



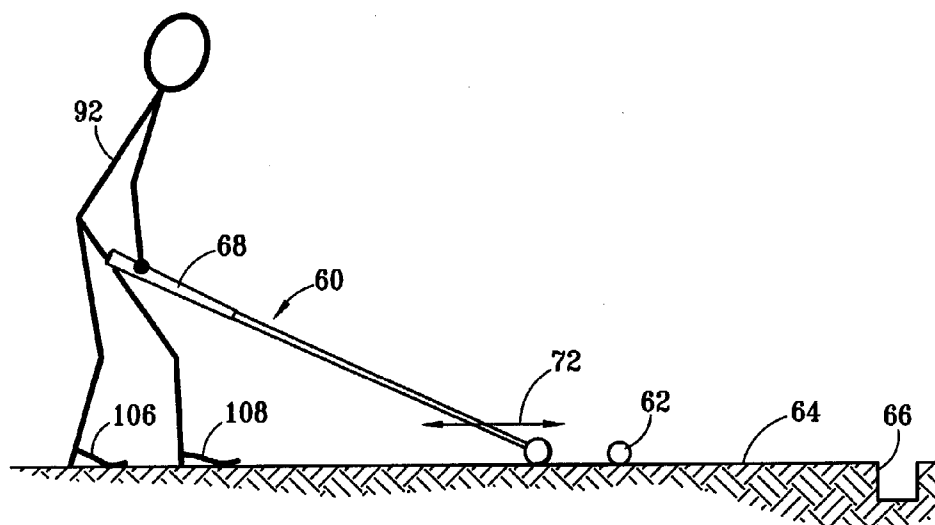
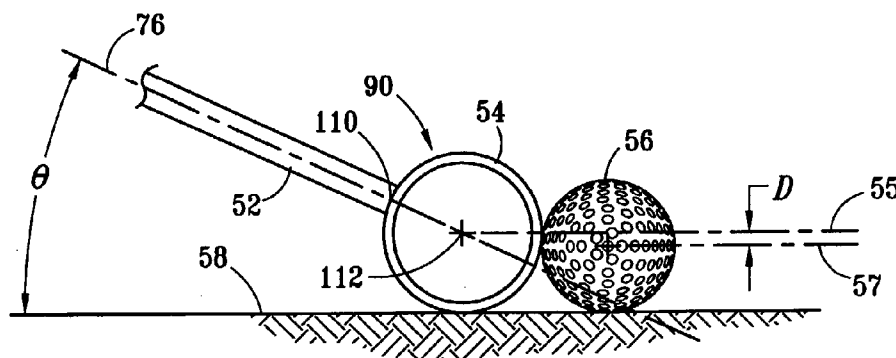
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(19) **United States**(12) **Patent Application Publication****Cosmo**(10) **Pub. No.: US 2004/0147336 A1**(43) **Pub. Date: Jul. 29, 2004**(54) **GROUND CONTACT PUTTER**(52) **U.S. Cl. 473/293**(76) **Inventor: Mary Anne Cosmo, Garland, TX (US)**(57) **ABSTRACT**

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Monty L. Ross**Locke Liddell & Sapp LLP****2200 Ross Avenue, Suite 2200****Dallas, TX 75201-6776 (US)**(21) **Appl. No.: 10/350,447**(22) **Filed: Jan. 24, 2003****Publication Classification**(51) **Int. Cl.⁷ A63B 69/36**

A ground-contact putter and method of use are disclosed wherein a substantially cylindrical putter head is rested on the putting surface and pushed by the putter shaft forwardly across the putting surface to strike a golf ball toward a cup. The putter head is oriented so that the longitudinal axis through the putter head is perpendicular to the ball-strike direction. The putter handle is preferably attached to the putter head at a rearward angle of at least about 10 degrees from perpendicular to the central longitudinal axis through the putter head. The putter head can optionally comprise a core, ground-contact surface and ball-strike surface made of different materials.



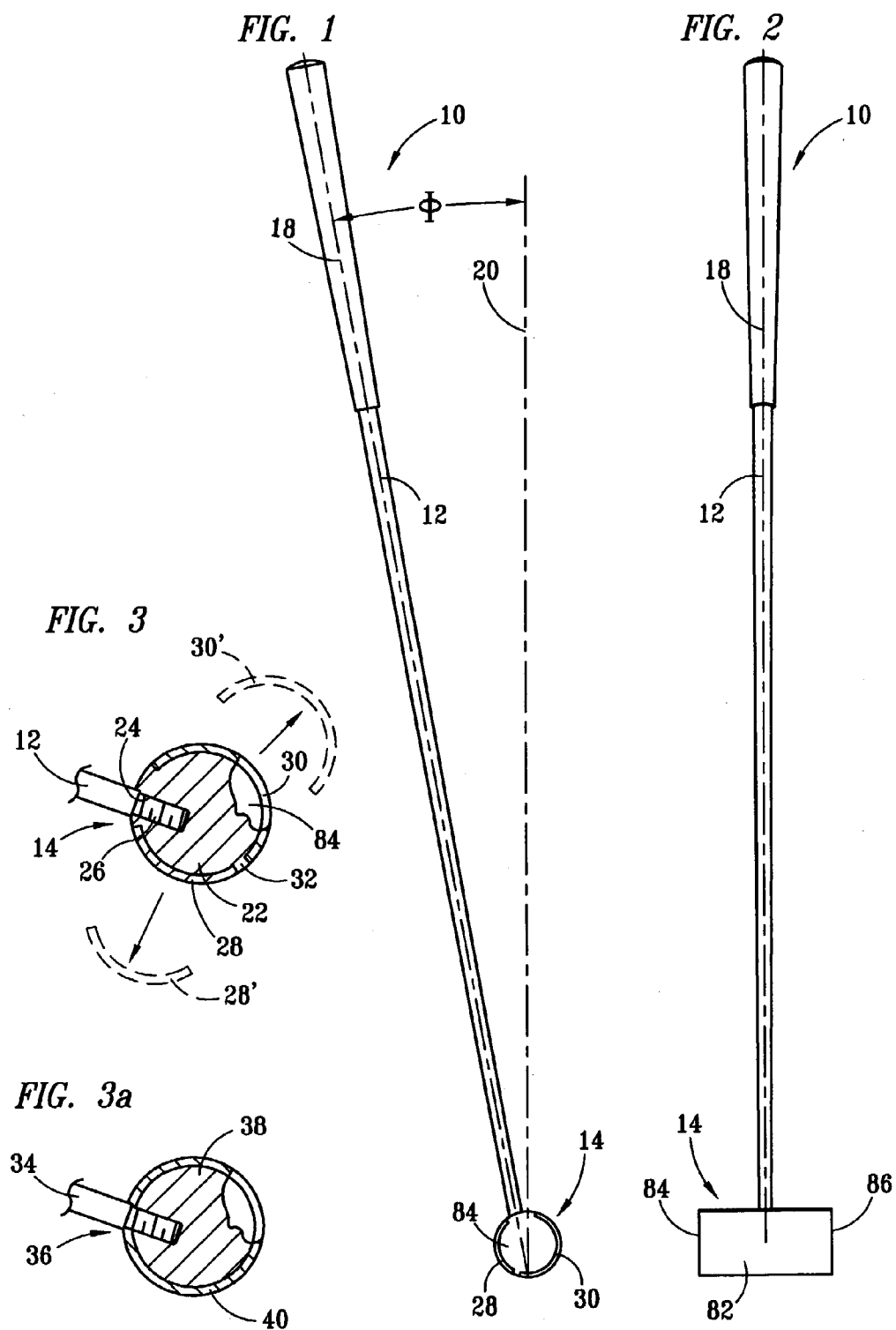


FIG. 4

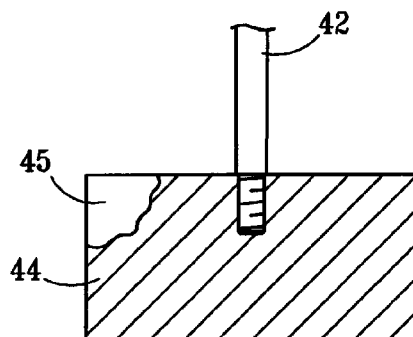


FIG. 4a

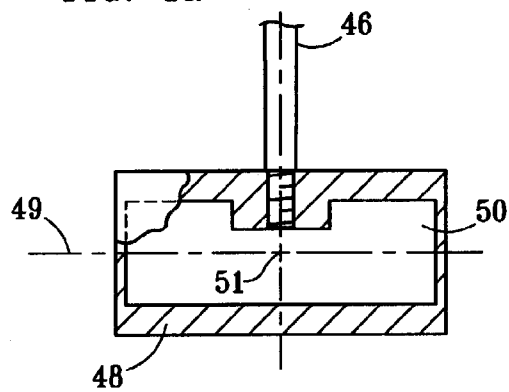


FIG. 5

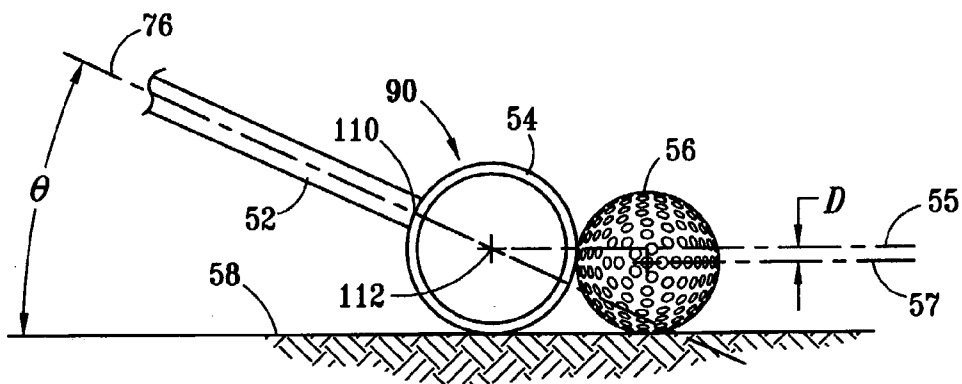


FIG. 5a

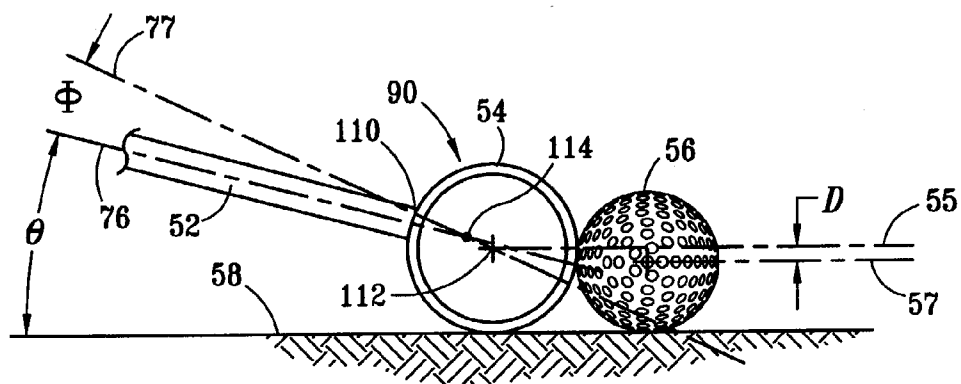
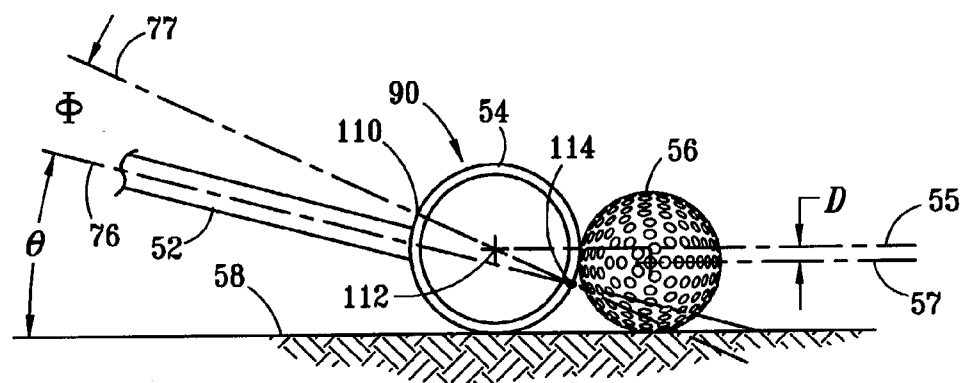


