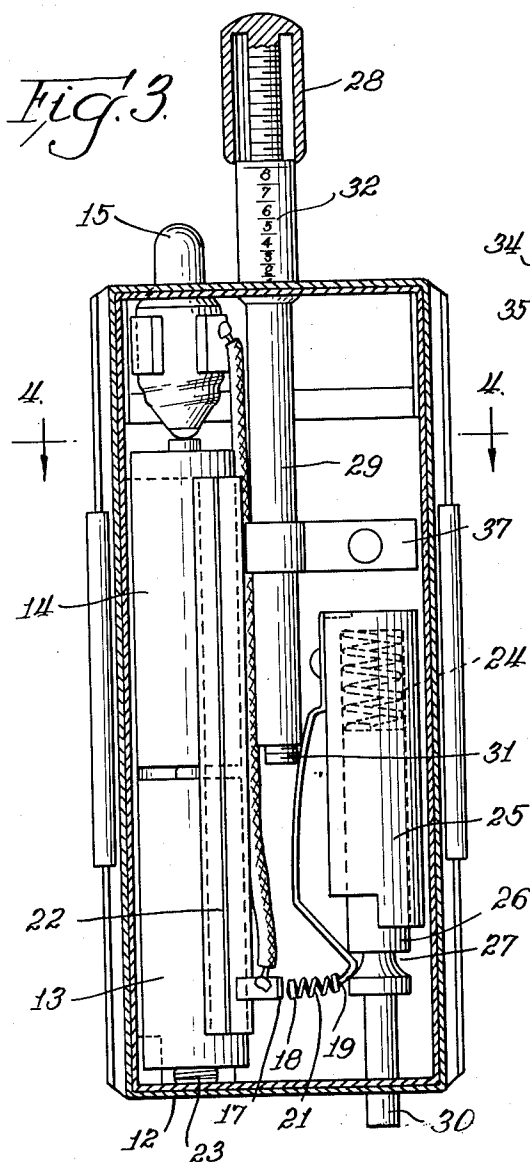
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CLUB SWING MOMENTUM INDICATOR

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2 Sheets-Sheet 2



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CLUB SWING MOMENTUM INDICATOR
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Inc., Evansville, Ind., a corporation of Delaware
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10 Claims. (Cl. 273-186)

This invention relates to a momentum indicator, attachable to golf clubs which indicator operates upon the visual and auditory senses of a golfer or an observer to indicate a point in the golfer's swing where a predetermined momentum is created which activates the indicator. More particularly, the invention relates to an indicator which is removably attached to the shaft of a golf club for the purpose of sensing when the momentum created by the golfer's swing, which in a large measure is due to the uncocking of his wrists, has reached a magnitude which is sufficiently great to overcome the mechanical retaining force of the mechanical system of the indicator and thereby activate said mechanical system which in turn activates an electrical system which indicates to the golfer or observer that the golfer is properly or improperly coordinating his swing.

The mechanical system when released causes a hammer to strike against the housing of the indicator causing an audible sound which is heard by the golfer. The electrical system which is substantially simultaneously activated with the mechanical system causes a light bulb to be illuminated, further indicating to the golfer that at that point in his swing a predetermined momentum has been created which is sufficient to overcome the retaining force of a spring latch within the indicator. Through proper adjustment of the indicator to correspond to the golfer's swing, the golfer can use the indicator as a guide to perfect the timing of his swing, as will hereinafter be more fully explained.

The momentum indicator of the present invention is an improvement over devices heretofore used, in that it operates upon both the visual and auditory senses of a golfer or an observer, in a substantially simultaneous operation to indicate whether the golfer is coordinating his swing properly. Also, the present indicator is designed to be simply and safely mounted upon or removed from the shaft of a club, making it usable on any or all clubs in the set without requiring a permanent attachment to any one of them.

A primary object of this invention is to provide an indicator which enables a golfer to perfect his swing through properly coordinating his body movements.

A second object of this invention is to provide an indicator which operates upon both the visual and auditory senses of the golfer, to indicate at what point in his swing he has created a momentum sufficient to activate the indicator.

A further object of the present invention is to provide an indicating attachment for a golf club which permits the golfer to use his clubs in a restricted area, where it is impossible to permit the hitting of a golf ball to determine whether or not he is coordinating his swing to create a point therein of a predetermined momentum which coincides with the position at which the golf head would normally make impact with a golf ball.

