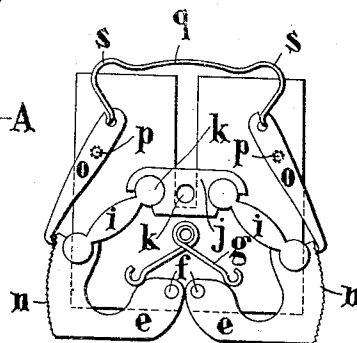
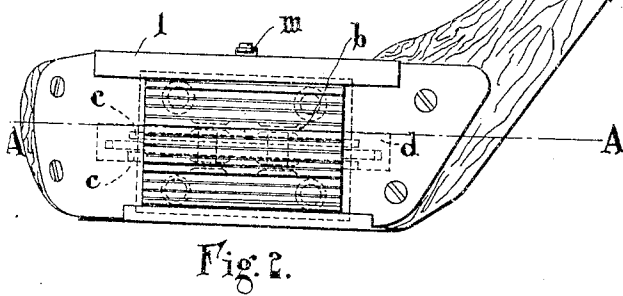
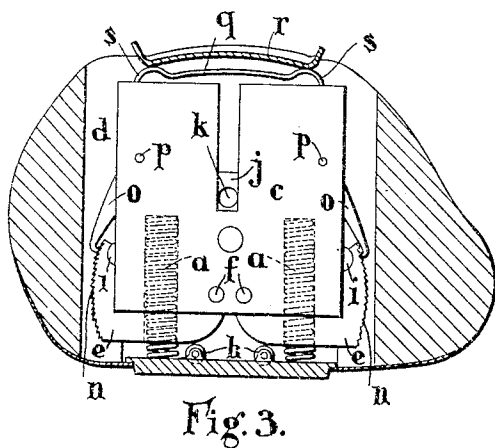
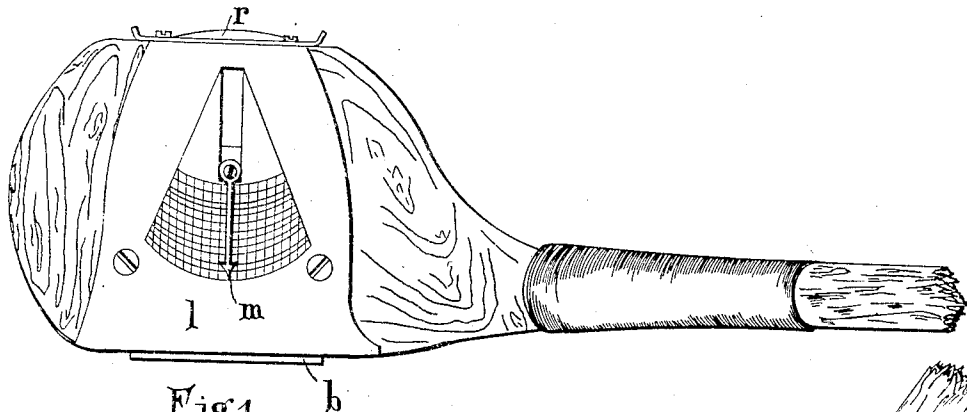


S. O. H. COLLINS & H. V. PEARCE.
 MEANS FOR INDICATING THE STRIKING FORCE OF GOLF CLUBS OR SIMILAR INSTRUMENTS.
 APPLICATION FILED JUNE 21, 1910.

1,039,491.

Patented Sept. 24, 1912.



WITNESSES
J. P. Davis
J. D. Reelham

Fig. 4. INVENTORS
 Stephen Ogle Hearn Collins
 Harold Vinyan Pearce
 BY *Munn Co*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

STEPHEN OGLE HENN COLLINS AND HAROLD VYVYAN PEARCE, OF LONDON, ENGLAND.

MEANS FOR INDICATING THE STRIKING FORCE OF GOLF-CLUBS OR SIMILAR INSTRUMENTS.

1,039,491.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed June 21, 1910. Serial No. 569,120.

To all whom it may concern:

Be it known that we, STEPHEN OGLE HENN COLLINS, a subject of the King of Great Britain and Ireland, and residing at 18 Walton street, in the county of London, England, and HAROLD VYVYAN PEARCE, a subject of the King of Great Britain and Ireland, and residing at 13 Astwood road, in the county of London, England, have invented certain new and useful Means for Indicating the Striking Force of Golf-Clubs or Similar Instruments, of which the following is a specification.

