United States Patent

Worrell

[15] **3,649,028**

[45] **Mar. 14, 1972**

[54] LUMINESCENT GOLF SWING TRAINING DEVICE

[72] Inventor: **Eugene N. Worrell,** 1511 Clinton Road, Glenshaw, Pa. 15116

[22] Filed: **Apr. 7, 1970**

[21] Appl. No.: **26,328**

[52] **U.S. Cl.** .....**273/186 A,** 273/DIG. 24, 273/183 A, 273/194 A

[51] **Int. Cl.** **A63b 69/36**

[58] **Field of Search**.....273/183, 186, 195, 196, 197, 273/198, 56, 193, 194, 163, 164; 250/71; 35/29

[56] **References Cited**

UNITED STATES PATENTS

280,807	7/1883	Farley	273/56
1,485,272	2/1924	Kinsman	273/164
3,360,268	12/1967	Molinari	273/194 A X

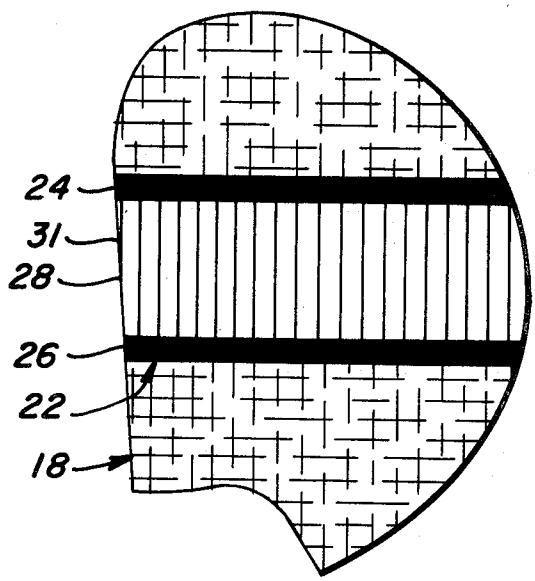
Primary Examiner—George J. Marlo

Attorney—Brown, Murray, Flick & Peckham

[57] **ABSTRACT**

Golf practicing apparatus characterized in the use of adjacent strips of luminescent or light-emitting material on the upper surface of a golf club in a manner such that when the club is swung through an arc, a visible trace pattern is emitted by the luminescent or light-emitting material which enables an observer to make a rapid and accurate determination as to the disposition of the golf club head throughout its arcuate path of travel. The pattern comprises three adjacent stripes of outer black stripes and an intermediate stripe of red. Luminescent reference guide stripes in the path of travel of the club are also provided one of which stripes is tangential to the path of travel of the club and the other of which guide stripes is perpendicular thereto and at a point of impact of a golf ball. Another form of the invention includes stripes of a luminescent chemical that are covered with a cover that is ruptured prior to use so that airborne oxygen reacts with the chemical to yield a distinctively colored light pattern when the club is swung through an arc.

