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APPARATUS FOR MEASURING MOMENTS OF GOLF CLUBS AND THE LIKE

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4 Claims. (Cl. 265—49)

The present invention relates to apparatus for measuring, comparing, and classifying golf clubs and the like, such for example, as tennis rackets, baseball bats, and other implements, in order to enable the user thereof to select those best suited to his use.

Players of golf, tennis, baseball, and other similar sports find difficulty in matching their implements, or in duplicating those which they have found especially suited to their use. While the dead weights of such implements may to a slight extent be of importance to their users in making their selections, a more important factor is the somewhat indefinite quality known as "heft" or "swinging weight". That a given implement shall possess for its user the proper "heft" or "swinging weight" is of great importance, for with an implement ill-suited to one's needs, no one can hope to attain in performance the best possible results.

The necessity for matching or classifying is perhaps most pronounced in the case of golf clubs, a set of which comprises implements of different dead weights and different lengths, all of which should have the same or nearly the same "heft" or "swinging weight."

The principal objects of the present invention is to provide an apparatus for matching game implements, such as golf clubs, to secure a set having similar playing characteristics.

Another object of this invention is to provide means whereby a user of such implements having discovered by trial one such implement satisfactory to him, can with certainty select other implements equally suited to his purpose, by using the club possessing satisfactory characteristics as a standard for comparison of other clubs therewith.

Another object of the invention is to provide means whereby the manufacturers of such implements can classify their products into grades, the members of each grade possessing in common cognate dynamic qualities rendering all of them suited for use by a person who finds empirically any one of them suited for use.

Another object of this invention is to provide means whereby implements having substantially equal moments about a point at a fixed distance from one end of the implement may be selected from a number of such implements varying in length and in other dimensions and proportions.

I have discovered that in a set of game implements, such as golf clubs, the "heft" or "swinging weight", although in itself a rather indefinite quality as already noted, may be measurably determined, at least to an extent sufficiently precise for the purpose of matching and classification. According to the present invention, the implement is pivoted or fulcrumed about a point at a fixed distance from the grip end and the unbalanced moment of the club about this point is measured. Although any convenient apparatus may be used for this purpose, it is preferred to employ a movable poise carried on a graduated scale beam. I have found in actual practice that satisfactory results are realized if the fixed point be located a distance of fourteen inches from the grip end.

While the "heft" or "swinging weight" of the club is a quantity involving dynamic as well as static considerations, it has been found that the method of the present invention, which involves only a simple statical measurement, affords an adequate procedure for matching clubs. Thus a driver with a long shaft and a light head may be matched with a midiron which has a shorter shaft and a heavier head, so that the player, having accustomed himself to either, finds the same "heft" or "swinging weight" in the other. Although the true theory underlying the present method, when applied to implements which have complicated rotary and translatory motions in actual play, is not understood, experience indicates that a player, using a set of clubs matched according to the present invention, consistently obtains a more favorable average score.

A construction whereby the realization of the objects of this invention can be obtained is illustrated in the specific embodiment of the invention presented in the drawing in which Fig. 1 is a side elevation of the invention with a golf club in position to be examined; Fig. 2 is a section along line 2—2 of Fig. 1, showing the cradle or support in which the golf club rests; Fig. 3 is a section along line 3—3 of Fig. 1, showing the inverted U-shaped device for receiving the butt end of the golf club; Fig. 4 is a side elevation of a portion of the invention showing a modification of the end-engaging device to permit a greater or lesser portion of the shaft of the golf club to be held by and between the cradle and the end-engaging device; and Fig. 5 is an end view of the modification of the end-engaging device illustrated in Fig. 4.

Referring now to the drawing, the device comprises the base 2, bearing a frame 4, upon which is supported by a pivot 6 a lever 8 provided with a sliding poise 10. Adjacent its other end, the lever rests within the guides 14 of the bracket 12.

These guides are formed to provide recesses within which the ends of the pin 16 inserted into the lever 8 are confined. At some distance beyond the bracket 12, the end of the lever is extended in an arc 18 of 90° to form an upright arm 20. To this arm is fastened an inverted U-shaped hook-like member 22 adapted to receive and engage the end of the implement being compared. Upon the lever adjacent its pivot is mounted a cradle 24, to receive and to support the implement 26 being compared.

The procedure of using this embodiment of the invention is as follows: An implement, 26, say a golf club, whose characteristics have been found empirically by its user to be satisfactory, is placed in the cradle 24 with the grip end engaged by the hook-like member 22. A given fixed length of the handle of the implement is thus confined between the hook-like member and the cradle. While the implement is in this position, the poise 10 is moved along the lever arm 8 until a balance of the lever arm and the implement is attained, and the reading of the balance is noted. The preferred fixed length, that is, the preferred distance between the cradle and the arm 20, has been found to be approximately fourteen inches for golf clubs, although the distance may be varied somewhat from this preferred value. Other implements differing perhaps greatly from each other in weight and length are substituted successively; and for those implements the readings upon which are identical, the "heft" or "swinging weight" characteristics will be found to be identical.