This invention relates to improvements in means for indicating the striking force of golf clubs and the like upon balls.

Indicating devices of this character as hitherto proposed have employed a fixed indicating device connected to the ball so that after the latter has been struck the indicator is operated by the motion of the ball. Results obtained by such devices however are not altogether satisfactory because there is no means of indicating the nature or point of application of the blow *i. e.* whether the blow was one made fairly in the center of the striking face or to one or other side of it.

The object of our invention is to produce an indicating device by which an indication may be obtained not only of the force of the blow but also of its approximate directness or the point of contact of the ball upon the striking face of the club.

The invention consists in a golf club or like means for striking a blow which itself carries a device for indicating the force of a blow struck upon a ball or the like.

The invention further consists in a golf club or like indicating device having means for indicating the force of a blow given and means for indicating whether the blow is to one side or the other of a given position on the club or the like.

Referring now to the accompanying drawings:—Figure 1 is a view of the top face of the club showing the indicating dial plate and pointer; Fig. 2 shows the striking face of the club; Fig. 3 is a section on line A—A of Fig. 2; and Fig. 4 is a view of the indicating mechanism with the top plate removed.

In carrying the invention into effect in one manner as applied to a golf club, we form in the front side of the club a deep

recess in which a plate *b* forming the striking face of the club is adapted to slide back against a resilient resistance such as one or more springs, *a*, or the like. The plate *b*, is preferably formed so that it projects slightly from the remainder of the face of the club the edges of the projecting part being rounded as shown. It will be seen that the plate, *b*, is arranged in conjunction with the resilient resistance in such a manner that if the plate strikes the ball centrally it will move back a distance proportional to the force of the blow without tilting the plate but if the blow is to one side or other of the vertical center line it will not only move the plate back, but will also tilt it an amount approximately proportional to the distance of the point of contact with the ball from the vertical center line. The amount of back movement of the plate *b* is less than in the case of a fair blow. Any convenient means may be used for utilizing these movements of the plate for indicating the nature of the blow. One construction of such indicating mechanism is shown in the accompanying drawings and is described hereinafter.

In a slot, *d*, extending from the front to the back of the club are fixed side plates *e*, between which we pivot a pair of segments, *e*, on pins, *f*, these segments are pressed forward by the spring, *g* to bear against rollers, *h*, on the back of the striking plate, *b*, or they may bear upon the plate itself or upon any suitable projection formed thereon. In recesses in the back ends of the segments, *e*, are pivoted the ends of the links, *i*, said links having their other ends pivoted in the connecting link *j*. From the center of the link, *j*, a pin, *k*, passes up through slots in the side plates, *e*, and in the club and also in the dial plate, *l*, and carries at its upper end the pointer, *m*. Fine ratchet teeth, *n* are formed upon the peripheries of the segments, *e*, and catch pawls, *o*, pivoted on the pins, *p*, are held in gear with said teeth by the action of the spring, *q*.

When a ball is struck by the face plate, *b*, of the club, the force of the blow deflects the springs *a*, or other resilient resistance, and the segments, *e* are rotated about their pins, *f*, by the plate pressing upon them, the connecting link *j*, with the pin, *k* and pointer, *m*, will be pushed back by the links, *i*, and

the segments, *e*, being prevented from returning by the catch pawls, *o*, the force of the blow will be shown by the pointer on the dial plate. If the blow has been struck in the center of the face plate both of the segments, *e*, will be rotated an equal amount and the pointer, *m*, in its new position will still remain on a center line at right angles to the face plate. If however the blow has not been central, one segment will be rotated more than the other and the pointer will be deflected from the central line, thus indicating to what extent the blow has been out of center.

After a blow the segments may be returned to their normal positions by releasing the catch pawls by suitable means, such as a deflectable plate *r*, which by being pressed upon the curved parts, *s*, of the spring, *g*, moves the catch pawls, *o*, out of gear with the teeth, *n*, on segments, *e* thus allowing said segments to be returned under the action of spring, *g*.

It will be readily seen that the mechanism may be considerably modified so long as the chief features are maintained namely, the provision in the head of the club of means for indicating not only the force of a direct blow but also the approximate position of the blow as shown by the tilt of the plate.

