Jan. 5 , 1926. 1,568,698

P. A. VAILE ET AL

APPARATUS FOR OBTAINING THE LEVERAGE WEIGHT OF ATHLETIC IMPLEMENTS

Filed May 27, 1925 2 Sheets-Sheet 1

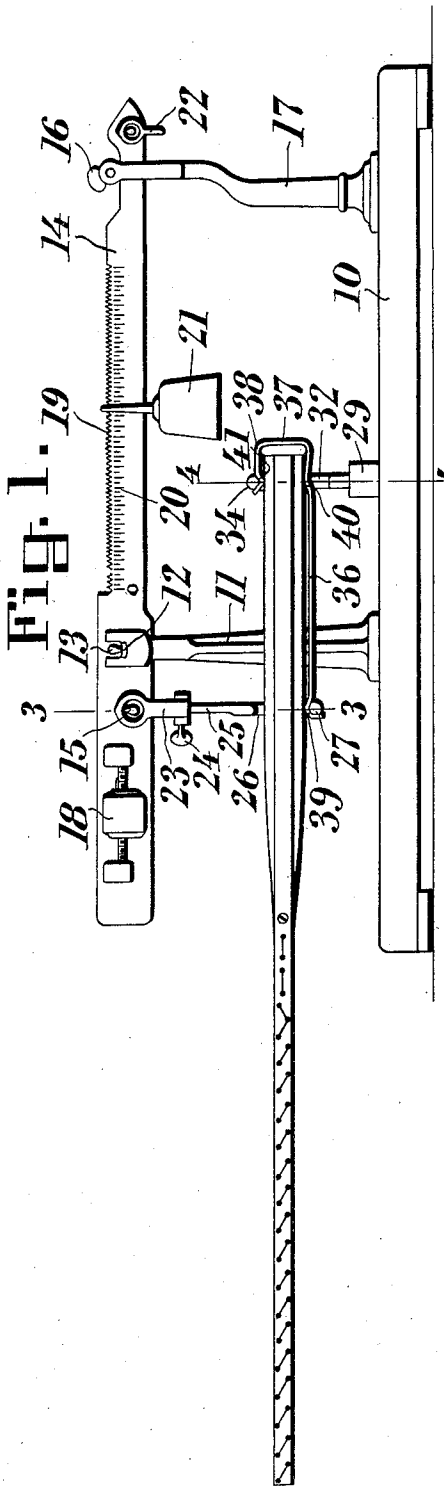


Fig. 1.

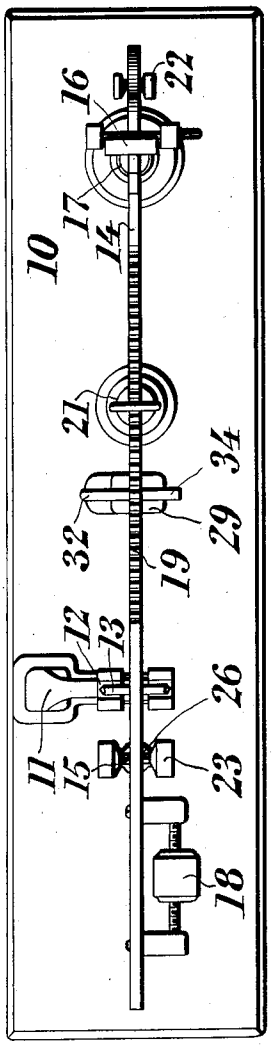


Fig. 2.

INVENTORS

Pembroke A. Vaile and
Francis V. Roy

By Malcolm F. Gaunett ATTORNEY

Jan. 5 , 1926. 1,568,698

P. A. VAILE ET AL

APPARATUS FOR OBTAINING THE LEVERAGE WEIGHT OF ATHLETIC IMPLEMENTS

Filed May 27, 1925 2 Sheets-Sheet 2

Fig. 3.

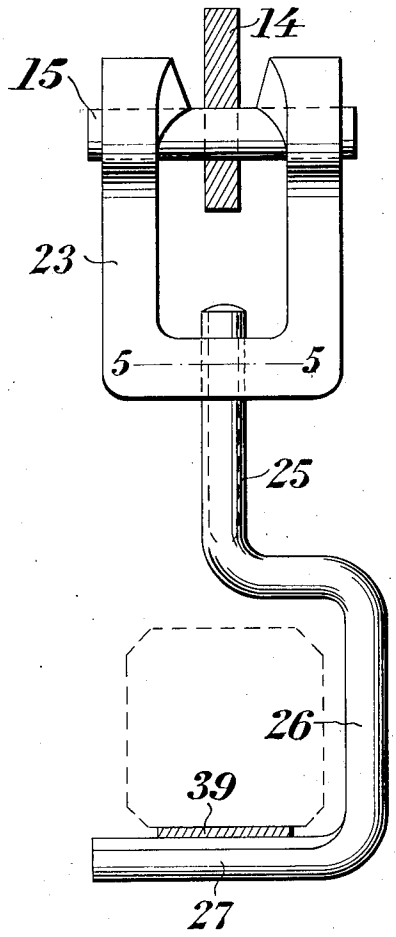


Fig. 6.