A slight modification of the invention is presented in Figs. 4 and 5 wherein the full stop hook-like member 22 is replaced by a hook-like member 26 bearing a stop 28, but also permitting the engagement of lengths of the handle of the implement less or more than the length engaged when the end of the handle is in contact with the stop. If the implement, when examined according to the original procedure, has been found to have somewhat too great a reading, two methods of adjustment to match the implement with which it is being compared are available; weight may be removed from the remote end of the implement, or the handle itself may be shortened. The amount of shortening required is determined by setting the poise at the proper reading and then moving the handle beneath the hook and beyond the stop, until a balance is attained, in which case the length of the handle between its end and the stop is a measure of the amount by which the handle must be shortened, in order to render it satisfactory for use. If the implement as measured by the original procedure has been found to have too small a reading, the method of adjustment is to load the remote end with additional weight until a balance is attained, or to lengthen the handle.

Having thus described the invention, what is claimed is:

1. Apparatus for comparing golf clubs which comprises a horizontally disposed lever, a pivot therefor, supports carried by the lever for positioning the club thereon with its handle end at a distance of approximately fourteen inches from said pivot and the head end extending on the opposite side of said pivot, and means for counterbalancing the turning moment of the head end of the club under the action of gravity.

2. Apparatus for comparing golf clubs and the like which comprises a frame, a lever supported pivotally thereby and provided with a variable force-exerting element acting in a direction to turn the lever upon its pivot, means connected with the pivoted lever for engaging the end of the club, and means for attaching the club to the lever to permit the club to turn about the pivot of the lever with the opposite end of the club tending to turn the lever in the opposite direction, the force-exerting element being adjustable to permit a balance to be secured with the lever and club.

3. Apparatus for comparing golf clubs and the like which comprises a frame, a lever at one end pivoted upon the frame and provided with an abutment and a hook for engaging the end of the handle of the club and a support for the handle at a point distant from the end thereof, and a counter-poise mounted slidably upon the lever.

4. Appratus for comparing golf clubs and the like comprising a frame, a lever pivoted at one end upon the frame, a U-shaped cradle carried by the lever adjacent its pivot, an inverted U-shaped hooked member carried by the lever at its other end, and a counter-poise slidably carried by the lever.

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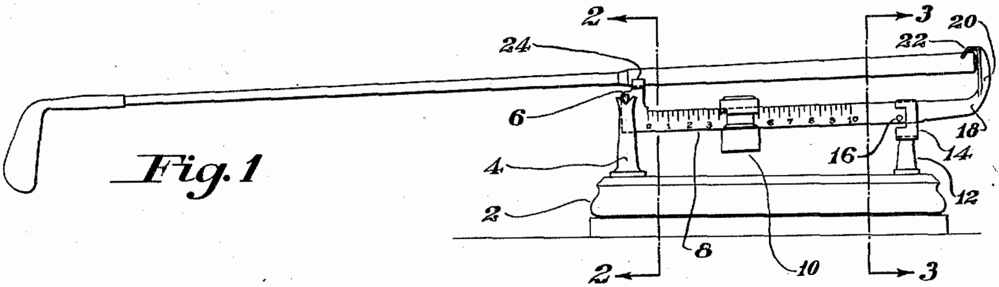

Fig. 1

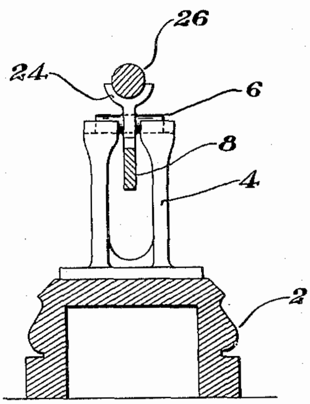

Fig. 2

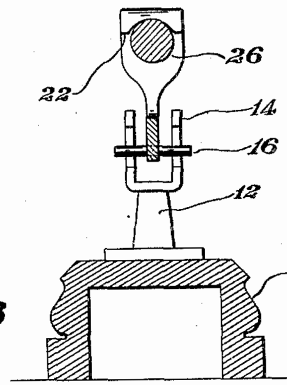

Fig. 3

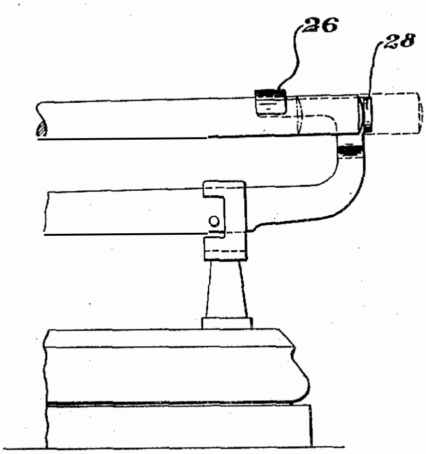

Fig. 4

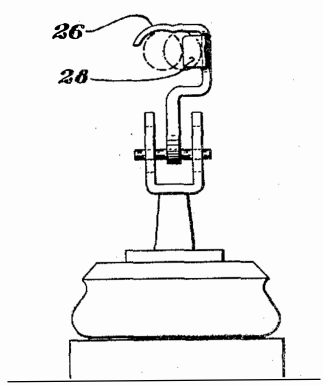

Fig. 5

Witness

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