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(54) **GOLF PUTTER HEAD**

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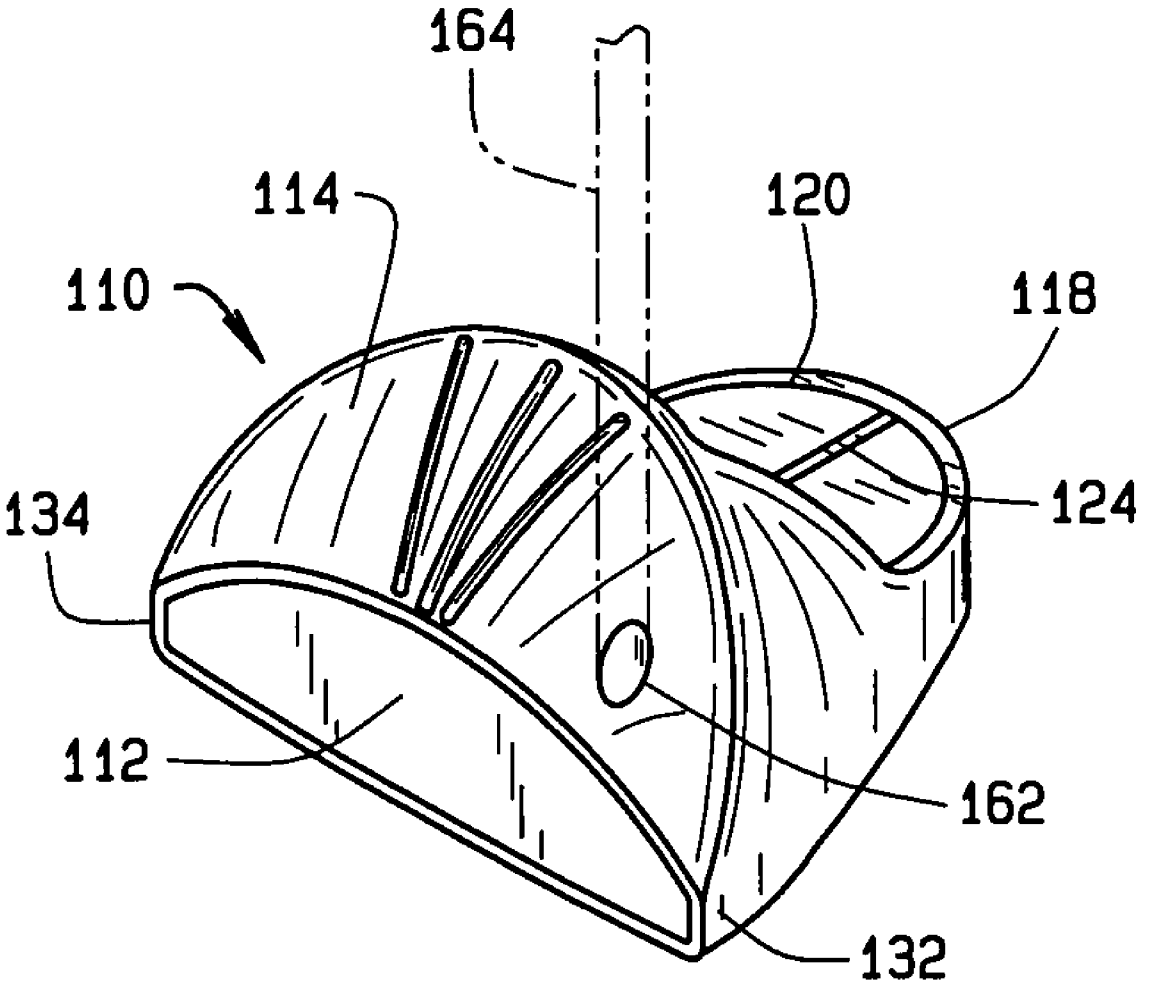
(57) **ABSTRACT**

A golf putter head that generally includes a striking surface and a reflective surface extending above the striking surface for reflecting an image of a golf ball, or at least a portion thereof, to a user when the striking surface is positioned adjacent the golf ball. The golf putter head further includes an alignment surface positioned behind the striking surface. The alignment surface includes at least one indicator for aligning the striking surface with the golf ball.



