June 29, 1965 F. G. HOOPER 3,191,939

SWING INDICATOR ATTACHMENT FOR GOLF CLUBS INCLUDING SPACED ELECTRIC LIGHT BULBS

Filed Aug. 27, 1962 3 Sheets-Sheet 1

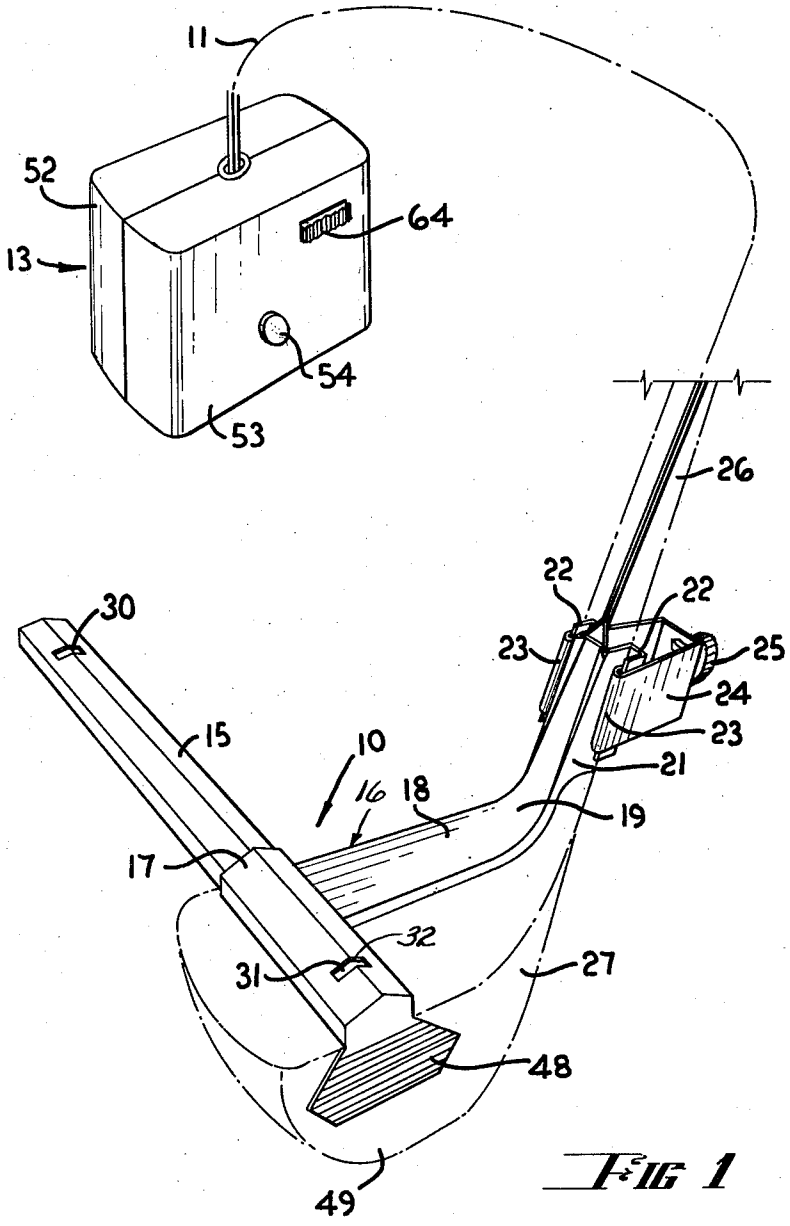


FIG 1

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Filed Aug. 27, 1962 3 Sheets-Sheet 2