A still further object of this device is to train the golfer to keep his head down and eye on the ball.

The indicator of the present invention is made adjustable, so that any golfer can properly adjust the device to his own capabilities to indicate a point of predetermined momentum, which coincides substantially with a point at which impact with a golf ball would have taken place. The indicator is further calibrated to assist the golfer to locate an approximate setting thereon to

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correspond to a particular numbered club being used. With the foregoing description and objects in view, the device will now be described in conjunction with the drawing, in which:

5 FIG. 1 shows the device of the present invention mounted to the shaft of a golf club;

FIG. 2 is a vertical sectional view taken along line 2-2 of FIG. 1, showing the members in their operational positions;

10 FIG. 3 is a vertical sectional view similar to FIG. 2, showing the members in their non-operational or retracted positions;

FIG. 4 is a horizontal sectional view taken along line 4-4 of FIG. 3; and

15 FIG. 5 is a side elevational view of the device removed from a golf club shaft, showing the various mounting elements disassembled.

Referring now to the drawings in detail, and first to FIG. 1 thereof, 10 indicates a golf-club shaft to which the indicator of the present invention 11 is mounted. The indicator is comprised of a housing 12, which contains therein the electrical system comprised of batteries 13 and 14, a light bulb 15, and a wire lead 16 which ties in the contact point 17 to the light bulb 15. Another contact point 18 cooperates with contact point 17 to form a switch. The contact point 18 is attached to the end of a leaf spring latch 19 by means of helical spring 21. The batteries 13 and 14 are cradled in a battery-carrying bracket 22, and are held in alignment axially against the light bulb 15 by the compression spring 23.

The electrical system as shown in FIG. 2 shows the switch contact points 17 and 18 in a closed position, completing the electrical circuit which causes the light bulb 15 to become illuminated. The same system is shown in FIG. 3 with the spring latch 19 in a retaining position, maintaining the contact points 17 and 18 in a spaced-apart relationship, in which the electrical system is open.

The mechanical system also mounted within the housing 12 is comprised of a cylinder 25 fixedly mounted in the housing with its axis parallel with that of the housing (i.e., parallel with the axis of the club when mounted thereon), a hammer 26 residing in the cylinder, and a compression spring 24 also nested in the cylinder between the end wall of the cylinder and the base of the hammer for exerting a force on the hammer. The hammer 26 is provided with a notch, which may be in the form of an annular groove 27 which cooperates with the spring latch 19 for retaining the hammer 26 in a retracted position, as shown in FIG. 3.

The mechanism for applying the retaining force with which the latch 19 is held in the annular groove 27 is supported in a cylinder 29, and is comprised of a thimble 28, a calibrated internally threaded sleeve 32, a movable spindle 31 and a cylinder bracket 37. As the thimble 28 is screwed on the sleeve 32 toward the housing 12, the spindle 31 protrudes farther and farther from the cylinder 29, thereby exerting more and more pressure upon the inclined spring latch 19, causing the said latch 19 to be under greater pressure and exert a greater retaining force on the hammer 26. As the spindle 31 exerts more pressure on the latch 19, a greater centrifugal force is required to act upon the hammer 26 to overcome the latch retaining force. From this mode of operation, it is readily apparent that as longer irons and woods are used, namely, those designed for hitting a golf ball greater distances, the thimble 28 should be positioned closer to the indicator housing 12 than when shorter irons of the type designed for shorter distances are being employed.

The centrifugal force acting upon the hammer 26, is developed during the course of a golfer's swing. In swinging a golf club a player initially brings the club

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back on the backswing by the use of his arms and body in a winding manner. When a point is reached in the backswing where the player's arms have carried the club to a substantially horizontal position, the golfer begins a cocking of his wrists in order to rotate the club along its backward arc. When the club has reached the end of the backswing, the wrists of the golfer are fully cocked.

Then as the club is started downwardly, the body and arms of the player begin to unwind while the wrists are retained in their cocked position. As the downward swing progresses and the velocity of the club head is increased a point is reached where the player's hands are approaching the front of his body. At this point the player begins to uncock his wrists increasing the velocity of the club head.