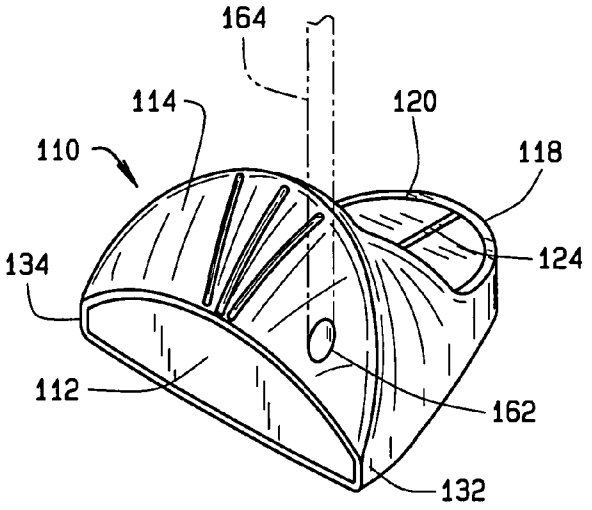


FIG. 1

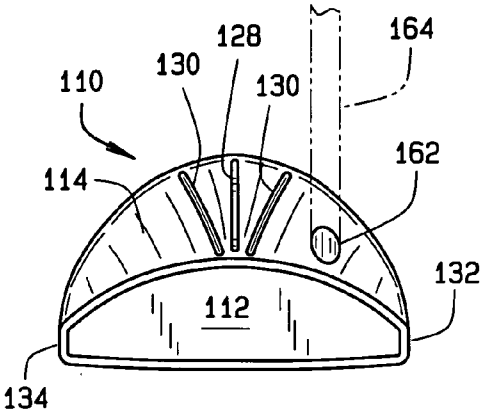


FIG. 2

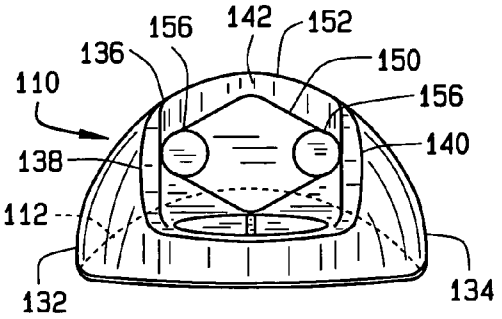


FIG. 3

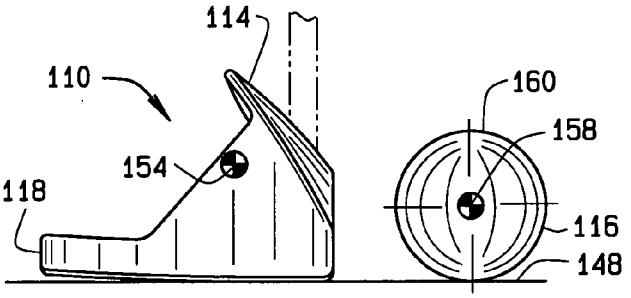


FIG. 4

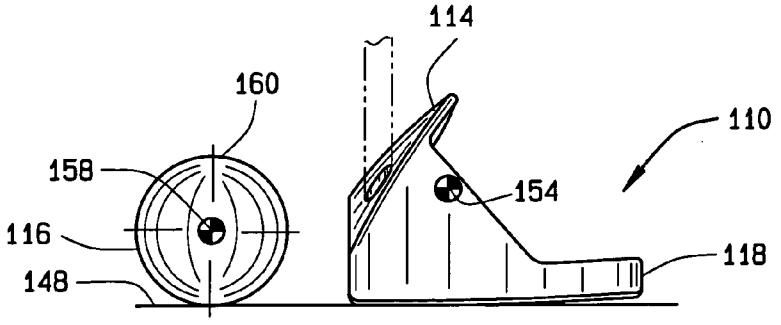


FIG. 5

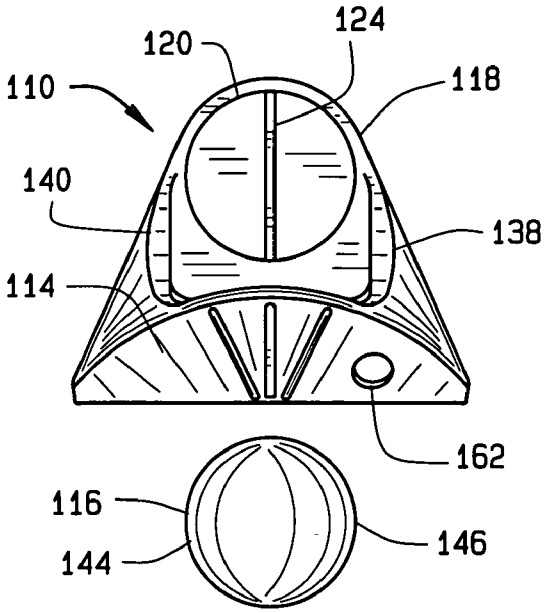


FIG. 6

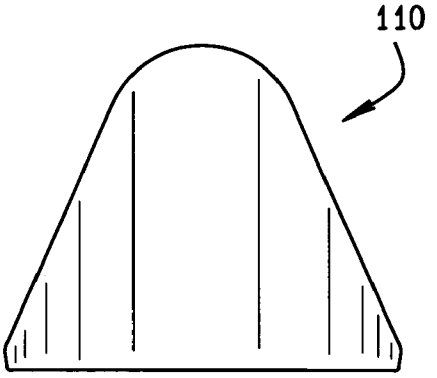


FIG. 7

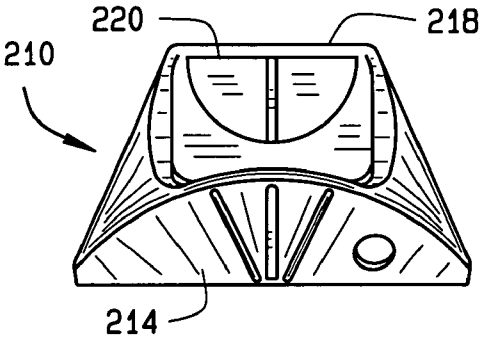


FIG. 8

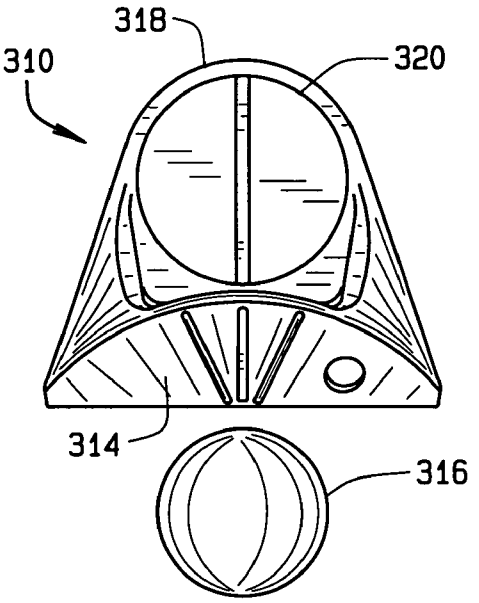


FIG. 9

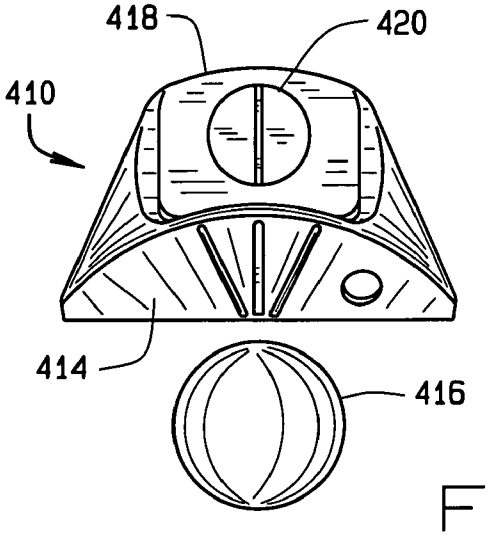


FIG. 10

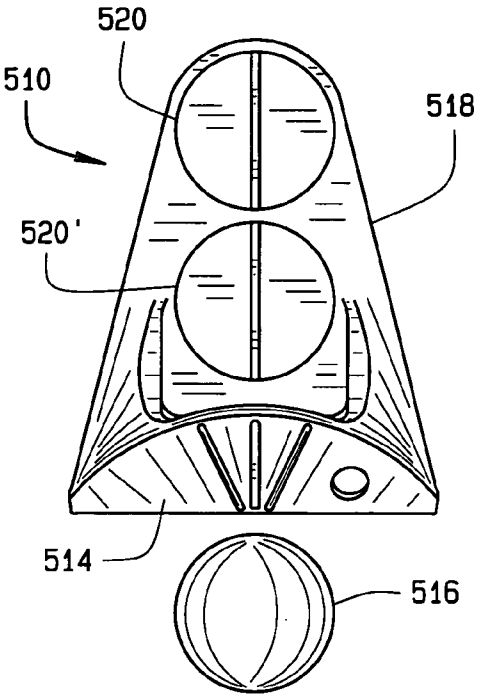


FIG. 11

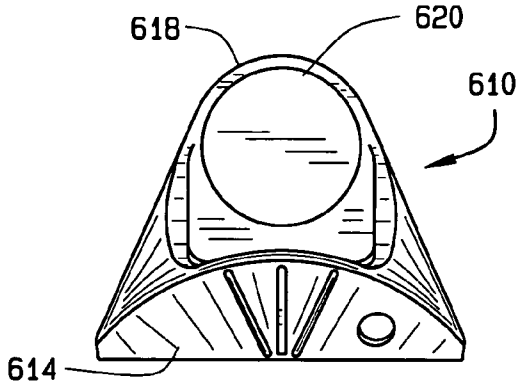


FIG. 12

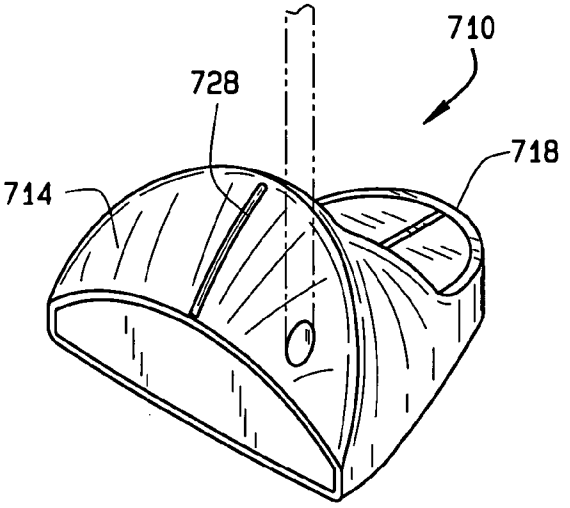


FIG. 13

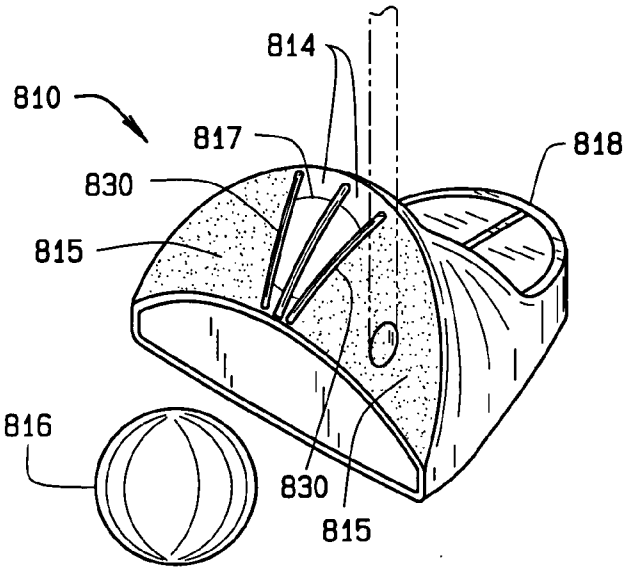


FIG. 14

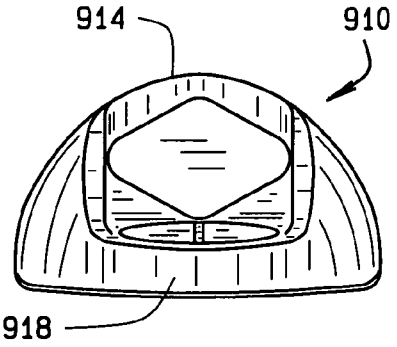


FIG. 15

GOLF PUTTER HEAD

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. (Attorney Docket Number 8572-00012/US), filed Jan. 12, 2004, titled "Golf Putter Head" of Timothy M. Green.

FIELD OF THE INVENTION

[0002] The present invention relates generally to golf equipment and more particularly to golf putter heads.

BACKGROUND OF THE INVENTION

[0003] Golf enthusiasts and equipment manufacturers have continually sought to improve golf clubs, including putters, for many years. These efforts have included the addition of structures to improve the play of the clubs and structures designed as teaching aids to assist in instruction and use of particular clubs. For example, elements have been developed to assist in teaching effective putting technique.

SUMMARY OF THE INVENTION

