Jan. 30, 1923. 1,443,412.

C. H. HUTTON.

GOLF STROKE DYNAMOMETER AND INDOOR GOLF APPARATUS.

FILED FEB. 4, 1922. 2 SHEETS—SHEET 1.

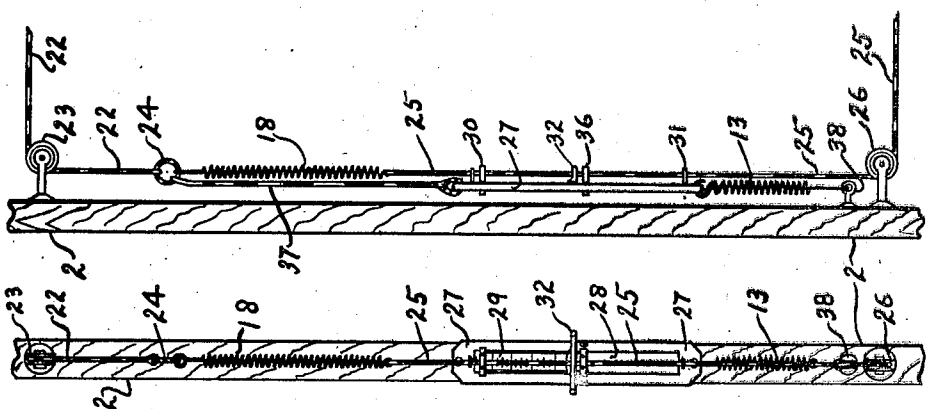


FIG. 4

FIG. 3

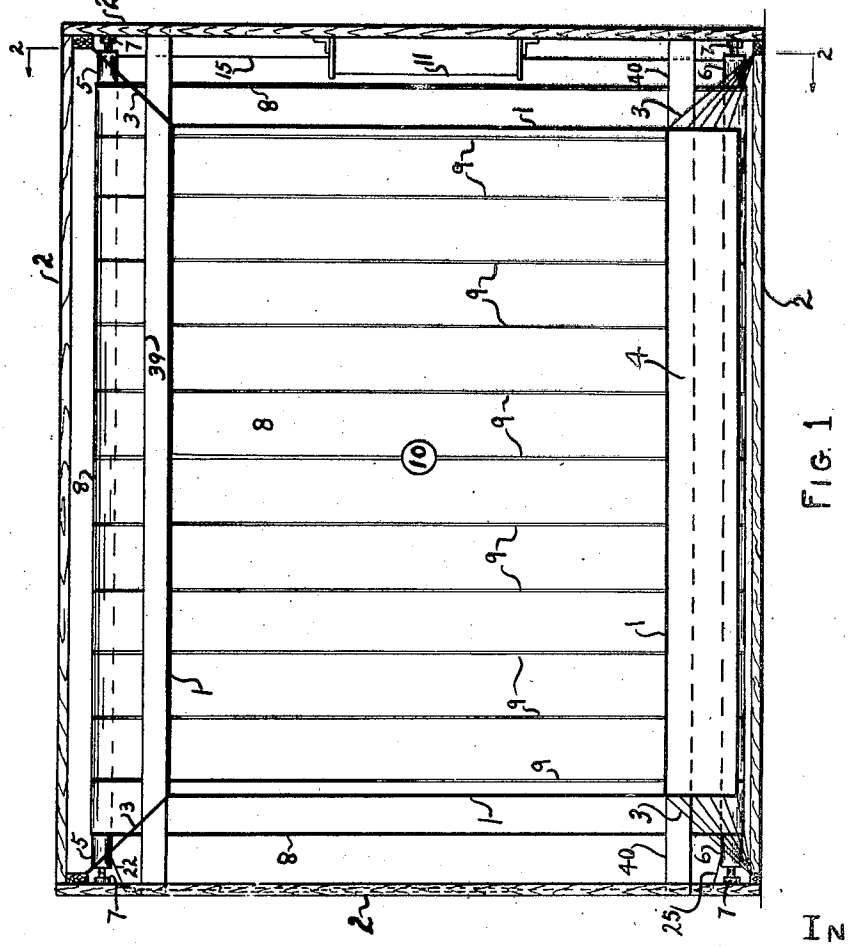


FIG. 1

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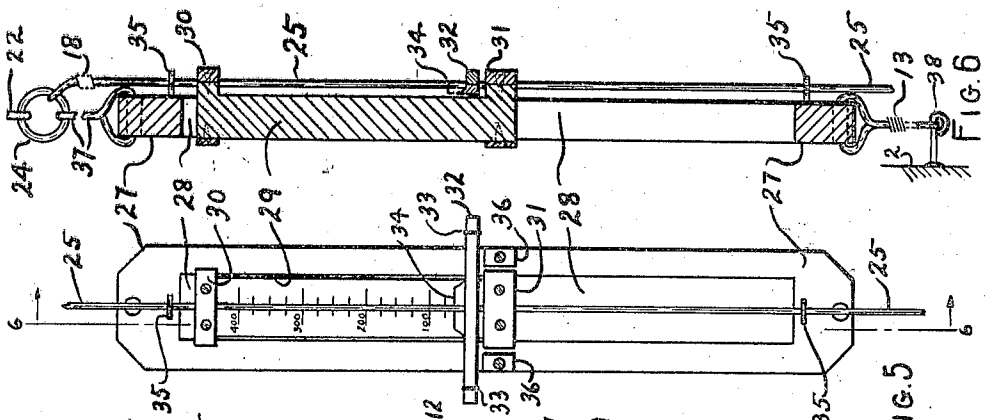


FIG. 6

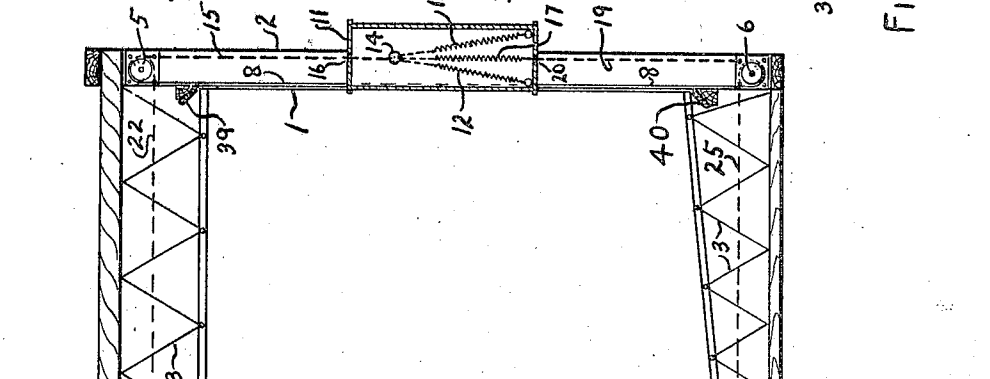


FIG. 5

FIG. 2

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Patented Jan. 30, 1923. 1,443,412

UNITED STATES PATENT OFFICE.

CHARLES HYDE HUTTON, OF HAMILTON, ONTARIO, CANADA.

GOLF-STROKE DYNAMOMETER AND INDOOR-GOLF APPARATUS.

Application filed February 4, 1922. Serial No. 534,170.

To all whom it may concern:

Be it known that I, CHARLES HYDE HUTTON, a subject of the King of Great Britain, and a resident of the city of Hamilton, in the county of Wentworth, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Golf-Stroke Dynamometers and Indoor-Golf Apparatus, of which the following is a specification.

My invention relates to improvements in golf stroke dynamometers and indoor golf apparatus and the object of the invention is to devise an apparatus whereby driving strokes may be practised indoors under conditions very closely corresponding to those actually existing on the ordinary golf course, provision being made for ascertaining the direction and distance of flight of a driven golf ball.