FIG. 5b



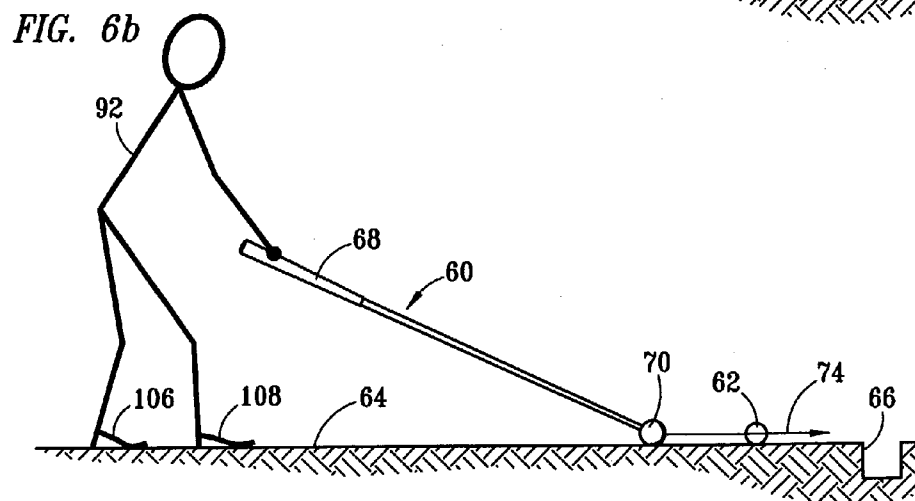
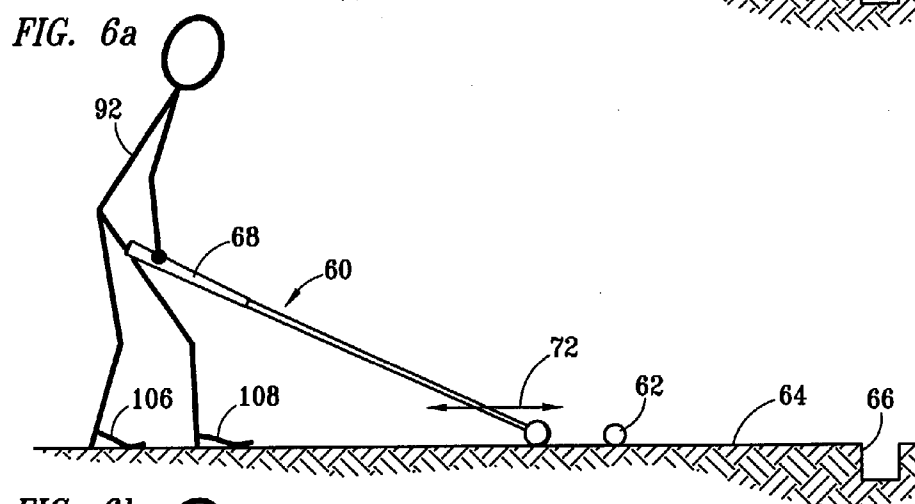