The increase in velocity causes an increase in the momentum generated and also an increased centrifugal force acting upon the hammer 26 as both of these forces are functions of the velocity of the club. The increased centrifugal force upon the hammer 26 activates the mechanical system by overcoming the retaining force upon the hammer.

The present indicator senses the increase in velocity which in a large part is due to wrist action and activates the mechanical and electrical systems. The player is made aware of this point in his swing if he has properly coordinated his movements as he has generated a momentum sufficient to overcome the retaining force of the latch 19.

If the player generates this momentum at a point in his swing where he would normally be making impact with a golf ball, he can conclude that his timing is proper. If the necessary momentum is generated before or after he would normally be making impact with a golf ball, he can conclude that his timing is faulty and take measures to correct his faults.

In operation, the indicator of the present invention is cocked as at FIG. 3, with the plunger 30 in a retracted position in the housing 12, so that the annular groove 27 in the periphery of the hammer 26 cooperates with the spring latch 19 to hold the hammer 26 in its retracted position against the spring 24. In this retracted position the switch contact point 18 is spaced apart from contact point 17, and the electrical system is open. As a golfer swings a club with the indicator attached thereon, as shown in FIG. 1, a momentum is generated during the down-swing as heretofore described, the retaining force of the spring latch 19 upon the hammer 26 is overcome, the hammer is forced downward causing the spring latch 19 to move out of the groove 27, and spring latch 19 rides upon the outer periphery of said hammer, thereby bringing the contact point 18 into contact with contact point 17, closing the electrical system and illuminating the light bulb 15. It is preferred to adjust the setting on the indicator, so that it is activated at substantially a point in the golfer's swing when an imaginary golf ball would be hit. That is, by adjusting the retaining force on the spring latch 19, it is possible to cause a setting on the indicator which will be overcome only at a point approximately where impact with a golf ball would occur. Having adjusted the indicator in this manner, the golfer can perfect the timing of his swing without actually hitting a ball.

As an aid to enable a golfer to determine the initial setting on the indicator, the sleeve 32 has been calibrated as shown in FIG. 3. However, it must be understood that each golfer will through trial and error learn where his particular swing causes the indicator to be activated, and from this he will be able to make the proper settings thereon.

It is recognized that the maximum momentum of a golfer's swing should be reached at a point therein somewhat after the point of impact with a ball occurs. With proper timing and coordination this ideal swing can be developed and it is a purpose of present indicator to enable

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a golfer to develop such a swing though not actually playing the same.

The indicator of the present invention is attached to the shaft of a club just above the club head by the mounting shown in FIGS. 4 and 5 which show a bracket 34 that is placed on one side of the shaft of the club and which is constructed with an inclined trackway to interlock with the inclined trackway 35 secured to the housing of the indicator. The inclined trackway 35 on the device is inclined upwardly and outwardly from the shaft of the golf club, so that as the club is swung, the tendency of the mounting is to become more secure upon the shaft, as it wedges downwardly cooperating with the bracket 34. The trackway on the bracket 34 interlocks the trackway 35 much as the fingers of two hands gripping each other, as can be seen in FIG. 4. The indicator is cushioned against impact and against marring the finish of the shaft of the club through the use of sponge rubber padding, shown secured thereto as at 36.

In summary then, the present invention provides an indicator which is removably mounted upon the shaft of a golf club, preferably where the shaft meets the head of the club. The indicator is adjustable to compensate both for the particular golfer using the device, and also for the club on which it is used. The thimble and sleeve are calibrated for an initial setting to correspond to the club on which the indicator is employed in a manner that the lower numbered clubs or woods which are used for longer distances require a setting on the device which places more pressure upon the spring latch 19, so that it exerts a greater retaining force on the hammer 26, thereby requiring a greater momentum to be created in the golfer's swing to overcome the said retaining force. To cock the indicator after each swing, the golfer merely pushes in on the plunger 30 thereby forcing the hammer 26 into a retracted position against the compression spring 24, whereat the spring latch 19 becomes seated in the annular groove 27, retaining the hammer 26 in that position until the golfer swings the club and creates the momentum sufficient to overcome the spring latch retaining force upon the hammer. When this point in his swing is reached the hammer 26 is driven out of the cylinder 25 by centrifugal force, against the housing 12 of the indicator, causing a clicking sound. Substantially simultaneously therewith contact point 18 secured to the free end of the spring latch 19, is forced against contact point 17 by the camming action of the hammer 26, closing the electrical circuit and illuminating the light bulb 15.