8 Claims, 6 Drawing Figures



Patented March 14, 1972 3,649,028

2 Sheets-Sheet 1

FIG. 1

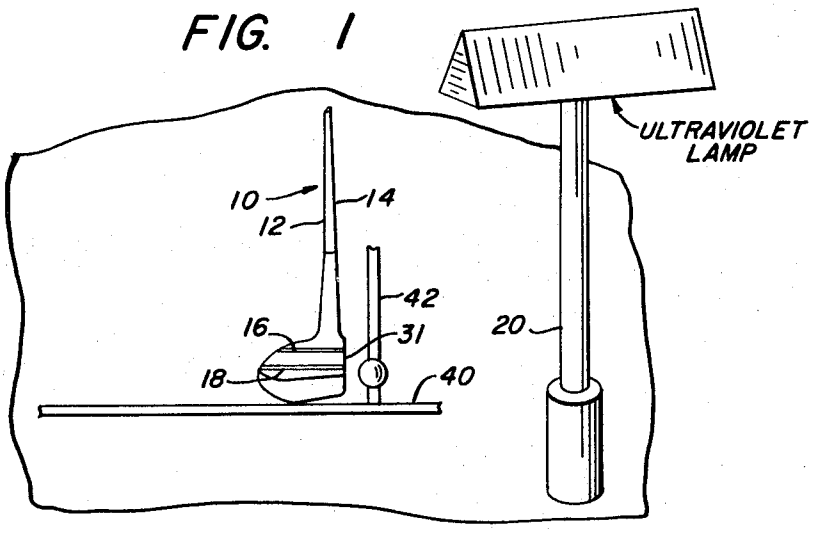


FIG. 2

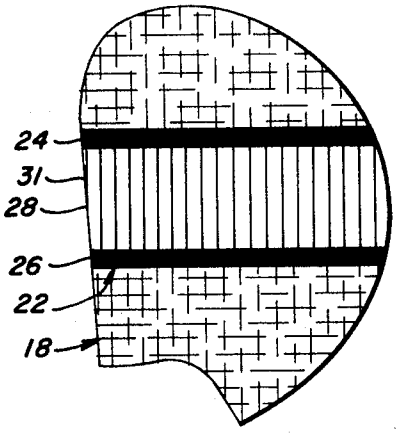


FIG. 3

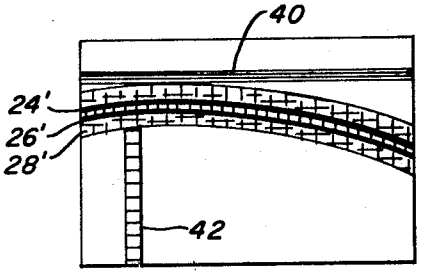


FIG. 4

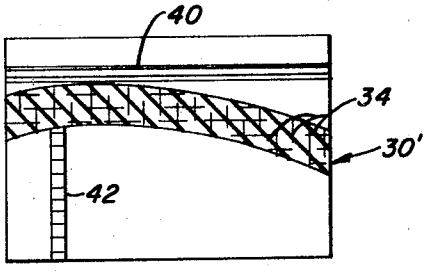
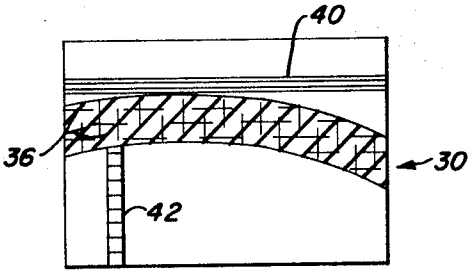


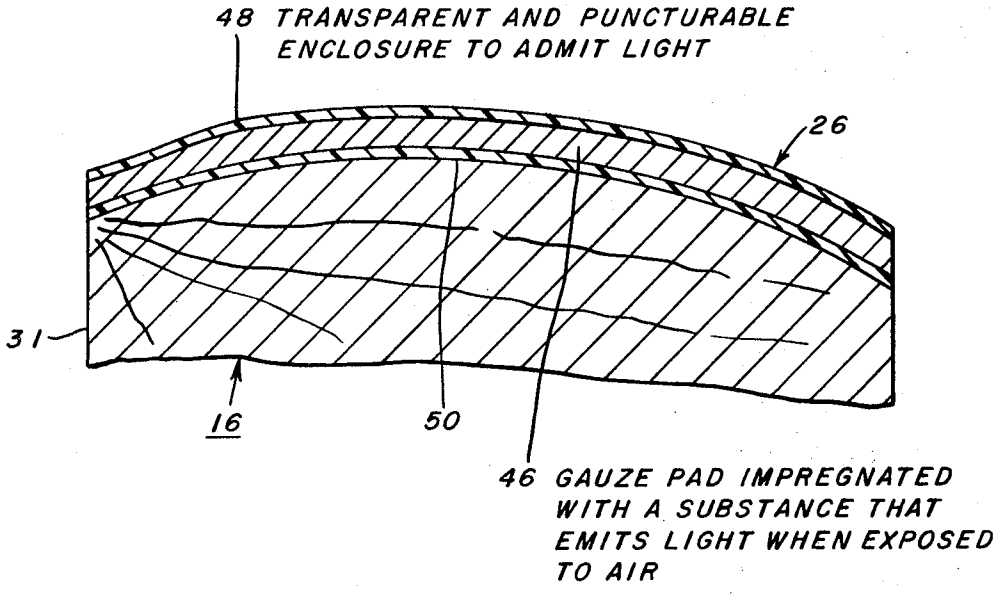
FIG. 5



INVENTOR
EUGENE N. WORRELL

By
Brown, Murray, Flick & Peckham
Attorneys

FIG. 6.