My invention consists generally of an open ended canvas tunnel, into the front end of which the golf ball is driven, a target sheet suspended at the rear end of the tunnel, sheet tension means for maintaining the sheet stretched, and indicating means cooperating with said target sheet for measuring the probable flight of a driven golf ball impinging against the sheet, all as hereinafter more particularly described and illustrated in the accompanying drawings in which;

Fig. 1 is a front elevation of my invention looking into the canvas tunnel.

Fig. 2 is a longitudinal section on the line 2, 2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a face view of the indicator of the dynamometer showing the method of mounting same and the cables connecting therewith.

Fig. 4 is a side view of Fig. 3.

Fig. 5 is a face view of the indicator.

Fig. 6 is a section on the line 6, 6 of Fig. 5 looking in the direction of the arrows.

In the drawings like characters of reference indicate corresponding parts in the different views.

1 is a four sided canvas tunnel open at its front and rear ends and is suitably supported within a main wooden framework 2 by the rope lashing 3.

The floor 4 of the tunnel slopes from back to front.

5 and 6 are top and bottom rollers rotatably supported in bearings 7 and disposed transversely of the frame 2 at its rear end and adjacent to the top and bottom thereof.

8 is a canvas target sheet connected at its ends to the rollers 5 and 6, the sheet extending across the rear open end of the tunnel 1.

The sheet is divided by a series of upright parallel lines 9 into a series of strips and has marked thereon a central bull's eye 10. The purpose of these markings will appear hereinafter.

11 is a cabinet mounted at the rear of the frame 2.

The weight of the target sheet 8, which tends to rotate the top roller 5, is counterbalanced by main sheet weight springs 12 and an auxiliary sheet weight spring 13, the latter of which will be described hereinafter.

The springs 12 are contained within the cabinet 11, their lower ends being secured thereto and their upper ends to a ring 14 also within the cabinet.

15 is a cable secured to the top roller 5 and leading over the rear side thereof and being secured at its lower end to the ring 14. This cable passes through an orifice 16 in the top of the cabinet 11.

The tension of the sheet 8 is provided and controlled by a main sheet tension spring 17 within the cabinet 11 and an auxiliary sheet tension spring 18, the latter of which will be described hereinafter.

The spring 17 has its upper end connected to the ring 14 and its lower end to a cable 19 which passes through an orifice 20 in the bottom of the cabinet 11 and over the rear side of the lower roller 6 to which roller the end of said cable is secured.

21 indicates collectively the indicating device, used in my invention, and is located at the rear of one of the front upright members of the main framework 2.

22 is a cable secured to the top roller 5 and leads forwardly from the under side thereof. This cable passes downwardly over a guide wheel 23 at the front of the main frame 2 and carries at its end a ring 24.

25 is a cable secured to the bottom roller 6 and leads forwardly from the top side thereof. The cable passes upwardly over a guide wheel 26 at the front end of the main frame 2 and is secured at its end to the

lower end of the auxiliary sheet tension spring 18, the upper end of said spring 18 being secured to the ring 24.

The indicating device 21 comprises the main bracket 27 having the slot 28 therein.

29 is a graduated scale slidably mounted within the slot 28 in the bracket 27 and carries at its top and bottom ends the split friction clamps 30 and 31 by means of which said scale may be firmly clamped upon the cable 25.

32 is a split indicator rider through which the cable 25 passes. This rider is held in frictional contact with the cable 25 by means of elastic bands 33, or other suitable resilient means, so that normally it will remain at any set position upon the cable, but will be free to slide thereon when the device is operated. The rider is provided with the indicating upper edge 34.

35 are guide eyes carried by the main bracket 27 through which the cable 25 passes.

36 are rider stops secured to the face of the bracket 27 and are adapted to engage the under side of the rider 32 as will hereinafter appear.

37 is a cable connecting the upper end of the main bracket 27 to the ring 24.

The lower end of the bracket 27 connects with the upper end of the auxiliary sheet weight spring 13 while the lower end of the spring is secured to the main frame 2 by means of the eye bolt 38.

39 and 40 are top and bottom cushioned supports carried by the frame 2 at the rear end of the tunnel.