Invention is claimed as follows:

1. A club swing momentum indicator comprising: a housing; means secured to said housing for mounting said indicator upon a club; and a mechanical system and an electrical system mounted in said housing for substantially simultaneously giving audible and visible signals when a predetermined momentum is reached during the swinging of a club having said indicator attached thereto, said mechanical system being operatively associated with said electrical system and including a cockable mechanism responsive to the centrifugal force resulting from the swinging of the club to trigger the mechanism when the predetermined momentum is achieved to generate the audible signal and activate the electrical system to give the visible signal.

2. A club swing momentum indicator in accordance with claim 1 wherein the cockable mechanism of the mechanical system is adjustable to establish the magnitude of centrifugal force at which said mechanism is activated to close the switch of the electrical system at any predetermined value within the maximum capability of the mechanism.

3. A momentum indicator in accordance with claim 1 wherein the cockable mechanism of the mechanical system comprises a spring-biased hammer mounted for movement along its axis parallel with the axis of the housing and having a notch therein and a spring latch

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arranged to cooperate with said notch to retain said hammer in normally retracted position, the arrangement being such that the triggering of said mechanism allows the hammer to move and strike fixed structure of the housing to generate the audible signal.

4. A momentum indicator in accordance with claim 3 wherein the hammer is cylindrical and the notch is formed by an annular groove encircling said hammer.

5. A momentum indicator in accordance with claim 3 wherein the hammer has a plunger extending forwardly therefrom through the housing to the exterior thereof whereby the mechanical system may be cocked by forcing said plunger inwardly until the spring latch seats in the notch in the hammer.

6. A momentum indicator in accordance with claim 3 and including means for adjusting the spring pressure with which the spring latch engages the notch in the hammer whereby to establish the magnitude of momentum at which the cockable mechanism of the mechanical system is triggered.

7. A momentum indicator in accordance with claim 3 and including means for adjusting the spring pressure with which the spring latch engages the notch in the hammer whereby to establish the magnitude of momentum at which the cockable mechanism of the mechanical system is triggered, said adjusting means including a screw extending outside of the housing, and indicia means indicating the several positions of said adjusting screw.

8. A momentum indicator in accordance with claim 7 wherein the spring latch comprises a leaf spring including a portion inclined to the axis of the hammer and the adjusting screw is substantially parallel with the axis of the hammer, and the end of said screw bears against said inclined portion of said leaf spring latch whereby the spring pressure of said latch is responsive to the position of adjustment of said adjusting screw.

9. A momentum indicator in accordance with claim 1 wherein the cockable mechanism of the mechanical system comprises a spring-biased hammer mounted for move-

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ment along its axis parallel with the axis of the housing and having a notch therein and a spring latch arranged to cooperate with said notch to restrain said hammer in normally retracted position, and the electrical system includes a switch arranged for operation by the spring latch, the arrangement being such that triggering of said mechanism releases said hammer and the resulting action moves said latch to close said switch and said hammer strikes fixed structure of the housing to generate the audible signal.

10. A momentum indicator in accordance with claim 1 wherein the mechanical and electrical systems comprise: an electric lamp and batteries therefor mounted in the housing with the bulb of said lamp exposed at the top of said housing; a hammer having a notch therein and a plunger extending forwardly therefrom mounted in said housing for vertical movement with the plunger extending through said housing at the bottom thereof; a leaf spring latch mounted in said housing for cooperation with the notch in said hammer for restraining said hammer in normally retracted position; and an electric switch connected in circuit with said batteries and lamp, one contact of said switch being affixed to said spring latch, the arrangement being such that downward movement of said hammer responsive to the centrifugal force resulting from the swinging of the club forces said spring latch out of said notch and thereby moves the contact thereon into engagement with the other contact of said switch to close the lamp circuit and light the lamp.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,106,403

October 8, 1963

Fredrick J. Kirkman

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 54, after "indicator." insert the following paragraph:

Another object is to provide an indicator which can be readily attached to and removed from the shaft of a golf club, to enable the golfer to use each club in his set with the same indicating device.
same column 1, line 6, after "golf" insert -- club --;
column 4, line 2, for "same" read -- game --.

Signed and sealed this 21st day of April 1964.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents