A putter head (100) which is effectively hollow or formed of a lightweight material includes weights (120, 122) positioned in the heel and toe ends of the putter head to provide an increased moment of inertia. A wide variety of embodiments and methods of making such putter heads range from the use of a generally U-shaped channel element (102) which receives weights in its ends (104, 106) with the channel element then being closed by a lightweight material preformed or molded in place to the use of a lightweight material having two weight receiving areas formed therein which areas are filled with appropriate weights to complete the putter head. The various embodiments not only provide an oversized blade putter head which is within desired weight limits and properly heel/toe weighted, but also the weights can be selectively positioned relative to the top and bottom or sole of the putter head as desired for tuning the feel of a given putter head. A variety of putter heads made in accordance with the invention are illustrated including a novel putter head having the shape of a chord of a circle and a mallet head putter.
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HEEL/TOE WEIGHTED GOLF PUTTERS AND METHODS OF MAKING HEEL/TOE WEIGHTED GOLF PUTTERS

The present invention relates in general to the design of golf putters and, more particularly, to improved golf putters having the appearance, for example, of blade type putters but also having heel/toe weighting which is preferred for improved moment of inertia in golf putters and methods of making such improved golf putters.

The most basic design of a golf club putter head is an essentially flat, plate-like structure commonly referred to as a blade putter to which a golf club shaft is secured. While blade putters are still commonly used and preferred by many golfers, a wide variety of alternate golf putter designs are now available and promise improved performance due to the alternate designs. For example, heel/toe weighting is now commonplace and is accomplished in a variety of ways. Heel/toe weighting provides an increased moment of inertia that causes the putter head to resist twisting whenever a golf ball is struck at a point on the putter face which is not within the sweet spot of the putter.

Such heel/toe weighting has resulted in a large variety of shapes for putter heads which shapes are, at least to some extent, dictated by the goal of moving as much of the putter head material as possible to the heels and toes of the putter heads. In addition, heel and toe weights of materials having a higher density than the remainder of the putter head have been used in putter heads. In U.S. Patent No. 4,999,000, a listing of higher density elemental materials is suggested as possible heel and toe weights; however, tungsten and lead appear to be the most popular.
In U.S. Patent No. 5,246,227, a light weight metallic body receives heavier weight metallic weights at locations corresponding to the toe and heel of a putter head to form a core. A relatively thin, nonmetallic shell is molded around the core to form a heel/toe weighted putter head.

For those who prefer the appearance of a blade putter, improved heel/toe weighting in a blade putter is illustrated in U.S. Patent No. 5,290,035 wherein two open, hollow chambers are formed near the center of an otherwise solid putter head to increase the portion of heel and toe mass relative to the center mass of the putter head.

In spite of numerous available putter head designs, there is still a need for a putter head design which provides an oversized putter head having a head weight within satisfactory weight limits and provides heel/toe weighting while satisfying golfers who prefer the appearance of a blade putter. Preferably, the putter head design would also provide oversizing and heel/toe weighting for other forms of putter heads in addition to blade putters.

This need is met by the invention of the present application wherein a putter head is effectively hollow or formed of a light weight material with weights being positioned in the heel and toe ends of the putter head to provide an increased moment of inertia. A wide variety of embodiments and methods of making such putter heads range from the use of a channel element, for example u-shaped, which receives weights in its ends with the channel element then being closed by a light weight material preformed or molded in place to the use of a light weight material having two weight receiving areas formed therein which areas are filled with
appropriate weights to complete the putter head. The various embodiments not only provide an oversized blade putter head which is within desired weight limits and properly heel/toe weighted, but also the weights can be selectively positioned relative to the top and bottom or sole of the putter head and/or relative to the front face and rear face of the putter head as desired for tuning the feel of a given putter head. In addition, the present invention provides for putter head designs other than blade putters, for example, one embodiment defines a mallet head putter.

