



(19) **United States**

(12) **Patent Application Publication**
Thornes

(10) **Pub. No.: US 2009/0233726 A1**

(43) **Pub. Date: Sep. 17, 2009**

(54) **GOLF PUTTER CLUBHEAD**

(52) **U.S. Cl. 473/220; 473/250; 473/409**

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(57) **ABSTRACT**

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The present invention relates to a golf clubhead. Specifically, it relates to a golf putter clubhead comprising a body having a viewing face, and a sole; characterised in that at least one light guide is provided in the body, adapted to direct light through the body to a given location; and at least one viewing aperture is provided and arranged to visualise reflected light from the given location. The invention, in use, is intended to indicate a correct "target line", thereby affording better aim to a user, and assist in producing a more consistent performance. It is envisaged that when a user addresses a golf ball prior to the stroke, use of the clubhead will facilitate increased putting accuracy by indicating to a user that the clubhead is at the correct position for optimal striking of the ball. Moreover, in use, the clubhead can improve aim by offering a user the opportunity to more reliably strike the ball squarely at the optimum height above the playing surface, and ultimately ensuring that the face of the clubhead is square to stance of the user (and/or the golf ball), during the stroke.

(21) **Appl. No.: 12/381,476**

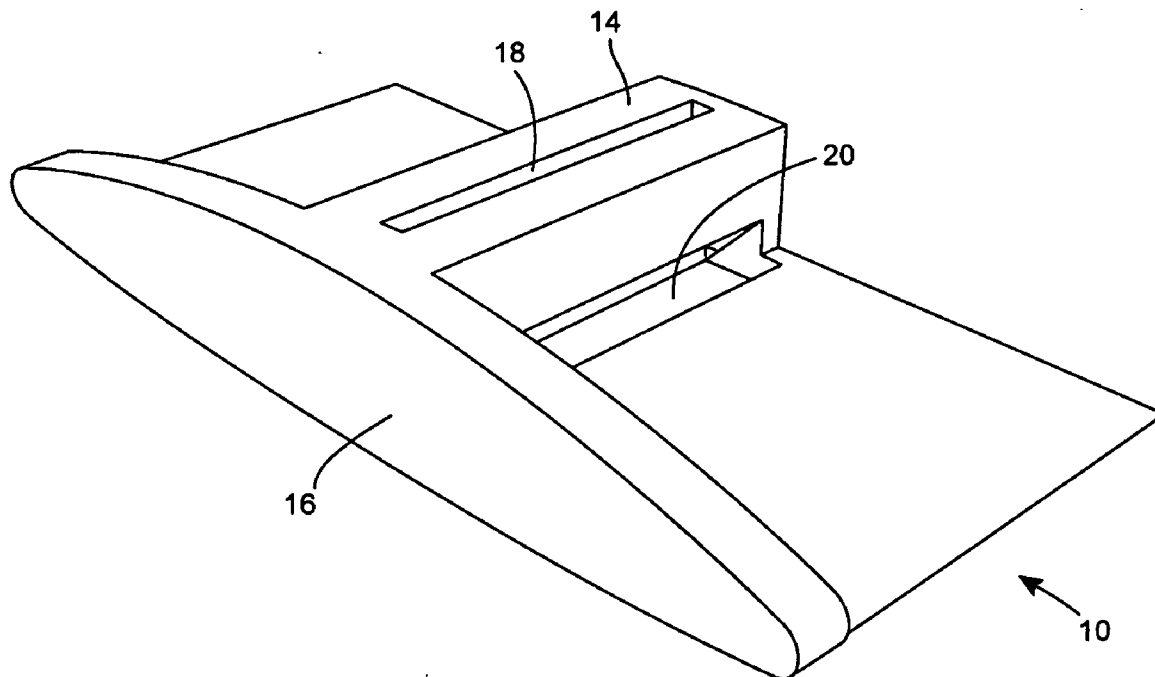
(22) **Filed: Mar. 11, 2009**

(30) **Foreign Application Priority Data**

Mar. 11, 2008 (IE) S2008/0178

Publication Classification

(51) **Int. Cl.**
A63B 53/06 (2006.01)
A63B 69/36 (2006.01)



