May 14, 1929. J. GIBSON 1,712,609

STROKE INDICATING ATTACHMENT FOR GOLF CLUBS

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Fig. 1.

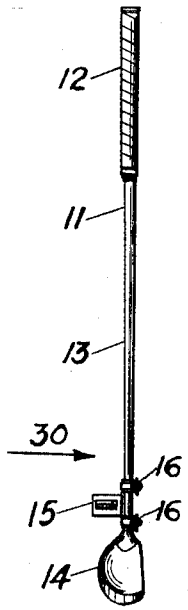


Fig. 2.

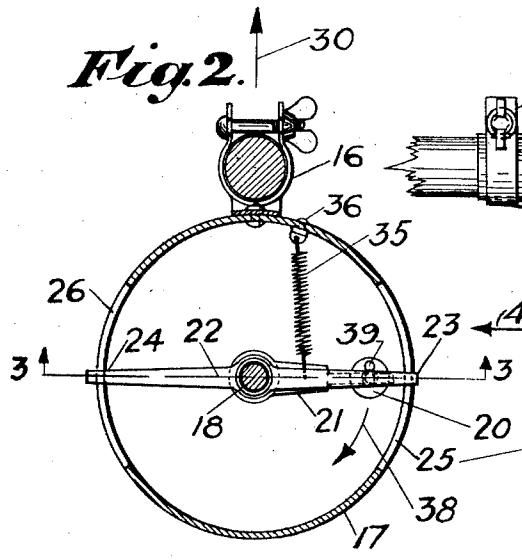
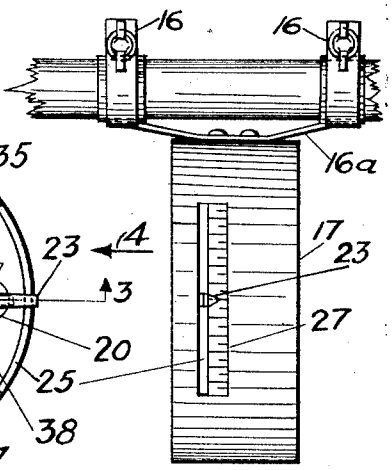


Fig. 4.



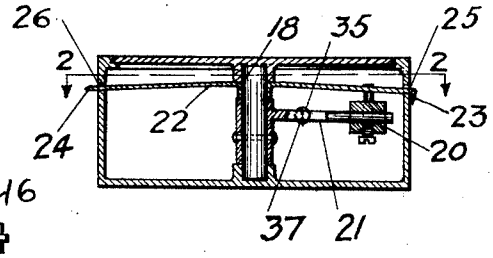


Fig. 3.

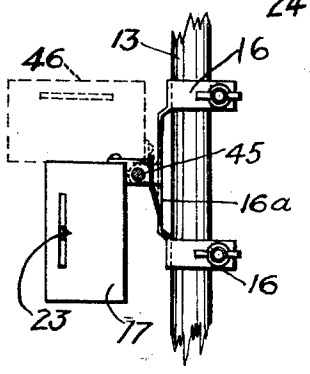


Fig. 5.

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STROKE-INDICATING ATTACHMENT FOR GOLF CLUBS.

Application filed September 28, 1927. Serial No. 222,559.

This invention relates to means for measuring the force or speed of, or the force or speed imparted to, a striking instrument such as a golf club or other similar game device used by a player in a like manner. Although this specification is specifically directed to an attachment particularly designed for use with golf clubs, it is to be borne in mind that there are other game devices of this general classification to which the invention may be applied, baseball bats and tennis racquets being mentioned for the purpose of further illustrating the general scope of this classification.

It is an object of the invention to provide an attachment for a game device of the character described having an inertia actuated member swingably mounted in such a manner that the extent of movement of this inertia actuated member against the resistance of a resilient element such as a spring will be representative of the force or speed of the stroke of the game device, and having a separate movable indicating member adapted for movement by the inertia actuated member through a distance proportionate to the movement of the inertia actuated member and adapted to remain in the position to which it is moved, after the inertia actuated member has returned to its initial position, thereby retaining a record of the movement of the inertia actuated member.

It is a further object of the invention to provide an indicator of the class described adapted for use on a game device in several positions wherein the inertia effect for accomplishing a measurement reading will be applied in two separate manners, as will be hereinafter fully described.

Further objects and advantages of the invention will be made evident throughout the following part of the specification, in which:

Fig. 1 is a view of a game device, more particularly a golf club, having a stroke indicating device embodying the features of my invention attached thereto.

Fig. 2 is an enlarged plan-section on a plane represented by the line 2—2 of Fig. 3.

Fig. 3 is a cross-section on a plane represented by the line 3—3 of Fig. 2.