In accordance with one aspect of the present invention, a putter head comprises a channel element having a base and sidewalls extending from either side of the base. The channel element further has first and second ends, an open trough defined by a first side of the base and the sidewalls and a closed surface defined by a second side of the base opposite the first side. A first weight is fitted within the first end of the channel element and a second weight is fitted within the second end of the channel element. A trough filling element closes the open trough of the channel element to complete the putter head. The channel element can be formed from a variety of materials; however, a metallic material, in particular, titanium, is currently preferred. The trough filling element can be preformed or molded in place within the channel element. While the putter head can take a variety of shapes, for several of the illustrated embodiments the open trough of the channel element or terminal ends of the sidewalls are generally arcuate and the closed surface of the channel element includes a shaft receiving opening therein. For other embodiments of the putter head, one of the sidewalls includes a shaft receiving opening therein. The first weight and second weights can be secured within the first and second ends of the channel.
element or, alternately, the trough filling element may be secured within the channel element to maintain the first and second weights within the channel element.

In accordance with another aspect of the present invention, a putter head comprises a first elongated member having a first end and a second end, a generally planar closed surface and a surface opposite said closed surface defining an open first weight receiving area within the first end and an open second weight receiving area within the second end. A first weight is received within the first weight receiving area and a second weight is received within the second weight receiving area. While the first and second weights may form the external surface of the putter head, the putter head may also further comprise a closure for closing the open first and second weight receiving areas. The closure may comprise a first closure element for the open first weight receiving area and a second closure element for the open second weight receiving area; a second elongated member closing both the open first and second weight receiving areas; or, a second elongated member closing both the open first and second weight receiving areas and defining a surface of the putter head opposite the generally planar closed surface.

In accordance with yet another aspect of the present invention, a putter head comprises a first weight and a second weight. A first elongated member having a first end and a second end defines a first weight receiving area within the first end and a second weight receiving area within the second end. A second elongated member having a first end and a second end defines a third weight receiving area within the first end and a fourth weight receiving area within the second end. The second elongated member is engaged with the first elongated member with the first and second weights
being received within the weight receiving areas of the first and second elongated members to define the putter head. The first and second elongated members may be formed of the same material or different materials.

In accordance with still another aspect of the present invention, a method of making a putter head comprises the steps of: forming a channel element having an open trough defined by a first side of a base and sidewalls extending from either side of the base and a closed surface defined by a second side of the base opposite the first side, the sidewalls extending between first and second ends of the channel element; fitting a first weight within the first end of the channel element; fitting a second weight within the second end of the channel element; and, closing the open trough of the channel element. The step of closing the open trough of the channel element may comprise securing a trough filling element in the channel element or the step of molding a trough filling element within the channel element. The method may further comprise forming the sidewalls of the channel element to have generally arcuate terminal edges and the steps of securing the first weight within the first end of the channel element, and securing the second weight within the second end of the channel element. A shaft receiving opening may be formed within the closed surface of the channel element or one of the sidewalls for receiving a golf club shaft.

In accordance with a further aspect of the present invention, a method of making a putter head comprises the steps of: providing a first elongated member having a first end and a second end, a generally planar closed surface and a surface opposite said closed surface defining an open first weight receiving area within the first end and an open second weight receiving area
within the second end; securing a first weight within the first weight receiving area; and, securing a second weight within the second weight receiving area. The method may further comprise closing the open first and second weight receiving areas by placing a first closure element within the open first weight receiving area, and placing a second closure element within the open second weight receiving area. Alternately, the step of closing the open first and second weight receiving areas may comprise engaging a second elongated member with the first elongated member to close both the open first and second weight receiving areas. It is also possible to close the open first and second weight receiving areas by engaging a second elongated member with the first elongated member to close both the open first and second weight receiving areas and to define a surface of the putter head opposite the closed surface.

It is, thus, an object of the present invention to provide improved golf putters and methods of making those putters to be oversized, have head weights within satisfactory weight limits and also have heel/toe weighting and having the appearance of putters which do not provide such advantages such as blade type putters and mallet type putters.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In order that the invention may be more readily understood, reference will now be made to the accompanying drawings, in which:

Fig. 1 is a perspective view of a golf putter head of and made in accordance with the present invention;
Fig. 2 is a perspective exploded view of a first embodiment for the golf putter head of Fig. 1;

Figs. 3 and 4 are side and bottom views, respectively, of a second embodiment for the golf putter head of Fig. 1;

Figs. 5 and 6 are side and bottom views, respectively, of a third embodiment for the golf putter head of Fig. 1;