INVENTOR.
EUGENE N. WORRELL
By
Brown, Murray, Flick & Peckham
Attorneys

LUMINESCENT GOLF SWING TRAINING DEVICE

BACKGROUND OF THE INVENTION

Heretofore a variety of swing indicators have been provided for the purpose of aiding a golfer in correcting his swing, such indicators commonly being in a form of specially adapted golf clubs or attachments for standard golf clubs. As an example of the latter type, reference is made to my copending U.S. application Ser. No. 840,178, filed July 9, 1969 wherein a luminescent material is disposed on the upper surface of a golf club such that when the club is swung through a field of ultraviolet radiation, a visible trace pattern of its arcuate path of travel is produced.

While the above-mentioned application is entirely satisfactory for the purpose of providing means for visibly observing whether the club is arcing inwardly or outwardly with respect to a ball, it does not provide means for rapidly and accurately determining whether or not the striking face of the club head is square throughout the swing of the golf club. As will be understood, it is of vital importance to strike the ball squarely, or otherwise the ball will slice or hook.

SUMMARY OF THE INVENTION

By use of the present invention which includes a plurality of adjacent light-emitting stripes disposed on the upper surface of the golf club, a readily discernible trace pattern is emitted by such stripes when the golf club is passed through an arc in a darkened environment. The configuration of the trace pattern will vary depending on the particular orientation of the club head during the swing of the golf club and, as such, an observer or the golfer can readily discern the orientation of the club head merely by viewing the differing trace patterns.

These and other objects and advantages of this invention will become readily apparent upon a viewing of the following details and drawings in which:

FIG. 1 is a diagrammatic view of a golf practice apparatus embodying the principles of this invention;

FIG. 2 is a partial plan view of the upper surface of the golf club head shown in FIG. 1 and having thereon luminescent means of this invention;

FIG. 3 is a schematic illustration of a plan view of a visible trace pattern emitted by the luminescent means shown in FIG. 2 when a golf club is swung through an ultraviolet field and the face of such club is square with respect to the arc of the swing throughout such swing;

FIG. 4 is a schematic illustration of a plan view of a visible trace pattern emitted by the luminescent means shown in FIG. 2 when a golf club is swung through an ultraviolet field and the face of such club is closed inwardly with respect to the arc of the swing throughout such swing; and

FIG. 5 is a schematic illustration of a plan view of a visible trace pattern emitted by the luminescent means shown in FIG. 2 when a golf club is swung through an ultraviolet field and the face of such club is open outwardly with respect to the arc of the swing throughout such swing; and

FIG. 6 is an illustration of an alternative embodiment of the invention utilizing a light-emitting chemical.

A golf practice apparatus in accordance with one embodiment of the invention is generally indicated at **10** and comprises: a golf club **12** having a shaft **14** and a club head **16** secured to shaft **14** at the lower end thereof; luminescent material **18** disposed on the upper surface of the club head **16** in a manner hereinafter described; and a lamp **20** which emits ultraviolet radiation for impingement upon the luminescent material **18** such that when material **18** passes through an ultraviolet field emitted from lamp **20**, a visible trace pattern is observable which indicates the manner in which the club head is controlled by the golfer throughout the swing through the ultraviolet field. It is to be noted that the term "luminescent" as used herein is to be taken in the broadest sense as meaning adapted for the production of luminescence, or any emission of light not ascribable directly to incandescence and as such will include light-emitting substances, an example of which is described hereinafter, or materials such as fluorescent or phosphorescent metallic salts which emit radiation in the visible portion of the spectrum when radiation is impinged thereon.