[0004] The present invention is directed to golf putter heads and methods of using the same. In one embodiment, the golf putter head generally includes a striking surface and a reflective surface extending above the striking surface for reflecting an image of a golf ball (or at least a portion thereof) to a user when the striking surface is positioned adjacent the golf ball. The golf putter head further includes an alignment surface positioned behind the striking surface. The alignment surface includes at least one indicator for aligning the striking surface with the golf ball.

[0005] In another embodiment, a golf putter head generally includes a striking surface, a surface extending above the striking surface, and an alignment surface positioned behind the striking surface. The golf putter head has a center of gravity positioned above a center of gravity of a golf ball when the striking surface is positioned adjacent the golf ball. A shaft hole positioned ahead of the center of gravity of the golf putter head.

[0006] In another embodiment, a putter head generally includes a first striking surface, a second surface extending above the first striking surface, and a third surface extending rearwardly behind the striking surface. The second and third surfaces have aligned indicators.

[0007] In another form, the invention provides methods of aligning a golf putter head with a golf ball. In one implementation, the method generally includes positioning a striking surface of the golf putter head relative to the golf ball such that the golf ball is aligned with an axis passing through a center of a reflected image of the golf ball (or at least a portion thereof) on a reflective surface extending above the striking surface and is aligned with an indicator defined by an alignment surface positioned behind the striking surface.

[0008] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating at least one exemplary embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present invention will be more fully understood from the detailed description and the accompanying drawings, wherein:

[0010] **FIG. 1** is a front perspective view of a golf putter head according to an embodiment of the present invention;

[0011] **FIG. 2** is a front elevation view of the golf putter head shown in **FIG. 1**;

[0012] **FIG. 3** is a rear elevation view of the golf putter head shown in **FIG. 1**;

[0013] **FIG. 4** is a left elevation view of the golf putter head shown in **FIG. 1**;

[0014] **FIG. 5** is a right elevation view of the golf putter head shown in **FIG. 1**;

[0015] **FIG. 6** is a top plan view of the golf putter head shown in **FIG. 1**;

[0016] **FIG. 7** is a bottom plan view of the golf putter head shown in **FIG. 1**;

[0017] **FIG. 8** is a top plan view of a golf putter head according to another embodiment of the invention;

[0018] **FIG. 9** is a top plan view of a golf putter head according to another embodiment of the invention;

[0019] **FIG. 10** is a top plan view of a golf putter head according to another embodiment of the invention;

[0020] **FIG. 11** is a top plan view of a golf putter head according to another embodiment of the invention.