Figs. 7 and 8 are side and bottom views, respectively of a fourth embodiment for the golf putter head of Fig. 1;

Figs. 9-13 illustrate a fifth embodiment for the golf putter head of Fig. 1 made up of first and second elongated members with Figs. 9 and 10 being side and end views of the first elongated member, Figs. 11 and 12 being side and end views of the second elongated member, and Fig. 13 being a bottom view; and

Figs. 14 and 15 are perspective views of additional embodiments of golf putter heads of and made in accordance with the present invention wherein the putter heads have been rotated 90° from the embodiments of Figs. 1-13.

DETAILED DESCRIPTION OF THE INVENTION

A golf putter head 100 in accordance with the invention of the present application will now be described with reference to the drawing figures wherein Fig. 1 illustrates, in perspective view, the external appearance of the putter head 100. The putter head 100 appears as a novel design of an oversized blade putter; however, as will be apparent from the embodiments
illustrated in the remaining drawing figures, the putter head 100 is heel/toe weighted to provide an increased moment of inertia that causes the putter head 100 to resist twisting whenever a golf ball is struck off the sweet spot of the putter head 100. The description of the embodiments of Figs. 2-8 will clarify the heel/toe weighting of the putter head 100.

In Fig. 2 a first embodiment of the putter head 100 is illustrated in an explode perspective view. As should be apparent, the putter head 100 is shown upside down to better illustrate its construction. In particular, the putter head 100 comprises a channel element 102 having a first end 104 and a second end 106. The channel element 102 includes a base 108 and sidewalls 110, 112 extending from either side of the base 108, an open trough 114, defined by a first side 108A of the base 108 and the sidewalls 110, 112 and a closed surface 108B defined by a second side of the base 108 opposite the first side 108A.

The channel element 102 can be made from a variety of metallic and nonmetallic materials including, for example, titanium, stainless steel, brass, a variety of plastic materials, graphite, composite materials including inorganic fibers such as glass as well as others, with titanium currently being preferred. The open trough 114 of the channel element 102 is generally arcuate in accordance with the generally arcuate formation of the terminal edges 110T, 112T of the sidewalls 110, 112. The closed surface 108B of the channel element 102 includes an opening 116 for receiving a golf club shaft 117 therein and an aiming or alignment groove 118, see Fig. 2. As will be apparent, an opening for receiving a golf club shaft may alternately be formed in one of the sidewalls 110, 112. While the channel element 102 is illustrated as being
generally u-shaped in cross section, it should be apparent that it can have other shapes.

A first weight 120 is fitted within the first end 104 of the channel element 102 and a second weight 122 is fitted within the second end 106 of the channel element 102. It is currently preferred to use lead for the first and second weights 120, 122; however, other materials can be used. A channel or trough filling element 124 closes the open trough 114 or the channel element 102 to complete the putter head 100. In Fig. 1, the trough filling element 124 is illustrated as a separate preformed element which is fitted into the open trough 114 of the channel element 102 and then forms the bottom surface of the putter head 100. The trough filling element can also be machined or otherwise processed to an appropriate finish as desired for the final appearance of the bottom surface of the putter head 100. Alternately, the trough filling element 124 can be molded in place by depositing and curing or otherwise solidifying a plastic material into the open trough 114 of the channel element 102.

A light weight positioning element 126, shown in dotted lines in Fig. 1, can be placed into the open trough 114 of the channel element 102 to position the weights 120, 122 and facilitate assembly. The weight positioning element 126 can be made of styrofoam or other light weight material which is appropriate in view of the assembly process. For example, the weight positioning element 126 should be constructed of a material which is not effected by the molding material if the trough filling element 124 is molded in place.

It is currently preferred to secure the first and second weights 120, 122 in place in the channel element 102, for example by an appropriate adhesive, such that
the weight separating or positioning element 126, if used, would be used to improve the feel or sound of the putter head 100 as it strikes a ball. It is noted that securement of the weights 120, 122, such as by adhesive, is particularly important if the trough filling element 124 is molded in place since otherwise the weights 120, 122 may "float" or change their positions during the formation of the trough filling element 124.