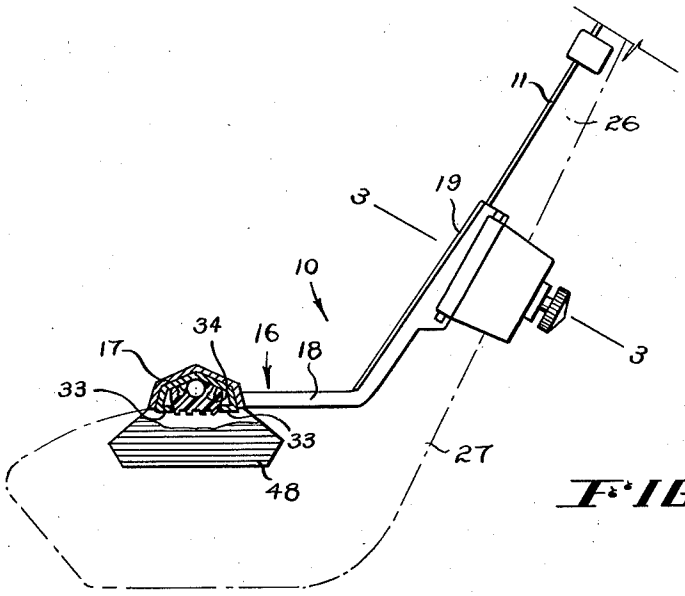


FIG 2

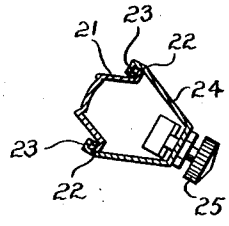


FIG 3

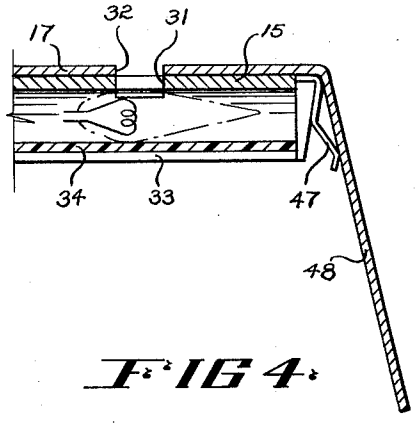


FIG 4

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SWING INDICATOR ATTACHMENT FOR GOLF CLUBS INCLUDING SPACED ELECTRIC LIGHT BULBS