[0021] **FIG. 12** is a top plan view of a golf putter head according to another embodiment of the invention;

[0022]

[0023] **FIG. 13** is a front perspective view of a golf putter head according to another embodiment of the invention;

[0024] **FIG. 14** is a front perspective view of a golf putter head according to another embodiment of the invention; and

[0025] **FIG. 15** is a rear elevation view of a golf putter head according to another embodiment of the invention.

[0026] Corresponding reference characters indicate corresponding features throughout the drawings.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0027] Referring to **FIGS. 1 through 7**, there is shown a golf putter head, generally indicated by reference number **110**, according to one embodiment of the present invention. The golf putter head **110** includes a striking surface **112** and a reflective surface **114** which extends above the striking surface **112**. The reflective surface **114** reflects an image of a golf ball **116** to a user when the striking surface **112** is positioned adjacent the golf ball **116**. The golf putter head **110** further includes an alignment surface **118** positioned behind the striking surface **112**. The alignment surface **118** includes an indicator **120**. As described in detail below, the reflective and alignment surfaces **114** and **118** can be used by

a golfer to statically and dynamically align the putter head **110** with the golf ball **116**. As used herein, the term "golf ball" shall be construed to include golf balls approved by the United States Golf Association (USGA) and golf balls approved by the Royal and Ancient Golf Club of St. Andrews.

[**0028**] In **FIG. 6**, the alignment surface **118** includes only one circular indicator **120**. The circular indicator **120** is sized such that its diameter is about equal, and preferably is equal, to the golf ball's diameter. In addition, the color of the indicator **120** can be white or other suitable color (e.g., yellow, pink, orange, etc.) so as to even further resemble a golf ball.

[**0029**] Alternatively, a wide range of other non-circular geometric shapes can be used for the indicator, including semicircular shapes, triangular shapes, rectangular shapes, etc. By way of example, **FIG. 8** illustrates an exemplary golf putter head **210** having an alignment surface **218** defining a semicircular indicator **220**. In addition, the size of the indicator can also vary.

[**0030**] In addition, the alignment surface may define any number of (i.e., one or more) indicators which can vary in size and have diameters larger, smaller, and/or about equal to a golf ball diameter. For example, **FIG. 9** illustrates an exemplary golf putter head **310** having a single circular indicator **320** with a diameter larger than the diameter of the golf ball **316**. **FIG. 10** illustrates an exemplary golf putter head **410** having a circular indicator **420** with a diameter smaller than the diameter of the golf ball **416**. **FIG. 11** illustrates an exemplary golf putter head **510** having two generally circular indicators **520** and **520'**, each of which are of similar size to the golf ball **516**.

[**0031**] In various embodiments, the alignment surface and indicators can have a monolithic construction and be integrally formed as a single component. Alternatively, the alignment surface and indicator may comprise separate components in which case the indicator can be attached to the alignment surface, for example, by welding, adhesives, and/or other suitable fastening methods.

[**0032**] As shown in **FIG. 6**, a guide line **124** is defined by the indicator **120**. The guide line **124** is aligned with a center of the striking surface **112**. The guide line **124** is generally perpendicular to the striking surface **112**.

[**0033**] In a preferred embodiment, the guide line **124** comprises a groove inscribed in the indicator **120**. The groove is preferably highlighted or colored (e.g., with paint, etc.) so as to increase the contrast between the guide line **124** and the surface of the indicator **120**, thus making the guide line **124** more readily visible.

[**0034**] Alternatively, the indicator and guide line can be separate components in which case the guide line can engaged to the indicator, for example, by welding, adhesive, and/or other suitable fastening methods. Still further embodiments include a golf putter head **610** which does not have a guide line defined by the indicator **620**, as shown in **FIG. 12**.

[**0035**] With reference to **FIGS. 1 through 6**, the reflective surface **114** reflects an image of a golf ball **116** to a user when the striking surface **112** is positioned adjacent the golf ball **116**. The reflective surface **114** is preferably muted so to render the putter head **110** in compliance with USGA rules. By way of example only, an exemplary embodiment includes a reflective surface **114** which has been roughened so as to mute the reflective properties of the surface **114**. In another embodiment, a coating can be applied to the reflective surface **114** with the coating decreasing the reflective nature of the surface **114**.

[**0036**] The reflective surface **114** includes a center guide line **128** positioned between two diverging guide lines **130**. The center guide line **128** is positioned relative to the indicator guide line **124** such that the two lines **124** and **128** appear as a single line to a golfer looking downward at the putter head **110** when the golfer's head is directly over the putter head **110**, which is generally regarded as the proper head position for putting.