Fig. 4 is an elevational view of the device drawn to a scale corresponding to Figs. 2 and 3, and viewing Fig. 2 from the position indicated by the arrow 4 in such figure.

Fig. 5 is an elevational view showing the device equipped with means for employing it in two positions on the golf club.

The golf club 11 shown in Fig. 1 is the common type having a handle or grip portion 12, a shaft 13 and a head 14. My stroke indicating instrument, as denoted by 15 in this figure, is equipped for securement to the game device 11, and preferably near the lower end of the shaft 13, by the means of clips 16 or other attachment means arranged for gripping the shaft 13 in the manner indicated in Figs. 2 and 4, the present form of the invention being shown with a flat strap 16^a having the function of joining the clips 16 with the casing 17 of the stroke indicating instrument 15, the member 16^a forming a resilient connecting or supporting means.

In the preferred form of my invention, the casing 17 serves as a supporting structure for holding a pivot 18 swingably supporting an inertia actuated element 20 by means of an arm or lever 21. Also in the casing 17 is a registering member which is separate from the element 20 and which is preferably mounted to rotate on the pivot or shaft 18. In order to provide a visible reading or indication by the registering member, this member is given the form of a light, thin metal bar 22, centrally pivoted and having the ends 23 and 24 thereof projecting respectively through slots 25 and 26 formed in the casing 17, the end 23, which may be designated as the forward end, having a downwardly bent point arranged to travel along and indicate on a scale 27, and the end 24, which may be designated as the rearward end, being for the purpose of manual engagement whereby to return the registering member to its initial position after it has functioned to indicate the intensity, force or speed of a movement of a game device such as the golf club 11.

A feature of the device is to so mount the inertia actuated element 20 which consists of a small weight providing a mass, in such a manner and in such position that the axis on which it is swingable will be substantially parallel to the extension of the golf club 11 and will be in parallel alignment with the radii of the circular path through which the game device is swung in making a stroke. Therefore, when the device 15 is in the position shown in Figs. 1,

2, and 3, centrifugal force cannot act to move the member 20 for the reason that the member can move only in a plane tangential to the circular path through which the device travels during the swinging of the game device to which it is attached.

The arrow 30 in Fig. 1 indicates the direction of travel of the indicating device 15 when the golf club 11 is swung, therefore it will be seen from Fig. 2 that when the club is swung in its proper direction as indicated by the arrow 30 in this figure, the arm 21 on which the element 20 is carried projects sideways from the direction of movement 30 of the device 15. The operation of the instrument employs inertia, or in this present instance the disinclination of the member 20 to move from a position of rest. The mass represented by the element 20 requires force to accelerate it from a condition of rest to a condition of movement, which force is proportionate to the rate of acceleration, therefore the measure of this force or the reaction of the element 20 thereto may be used as an indication of the force or impulse of the stroke. When the device is moved in a direction as indicated by the arrow 30, a light resilient element or spring 35, extending from an attachment 36 in the forward part of the casing 17 to an intermediate point 37 of the arm 21 which may be considered as forming part of the inertia actuated element, exerts a forward pull on the element 20, which pull is resisted by the inertia acting therein, so that the tendency for the element 20 to remain stationary while the forward end of the spring 35 moves forwardly produces a stretching of the spring proportionate to the force exerted on and resisted by the element 20. The inertia acting in the element 20 serves to produce a relative movement thereof in the direction of the arrow 38 of Fig. 2, this movement being proportionate to the elongation of the spring 35 and the force exerted. A small pin or engagement means 39 engages the indicating member 22 and moves the end 23 thereof forwardly in the direction of the arrow 38 to a position denoting the extent of movement of the inertia actuated element 20, in which the indicator remains by reason of the frictional engagement of the ends 23 and 24 with the edges of the slots 25 and 26, until returned to its initial position by manually pushing it back in the manner previously described.

The indicator 15 although particularly suitable for use as previously described relative to Figs. 1 and 2, in which use the measurement of the stroke is obtained through the action or inertia in a swingable member, the device may also be used in a position in which centrifugal force, which is another form of inertia exemplified, will act to cause the element 20 to swing against the retentive action of the spring 35 during the stroke of the game device. This may be obtained by employing a spring retained hinge 45 between the part 16ª of the attachment means, so that the device 15 may be swung from the horizontal position as indicated by the dotted lines 46 of Fig. 5 to the vertical position in which the device is indicated in full lines in this figure. the hinge structure 45 being of such character that the device will not slip from either of the positions indicated in Fig. 5. When the device is in the vertical position illustrated, the axis of the pivot 18 extends perpendicular to the direction of action of centrifugal force, thus allowing the element 20 to swing outwardly under the action of this centrifugal force in the direction of the arrow 38 of Fig. 2, the movement of the inertia actuated element 20 being registered by the member 22. In this use of the device 15, inertia endeavoring to preserve a straight line movement of the element 20 produces that effect known as centrifugal force, thus in both uses of the device inertia serves as the impelling means for producing a measuring movement of movable members in the device.