Filed Aug. 27, 1962 3 Sheets-Sheet 3

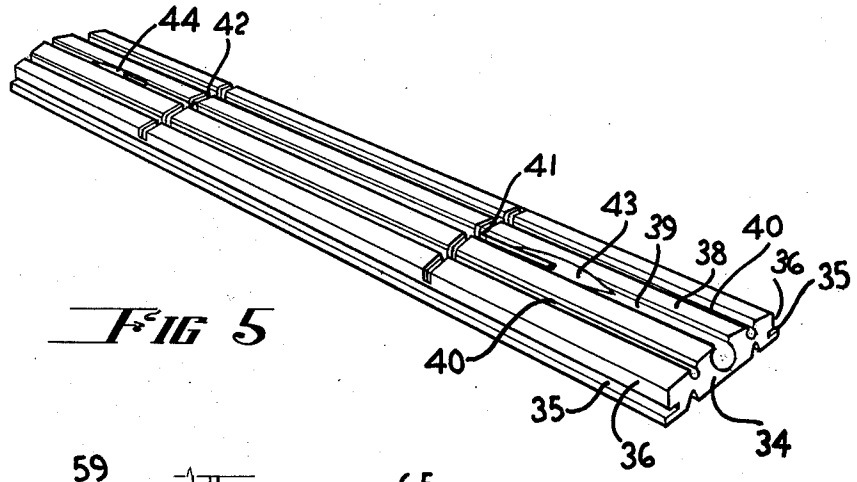


FIG 5

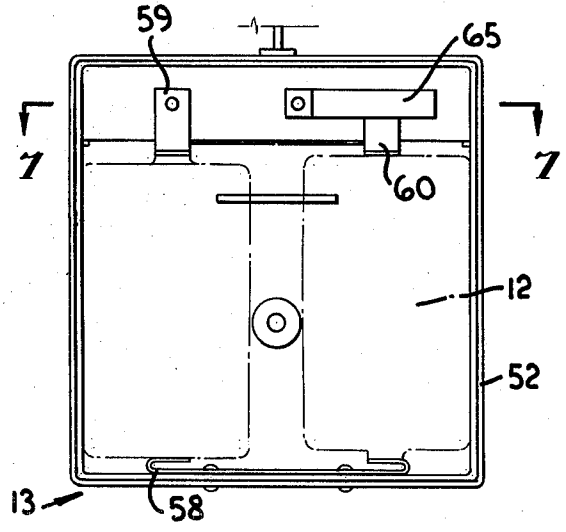


FIG 6

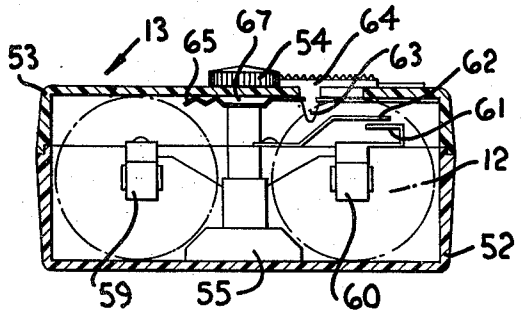


FIG 7

United States Patent Office 3,191,939 Patented June 29, 1965

3,191,939

SWING INDICATOR ATTACHMENT FOR GOLF CLUBS INCLUDING SPACED ELECTRIC LIGHT BULBS

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Filed Aug. 27, 1962, Ser. No. 219,548
Claims priority, application Australia, Sept. 1, 1961, 8,759/61
3 Claims. (Cl. 273—186)

This invention relates to a sporting device which is usable for the purpose of training sportsmen in the correct stroking of bats, for example, cricket bats, tennis racquets, golf clubs, baseball bats and the like.

When a ball is being struck by a bat, for example, a golf club, it is usual for a player to sweep the bat through an arc and the striking instrument continuously changes its angular relationship with reference to a ball, and if the player's eye is stationary, it follows that the angular relationship will also vary with reference to the player's eye.

In many sports the angular relationship of the bat to the ball at the time of impact is a matter of very great importance, and in the striking of a golf ball by a golf club, for example, becomes of paramount importance.

The main object of this invention is to provide means which will assist a sportsman or professional coach in determining the characteristics of the swing of a bat.

In its simplest form the invention consists of a bracket, bat-engaging clamp means on the bracket, globe-retaining means on the bracket, a pair of spaced globes in the globe-retaining means, and a flexible cable electrically connected to both globes and extending from the bracket, the globes being arranged in a fore and aft relationship with each other so that they intersect at impact between a ball and a bat to which the bracket is clamped.

An embodiment of the invention wherein it is applied to a golf club is described hereunder in some detail with reference to and is illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view showing the sporting device of this invention secured to the lower end of a golf club,

FIG. 2 is a front elevation of the bracket of the device when clamped to a club,

FIG. 3 is a section on line 3—3 of FIG. 2,

FIG. 4 is a fragmentary section of an end of the boom showing the mounting arrangement for a globe,

FIG. 5 is a perspective view of the globe-retaining member,

FIG. 6 is an elevation of the inner half case of the battery case, and

FIG. 7 is a section on line 7—7 of FIG. 6, but illustrating both the inner and outer half cases when in their assembled condition.

The sporting device comprises a bracket **10**, the bracket **10** being connected by means of a flexible cable **11** to batteries **12** in a battery case **13**.

The bracket **10** comprises two main portions, one being a sheet metal boom **15** and the other a support member **16**. The support member **16** has on its one end a sheet metal boom engaging portion **17** which engages over one end of the boom **15** (see FIG. 2). The sheet metal used for both the boom and support member is coated with polyvinyl chloride or other thermoplastic material either before or after pressing, and the contiguous surfaces of the two members are held together while heat is applied to thereby effect a weld between the adjacent surfaces of polyvinyl chloride.