Having now described our invention what we claim as new and desire to secure by Letters Patent is:—

1. In combination in a device for striking a blow, a member capable of a compound movement under the force of said blow and indicating means capable of similar movement whereby the nature of said blow is ascertained.

2. In combination in a device for striking a blow, a member forming the striking surface, springs supporting said member and allowing a compound movement thereof under the force of said blow, and indicating means capable of similar movement whereby the nature of said blow is ascertained.

3. In combination in a device for striking a blow, a member forming the striking surface, a frame surrounding and retaining said member, springs pressing said member forward into said frame but allowing backward and tilting movement thereof under the force of said blow, and indicating means capable of contacting with said member at a plurality of points whereby the backward and tilting movements of said member are ascertained.

4. In combination in an apparatus for striking a blow, a flanged plate forming the striking surface, a frame surrounding said plate, said flanges engaging behind said frame, spring behind said plate causing the aforesaid engagement but allowing backward movement of said plate under the force of said blow, and indicating means capable

of contacting with said plate at a plurality of points whereby the nature of the movement of said plate is ascertained.

5. In combination in a device for striking a blow, a plate capable of compound movement under the force of said blow, a member the movements of which indicate the nature of said blow, and a plurality of means capable of forming connections between said plate and said member.

6. In combination in an apparatus for striking a blow, a flanged plate forming the striking surface, a frame surrounding said plate, said flanges engaging behind said frame, springs behind said plate causing the aforesaid engagement but allowing backward movement of said plate under the force of said blow, a member the movements of which indicate the nature of said blow and a plurality of means forming connections between said plate and said member.

7. In combination in an apparatus for striking a blow, a flanged plate forming the striking surface, a frame surrounding said plate, said flanges engaging behind said frame, springs behind said plate causing the aforesaid engagement but allowing backward movement of said plate under the force of said blow, an indicating device capable of pivotal and longitudinal movement, means for transmitting the movements of said plates to said device and means for retaining said device in its displaced position.

8. In combination in a device for striking a blow, a member movable under the force of said blow, an indicating device capable of pivotal and linear movement, a plurality of transmission means in operative connection with said device and pressed by spring means into a position behind said member to convey the movements of said member to said device and means for retaining said transmission means in their displaced position.

9. In combination in a device for striking a blow, a plate forming the striking surface, springs supporting said plate and allowing movement thereof under the force of said blow, an indicating device capable of pivotal and linear movement, transmission means including a plurality of ratchet toothed racks in operative connection with said device and pressed by spring means in opposition to the movement of said plate, and spring actuated members engaging said ratchet teeth to retain said transmission means and indicating device in their deflected position.

10. In combination in an apparatus for striking a blow, a flanged plate forming the striking surface, a frame surrounding said plate, said flanges engaging behind said frame, springs behind said plate causing the aforesaid engagement but allowing backward movement of said plate under the

force of said blow, an indicating device capable of pivotal and linear movement, transmission means including a plurality of ratchet toothed racks in operative connection with said device and pressed by spring means in opposition to the movement of said plate, spring actuated members engaging said ratchet teeth to retain said transmission means and indicating device in their deflected position and means for disengaging said members from said teeth.

11. In combination in an apparatus for striking a blow, a striking member carrying a resiliently supported plate which forms the striking surface, indicating means capable of linear and angular movement, and means forming an operative connection between said indicating means and said plate.

12. In combination in an apparatus for striking a blow, a movable striking head, a resiliently supported plate which forms the striking surface carried thereby, a member capable of pivotal and linear motion, also carried by said striking head, and means acting to transmit the movements of said plate to said member when a blow is struck whereby the point of application as well as the force of the blow is indicated.

13. In combination in an apparatus for striking a blow, a movable striking head, a resiliently supported plate which forms the striking surface carried thereby, a member capable of pivotal and linear motion, also carried by said striking head, means acting to transmit the movement of said plate to said member when the blow is struck, whereby the point of application and force of the blow is indicated, and means acting to retain said member in the deflected position when the plate returns to its normal position.

14. In combination in an apparatus for striking a blow, a movable plate forming a striking surface, spring members supporting said plate against said blow, indicating means capable of linear and angular movement, and means forming an operative connection between said indicating means and said plate.