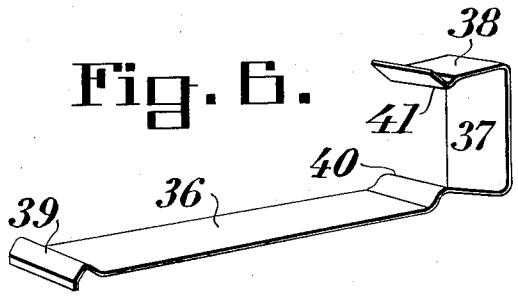


Fig. 4.

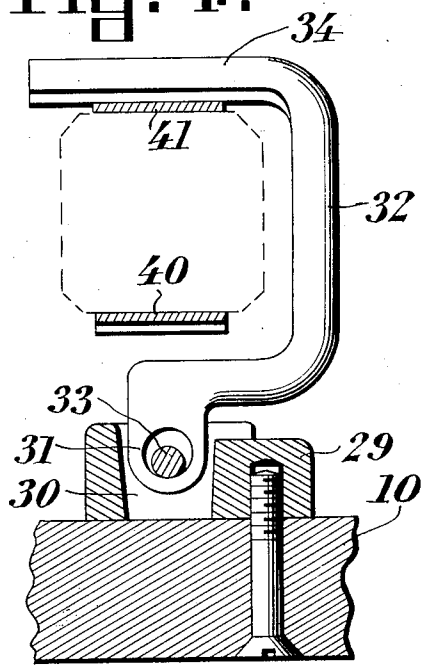
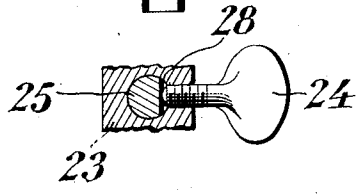


Fig. 5.



INVENTORS
Pembroke A. Vaile and
Francis V. Roy
By Malcolm J. Garnett
ATTORNEY

Patented Jan. 5, 1926.

1,568,698

UNITED STATES PATENT OFFICE.

PEMBROKE A. VAILE AND FRANCIS V. ROY, OF CHICAGO, ILLINOIS, ASSIGNORS TO E. & T. FAIRBANKS AND COMPANY, OF ST. JOHNSBURY, VERMONT, A CORPORATION OF VERMONT.

APPARATUS FOR OBTAINING THE LEVERAGE WEIGHT OF ATHLETIC IMPLEMENTS.

Application filed May 27, 1925. Serial No. 33,188.

To all whom it may concern:

Be it known that we, PEMBROKE A. VAILE, a subject of the King of Great Britain, and FRANCIS V. ROY, a citizen of the United States of America, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Obtaining the Leverage Weight of Athletic Implements, of which the following is a specification.

This invention relates to weighing apparatus, and more particularly to devices used for the purpose of comparing the leverage weight of sporting and athletic implements, such as golf clubs, base ball bats, tennis rackets, hunting rifles and guns, fishing rods and the like.

The prime object of our invention is to provide means by which sporting and athletic implements of varying shapes and sizes may be interchangeably supported from the load pivot of a weigh-beam, so that the leverage weight of such implements may be obtained.

Another object of our invention is to provide means by which sporting and athletic implements may be supported from the load pivot of a weigh-beam so that friction will be reduced to a minimum and a uniform pull on the beam can be obtained.

Tennis, golf, base ball players, and others engaged in athletic and sporting pursuits have found difficulty in providing identical spare implements or duplicating those to which they have become accustomed and which may have become broken, worn out or required repairing. In the past it has usually been the custom to stamp such implements with a weight that represented their actual dead weight, but which did not take into consideration anything concerning the leverage weight, heft, or feel of the implement. It has usually been understood that the leverage weight of any of the implements used for athletic and sporting purposes is of great importance, because an implement which is not properly balanced, quickly causes fatigue and perceptibly reduces both speed and accuracy of the user.

Our invention, generally stated, consists in pivotally mounting a weigh-beam of the usual construction on a suitable base. A hook-like member is suspended from the load pivot of the beam, and another, or fulcrum hook-like member is hingedly carried by the base, directly beneath the beam, but forwardly of the fulcrum pivot thereof. Both the load and fulcrum hook-like members are formed so as to retain in a substantial horizontal position a resilient clip which is adapted for the insertion of the butt end, or grip portion of a golf club, tennis racket, base ball bat, or the like, whereby the rear end of the implement to be weighed will be held in a stationary position against the fulcrum hook, while the projecting end of the implement can swing downwardly. The arrangement of the parts is such that this downward action of the projecting end of the implement will raise the tip of the beam, and equilibrium can then be established by moving the poise, with which the beam is provided, outwardly to obtain a balance.