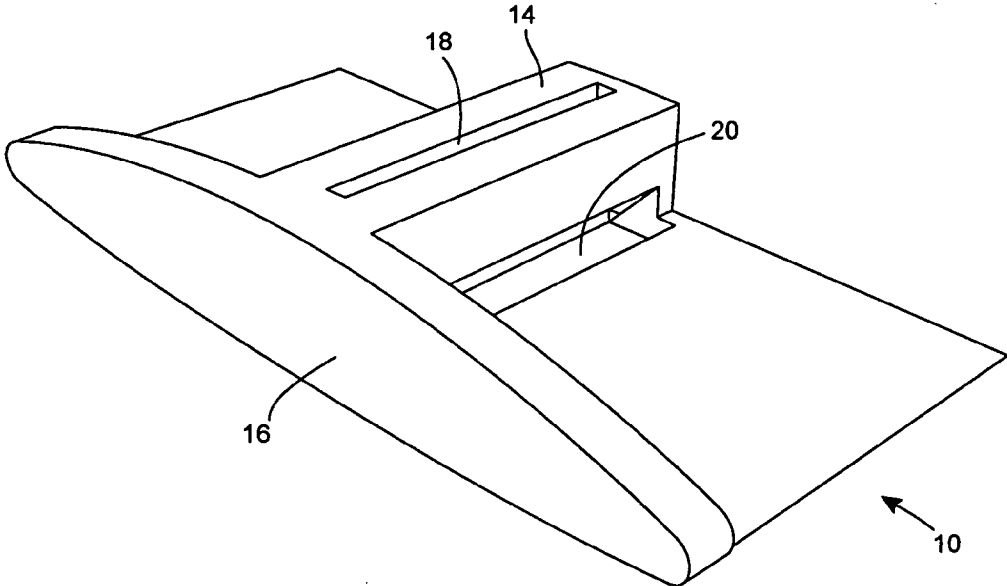


Fig. 1

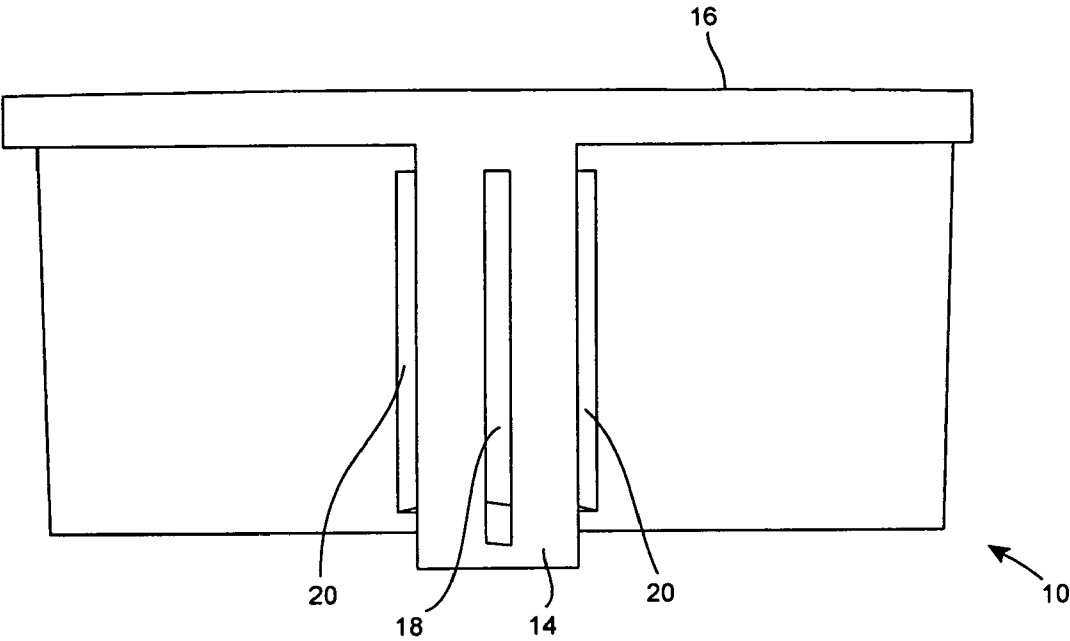


Fig. 2

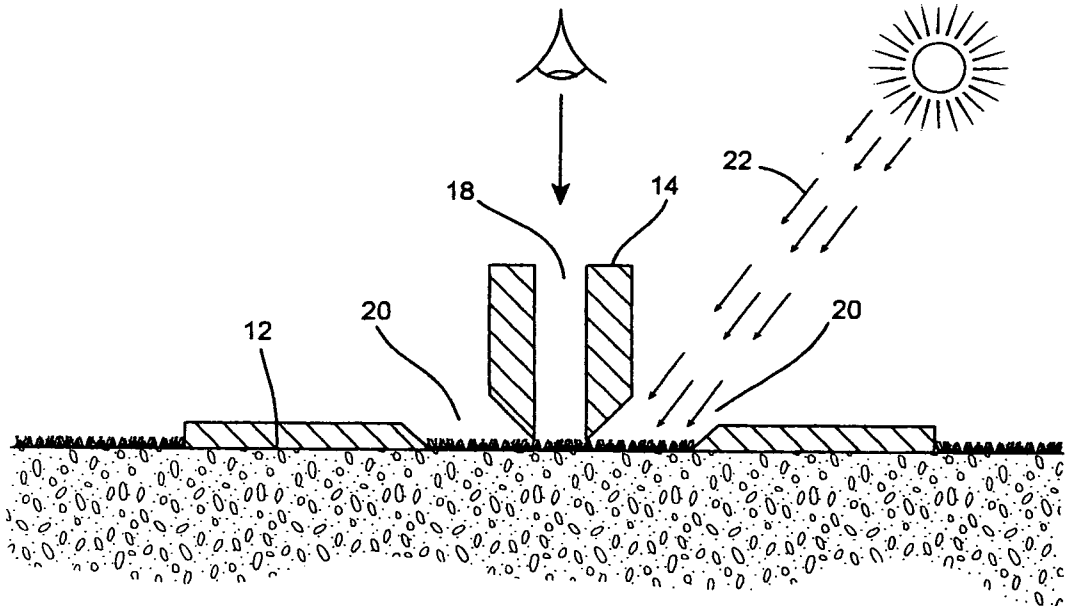


Fig. 3A

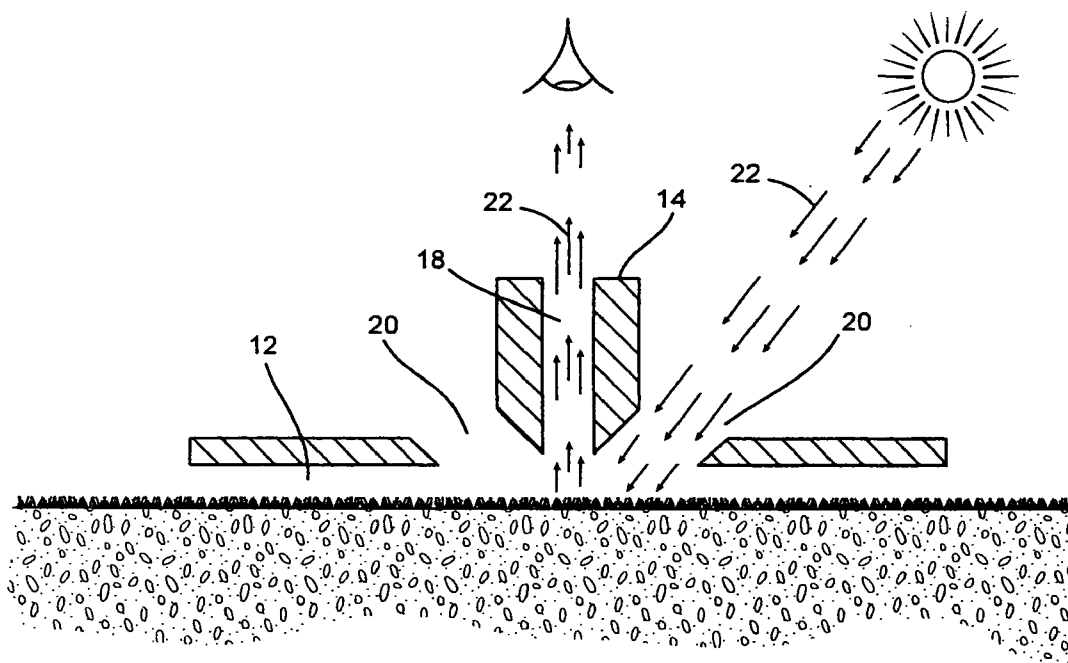


Fig. 3B

GOLF PUTTER CLUBHEAD

BACKGROUND OF THE INVENTION

[0001] This invention relates to a golf putter. In particular, it relates to a golf putter clubhead.