The support member **16** has a boom-engaging portion **17** which extends in the direction of the normal path of

travel of a bat to which it is attached, and extending to one side of the boom-engaging portion **17** is a horizontal portion **18**, the horizontal portion **18** merging into a bat-engaging clamp portion **19**. The bat-engaging clamp portion **19** includes a pair of spaced diverging walls **21**, and each of these walls **21** are turned at their edges through nearly 180° to form upturned flanges **22**. The walls **21** constitute bat-engaging clamp means, while the upturnerd flanges **22** are engaged by inturned lips **23** on a saddle **24**, the saddle **24** carrying a clamping screw **25** which is engageable against the stem **26** of a bat, which in this embodiment is shown as the golf club **27**.

The boom **15** has two spaced apertures **30** and **31** which are illumination apertures, the aperture **31** being aligned with an aperture **32** in the boom engaging portion **17**, and in this embodiment these apertures are so arranged that upon correct swing of the golf club **27**, the paths of light established by globes visible through the apertures **30** and **31** intersect at the point where the ball is normally struck. The boom **15** has inwardly directed horizontal flanges **33**, the flanges defining a parallel opening beneath the boom **15**. A globe-retaining member **34** is formed of a strip of polyethylene of constant cross-section, and includes a pair of oppositely disposed flange-engaging grooves **35**. These flange-engaging grooves **35** are at the bases of upwardly converging side walls **36**, so that the globe-retaining member **34** can be "clipped" into position in the opening defined by the inturned horizontal flanges **33** of the boom **15**.

The upper surface **38** of the globe-retaining member **34** has a central globe-retaining groove **39** flanked on each side by a conductor-retaining groove **40**. A pair of transverse narrow slots **41** and **42** interconnect the globe-retaining groove **39** with the two conductor-retaining grooves **40**, and a pair of pear-shaped globes **43** and **44** are disposed within the groove **39**. Each of the globes **43** and **44** has its connection wires disposed for a short distance adjacent the globe within the globe-retaining groove **39**, and then passing through a transverse narrow slot and being positioned along the conductor-retaining groove **40**. Conductors are disposed within the grooves **40** and these are connected to the ends of the twin flexible cable **11**.

FIG. 4 shows the arrangement wherein the globe-retaining member **34** is positioned within the boom **15**, and is retained against end movement by the spring member **47**. The spring member **47** engages a positioning plate **48** which is arranged to engage the striker surface **49** of the golf club **27**. The positioning plate **48** is constituted by the front end of the boom engaging portion **17** turned downwardly.

The battery case **13** comprises an inner half case **52** which mates edge to edge with an outer half case **53**, the inner and outer half cases **52** and **53** being releasably retained together by means of a retaining screw **54** which is threaded into a threaded boss **55** on the inner face of the inner half case **52**.

The battery case **13** carries a pair of dry cell batteries **12** which engage at one end a lower contact bridging strip **58**, one of the batteries **12** engaging at the other end a fixed contact **59** while the other battery engages a second fixed contact **60**, the fixed contact **60** having a tongue **61** which co-operates with a moving spring contact **62**, the moving spring contact being controlled by a pin **63** on the inside of a finger switch **64**. The finger switch **64** retains a spring index plate **65** which slides along the inner surface of the outer half case **53** releasably engages over an index plate engaging projection **67** on the inner face of the outer half case **53**. When the finger switch **64** is moved, the pin **63** rides up a ramp face on the moving spring contact **62** urging it into electrical engagement with the tongue **61**.