The material **18** is disposed on the upper surface of club head **16** in any suitable manner, for example, an inset containing the luminescent material or a coating applied directly to club head **16**. However, it is preferred that the material be disposed on the upper surface of a vinyl or paper decal adapted to be secured to the upper surface of club head **16**. In any event, the material **18** will be arranged in a pattern of stripes **22** which is adapted to visually indicate the particular orientation of club head **16** when club **12** is swung through an ultraviolet field radiated by lamp **20**.

Pattern **22** comprises three adjacent stripes **24**, **26** and **28**, respectively, having their forwardmost ends positioned perpendicular to a vertical plane containing at least the upper edge of the striking surface or face **31** of club head **16**, and which stripes extend axially rearwardly from the face **31**. As shown, the two outer stripes **24** and **26** are black and the interior stripe **28**, which has the longitudinal sides thereof adjacent the respective inner longitudinal sides of stripes **24** and **26**, is red. The balance of the luminescent material **18** not covered by stripes **24**, **26** and **28** is shown as being yellow.

When a pattern **22** as described above is disposed on a golf club **12** and the club **12** swung through the ultraviolet field emitted by lamp **20**, a visibly observable trace pattern **30** is emitted by material **18** which enables the golfer or an observer to make an accurate and efficient analysis of the golf swing. It is to be noted that in order for the trace pattern **30** to be clearly visible, it is preferable to use the golf apparatus **10** in a dark room or any other environment normally considered to have little, if any, lighting therein. In such an atmosphere, impingement of the ultraviolet light on the luminescent material will cause it to fluoresce as it is moved through the ultraviolet field, thereby producing a visible arcuate trace. Because of the striped pattern on the club head, a correct swing of the club with the face **31** hitting the ball correctly will cause an arcuate trace of adjacent arcuate lines corresponding to the stripes shown in FIG. **2**. An incorrect swing produces a blurred pattern as will be hereinafter explained.

FIG. **3** represents the visible trace pattern **30** emitted by the luminescent material pattern **22** when a golf club **12** is swung in an arc and at all times during such swing the stripes **24**, **26** and **28** are perpendicular to a transverse plane passing through such arc at any point therealong. As can be seen when the club head **16** is positioned throughout the golf swing such that stripes **24**, **26** and **28** are perpendicular to the transverse plane as indicated above, such stripes will produce in the eye of the observer arcuate lines **24'**, **26'** and **28'**, respectively, and as such one can readily observe when the club head **16** is held in proper orientation throughout the golf swing.

FIG. **4** represents a visible trace pattern **30'** emitted by the luminescent material pattern **22** when a golf club **12** is swung in an arc and at all times during such swing the club head **16** is improperly turned inwardly toward the body of the golfer and as such the stripes **24**, **26** and **28** are not perpendicular to a transverse plane passing through such arc. Hence, such stripes are not represented by independent arcuate lines in trace pattern **30'** but rather the stripes merge and form barely visible diagonal lines **34** across the trace pattern **30'**.

FIG. **5** represents a visible trace pattern **30** emitted by the luminescent material pattern **22** when a golf club **12** is swung in an arc and at all times during such swing the club head **16** is improperly turned away from the body of the golfer and as such the stripes **24**, **26** and **28** merge and form barely visible diagonal lines **36** across the trace pattern **30**. It is to be noted that the diagonal extent of line **36** is opposite from the diagonal extend of line **34** and as such one can readily determine not only whether a golfer is swinging correctly but also whether the club head **16'** is turned inwardly or outwardly.

Additionally shown in the aforedescribed figures are luminescent guide stripes **40** and **42**. Inasmuch as the use of

guide stripes such as stripes **40** and **42** is fully explained in my hereinbefore mentioned copending application Ser. No. 840,178, it will suffice to say that stripe **40** extends tangentially to the arc of a swing at the proposed point of impact with a golf ball and that stripe **42** is approximately perpendicular to stripe **40** at such point of impact. The use of such stripes provides accurate referencing means for observation of the trace pattern emitted by means of this invention.