The construction and operation of my invention is as follows;

Since the weight of the target sheet 8 will tend to rotate the top roller 5, it is necessary that this weight be counterbalanced. This is provided for as previously stated by the main sheet weight springs 12 and the auxiliary sheet weight spring 13. The tendency of the weight of the sheet 8 will be to rotate the top roller anti-clockwise in Fig. 2 and it will be seen that rotation in this direction is opposed by both the springs 12 and 13, and by suitably arranging the strength of said springs the weight of the suspended portion of the sheet may be accurately counterbalanced.

In order that the device will constitute an efficient dynamometer the sheet must be put under an initial tension and this tension is provided, by the main sheet tension spring 17 and the auxiliary sheet tension spring 18.

From an examination of Fig. 2 of the drawings it will be clear that the tendency of the spring 17 will be to rotate the upper roller clockwise (see Fig. 2) and the bottom roller anti-clockwise and thus to roll the sheet 8 up upon said rollers which will of course result in stretching the sheet and putting it under tension.

The action of spring 18 will be the same as that of 17 above mentioned since this spring 18 connects the cables 22 and 25 which lead respectively from the bottom side of the top roller and the top side of the bottom roller. These springs 17 and 18 will co-operate with each other in maintaining the sheet under tension.

Before making a stroke the indicator rider 32 is slid by hand along the cable 25 into a position in which it is in engagement with the rider stops 36, in which position its indicating edge 34 is at zero on the graduated scale 29.

The player drives a golf ball from the front end of the tunnel 1 and upon the driven ball impinging upon the target sheet, said sheet is displaced rearwardly an amount proportional to the force of the impact of the ball thereon, and it is the extent of this displacement of the sheet that the dynamometer is designed to indicate.

The rearward displacement of the sheet causes the rollers 5 and 6 to rotate in opposite directions and the combined rotation is transmited through the connecting cables to the sheet tension springs and is equal to the extension of said springs.

The rotation of the upper roller draws the main bracket 27 upwardly through the cable 22 while that of the lower roller draws the cable 25 downwardly and since the graduated scale 29 is firmly held to the cable 25 by the friction clamps 30 and 31, it therefore moves downwardly in the slot 28 a distance equal to the combined rotation of the rollers and the indicator rider 32 is slid along the cable 25 a similar distance.

As the springs restore the target sheet 8 to its initial position and tension, both the indicator rider 32 and scale 29 are carried upwardly by the cable 25 while the bracket 27 moves downwardly and when the device has come to rest, the position of the rider 32 on the scale 29 will give a measure of the total displacement of the rollers.

The graduated scale 29 may be suitably calibrated in yards this indicating the distance that the golf ball would have travelled had it not been interrupted in its flight by the target sheet. This calibration would be done by an expert player of known driving ability.

The scale may, of course, be altered at will by altering the strength of the sheet tension springs 17 and 18.

After having made a stroke and before the next stroke the indicator rider 32 must be slid back along the cable 25 to its proper zero position.

In order that the direction of flight may be observed as well as the distance, the tar-

get sheet is divided by lines 9 and for further practising accuracy of direction the bull's eye 10 is provided.

Hitherto various indoor devices have been developed for practising golf and many of these have been of considerable benefit in "putting" in which the natural conditions of the regular golf course can be very closely approximated indoors on a suitable carpet, but I am not aware of any really successful and useful indoor device for practising "driving" and it has been for supplying such a device that my invention has been developed.

In former devices for indoor driving artificial conditions have been introduced which do not exist when actually playing on the course and these have rendered the beneficial results of their use doubtful. Some of these employed a captive golf ball attached to a wire or string while others have used a parachute attachment carried by the ball. It will readily be realized that any such devices completely change the behavior of the driven ball from what it would be if the ball were entirely free.

In my apparatus an ordinary free golf ball is used and all conditions of its flight up to the time it strikes the target are identical with those existing on the usual outdoor course and therefore my apparatus will provide a means for obtaining valuable and useful indoor practice in driving.