Figs. 3 and 4 illustrate a second embodiment for the golf putter head 100 of Fig. 1. In the embodiment of Figs. 3 and 4, an elongated member 128 has a first end 130 and a second end 132, a generally planar closed surface 134 and a surface 136 opposite the closed surface 134 defining an open first weight receiving area 138 within the first end 130 and an open second weight receiving area 140 within the second end 132. The elongated member 128 is formed of a light weight material such as graphite, an appropriate plastic or a composite material.

A first weight 142 is positioned within the first weight receiving area 138 and secured therein and a second weight 144 is positioned within the second weight receiving area 140 and secured therein. The weights 142, 144 can be prefinished to form arcuate surfaces 146, 148, respectively, which form part of the external surface of the putter head 100 once the weights 142, 144 are secured in place, for example by an appropriate adhesive, to complete the putter head 100. Alternately, the weights 142, 144 can be machined or otherwise finished in accordance with the desired appearance of the sole of the putter head 100. A bore, not shown, is formed into the generally planar closed surface 134 of the elongated member 128 for receiving a golf club shaft, not shown.
A third embodiment for the golf putter head 100 of Fig. 1 is illustrated in Figs. 5 and 6. An elongated member 150 has a first end 152 and a second end 154, a generally planar closed surface 156 and a surface 158 opposite the closed surface 156 defining an open first weight receiving area 160 within the first end 150 and an open second weight receiving area 162 within the second end 154. The elongated member 150 is formed of a light weight material such as graphite, an appropriate plastic or a composite material.

A first weight 164 is positioned within the first weight receiving area 160 and secured therein and a second weight 166 is positioned within the second weight receiving area 162 and secured therein. In this embodiment, the weights 164, 166 do not occupy substantially the entirety of the first and second weight receiving areas 160, 162 but, once installed in the elongated member 150, are recessed below the surface 158 of the elongated member 150.

For this embodiment, a closure is needed for closing the open first and second weight receiving areas 160, 162 and the closure may comprise a first closure element 168 for the first weight receiving area 160 and a second closure element 170 for the second weight receiving area 162. The first and second closure elements 168, 170 can be formed of the same material as the elongated member 150 and secured therein to substantially disappear presenting a continuous surface 158. Alternately, the first and second closure elements 168, 170 can be formed of a material different than that of the elongated member 150, or at least different in color, and finished to present ornamental patches on the surface 158.
Alternately, the closure can comprise an elongated member closing both the open first and second weight receiving areas 160, 162 as is suggested by the dash-dot line 172 which could also define at least a portion of the surface 158 of the elongated member 150 which becomes the golf putter head 100. A bore, not shown, is formed into the generally planar surface 156 of the elongated member 150 for receiving a golf club shaft.

A fourth embodiment for the golf putter head 100 of Fig. 1 is illustrated in Figs. 7 and 8. A first elongated member 174 has a first end 176 and a second end 178, a generally planar closed surface 180 and a surface 182 opposite the closed surface 180 defining a shallow channel 183 and an open first weight receiving area 184 within the first end 176 and an open second weight receiving area 186 within the second end 178. The first elongated member 174 is formed of a light weight material such as graphite, an appropriate plastic or a composite material.

A first weight 188 is positioned within the first weight receiving area 184 and a second weight 190 is positioned within the second weight receiving area 186. In this embodiment, the weights 188, 190 do not occupy substantially the entirety of the first and second weight receiving areas 184, 186. Once installed in the first elongated member 174, the weights 188, 190 are recessed below the surface 182 of the elongated member 174 but in substantial alignment with the bottom of the channel 183.

For this embodiment, a closure is needed for closing the channel 183 and the open first and second weight receiving areas 184, 186. The closure comprises a second elongated member 192 which closes both the first and second weight receiving areas 184, 186 and
defines the surface of the putter head 100 opposite the generally planar closed surface 180. The second elongated member 192 can be formed of the same material as the first elongated member 174 and secured thereto to substantially disappear presenting a continuous surface for the surface 182. Alternately, the second elongated member 192 can be formed of a material different than that of the first elongated member 174, or at least different in color, and finished to present an ornamental appearance for the surface 182. The surface 182 may be the sole of the putter 100 of Figs. 7 and 8 depending upon the placement of a golf club shaft receiving opening in either the surface 180 or in one of the sidewalls of the putter head 100.