[0002] For the purposes of this specification, the term “clubhead” is intended to be synonymous with the terms “golf putter clubhead”, “golf clubhead”, and “putter clubhead”.

[0003] It is an object of the present invention to provide a clubhead, which in use can indicate a correct “target line”, thereby affording better aim to a user, and assist in producing a more consistent performance. It is envisaged that when a user addresses a golf ball prior to the stroke, use of the clubhead will facilitate increased putting accuracy by indicating to a user that the clubhead is at the correct position for optimal striking of the ball. Moreover, in use, the clubhead can improve aim by offering a user the opportunity to more reliably strike the ball squarely at the optimum height above the playing surface, and ultimately ensuring that the face of the clubhead is square to stance of the user (and/or the golf ball), during the stroke.

SUMMARY OF THE INVENTION

[0004] According to a first aspect of the present invention there is provided a golf putter clubhead comprising a body having a viewing face, and a sole; characterised in that at least one light guide is provided in the body, adapted to direct light through the body to a given location; and at least one viewing aperture is provided and arranged to visualise reflected light from the given location.

[0005] Preferably, the at least one viewing aperture is provided in the body.

[0006] By “sole” is meant the, in use, ground-engagable face of the clubhead. What is meant by “viewing face” is the, in use, uppermost face (opposing the sole) of the clubhead.

[0007] Preferably, the given location is located, in use, below the sole of the body. Optionally, the given location is located spaced apart from the sole of the body. Further optionally, the given location is located adjacent, or at, the ground.

[0008] By “ground” is meant any surface capable of supporting a golf ball.

[0009] Preferably, the at least one light guide is an elongate aperture, described herein as a “light guide aperture”. Optionally, the at least one light guide aperture is an elongate aperture, which is substantially parallelepiped in transverse cross-section.

[0010] Optionally, the at least one light guide aperture is arranged to direct light through the body. Further optionally, the at least one light guide aperture is arranged to direct light to the given location. Optionally the light is ambient light. By “ambient light” is meant light encompassing the surrounding area or environment, such as sunlight.

[0011] Optionally, the at least one light guide aperture extends through the body of the clubhead, and opens at each of the sole of the body and at least one other face of the body. Further preferably, the at least one light guide aperture extends through the body of the clubhead, and opens at each of the sole of the body and the viewing face of the body.

[0012] Optionally, a first open end of the at least one light guide aperture has a first boundary, and a second open end of the at least one light guide aperture has a second boundary. Optionally, the first open end of the at least one light guide is located at the sole of the body and the second open end is

located at the viewing face of the body. Preferably, the first and second boundaries are substantially equal. Alternatively, the first boundary is greater than the second boundary. Still alternatively, the first boundary is less than the second boundary.

[0013] Preferably, the aperture extends through the body of the clubhead, and opens at each of the viewing face of the body and the sole of the body. Alternatively, the aperture may open at the sole of the body and at any other face of the clubhead.

[0014] Optionally, the light guide further comprises an optical guide. The optical guide may comprise a lens, optic fibre, or any such material that can be used to actively direct light to the given location.

[0015] Preferably, one, both, or each light guide is independently arranged to direct light to a single given location. Further preferably, one, both, or each light guide is independently arranged to direct light to the same single given location. Still further preferably, one, both, or, each light guide is arranged to direct light to the same single given location when the clubhead is, in use, spaced a predetermined distance from the ground.

[0016] Preferably, the predetermined distance is in the range of about 1 mm to about 10 mm, further preferably in the range of about 2 mm to about 8 mm. Still further preferably, the predetermined distance is about 5 mm.

[0017] Optionally, at least two light guides are provided in the body of the clubhead. Preferably, each light guide is arranged to direct light to a single given location.

[0018] Preferably, a pair of light guides is provided in the body of the clubhead. Further preferably, each light guide of the pair is independently arranged to direct light to the same single given location.

[0019] Preferably, the pair of light guides are arranged to direct light to a single given location when the clubhead is, in use, elevated a predetermined distance from the ground. Further preferably, each light guide of the pair is arranged to direct light to the same single given location only when the clubhead is, in use, spaced a predetermined distance from the ground.

[0020] Preferably, the predetermined distance is in the range of about 1 mm to about 10 mm, further preferably in the range of about 2 mm to about 8 mm. Still further preferably, the predetermined distance is about 5 mm.