Obviously, various forms of indoor games may be played with my apparatus by suitably marking the target sheet, such as the bull's eye 10, and drawing up any desired set of rules.

From the foregoing it will be apparent that I have devised an indoor apparatus whereby indoor practice in "driving" may be had under conditions very closely approximating to actual outdoor conditions on the golf course.

Various modifications may be made in my invention without departing from the spirit of the same or the scope of the claims and therefore the form shown is to be taken as illustrative only and not in a limiting sense.

For instance, the curtain might be supported in other ways than on the rollers shown. Also the exact form of indicator for the dynamometer might be varied.

What I claim as my invention is:

1. A golf stroke dynamometer comprising a flexible sheet connected at its ends to a pair of parallel rollers, and a portion of said sheet extending between said rollers, spring means acting to rotate the rollers in opposite directions to stretch the sheet therebetween, and impact indicating means operated by the rotation of the rollers incident upon the displacement of the sheet due to a blow thereon.

2. A golf stroke dynamometer comprising a flexible sheet suspended between top and bottom horizontal rollers, spring means acting to rotate the rollers in opposite directions to stretch the sheet therebetween, means for counterbalancing the suspended weight of the sheet, and impact indicating means operated by the rotation of the rollers incident upon the displacement of the sheet due to a blow thereon.

3. A golf stroke dynamometer comprising a flexible sheet suspended between top and bottom horizontal rollers, spring means acting to rotate the rollers in opposite directions to stretch the sheet therebetween, spring means for counterbalancing the suspended weight of the sheet, an impact indicator, and a cable operatively connecting each roller to the impact indicator.

4. A golf stroke dynamometer comprising a flexible sheet suspended between top and bottom horizontal rollers, spring means acting to rotate the rollers in opposite directions to stretch the sheet therebetween, spring means for counterbalancing the suspended weight of the sheet, an impact indicator, connecting means between the impact indicator and rollers whereby the total relative rotation of the rollers incident upon the displacement of the sheet due to a blow thereon is shown on the indicator.

5. A golf stroke dynamometer comprising a main framework structure, an impact receiving element mounted at the rear end thereof, cables extending forwardly of the frame and engaging respectively the top and bottom mountings of the impact receiving element, the forward ends of said cables connected by a tension spring, an impact indicator at the front of the frame, and comprising a main bracket, a graduated scale slidably carried thereby, one end of the bracket connected to one of the aforesaid cables and the other end of the bracket connected to the main frame by a tension spring, the graduated scale being secured to the other of the aforesaid cables, and means for drawing both cables rearwardly coincidently with the displacement of the impact receiving element due to a blow struck thereon.

6. A golf stroke dynamometer comprising a main framework structure, an impact receiving element mounted at the rear end thereof, cables extending forwardly of the frame and engaging respectively the top and bottom mountings of the impact receiving element, the forward ends of said cables connected by a tension spring, an impact indicator at the front of the frame and comprising a main bracket having a slot therein, a graduated scale slidably mounted within said slot, one end of the bracket connected to one of the aforesaid cables and the

other end of the bracket connected to the main frame by a tension spring, the graduated scale being secured to the other of the aforesaid cables, an indicator rider carried by the latter cable and slidable thereon, rider stops fixedly carried by the bracket and adapted to engage the rider to limit relative motion between the bracket and rider, and means for drawing both cables rearwardly coincidently with the displacement of the impact receiving element due to a blow struck thereon.

7. A golf stroke dynamometer comprising a main framework structure, horizontally disposed rollers mounted at the rear end and at the top and bottom thereof, a flexible sheet secured to the rollers and extending therebetween, spring controlled means for counterbalancing the suspended weight of the sheet, sheet tensioning means extending between the rollers on the side remote from the sheet, cables secured to the rollers and extending forwardly of the frame on adjacent sides of the rollers, the forward ends of said cables connected by a tension spring, an impact indicator at the front of the frame, said indicator comprising a main bracket, a graduated scale slidably carried thereby, one end of the bracket connected to the upper of said cables, and the other end of the bracket connected to the main frame by a tension spring, the graduated scale being secured to the lower of the aforesaid cables, a rider slidably carried by the lower cable and co-operating with the markings on the graduated scale, rider stops fixedly carried by the bracket and adapted to engage said rider for limiting relative motion between the rider and bracket, the top and bottom cables adapted to be rolled upon the corresponding rollers and drawn rearwardly coincidently with the displacement of the sheet due to a blow impinging upon the front side thereof.