A fifth embodiment for the golf putter head 100 of Fig. 1 is illustrated in Figs. 9-13. Figs. 9 and 10 are side and end views, respectively, of a first elongated member 194 having a first end 196 and a second end 198. The first elongated member defines a first weight receiving area 200 within the first end 196 and a second weight receiving area 202 within the second end 198. As illustrated, the first and second weight receiving areas 200, 202 are generally rectangular pockets which engage the tops of first and second weights 204, 206, respectively, shown in Figs. 11 and 12.

Figs. 11 and 12 are side and end views, respectively, of a second elongated member 208 having a first end 210 and a second end 212. The second elongated member 208 defines a third weight receiving area 214 within the first end 210 and a fourth weight receiving area 216 within the second end. The golf putter head 100 is formed by engaging the second elongated member 208 with the first elongated member 194 with the first weight 204 being received within the weight receiving areas 200, 214 and the second weight
206 being received within the weight receiving areas 202, 216 of the first and second elongated members 194, 208.

The first and second elongated members 194, 208 are formed from one of a number of light weight materials such as graphite, an appropriate plastic or a composite material. The first and second elongated members 194, 208 can be formed from the same material such that when they are secured together to form the golf putter head 100 they substantially merge to form a substantially continuous surface for the resulting golf putter head 100. Alternately, the first and second elongated members 194, 208 can be formed of different materials, or at least different in color, and finished to present an appropriate texture and appearance for an ornamental portion of the golf putter head 100.

The present invention results in an oversized blade putter having an increased moment of inertia yet being of a desirable weight well within putter weight requirements. A presently preferred weight for a golf putter head of the present invention having a length around 150 mm, being around 25 mm at its midpoint where the ball is preferably struck and varying in width from around 17 to 21 mm is approximately 330 grams. It should also be apparent that the weights can be selectively positioned in relation to the surfaces of the putter head 100 to attain a desired top to sole or front face to back face weight distribution for a desired feel for the putter head 100. Top to sole or front face to back face weight distribution can be accomplished by weight design, weight positioning or a combination of the two as should be apparent.

To this point, the invention of the present application has been described with reference to a
currently preferred novel design having a generally planar surface, an arcuate surface opposite the generally planar surface and sidewalls which taper generally outward from the planar surface to the arcuate surface. However, it should be apparent that the invention can be applied to golf putter heads having other shapes and forms including, for example, rectangular and parallelepiped shapes with other shapes being apparent in view of the above description.

Further, the above description will suggest other one-part and two-part structures which can be used to embody the invention of the present application. For example, a first elongated member could be formed to define an upper top surface and include weight receiving areas with a second elongated member being formed to define a bottom surface, complementary weight receiving areas and sidewalls for the putter head.

In addition, while openings are normally formed in the top surfaces of the putter heads as illustrated in Figs. 1-13 to receive golf club shafts, it is also possible to form openings in one of the sidewalls of the putter heads of Figs. 1-13 such that the sidewalls become the tops and bottoms of the putter heads. It is also possible to provide hosels on the putter heads for connecting golf club shafts to the putter heads. These alternate constructions should be apparent; however, for sake of clarity, the use of openings in the sidewalls of the putter heads will now be described with reference to Figs. 14 and 15 wherein structures substantially the same as the golf putter heads of Figs. 1-13 have been turned on their side, i.e., turned 90°, are illustrated.

In Figs. 14 and 15, golf club heads 100A, 100B have been illustrated as having the structure of the golf club head 100 of Figs. 1 and 2. Accordingly, the putter heads 100A, 100B comprise channel elements 102A, 102B
having first ends 104A, 104B and second ends 106A, 106B and sidewalls 110A, 112A, 110B, 112B. First and second weights, not shown, are fitted within the first and second ends, respectively, of the channel elements 102A, 102B and trough filling elements 124A, 124B close the channel elements 102A, 102B to complete the putter heads 100A, 100B. The sidewalls 110A, 110B of the channel elements 102A, 102B include openings 116A, 116B for receiving golf club shafts 117A, 117B therein and aiming or alignment grooves 118A, 118B.