[0021] Preferably, each light guide of the pair is located on opposing sides of the viewing aperture, and arranged to direct light to the same single given location.

[0022] Optionally, the at least one light guide is arranged to allow passage of light through the body to the given location. Further optionally, the at least one viewing aperture is arranged to allow passage of light through the body from the given location to a second location.

[0023] Preferably, the at least one viewing aperture is an elongate aperture, described herein as a “viewing aperture”. Optionally, the at least one viewing aperture is an elongate aperture, which is substantially parallelepiped in transverse cross-section.

[0024] Optionally, the at least one viewing aperture is arranged to direct light through the clubhead. Further optionally, the at least one light guide aperture is arranged to direct light to a second location. Optionally, the light is reflected light. Preferably, the light is reflected from the given location.

[0025] Optionally, the at least one viewing aperture extends through the body of the clubhead, and opens at each of the

sole of the body and any other face of the body. Further preferably, the at least one viewing aperture extends through the body of the clubhead, and opens at each of the sole of the body and viewing face of the body.

[0026] Optionally, a first open end of the at least one viewing aperture has a first boundary, and a second open end of the at least one viewing aperture has a second boundary. Optionally, the first open end of the at least one viewing aperture is located at the sole of the body and the second open end is located at the viewing face of the body. Preferably, the first and second boundaries are substantially equal. Alternatively, the first boundary is greater than the second boundary. Still alternatively, the first boundary is less than the second boundary.

[0027] Preferably, the second location is an eye of a user.

[0028] Optionally, the at least one viewing aperture further comprises an optical guide. The optical guide may comprise a lens, optic fibre, or any such material that can be used to actively direct light from the given location.

[0029] Preferably, each open end of the viewing aperture is substantially perpendicular to the plane of the striking face of the body. Further preferably, the longitudinal axis of each end of the viewing aperture is substantially perpendicular to the plane of the striking face of the body.

[0030] For the purposes of this specification, the term "striking face" is intended to refer to the face of the clubhead that comes in contact with the golf ball during the stroke.

[0031] Preferably, the viewing aperture is shaped and dimensioned to receive light from one, both, or each light guide.

[0032] Optionally, the at least one viewing aperture is arranged to be in optical communication with one, both, or each of the at least one light guides. Further optionally, the at least one viewing aperture is arranged to receive light reflected from the given location, and direct light to a second location. Still further optionally, the at least one viewing aperture is arranged to receive light reflected from the ground, and direct light to an eye of a user.

[0033] Preferably, the at least one light guide and the at least one viewing aperture are in optical communication to allow light to be directed by the light guide to the given location; and same said light to be directed by the at least one viewing aperture from the given location to the second location.

[0034] Preferably, the at least one light guide and the at least one viewing aperture are in optical communication to allow light to be directed by the light guide from, for example, the viewing face of the body to the given location, for example, the ground below the sole of the body; and same said light to be directed by the at least one viewing aperture from the given location, for example, the ground below the sole of the body to the second location, for example, an eye of a user.

[0035] Optionally, the at least one viewing aperture is arranged to allow a user to view the location to which light is directed by the at least one light guide. Preferably, the viewing aperture is shaped and dimensioned to allow a user to view the location to which light is directed by the at least one light guide. Further preferably, the viewing aperture is shaped and dimensioned so that a user can view the location to which light is directed by the at least one light guide, without allowing the passage of ambient light through the viewing aperture.

[0036] Preferably, the plane of the viewing aperture is substantially perpendicular to the plane of the sole of the body.

[0037] Preferably, the at least one light guide and the viewing aperture are in optical communication to allow light to be directed from the viewing face of the body to an, in use, location below the sole of the body by the light guide, and same said light to be directed from the in use, location below the sole of the body to the eye of a user by the viewing aperture.

[0038] Further preferably, the at least one light guide and the at least one viewing aperture are adapted to be in optical communication, whereby in a first position, light may pass from the at least one light guide to the at least one viewing aperture, and in a second position, light is impeded from passing from the at least one light guide to the at least one viewing aperture.

[0039] Optionally, the second position is achieved when, in use, at least part of the body, for example the sole, is engaging the ground, and the first position is achieved when, in use, at least part of the body, for example the sole, is spaced a predetermined distance from the ground.

[0040] Preferably, the second position is achieved when, in use, the sole of the body is engaging the ground, and the first position is achieved when, in use, the sole of the body is spaced a predetermined distance from the ground.