We will now describe in detail the construction by which the above and other objects are attained, reference being had to the accompanying drawings in which:—

Figure 1, is a side elevation of a balance constructed according to our invention, showing a tennis racket mounted therein;

Fig. 2, is a plan of the structure shown by Fig. 1, with the tennis racket removed;

Fig. 3, is a transverse section taken approximately on the line 3—3 of Fig. 1, illustrating in detail the load hook-like member;

Fig. 4, is a transverse section taken on the line 4—4 of Fig. 1, illustrating in detail the fulcrum hook-like member;

Fig. 5, is a detail section taken approximately on the line 5—5 of Fig. 3; and

Fig. 6, is a detail perspective of the clip used between the load and fulcrum hook-like members.

Referring now to the drawings, the device comprises a base 10, on which is mounted a stand 11, the upper end of which is bifurcated to receive a pair of spaced, alined bearings 12. Fulcrumed in the bearings of the stand 11, by means of the laterally projecting arms of a knife-edge pivot 13, is a beam 14 of any approved design. At a suitable distance to the rear of the pivot 13, the beam is provided with a similarly

formed load pivot 15, but, as shown, while the knife-edge of the pivot 13 is down, the knife-edge of the pivot 15 is up.

The front end or tip of the beam is inserted through a trig-loop 16 carried by a stand 17 that is fixed to the base near the end thereof. An adjustable balance ball 18 is mounted on the beam to the rear of the load pivot 15.

A portion of the top of the beam, between the fulcrum pivot 13 and its tip, is provided with notches 19, and the sides of the beam adjacent such notches carry graduations 20. Carried by the beam is a poise 21, which can be of any approved design. By preference, the graduations 20 can indicate fractions of pounds, such as ounces, but, if so desired, graduations for the metric equivalents can be used.

The tip of the beam carries a pivotally mounted loop 22 for receiving auxiliary weights (not shown) for increasing the capacity of the beam beyond the graduations.

As shown particularly by Fig. 3, the load pivot 15 of the beam has suspended therefrom a U-shaped loop 23 in the bottom of which is secured, by means of a thumb screw 24, the vertically disposed upper end 25, of a hook-like member 26. This member, which is adapted to lie directly beneath the beam, is formed with a lower straight horizontal portion 27, the upper edge of which is of inverted V-form. The portion 25 of the member 26 can be made of any length desired, and the part thereof that is engaged by the thumb screw 24 is flattened, as at 28, Fig. 5, so that the member 26 will be kept from turning, when it is adjusted in position with respect to the loop 23. It is to be noticed that the member 26 is so pivotally mounted with respect to the beam 14, that it is free to swing in a path coinciding to the longitudinal axis of the beam, but can not swing in a path at right angles to the longitudinal axis of the beam.

Between the stands 11 and 17, the base 10 has secured thereto, directly beneath the beam 14, a block 29 having a vertical opening 30 formed therein, as shown by Fig. 4. The lower perforated end 31 of a hook-like member 32 is received in the opening 30 by means of a pin 33, that passes horizontally through the block. In this manner, the member 32 is pivotally connected to the block. In general, the configuration of the member 32 is similar to the main body of the member 26, but the former member is placed in an inverted position with respect to the latter member. The member 32 is formed with an upper substantially straight horizontal portion 34, the lower edge of which is of V form. It will also be noticed that the member 32 is so pivotally mounted on the base that it is free to swing in a path at right angles to the longitudinal axis of the beam, but can not swing in the same direction as does the member 26.

On Sheet 2 of the drawings, Figs. 3 and 4 are so placed that the members 26 and 32 are in approximately alined positions when the device is adjusted for balancing a tennis racket (see Fig. 1), and it will be observed that the portion 27 of the member 26 is located a sufficient distance below the portion 34 of the member 32 so that the handle of the tennis racket can be carried in a substantially horizontal position.

As the members 26 and 32 are pivotally mounted, in order to retain them in fixed relation with respect to each other, we utilize an L-shaped clip 36, shown in detail by Fig. 6. The body of the clip is made substantially flat for bridging the space between the members 26 and 32, and the end of the clip adjacent the member 32 is bent upwardly, as at 37, and then forwardly, as at 38, to provide means for receiving the butt end of the implement to be balanced. It will be noticed that the portion 37 serves as a stop whereby the end of the implements can be successively placed at the same position in the device. This is important in order to obtain accurate comparative balances.