The remainder of the structural of the golf putter heads 100A, 100B are the same as that described above relative to Figs. 1 and 2 which should be referred to for more detailed structural details of the putter heads 100A, 100B. It is also noted that the remaining embodiments of the putter head 100 illustrated in Figs. 2-13 and described above can be constructed for use in positions rotated by 90° from that of the drawing figures such that they would be similar to the golf club putters 100A and 100B of Figs. 14 and 15. A mallet head putter construction as illustrated by the dotted line structure 220 in Fig. 14 is also contemplated for the present invention in addition to other forms as suggested above and as will be suggested to those skilled in the art from the above description.

Having thus described the invention of the present application in detail and by reference to preferred embodiments thereof, it will be apparent that the noted modifications and variations as well as others suggested by the description of the invention are possible without departing from the scope of the invention as defined in the appended claims.
CLAIMS

1. A putter head (100, 100A, 100B) comprising:
   a channel element (102, 102A, 102B) having a base (108) and sidewalls (110, 110A, 110B, 112, 112A, 112B)
   extending from either side of said base, said channel element further having first and second ends (104, 104A, 104B, 106, 106A, 106B), an open trough (114) defined by a first side (108A) of said base and said sidewalls and a closed surface (108B) defined by a second side of said base opposite said first side;
   a first weight (120) fitted within said first end (104) of said channel element (102);
   a second weight (122) fitted within said second end (106) of said channel element (102); and
   a trough filling element (124) for closing said open trough (114) of said channel element (102).

2. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said channel element (102) is formed of a metallic material.

3. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said trough filling element (124) is molded in place within said trough (114) of said channel element (102).

4. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said sidewalls (110, 112) of said channel element (102) have generally arcuate terminal edges (110T, 112T).

5. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said closed surface (108B) of said channel element (102) includes a shaft receiving opening (116) therein.
6. A putter head (100, 100A, 100B) as claimed in claim 1 wherein one (110A, 110B) of said sidewalls (110, 110A, 110B, 112, 112A, 112B) of said channel element (102) includes a shaft receiving opening (116A, 116B) therein.

7. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said first weight (120) is secured within said first end (104) of said channel element (102) and said second weight (122) is secured within said second end (106) of said channel element (102).

8. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said trough filling element (124) is secured within said channel element (102) to maintain said first and second weights (120, 122) within said channel element (102).

9. A putter head (100, 100A, 100B) as claimed in claim 1 wherein said channel element (102, 102A, 102B) is generally u-shaped.

10. A putter head (100) comprising:
    a first elongated member (128, 150, 174, 194)
    having a first end (130, 152, 176, 196) and a second end (132, 154, 178, 198), a generally planar closed surface (134, 156, 180) and a surface (136, 158, 182) opposite said closed surface defining an open first weight receiving area (138, 160, 184, 200) within said first end and an open second weight receiving area (140, 162, 186, 202) within said second end;
    a first weight (146, 164, 188, 204) within said first weight receiving area (138, 160, 184, 200); and
    a second weight (148, 166, 190, 206) within said second weight receiving area (140, 162, 186, 202).
11. A putter head (100) as claimed in claim 10 further comprising a closure (168, 170, 172, 192, 208) for closing said open first and second weight receiving areas (138, 160, 184, 200, 140, 162, 186, 202).

12. A putter head (100) as claimed in claim 10 wherein said closure (168, 170, 172, 192, 208) comprises a first closure element (168) for said open first weight receiving area (160) and a second closure element (170) for said open second weight receiving area (162).

13. A putter head (100) as claimed in claim 10 wherein said closure (168, 170, 172, 192, 208) comprises a second elongated member (172, 192, 208) closing both said open first and second weight receiving areas (160, 162, 184, 186, 200, 202).

14. A putter head (100) as claimed in claim 10 wherein said closure (168, 170, 172, 192, 208) comprises a second elongated member (192, 208) closing both said open first and second weight receiving areas (184, 186, 200, 202) and defining a surface of said putter head opposite said generally planar closed surface.