[0041] Preferably, the predetermined distance is in the range of about 1 mm to about 10 mm, further preferably in the range of about 2 mm to about 8 mm. Still further preferably, the predetermined distance is about 5 mm.

[0042] Optionally, the clubhead further comprises a light source, such as a bulb. Alternatively, the light may be in the form of a laser beam. Further optionally, the light source is arranged to direct light to the given location. Still further optionally, the light source is arranged to direct light through the at least one light guide to the given location.

[0043] Preferably, in use, the clubhead has a loft of no more than ten degrees. By "loft" is meant the angle of deviation from the vertical made by the plane of the striking face of the clubhead.

[0044] Preferably, the clubhead has at least one striking face. Optionally, the clubhead comprises first and second striking faces. Preferably, the planes of the first and second striking faces are substantially parallel to one another. More preferably, the first and second striking faces are identical and/or symmetrical to one another.

[0045] Preferably, the clubhead is formed from metal. Preferably, the metal is malleable. Most preferably, the clubhead is formed from steel. Although, it will be seen that the clubhead can be formed from any material that will impart the required mechanical strength, such as aluminium, zinc, titanium, or other suitable alloy. The material may be selected by one skilled in the art.

[0046] Optionally, the weight of the clubhead may be distributed uniformly throughout the clubhead. Alternatively, the weight distribution of the clubhead may be biased to the outer perimeter of the clubhead.

[0047] Optionally, weighted inserts may be provided to bias the weight distribution of the clubhead.

[0048] Preferably, the clubhead further comprises means for attaching the clubhead to a shaft.

[0049] Preferably, the attaching means is shaped, dimensioned, and located so as to provide uninterrupted views to at least part of the viewing face of the clubhead. Further preferably, the attaching means is shaped, dimensioned, and located so as to provide uninterrupted views to at least part of the viewing aperture of the clubhead.

[0050] Preferably, the attaching means is a hosel, the hosel being shaped, dimensioned, and located so as to provide uninterrupted views to at least part of the viewing face of the clubhead.

[0051] According to a second aspect of the present invention there is provided a method for using the present invention, the method comprising the steps of:

- [0052]** 1. grounding the clubhead when addressing a golf ball;
- [0053]** 2. visualising reflected light through the viewing aperture;
- [0054]** 3. elevating the clubhead from the ground to the point at which the reflected light is at its brightest;
- [0055]** 4. adjusting the position of the clubhead based on the orientation of the viewing aperture; and
- [0056]** 5. striking the ball accordingly.

[0057] According to a third aspect of the present invention there is provided a method for using the present invention, the method comprising the steps of:

- [0058]** 1. grounding the clubhead when addressing a golf ball;
- [0059]** 2. elevating the clubhead a predetermined distance from the ground;
- [0060]** 3. visualising reflected light through the viewing aperture; and
- [0061]** 4. striking the ball accordingly.

[0062] Optionally, the method comprises the further step of adjusting the position of the clubhead based on the orientation of the viewing aperture; before the striking step.

[0063] By “grounding” is meant engaging at least part of the clubhead with the ground. Preferably, the sole of the body of the clubhead is engaged with the ground. Further preferably, the given location is adjacent, or at, the ground.

[0064] Optionally, the visualising step involves visualising reflected light passing from the given location, through the viewing aperture, to a second location.

[0065] Optionally, the elevating step is carried out until the reflected light has a maximum intensity.

[0066] Preferably, the elevating step is carried out until the clubhead reaches a predetermined distance from the ground.

[0067] Preferably, the reflected light has a maximum intensity at the predetermined distance from the ground.

[0068] Preferably, the predetermined distance is in the range of about 1 mm to about 10 mm, further preferably in the range of about 2 mm to about 8 mm. Still further preferably, the predetermined distance is about 5 mm.

DESCRIPTION OF THE DRAWINGS

[0069] FIG. 1 is a perspective view of a golf putter clubhead according to a first aspect of the present invention;

[0070] FIG. 2 is a plan view of the golf putter clubhead of FIG. 1;

[0071] FIG. 3A is a schematic diagram illustrating a cross-sectional view of the golf putter club of FIG. 1 in an in use, second, ground-engaging position; and

[0072] FIG. 3B is a schematic diagram illustrating a cross-sectional view of the golf putter club of FIG. 1 in an in use, first, elevated position.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0073] Referring now to FIGS. 1 and 2 of the drawings, there is shown a golf putter clubhead according to a preferred

embodiment of a first aspect of the present invention. The clubhead 10 comprises a striking face 16, a sole 12, and a viewing face 14.