I claim as my invention:

1. A stroke indicator for a game device, comprising: a supporting structure having means for attaching it to a game device; an element movably supported by said structure in such a manner that it may move when said game device is swung; a separate indicating member supported in said structure; and engagement means between said element and said indicating member for moving said member a distance proportionate to the movement of said element.

2. A stroke indicator as defined in claim 1, in which said supporting structure is equipped with attachment means adapted for attaching it to said game device in such position that inertia will act in said element in a manner to cause it to move in a relatively rearward direction, or in such position that inertia will act in said element in a manner to cause said element to move centrifugally.

3. A stroke indicator for a game device, comprising: a supporting structure having means for attaching it to a game device; an element movably supported by said structure and adapted to move relatively to said structure through the action of inertia therein; a resilient member for resisting movement of said element; and a separate indicating member adapted to be moved by said element a distance proportionate to the movement of said element against the resistance of said resilient member.

4. A stroke indicator as defined in claim 3, in which said supporting structure is equipped with attachment means for attaching it to said game device in such position that inertia will act in said element in a manner to cause it to move in a relatively rearward direction with reference to said

structure, or in such position that inertia will act in said element in a manner to cause it to move centrifugally against the resistance of said resilient member.

5. A stroke indicator as defined in claim 3, in which said supporting structure is equipped with hinge means so operative between said structure and said means for attaching, that the said indicator may be changed from a position in which inertia will act in said element in a manner to cause it to move in a relatively rearward direction with reference to said structure, to a position in which inertia will act in said element in a manner to cause it to move centrifugally against the resistance of said resilient member.

6. A stroke indicator for a game device, comprising: a casing adapted for attachment to a game device; a pivot in said casing; an element swingable on said pivot through the action of inertia therein when said game device is swung; a resilient member for resisting movement of said element; a frictionally engaged indicating member with said casing; and an engagement between said element and said indicating member for moving said indicating member a distance proportionate to the movement of said element against the resistance of said resilient member.

7. A stroke indicator as defined in claim 6, including means for attaching said indicator to the game device with the said pivot extending radially with respect to the curved path through which the game device is swung in making a stroke.

8. A stroke indicator as defined in claim 6, including hinge means for attaching said indicator to the game device in such a manner that said indicator may be swung between a position in which said pivot extends radially with respect to the curved path through which the game device is swung in making a stroke, and a position in which said pivot extends in a plane tangential with respect to the curved path through which the game device is swung in making a stroke.

9. A stroke indicator for a game device, comprising: a casing; means for attaching said casing to a game device; a pivot in said casing; an element swingable on said pivot through the action of inertia therein when the game device is swung; a resilient member for resisting the movement of said element; an indicating member swingable on said pivot, said indicating member having an end projecting through a slot in said casing and having frictional retaining engagement with said casing; and an engagement between said element and said indicating member for moving said indicating member a distance proportionate to the movement of said element against the resistance of said resilient member.

10. A stroke indicator as defined in claim 9, including a hinge associated with said means for attaching, for permitting said indicator to be swung between a position in which said pivot extends radially with respect to the curved path through which the game device is swung in making a stroke, and a position in which said pivot is in a plane tangential with respect to the curved path through which the game device is swung in making a stroke.

11. In combination: a game device such as a golf club; an indicating device for measuring the stroke of said game device, formed as a separate member and having attachment means whereby it may be attached to said game device when a measurement of the stroke is desired, but permitting the use of the game device separately for the purpose of playing the game to which the game device is adapted.

12. In combination: a game device such as a golf club; a stroke indicator having a movable element so arranged as to be actuated in proportion of the stroke impulse; and attachment means co-operative between said game device and said stroke indicator for securing said indicator in operative position on said game device so that a stroke measurement may be taken, but permitting said indicator to be removed and said game device to be employed separately in pursuit of a game.

13. A stroke indicator for a game device, comprising: a supporting structure having means for attaching it to a game device; and a movable member held in said supporting structure in such a manner that said movable member will move in relatively reverse direction in said structure through the action of inertia therein when the game device is swung through a stroke.

14. A stroke indicator for a game device, including: a supporting structure having means for attaching it to a game device; and a movable member held in said supporting structure in such a manner that said movable member will move in relatively reverse direction in said structure through the action of inertia therein when the game device is swung through a stroke, there being means for indicating the extent to which said movable member has been swung by such action of inertia.

15. A device as defined in claim 14, including a resilient element operative to resist movement of said movable member.

Signed at Los Angeles, in the county of Los Angeles and State of California, this 7th day of September, 1927.

JAMES GIBSON.