15. A putter head (100) comprising:
   a first weight (204);
   a second weight (206);
   a first elongated member (194) having a first end (196) and a second end (198), said first elongated member defining a first weight receiving area (200) within said first end and a second weight receiving area (202) within said second end; and
   a second elongated member (208) having a first end (210) and a second end (212), said second elongated member defining a third weight receiving area (214) within said first end and a fourth weight receiving area (216) within said second end, said second elongated
member (208) being engaged with said first elongated member (194) with said first and second weights (204, 206) being received within said weight receiving areas (200, 202, 214, 216) of said first and second elongated members (194, 208) to define said putter head (100).

16. A putter head (100) as claimed in claim 15 wherein said first and second elongated members (194, 208) are formed of different materials.

17. A method of making a putter head (100, 100a, 100b) comprising the steps of:
   forming a channel element (102, 102A, 102B) having an open trough (114) defined by a first side (108A) of a base (108) and sidewalls (110, 110A, 110B, 112, 112A, 112B) extending from either side of said base (108) and a closed surface (108B) defined by a second side of said base opposite said first side, said sidewalls extending between first and second ends (104, 104A, 104B, 106, 106A, 106B) of said channel element;
   fitting a first weight (120) within said first end (104) of said channel element (102);
   fitting a second weight (122) within said second end (106) of said channel element (102); and
   closing said open trough (114) of said channel element (102).

18. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 wherein said step of closing said open trough (114) of said channel element (102) comprises the step of securing a trough filling element (124) within said channel element (102).
19. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 wherein said step of closing said open trough (114) of said channel element (102) comprises the step of molding a trough filling element (124) within said channel element (102).

20. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 further comprising the step of forming said sidewalls (110, 112) of said channel element (102) to have generally arcuate terminal edges (110T, 112T).

21. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 further comprising the steps of:
   securing said first weight (120) within said first end (104) of said channel element (102); and
   securing said second weight (122) within said second end (106) of said channel element (102).

22. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 further comprising the step of forming a shaft receiving opening (116) within said closed surface (108B) of said channel element (102).

23. A method of making a putter head (100, 100a, 100b) as claimed in claim 17 further comprising the step of forming a shaft receiving opening (116A, 116B) within one of said sidewalls (110, 110A, 110B, 112, 112A, 112B) of said channel element (102).

24. A method of making a putter head (100) comprising the steps of:
   providing a first elongated member (128, 150, 174, 194) having a first end (130, 152, 176, 196) and a second end (132, 154, 178, 198), a generally planar closed surface (134, 156, 180) and a surface (136, 158, 182) opposite said closed surface defining an open first
weight receiving area (138, 160, 184, 200) within said first end and an open second weight receiving area (140, 162, 186, 202) within said second end;

5 securing a first weight (146, 164, 188, 204) within said first weight receiving area (138, 160, 184, 200); and

securing a second weight (148, 166, 190, 206) within said second weight receiving area (140, 162, 186, 202).

25. A method of making a putter head (100) as claimed in claim 24 further comprising the step of closing said open first and second weight receiving areas (138, 160, 184, 200, 140, 162, 186, 202).

26. A method of making a putter head (100) as claimed in claim 24 wherein said step of closing said open first and second weight receiving areas (138, 160, 184, 200, 140, 162, 186, 202) comprises the steps of:

placing a first closure element (168) within said open first weight receiving area (160); and

placing a second closure element (170) within said open second weight receiving area (162).

27. A method of making a putter head (100) as claimed in claim 24 wherein said step of closing said open first and second weight receiving areas (138, 160, 184, 200, 140, 162, 186, 202) comprises the step of engaging a second elongated member (172, 192, 208) with said first elongated member (128, 150, 174, 194) to close both said open first and second weight receiving areas (138, 160, 184, 200, 140, 162, 186, 202).
28. A method of making a putter head (100) as claimed in claim 24 wherein said step of closing said open first and second weight receiving areas (184, 186, 200, 202) comprises the step of engaging a second elongated member (192, 208) with said first elongated member (174, 194) to close both said open first and second weight receiving areas (184, 186, 200, 202) and to define a surface of said putter head opposite said closed surface.
### INTERNATIONAL SEARCH REPORT

#### A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A63B53/04

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search  
4 November 1997

Date of mailing of the international search report  
21/11/1997

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