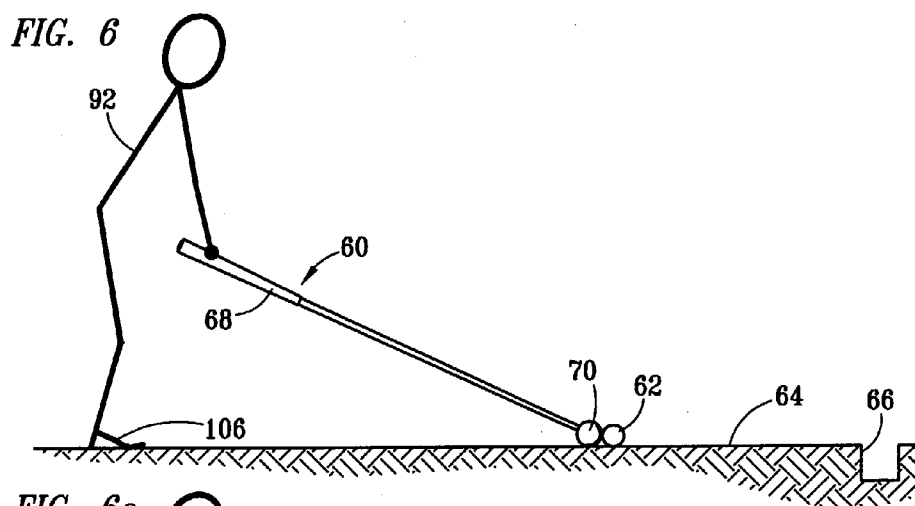
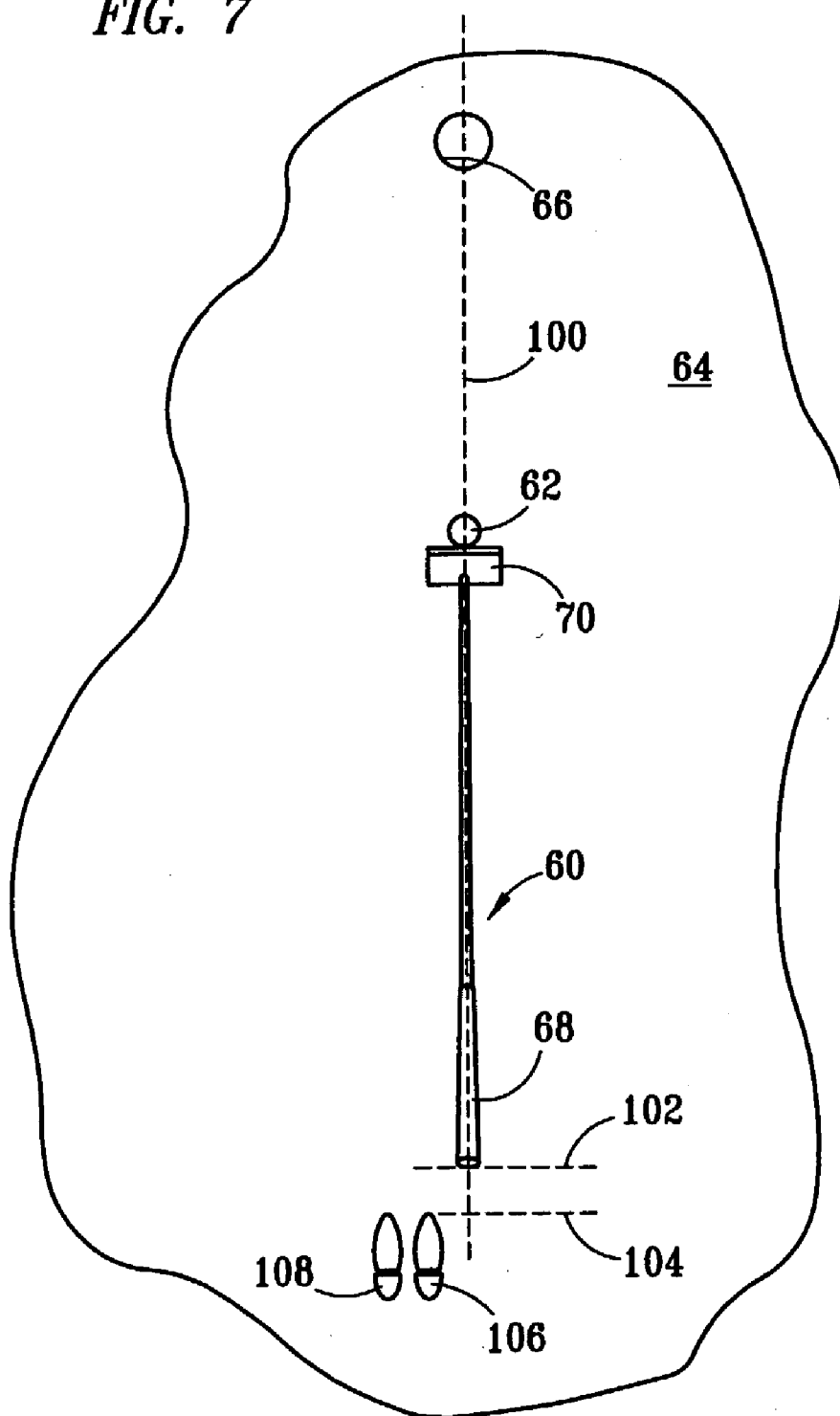