[**0037**] In some embodiments, however, the reflective surface does not include a center guide line and/or diverging guide lines. For example, **FIG. 13** illustrates an exemplary golf putter head **710** in which the reflective surface **714** includes a center guide line **728** but not diverging guide lines.

[**0038**] Further, the entire surface extending above the striking surface **112** is reflective in **FIG. 1**. In other embodiments, however, such is not the case. For example, **FIG. 14** illustrates an exemplary golf putter head **810** in which the reflective surface **814** is disposed only between the diverging guide lines **830**. The reflective surface **814** reflects an image **817** of a portion of the golf ball **816**. The portion **815** outside the guide lines **830** is not reflective as represented by the speckles.

[**0039**] Referring now to **FIG. 3**, the golf putter head **110** further includes a heel portion **132**, a toe portion **134**, and a rear surface **136** positioned opposite (i.e., on a backside of) the striking surface **112** and the reflective surface **114**. The golf putter head **110** also includes a weighted perimeter portion **138** adjacent the heel portion **132** and a weighted perimeter portion **140** adjacent the toe portion **134**.

[**0040**] In the illustrated embodiment, the weighted perimeter portions **138** and **140** are defined by enhanced sidewall buttresses which function to distribute weight wider than the golf ball **116**. This, in turn, increases the effective contact area of the striking surface **112** with the golf ball **116**. In other words, the relatively extreme heel and toe weighting due to the weighted perimeter portions **138** and **140** extends or increases the "sweet spot" of the striking surface **112**. Accordingly, the weighted perimeter portions **138** and **140** thus allow the putter head **110** to be more forgiving and more effective at delivering a truer hit to the golf ball **116** when the point of contact between the golf ball **116** and the striking surface **112** does not coincide with the location of the center of mass of the putter head **110**.

[**0041**] The rear surface **136** also includes a weighted perimeter portion **142** which extends above the striking surface **112**, shown in phantom in **FIG. 3**. In the illustrated embodiment of **FIGS. 1 through 7**, the weighted perimeter portion **142** extends along both sides **144** and **146** of the golf ball **116** when the striking surface **112** is positioned adjacent the golf ball **116** on the putting surface **148**. The weighted perimeter portion **142** also extends substantially from the heel portion **132** to the toe portion **134**. The weighted perimeter **142** may also extend above and substantially

around an upper hemisphere of the golf ball **116** when the striking surface **112** is positioned adjacent the golf ball **116** sitting on the putting surface **148**.

[**0042**] As shown in **FIG. 3**, the rear surface **136** has at least one cavity or recessed portion **150** therein. A portion of the cavity **150** extends above the striking surface **112** so as to define the weighted perimeter portion **142** on the rear surface **136**. Stated differently, the recessed portion **150** defines at least one non-recessed portion **152**, which constitutes the weighted perimeter portion **142** of the rear surface **136**. In one embodiment, the cavity **150** is generally centered between the heel portion **132** and the toe portion **134** of the golf putter head **110**.

[**0043**] In **FIG. 3**, the rear surface **136** is shown having only one cavity **150**. It should be noted, however, that the rear surface **136** may be provided with any number of cavities, and these cavities can be shaped and positioned as necessary to locate the center of gravity **154** of the putter head **110** and provide the putter head **110** with a weighted distribution as desired. In addition, any of a wide range of geometric shapes may be used for the cavity **150**, such as circular shapes, triangular shapes, octagonal shapes, etc.. By way of example only, the cavity **150** in **FIG. 3** is substantially diamond-shaped, although other suitable shapes can be employed.

[**0044**] In the illustrated embodiment, the golf putter head **110** also includes weights **156** attached to the rear surface **136**. The weights **156** may have a density that is either higher, lower, or the same as the density of the rear surface **136** depending on the weight distribution that is desired for the putter head **110**. The weights **156** may be removably attached to the rear surface **136**. If removable, the weights **156** can be added and/or removed as desired even after the putter head **110** is manufactured. The weights **156** may also be positioned within a cavity (e.g., **150**) defined in the rear surface **136**. In the preferred embodiment, the golf putter head **110** includes two weights **156** each of which is positioned within the diamond-shaped cavity **150**. Alternatively, other embodiments do not include weighted inserts, such as the golf putter head **910** shown in **FIG. 15**.

[**0045**] Preferably, the weights **156** and weighted perimeter portions **138** and **140** distribute a substantial portion of the weight of the putter head **110** higher and wider than the golf ball **116** so as to better distribute the impact force between the striking surface **112** and the golf ball **116**. This, in turn, increases a golfer's opportunity at achieving a straighter and truer putt of the golf ball **116** with the putter head **110**.

[**0046**] Further, the various putter head features (e.g., the striking surface **112**, reflective surface **114**, alignment surface **118**, weighted perimeter portions **138**, **140142**, weights **156**, etc.) are designed (e.g., sized, positioned, material selections, etc.) to position the center of gravity **154** for the putter head **110** as desired horizontally and vertically. In the embodiment shown in **FIGS. 1 through 6**, the weighted perimeter portion **142** extends not only above the center of gravity **158** of the golf ball **116** but above the top edge **160** of the golf ball **116** as well when the golf ball **116** and putter head **110** are both resting on a generally horizontal or level putting surface **148**.