[0074] The striking face 16 is substantially elliptical in shape, and has a generally planar face for engaging a golf ball (not shown), in use. Although, it will be appreciated that the shape and dimension of the striking face may be selected by one skilled in the art.

[0075] The sole 12 comprises a generally rectangular body, which extends rearwardly from the in use, ground-engaging edge of the striking face 16.

[0076] The viewing face 14 is generally rectangular in shape and extends rearwardly from the opposing edge of the in use, ground-engaging edge of the striking face 16.

[0077] A viewing aperture 18 is provided in the clubhead 10. The viewing aperture 18 comprises an elongate slot, which extends through the clubhead 10, and opens at each of the viewing face 14 and the sole 12. The plane of the viewing aperture 18 is substantially perpendicular to the plane of the face of the striking face 16.

[0078] A light guide 20 is provided on each side of the plane of the viewing aperture 18. Each light guide 20 comprises an elongate aperture, which extends through the clubhead 10, and opens at opposing sides of the viewing face 14, and at the sole 12. The plane of each light guide 20 is oriented such that the distance at the viewing face 14, between the opening of the viewing aperture 18 and the opening of the light guide 20 is shorter in length than the distance at the sole 12, between the opening of the viewing aperture 18 and the opening of the light guide 20. As such, each of the light guides 20 is angled to, in use, direct light to the same single given location below the sole 12.

[0079] FIG. 3A is a schematic diagram illustrating a cross-sectional view of the golf putter club 10 according to a first aspect of the present invention, in an in use, second, ground-engaging position. In use, the sole 12 of the clubhead 10 engages the ground. Ambient light 22 enters one or each of the light guides 20, which in turn directs the ambient light 22 toward a given location below the sole 12. However, in this position, the ground impedes the passage of the ambient light 22 from the light guide 20. Resultantly, the viewing aperture 18, when viewed by a user (depicted by an eye) appears darker.

[0080] FIG. 3B is a schematic diagram illustrating a cross-sectional view of the golf putter club 10 according to a first aspect of the present invention, in an in use, first, elevated position. In use, the sole 12 of the clubhead 10 is spaced a predetermined distance from the ground.

[0081] Preferably, the predetermined distance is in the range of about 1 mm to about 10 mm, further preferably in the range of about 2 mm to about 8 mm. Still further preferably, the predetermined distance is about 5 mm.

[0082] Ambient light 22 enters one or each of the light guides 20, which in turn directs the ambient light 22 toward a given location below the sole 12. The ambient light 22 passes from the light guide 20, and is reflected from the given location, at the ground, to the viewing aperture 18, which in turn directs the reflected light 22' to a second location, an eye of a user. Resultantly, the viewing aperture 18, when viewed by a user (depicted by an eye) appears lighter.

[0083] Accordingly, in use, the user grounds the clubhead 10 when addressing a golf ball, and visualises the viewing aperture 18, which will appear darker as ambient light 22 received at the light guides 20 cannot pass to the given loca-

tion, the ground. Spacing the clubhead **10** from the ground allows the ambient light **22** to pass from the light guides **20** and be reflected from the given location, the ground, to the viewing aperture **18**. The user, still visualising the viewing aperture **18**, elevates the clubhead **10** to the point at which the reflected light **22'** has the greatest intensity, thereby indicating that the clubhead **10** is at a height from the ground for optimal striking of the golf ball. Moreover, the position of the lighter viewing aperture **18** provides a means to indicate the "sweet spot" of the striking face **16**, and the orientation of the viewing aperture **18** provides an indication of the proposed target line. As such, the user can then adjust the target line based on the orientation of the viewing aperture and strike the golf ball accordingly.

[0084] It is envisaged that the clubhead can, optionally, comprise a light source (not shown), to facilitate use of the clubhead during periods of low, or diminished, ambient light **22**. The light source is envisaged to potentiate, or replace, the ambient light **22**, during periods when the intensity of the reflected light **22'** is insufficient to be visualised through the viewing aperture **18**.