In the embodiment of the invention shown in FIG. **2**, for example, the luminescent stripes are provided on a backing having a pressure-sensitive adhesive for securing it to the club head; and luminescent material requires the use of an ultraviolet lamp or other source of radiation. In FIG. **6** an alternative embodiment of the invention is shown wherein the stripes, such as stripes **24**, **26** and **28** are formed from a material which does not require a source of external radiation, but will give off light due to a chemical reaction. In this case, each stripe, such as stripe **26** is formed from a gauze pad **46**, impregnated with a chemical which will combine with oxygen when exposed to air and give off light of a distinctive color. Such a chemical, for instance is tetrakis dimethylaminoethylene sold by Remington Arms, Inc. of Bridgeport, Conn. The gauze pad **46**, impregnated with the aforesaid chemical, is sealed within a plastic enclosure **48** having a pressure-sensitive adhesive on the lower surface **50** thereof such that it may be secured to the top of the club head **16**. The gauze pad **46** is normally sealed within the enclosure **48** and will not be exposed to air. Hence, the chemical it contains will not give off light. However, when the enclosure **48** is punctured or torn, as with a sharp instrument or the fingernail, air will enter, a chemical action will occur, and light will be emitted.

In the use of the device of FIG. **6**, it is necessary only to secure the plastic enclosures **48** containing the chemically impregnated gauze to the club head by means of the pressure-sensitive adhesive. Thereafter, the enclosures **48** are punctured to admit air; whereupon light is emitted from each stripe and the club is ready to use in a darkened area.

Although a preferred embodiment of this invention has been described and illustrated herein one can readily apply the principles of this invention in other forms to obtain the same operation and advantages without departing from the scope of this invention, for example; although the embodiment described hereinabove shows a material **18** having a pattern **22** thereon of a configuration to be used with a golf club of the wood variety it is to be understood that a similar material and pattern can be adapted to be disposed on the upper surface of a golf club of the iron variety.

The description herein does not limit the structure of this invention and the invention is defined by the scope of the claims set forth hereinafter.

I claim as my invention:

1. In the combination of a golf club having a shaft with a head at the lower end thereof, a striking surface at the forward end of said shaft and luminescent means associated with said head of said golf club for permitting visual observation of the movement of said club head during the execution of a swing of said golf club, the improvement comprising:

said luminescent means including a plurality of nonspaced adjacent stripes of luminescent material disposed on the uppermost surface of said club head with the forwardmost ends of said stripes being substantially perpendicular to a vertical plane containing at least the uppermost edge of said striking surface, whereby when the golf club is swung at an improper angle the nonspaced adjacent stripes merge and form visible diagonal lines across the movement of travel of the club head.

2. The combination as specified in claim **1** wherein said luminescent material includes a light-emitting substance adapted to emit radiation in the visible range of the spectrum when ultraviolet radiation is impinged thereon and at least two of said adjacent stripes emit radiation resulting in at least visibly discernible hues when said ultraviolet radiation is impinged thereon.

3. The combination as specified in claim **2** wherein said stripes extend rearwardly from said forwardmost ends in a substantially straight line.

4. The combination as specified in claim **2** wherein said luminescent means further includes luminescent material disposed on the uppermost surface of said club head adjacent said stripes.

5. The combination as specified in claim **1** wherein said luminescent means comprises a decal secured to said uppermost surface of said head.

6. The combination of claim **1** wherein said stripes of luminescent material comprise a gauzelike material impregnated with a substance which will emit light when exposed to air, said material being carried within an airtight transparent enclosure which can be punctured to admit air such that said substance will emit light.

7. The combination of claim **6** wherein one surface of said enclosure is provided with a pressure-sensitive adhesive adapted for connection to said club head.

8. In combination with a golf club having a shaft with a head at its lower end, luminescent means associated with said head of the golf club for permitting visual observation of the movement of said club head during the execution of a swing of said golf club, said luminescent means comprising an airtight transparent enclosure incorporating means for securing it to said club head, and gauzelike material carried within said enclosure and impregnated with a substance which will emit light when exposed to air, said enclosure being puncturable to admit air and cause said substance to emit light.

* * * * *