FIG. 7



GROUND CONTACT PUTTER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention generally relates to golf clubs and more particularly relates to a putter specially adapted to make continuous contact with the ground during use.

[0003] 2. Description of Related Art

[0004] Many different shapes and styles of putters are well known to persons familiar with the game of golf. All putters embody a head and a shaft. One end of the shaft is attached or connected to the head and the other end comprises a handgrip that is graspable by the user. The head typically comprises a ball-striking surface that is intended to contact a golf ball during the putting motion.

[0005] During use, conventional putters are supported by the hands of the player so that the sole of the putter is slightly above ground level and a little behind the ball. The player typically stands facing the ball, with his or her feet slightly apart and generally transverse to the direction in which the ball will travel when struck by the putter head. After observing or "reading" the topography of the green or other putting surface between the ball and the cup, the player causes the putter head to strike the ball, hopefully with appropriate force and in a direction such that the ball will roll smoothly across the ground and into the cup.

SUMMARY OF THE INVENTION

[0006] Unlike conventional putters, a putter is disclosed herein that is designed to maintain continuous contact with the ground throughout the putting stroke. According to a preferred embodiment of the invention, a putter is provided that comprises a shaft and a putting head. The putting head is preferably cylindrical, having a core, a substantially cylindrical sidewall disposed around the core, and two ends. The cylindrical sidewall further comprises a ground contact portion and a ball striking portion. The core of the head can be solid or hollow, and the ground contact portion and the ball striking portion can be made of the same or different materials. The shaft preferably has a handgrip at one end; the other end is preferably attached to the head at approximately the midpoint of the cylindrical sidewall, and the major longitudinal axis through the shaft preferably deviates slightly rearward from perpendicular to the longitudinal axis through the head.

[0007] According to a particularly preferred embodiment, the major longitudinal axis through the shaft is preferably perpendicular to the surface of the cylindrical putter head and, when extended, intersects the central longitudinal axis through the putter head at an angle of 90°. According to one alternative embodiment of the invention, the shaft axis, when extended, will intersect a perpendicular axis through the center of the putter head at the sole of the putter head. According to another embodiment of the invention, the shaft axis, when extended, will intersect a perpendicular axis through the center of the putter head at a point disposed above the center of the putter head.