[**0047**] As best shown in **FIGS. 4 and 5**, the center of gravity **154** of the putter head **110** is located above the golf ball's center of gravity **158**. Indeed, various embodiments include a center of gravity **154** of the putter head **110** which is located above the top edge **160** of the golf ball **116** as well when the golf ball **116** and putter head **110** are both positioned on the putting surface **148**.

[**0048**] Positioning the putter head center of gravity **154** above the golf ball's center of gravity **158** enables the putter head **110** to more readily impart topspin and rolling to the golf ball **116** instead of causing the ball to skip and/or slide as is the case for putter heads which have a center of gravity lower than a center of gravity of a golf ball.

[**0049**] With further reference to **FIGS. 4 and 5**, the golf ball's center of gravity **158** is about 0.84 inches (2.13 centimeters) above the putting surface **148**, whereas the golf ball's top edge **160** is about 1.68 inches (4.27 centimeters) above the putting surface **148**. The center of gravity **154** of the putter head **110** is preferably located a distance equal to or greater than about 1.00 inch (2.54 centimeters) above a bottom surface of the putter head **110**. Stated differently, the center of gravity **154** of the putter head **110** is preferably located a distance equal to or greater than about 1.00 inch (2.54 centimeters) above a level putting surface **148** when the putter head **110** is resting on a level putting surface **148**. Accordingly, the center of gravity **154** of the putter head **110** is above the golf ball's center of gravity **158** when the putter head **110** and golf ball **116** are both resting on a level putting surface **148**.

[**0050**] In addition, the alignment surface **118** is preferably designed along with other putter head features (e.g., enhanced sidewall buttresses **138** and **140**, etc.) so as to move the putter head's center of gravity **154** further rearward from the striking surface **112**. In the exemplary embodiment shown in **FIGS. 4 and 5**, the rearward location of the center of gravity **154** is rearward of a shaft hole **162** and shaft **164** (shown in phantom). Still referring to the exemplary embodiment of **FIGS. 4 and 5**, the center of gravity **154** of the putter head **110** is preferably located behind the striking surface **112** a distance equal to or greater than about 1.00 inches (2.54 centimeters).

[**0051**] By having a more rearward center of gravity **154** which is above the golf ball's center of gravity **158**, the putter head **110** is able to impart a greater moment arm and thus greater roll distance, and more immediate rolling, to the golf ball **116** with less stroke power, e.g., with a softer and slower stroke. Because a slower and softer putting stroke is usually more easily controlled, the putter head **110** can improve a golfer's chances of maintaining a straight line during a putting stroke.

[**0052**] In various embodiments, the golf putter head can have a monolithic construction in which the golf putter head is integrally formed as a single component. Alternatively, the golf putter head may comprise two or more separate components that are secured to one another, for example, by welding, adhesives, and/or other suitable fastening methods.

[**0053**] For example, any one or more of the various golf putter heads **110** (**FIGS. 1 through 7**), **210** (**FIG. 8**), **310** (**FIG. 9**), **410** (**FIG. 10**), **510** (**FIG. 11**), **610** (**FIG. 12**), **710** (**FIG. 13**), **810** (**FIG. 14**), **910** (**FIG. 15**) can include monolithic reflective and alignment surfaces (e.g., **114** and **118**, **214** and **218**, **314** and **318**, **414** and **418**, **514** and **518**, **614** and **618**, **714** and **718**, **814** and **818**, and **914** and **918**).

[0054] By way of example only, the golf putter head **110** in **FIGS. 1 through 7** includes monolithic reflective and alignment surfaces **114** and **118** which are integrally formed as a single component. The striking surface **112** and/or weights **156**, however, can be separate components which are secured to the putter head **110**. In an exemplary embodiment, the striking surface **112** is defined by a front surface of an insert formed of a material different than the putter head body, and the weights **156** comprise inserts formed of a heavier and higher density material than the material from which the monolithic reflective and alignment surfaces **114** and **118** are formed.

[0055] The putter head **110** can be used as follows to statically align the putter head **110** with the golf ball **116**. At address, a golfer positions the striking surface **112** adjacent the golf ball **116** so as to align the golf ball **116** with an axis passing through a center of a reflected golf ball image on the reflective surface **114** and to align the golf ball **116** and to align the indicator guide line **124** with the golf ball diameter perpendicular to the striking surface **112**.

[0056] Further, the indicator's guide line **124** and reflective surface's center guide line **128** can be used to indicate when the golfer's head is positioned directly over the putter head **110**, which is generally regarded as the proper head position for putting. More specifically, the guide lines **124** and **128** will appear as a single line to the downwardly looking golfer when the golfer's head is directly over the putter head **110**.