8. A golf apparatus comprising a main framework structure, an open ended tunnel carried longitudinally therein, upper and lower horizontal rollers carried at the rear end of the frame, a flexible sheet connected at its ends to said rollers and extending therebetween, the intermediate portion of said sheet covering the rear open end of the tunnel, spring means acting to rotate said rollers in opposite directions to stretch said sheet therebetween, and impact indicating means operated by the rotation of the rollers incident upon the displacement of the sheet due to a blow impinging on the front face thereof.

9. A golf apparatus comprising a main framework structure, an open ended tunnel carried longitudinally therein, upper and lower horizontal rollers carried at the rear end of the frame, a flexible sheet connected at its ends to said rollers and extending therebetween, the intermediate portion of said sheet covering the rear open end of the tunnel, spring means acting to rotate said rollers in opposite directions to stretch said sheet therebetween, spring means for counterbalancing the suspended weight of the sheet, and impact indicating means operated by the rotation of the rollers incident upon the displacement of the sheet due to a blow impinging on the front face thereof.

10. A golf apparatus comprising a main framework structure, an open ended tunnel carried longitudinally therein, upper and lower horizontal rollers carried at the rear of the frame, a flexible sheet connected to said rollers and the intermediate portion thereof extending between said rollers and covering the rear open end of the tunnel, spring means for counterbalancing the suspended weight of the sheet, sheet tensioning means extending between the rollers on the side remote from the sheet, cables secured to the rollers and extending forwardly of the frame on adjacent sides of the rollers, the forward ends of said cables connected by a tension spring, an impact indicator at the front of the frame, said indicator comprising a main bracket, a graduated scale slidably carried thereby, one end of the bracket connected to the upper of said cables, and the other end of the bracket connected to the main frame by a tension spring, the graduated scale being secured to the lower of the aforesaid cables, a rider slidably carried by the lower cable and co-operating with the markings on the graduated scale, rider stops fixedly carried by the bracket and adapted to engage said rider for limiting relative motion between the rider and bracket, the top and bottom cables adapted to be rolled upon the corresponding rollers and drawn rearwardly coincidently with the displacement of the sheet due to a blow impinging upon the front side thereof.

11. In an apparatus of the class described, the combination with two cables adapted to be pulled in opposite directions, against the tension of controlling springs, upon the operation of the apparatus, of an indicator comprising a bracket, a graduated scale slidably carried thereby, the bracket secured to the first of the cables and the scale secured to the second cable, a rider slidably carried by the second cable, and stops fixedly carried by the bracket and engaging the rider for limiting the relative movement of the bracket and rider.

12. In an apparatus of the class described, the combination with two cables adapted to be pulled in opposite directions, against the tension of controlling springs, upon the operation of the apparatus, of an indicator comprising a bracket having a longitudinal

slot therein, a graduated scale slidably mounted in said slot, the bracket secured to the first cable and the scale to the second cable, a rider slidably carried by the second cable, and stops fixedly carried by the bracket and engaging the rider for limiting the relative movement of the bracket and rider.

13. In an apparatus of the class described, the combination with two cables adapted to be pulled in opposite directions, against the tension of controlling springs, upon the operation of the apparatus, of an indicator comprising a bracket, a graduated scale carried by the bracket, the bracket secured to the first of the cables, an indicating rider slidably carried by the second cable, and stops fixedly carried by the bracket and engaging the rider for limiting the relative movement of the bracket and rider.

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Witnesses:
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NORIEEN COLES.