The manner in which the invention is used is as follows:

The golf club is swung in a partly illuminated area while the globes are illuminated by the batteries. A line or mark on the ground indicates the intended line of flight and a designated spot indicates the position of the ball. The user takes his stance in relation to these points. As the club moves through its arc, the two small light sources impress upon the brain, through the persistence of vision, the illusion of two streaks of light, and the distance between the two streaks of light at any point is a function of angle of the club face. This angle of course changes continuously during the swing of the club, the forward end of the club being further "out" away from the eye of the user at the beginning of the stroke, but closer "in" toward the eye of the user at the end of the stroke, than the rear end of the club. By a correct movement or "swing" of the golf club, two streaks of light will be observed by the user of the club which will converge and intersect at the instant of impact with a ball if the club has been correctly swung. This corresponds to a stroke wherein no spin is imparted to the golf ball. By noting the movement of leading light only in relation to a ground mark or "intended line of flight" an "inside-out" or "outside-in" swing is readily detected by the user. The trailing globe can be readily occluded or covered, if desired, to simplify the detection of this action. The path of travel of each light globe is readily determined due to the user's persistence of vision.

If the streaks of light appear to the user to intersect before the point of impact this will indicate an outside-in swing while if they appear to intersect after the point of impact the inside-out swing will be indicated. This gives a ready means of determining the exact nature of the swing of the club.

The invention can be extended to be used with other striking instruments where it is desirable to know the position of the striking instrument at the point of impact.

If it is desired, the globes may be replaced by reflectors of known type as light directing members, the reflectors being secured to the boom, and co-operating with an external light source to indicate their paths of travel.

What I claim is:

1. A sporting device comprising a support member and a boom secured thereto, horizontal flanges on said boom directed towards each other, said horizontal flanges having edges defining a parallel-sided slot beneath the boom, a globe-retaining member of constant cross-section and including upwardly converging side walls having lower terminal edges provided with longitudinally extending flange-engaging grooves, said flange-engaging grooves releasably engaging said edges of the horizontal flanges, said globe-retaining member having an upper surface provided with a central globe-retaining groove extending therealong, and a pair of conductor grooves disposed one on each side of the globe-retaining groove, a pair of spaced globes in the globe-retaining groove, the globes being disposed one behind the other lengthwise of the globe-retaining groove, said boom having an upper surface and a pair of illumination apertures in said upper surface aligned with the globes whereby the latter are visible through said apertures, a pair of conductors one in each conductor groove electrically connected to said globes, and a twin flexible power cable connected to said conductors.

2. A supporting device comprising a support member and a boom secured thereto, a positioning plate on one end of the boom, horizontal flanges on said boom directed towards each other, the flanges having edges defining a parallel-sided slot beneath the boom, a globe-retaining member of constant cross-section and including upwardly converging side walls having lower terminal edges provided with longitudinally extending flange-engaging grooves, said flange-engaging grooves releasably engaging said edges of the horizontal flanges, said globe-retaining member having an upper surface provided with a central globe-retaining groove extending therealong and a pair of conductor grooves disposed one on each side of the globe-retaining groove, a pair of spaced globes in the globe-retaining groove, the globes being disposed one behind the other lengthwise of the globe-retaining groove, said boom having an upper surface and illumination apertures in the upper surface of the said boom aligned with the globes whereby the latter are visible through said apertures, a pair of conductors one in each conductor groove electrically connected to said globes, and a twin flexible power cable connected to said conductors.

3. A sporting device comprising a support member and a boom secured thereto, a positioning plate on one end of the boom, horizontal flanges on said boom directed towards each other, said horizontal flanges having edges defining a parallel-sided slot beneath the boom, a globe-retaining member of constant cross-section and including upwardly converging side walls with lower terminal edges provided with longitudinally extending flange-engaging grooves, said flange-engaging grooves releasably engaging said edges of the horizontal flanges, said globe-retaining member having an upper surface provided with a central globe-retaining groove extending therealong and a pair of conductor grooves disposed one on each side of the globe-retaining groove, a pair of spaced globes in the globe-retaining groove, the globes being disposed one behind the other lengthwise of the globe-retaining groove, said boom having opposite ends and an upper surface provided with a pair of illumination apertures adjacent said ends, said globes being located in the globe-retaining groove in alignment with the apertures and being thereby visible through said apertures, a pair of conductors one in each conductor groove electrically connected to said globes, and a twin flexible power cable connected to said conductors for supplying electrical power thereto.

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