15. In combination in apparatus for striking a blow, a movable plate forming a striking surface, spring members supporting said plate, and a closed link work mechanism having a part constrained to move in a definite path, the movement of said part being imparted thereto by the movable plate when a blow is struck while the amount of said movement indicates the force of the blow.

16. In combination in an apparatus for striking a blow, a movable plate forming a striking surface, spring members supporting said plate, a closed link work one of the links of which is fixed relatively to said plate and a member constrained to move in a definite path and pivotally connected to

another link of the link work, the movement of the constrained member being effected by the movement of said plate when a blow is struck, whereby the movement of the constrained member indicates the force of the blow.

17. In combination in an apparatus for striking a blow a movable plate forming the striking surface, spring members behind said plate, a frame surrounding said plate into which the latter is pressed by said spring members, the front of said plate being adapted to project slightly above the surface of said frame and means operated from the movements of said plate against the resistance of said spring members to indicate the force and point of application of the blow delivered.

18. In combination in an apparatus for striking a blow a movable plate forming the striking surface, spring members behind said plate, a frame surrounding said plate into which the latter is pressed by said spring members, the front of said plate being adapted to project slightly above the surface of said frame, means operated from the movements of said plate against the resistance of said spring members to indicate the force and point of application of the blow delivered and means for returning or resetting said indicating means.

19. In combination in apparatus for striking a blow a resiliently supported plate forming a striking surface, lever means adapted to be in contact with said plate and to move in accordance with the movements thereof under the influence of a blow, means for retaining said lever means in their deflected position while said striking surface returns to its normal position and indicating means actuated by said lever means whereby the force and point of application of the blow is ascertained.

20. In combination in an apparatus for striking a blow a resiliently supported plate forming a striking surface, pivoted lever means adapted to be in contact with said plate and to move in accordance with the movements thereof under the influence of a blow, means for retaining said lever means in their deflected position while said striking surface returns to its normal position, indicating means actuated by said lever means whereby the force and point of application of the blow is ascertained and means for releasing said lever means to return into their normal position.

21. In combination in an apparatus for striking a blow, a resiliently supported plate forming a striking surface wherewith the blow is delivered, two segmental levers in contact with said striking surface whereby the movements of said surface under the influence of the blow are transmitted to said levers, a link pivotally connected to each

segmental lever and a further link pivotally connecting these former links, a pointer carried by said third link adapted to move over a graduated dial carried by said apparatus and pawl means for retaining said segmental levers in their deflected position while said striking surface returns to its normal position.

22. In combination in an apparatus for striking a blow, a resiliently supported plate forming a striking surface wherewith the blow is delivered, two segmental levers in contact with said striking surface whereby the movements of said surface under the influence of the blow are transmitted to said levers, a link pivotally connected to each segmental lever and a further link pivotally connecting these former links, a pointer carried by said third link adapted to move over a graduated dial carried by said apparatus, pawl means for retaining said segmental levers in their deflected position while said striking surface returns to its normal position.

23. In combination in an apparatus for striking a blow a plate forming the striking surface wherewith the blow is delivered, spring members behind said plate against the resistance of which the plate is moved under the influence of the blow, two segmental levers in contact with said plate, a link pivotally connected to each of said segmental levers, a further link pivotally connecting said former links, a pointer carried by this third link and adapted to move over a graduated dial carried by said apparatus, a pawl adapted to engage with each of said

segmental levers, spring means holding said pawls in such engagement whereby said segmental levers are retained in their deflected position after said striking plate has returned to its normal position.

24. In combination in an apparatus for striking a blow, a plate forming the striking surface wherewith the blow is delivered, spring members behind said plate against the resistance of which the plate is moved under the influence of the blow, two segmental levers in contact with said plate, a link pivotally connected to each of said segmental levers, a further link pivotally connecting said former links, a pointer carried by this third link and adapted to move over a graduated dial carried by said apparatus, a pawl adapted to engage with each of said segmental levers, spring means holding said pawls in such engagement whereby said segmental levers are retained in their deflected position after said striking plate has returned to its normal position and means adapted to engage with said pawls to release them from engagement with said segmental levers whereby the latter are allowed to return to their normal position in contact with said striking plate.

In testimony whereof we have hereunto affixed our signatures in the presence of two witnesses.

STEPHEN OGLE HENN COLLINS.
HAROLD VIVYAN PEARCE.

Witnesses:

T. J. LAFORD,
P. A. OUTHWAITE.