[0057] Dynamic alignment of the putter head **110** with the golf ball **116** during a putting stroke can be maintained as follows. During the backswing, the reflected golf ball image visually travels up the reflective surface **114**. Conversely, the reflected golf ball image visually travels down the reflective surface **114** during the forward swing.

[0058] Ideally, the golfer keeps the moving image of the golf ball centered on the reflective surface **114**, and thus centered relative to the putter head **110**, during both the backswing and forward swing. To assist the golfer with this feat, the reflective surface **114** includes the guide lines **128** and **130**, as shown in **FIG. 6**. By keeping the moving reflected image of the golf ball **116** centered along the center guide line **128** and/or between the guide lines **130**, the golfer is able to keep the putter head **110** dynamically aligned with the golf ball **116**.

[0059] In addition, the indicator guide line **124** can further assist the golfer in maintaining the dynamic alignment of the putter head **110** and the golf ball **116** during the putting stroke. The golfer can maintain the alignment by keeping the indicator guide line **124** aligned with the axis passing through the center of the moving reflected image of the golf ball **116**.

[0060] The description of the invention is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses. Thus, variations that do not depart from the substance of the invention are intended to be within the scope of the invention. Such variations are not to be regarded as a departure from the spirit and scope of the invention.

What is claimed:

1. A golf putter head comprising a striking surface, a reflective surface extending above the striking surface for reflecting an image of at least a portion of a golf ball to a user when the striking surface is positioned adjacent the golf ball, and an alignment surface positioned behind the striking surface, the alignment surface including at least one indicator for aligning the striking surface with the golf ball.

2. The golf putter head of claim 1 wherein the indicator is circular.

3. The golf putter head of claim 2 wherein the indicator has a diameter about equal to a diameter of the golf ball.

4. The golf putter head of claim 2 wherein the indicator has a diameter larger than a diameter of the golf ball.

5. The golf putter head of claim 2 wherein the indicator has a diameter smaller than a diameter of the golf ball.

6. The golf putter head of claim 1 wherein the alignment surface includes only one circular indicator.

7. The golf putter head of claim 1 wherein the indicator defines a guide line aligned with a center of and generally perpendicular to the striking surface.

8. The golf putter head of claim 7 wherein the reflective surface defines at least one guide line aligned with the indicator's guide line.

9. The golf putter head of claim 1 wherein the golf putter head has a monolithic construction.

10. The golf putter head of claim 9 wherein the golf putter head includes monolithic reflective and alignment surfaces.

11. The golf putter head of claim 1 wherein the golf putter head includes a higher center of gravity than the golf ball.

12. The golf putter head of claim 11 wherein the golf putter head includes a heel portion, a toe portion, and weighted perimeter portions adjacent the heel and toe portions.

13. The golf putter head of claim 11 wherein the golf putter head includes a weighted perimeter portion extending at least partially above the striking surface.

14. The golf putter head of claim 11 wherein the golf putter head includes a heel portion, a toe portion, and removable weights adjacent the heel and toe portions.

15. A golf putter head comprising a striking surface, a surface extending above the striking surface, an alignment surface positioned behind the striking surface, and a center of gravity higher than a center of gravity of a golf ball, the center of gravity of the golf putter head being located a distance equal to or greater than one inch behind the striking surface.

16. The golf putter head of claim 15 wherein the alignment surface defines an indicator for aligning the striking surface with the golf ball.

17. The golf putter head of claim 15 wherein at least a portion of the surface extending above the striking surface is reflective for reflecting an image of at least a portion of the golf ball to a user.

18. The golf putter head of claim 15 wherein the center of gravity of the golf putter head is located a distance equal to or greater than one inch above a generally horizontal surface when the golf putter head is resting on the generally horizontal surface.

19. The golf putter head of claim 15 wherein the center of gravity of the golf putter head is located a distance equal to or greater than one inch above a bottom surface of the golf putter head.

20. A putter head comprising a striking surface and a center of gravity located a distance equal to or greater than one inch behind the striking surface and a distance equal to

or greater than one inch above a generally horizontal surface when the golf putter head is resting on the generally horizontal surface.

21. A putter head comprising a first striking surface, a second surface extending above the first striking surface, and a third surface extending rearwardly behind the striking surface, the second and third surfaces having aligned indicators.

22. A method of aligning a golf putter head with a golf ball, the golf putter head having a striking surface, a reflective surface extending above the striking surface, and an alignment surface positioned behind the striking surface, the method comprising positioning the striking surface relative to the golf ball such that the golf ball is aligned with an axis passing through a center of a reflected image of at least a portion of the golf ball on the reflective surface and with an indicator defined by the alignment surface.

23. The method of claim 22, further comprising keeping the reflected image centered on the reflective surface during a putting stroke.

24. The method of claim 22 wherein the positioning comprises positioning the golf putter head such that a guide line defined by the indicator is aligned with the golf ball's diameter perpendicular to the striking surface.

25. The method of claim 22 wherein the positioning comprises positioning the golf putter head such that a guide line defined by the reflective surface is aligned with a guide line defined by the indicator.

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