The clip 36 is preferably constructed of some resilient material, such as sheet metal. The end of the clip that is supported by the member 26 is formed with a V-shaped rib 39 for engagement with the portion 27 of the member 26, while the opposite end of the clip is provided with an inverted V-shaped rib 40 for engagement with the lower portion of the member 32, and the upper forwardly projecting portion 38 of the clip is provided with a V-shaped rib 41, that lies directly over the rib 40 and is adapted to engage with the portion 34 of the member 32. The portions of the clip engageable with the member 32 are bent slightly towards each other so that force will be required to insert the butt end of the implement into the device. In this manner the clip can grip the handle portion of the device and hold it firmly in position.

It is to be understood that the distance between the members 26 and 32 is arbitrary, but in actual practice it has been found desirable to make this distance substantially the equivalent to the length of the grip taken by the hands on each class of implements being weighed. Therefore, it can be assumed that the purpose of the clip 36 is to provide a means by which the implement can be held in substantially the same manner as it would be held by a person so that such implement, when being weighed by this device, will act, or pull downwardly, in a manner similar to the downward pull on the wrist and arm of a person.

When an implement, such for instance, as

the tennis racket shown in Fig. 1, has been placed in the device in the manner shown and described, and the poise 21 is set at 0 position on the beam, the projecting end of the tennis racket will tip downwardly with the member 32 serving as a fulcrum. This action will pull the member 26 downwardly, and thereby cause the tip of the beam to swing upwardly against the trig-loop 16. The poise can then be moved outwardly on the beam to the point where the beam balances the tennis racket.

With the beam provided with graduations having an arbitrary value, and with the clip 36 having an arbitrary length for holding the tennis racket, then the point on the beam at which the poise is set to obtain the balance of the tennis racket and the beam will also be arbitrary.

Now assuming that the beam graduations are fractions of pounds, and the distance between the members 26 and 32 is a known number of inches, then it is possible to accurately determine a value that can be used in comparing the balance of like articles. This value can be computed by multiplying the number of pounds indicated by the position of the poise on the beam by the number of inches between the members 26 and 32, the result being inch pounds, which can be marked on the articles, if so desired. In this manner, replacement of an article having a known leverage weight with a duplicate article having a similar leverage weight can be readily accomplished.

While we have herein shown and described our invention used for the purpose of obtaining the leverage weight of a tennis racket, it is to be understood that the device can also be used for a similar purpose with other articles. In so doing, it is possible that the leverage weight of some of the articles will exceed the capacity of the beam, therefore, additional weights can be suspended from the loop 22 to increase the capacity of the beam, as has been the custom heretofore in operating various other forms of weighing machines.

Having thus described our invention what we claim is:—

1. The combination with a weigh-beam, of a load member pivoted to swing in a fixed path, a fulcrum member pivoted to swing in a path at right angles to said load member, and means connecting the two members for maintaining a fixed distance therebetween.

2. The combination with a weigh-beam having a load member pivoted to swing in a vertical path, of a fulcrum member pivoted to swing in a path substantially at right angles to said load member, and means connecting the two members for maintaining a substantially constant distance therebetween.

3. The combination with a pivotally mounted beam having a poise mounted thereon, of a pair of spaced supporting members, one of which members is suspended from the beam and adapted to swing in a vertical path, and the other member being pivotally mounted independent of the beam and adapted to swing in a path at right angles to said first named member.

4. The combination with a pivotally mounted beam having a poise mounted thereon, of a pair of spaced supporting members, one of which members is suspended from the beam and adapted to swing in a vertical path, the other member being pivotally mounted independent of said beam and adapted to swing in a path at right angles to said first named member, and means for bridging the said members for receiving an article to be balanced by the beam.

5. The combination with a weigh-beam having a load pivot, of a U-shaped loop carried by said pivot, a hook-like member adjustably suspended from said loop, the lower portion of said member having a V-shaped edge, a fulcrum hook-like member mounted independent of the said beam and in spaced relation to said first member, said fulcrum member also having a portion formed with a V-shaped edge, and a clip connecting both of said members.

6. The combination with a weigh-beam having a load pivot, of a U-shaped loop carried by said pivot, a hook-like member adjustably suspended from said loop, the lower portion of said member having a V-shaped edge, a fulcrum hook-like member mounted independent of the said beam and in spaced relation to said first member, said fulcrum member also having a portion formed with a V-shaped edge, and a clip connecting both of said members, said clip having ribs for engaging with said V-shaped portions of both members for the purpose of maintaining a fixed distance therebetween.

In testimony whereof we have hereunto signed our names this 19th day of May, 1925.

PEMBROKE A. VAILE.
FRANCIS V. ROY.