[0085] In either case, of using ambient light, or of using a light source, it is also envisaged that the intensity of the light reflected from the first position may be assessed using a device, such as a light meter, or similar device. For example, a device may be employed to quantitatively measure the intensity of light at the viewing aperture **18**, and thus facilitate the user in visualising or assign the intensity of light reflected from the first position.

[0086] Therefore, the present invention will indicate a correct "target line", and afford better aim to a user, ultimately producing a more consistent performance. Furthermore, the putter clubhead can improve aim by offering a user the opportunity to counteract the twist of the clubhead experienced due to torque during the stroke, and ensure that the face of the clubhead is square to stance of the user (and/or the golf ball), during the stroke.

[0087] For clarity, the golf putter clubhead illustrated in the accompanying drawings does not comprise a hosel. However, it is understood that in a preferred embodiment, the golf putter clubhead illustrated herein may further comprise a hosel, or similar means for attaching a shaft to the golf putter clubhead.

I claim:

1. A golf putter clubhead comprising a body having a viewing face, and a sole;
 - characterised in that at least one light guide is provided in the body, adapted to direct light through the body to a given location; and
 - at least one viewing aperture is provided and arranged to visualize reflected light from the given location.
2. A golf putter clubhead according to claim 1, wherein the at least one light guide is an elongate aperture, arranged to direct light through the body to the given location.
3. A golf putter clubhead according to claim 2, wherein the at least one light guide aperture extends through the body of the clubhead, and opens at each of the sole of the body and the viewing face of the body.
4. A golf putter clubhead according to claim 1, wherein the at least one light guide further comprises an optical guide to direct light to the given location.
5. A golf putter clubhead according to claim 1, wherein each light guide is selected from the group comprising one,

both, and each light guide, and each light guide is independently arranged to direct light to the same single given location.

6. A golf putter clubhead according to claim 5, wherein each light guide is arranged to direct light to the same single given location when the clubhead is, in use, spaced a predetermined distance from the ground.

7. A golf putter clubhead according to claim 6, wherein the predetermined distance is in the range of about 1 mm to about 10 mm.

8. A golf putter clubhead according to claim 1, wherein a pair of light guides is provided in the body of the clubhead, and each light guide of the pair is independently arranged to direct light to the same single given location.

9. A golf putter clubhead according to claim 8, wherein each light guide of the pair is located on opposing sides of the viewing aperture, and each light guide is arranged to direct light to the same single given location.

10. A golf putter clubhead according to claim 1, wherein the at least one light guide is arranged to allow passage of light through the body to the given location, and the at least one viewing aperture is arranged to allow passage of light through the body from the given location to a second location.

11. A golf putter clubhead according to claim 1, wherein the at least one viewing aperture extends through the body of the clubhead, and opens at each of the sole of the body and viewing face of the body.

12. A golf putter clubhead according to claim 1, wherein the at least one viewing aperture further comprises an optical guide to direct light from the given location.

13. A golf putter clubhead according to claim 1, wherein the body has a first striking face, and the longitudinal axis of each open end of the viewing aperture is substantially perpendicular to the plane of the first striking face of the body.

14. A golf putter clubhead according to claim 1, wherein the at least one viewing aperture is arranged to be in optical communication with each light guide.

15. A golf putter clubhead according to claim 14, wherein the at least one light guide and the at least one viewing aperture are adapted to be in optical communication, whereby in a first position, light may pass from the at least one light guide to the at least one viewing aperture, and in a second position, light is impeded from passing from the at least one light guide to the at least one viewing aperture.

16. A golf putter clubhead according to claim 1, further comprising a light source arranged to direct light through the at least one light guide to the given location.

17. A method of using a golf putter clubhead, comprising the steps of:

1. taking in hand a golf putter having a shaft and a clubhead connected to the shaft, the clubhead having a body with a viewing face and a sole and at least one light guide in the body, adapted to direct light through the body to a given location, and at least one viewing aperture provided and arranged to visualize reflected light from the given location;
2. grounding the clubhead when addressing a golf ball;

3. elevating the clubhead a predetermined distance from the ground;
4. visualizing reflected light through the viewing aperture; and
5. striking the ball.

18. A method according to claim **17**, further comprising the step of adjusting the position of the clubhead based on the orientation of the viewing aperture prior to the striking step.

19. A method according to claim **17**, wherein the visualizing step comprises visualizing reflected light passing from the given location, through the viewing aperture, to a second location.

20. A method according to claim **17**, wherein the predetermined distance is in the range of about 1 mm to about 10 mm.

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