[0008] Under USGA Rules (Appendix II), when the subject putter is in the normal address position, the projection of the straight part of the shaft on to the vertical plane

through the toe and heel of the putter will preferably diverge from the vertical by at least 10 degrees, and the projection of the straight part of the shaft on to the vertical plane along the intended line of play will preferably not diverge from the vertical by more than 20 degrees. Because the putter shaft is slanting to the rear rather than to the side of the putter face, a player using the putter disclosed herein will also have the advantage of being able to sight along the shaft of the putter when lining up a putt. The diameter and construction of the cylindrical head are preferably such that the center of gravity of the putter head is at an elevation about $\frac{1}{8}$ inch above the elevation of the center of gravity of the ball.

[0009] According to another embodiment, which is not preferred but is still believed to be within the scope of the invention, the subject putter does not have a completely cylindrical sidewall but instead has similarly convex, arcuate ground-contact and ball-strike surface sections connected by at least one other surface section having an external configuration that is not cylindrical and may, for example, be linear, concave, or convex or otherwise curvilinear with a different radius of curvature.

[0010] A method of putting using the subject putter is also disclosed. With the method of putting disclosed herein, the feet of the player are generally parallel rather than transverse to the intended direction of travel of the ball. The method of the invention preferably comprises the steps of gripping the handgrip at the free end of the putter shaft with one hand; resting the putter head on the ground or other putting surface a few inches behind on the ball; sighting along the putter shaft in the desired ball-strike direction while aligning the putter head so that the cylindrical sidewall is centered on the ball and is generally perpendicular to the direction in which the player desires to strike the ball, taking into consideration any break or other elevational changes in the putting surface; raising or lowering the handle grip, without lifting the putter head off the supporting surface, to a position comfortable for the player, most preferably where the longitudinal axis through the handle makes an acute angle with the putting surface ranging from about 30 to about 85 degrees; and thereafter moving the handle forward, simultaneously applying force along the handle to the putter head, causing the putter head to slide forwardly across the putting surface toward the ball, striking the ball in the intended direction of travel.

[0011] Use of the putter disclosed herein enhances the likelihood of a successful putt by reducing alignment errors prior to the puff and by reducing the opportunities for miss-striking the ball during the swing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The apparatus and method of the invention are further described and explained in relation to the following drawings, wherein:

[0013] FIG. 1 is a side elevation view of a preferred embodiment of the putter of the invention, showing how the major longitudinal axis through the shaft is slanted rearwardly from a vertical axis extending perpendicularly through the center of the cylindrical putter head;

[0014] FIG. 2 is a front elevation view of the putter of FIG. 1;

[0015] FIG. 3 is a side detail view, partially broken away and partially in cross-section, showing an embodiment of

the subject putter in which the cylindrical putter head comprises one material for the core, another material for the ground-contact surface, and another material for the ball-strike surface;

[0016] **FIG. 3a** is a side detail view, partially broken away and partially in cross-section, showing an embodiment of the subject putter in which the cylindrical putter head comprises one material for the core and another material for the surface;

[0017] **FIG. 4** is a front detail view, partially broken away and partially in cross-section, showing the base of the shaft attached to a cylindrical head in which the core and surface are unitarily made of a single material;

[0018] **FIG. 4a** is a front detail view, partially broken away and partially in cross-section, showing the base of the shaft attached to a cylindrical head in which the core is hollow;

[0019] **FIG. 5** is a side elevation view depicting the major longitudinal axis of the shaft, when extended, as being perpendicular to the center of the putter head of the invention, and showing a preferred positional relationship between the center of the putter head and the center of a conventional golf ball;

[0020] **FIG. 5a** is a side elevation view as in **FIG. 5** but with the shaft axis intersecting the perpendicular axis about $\frac{2}{3}$ of the distance between the proximal surface and the center of the putter head;

[0021] **FIG. 5b** is a side elevation view as in **FIG. 5** but with the shaft axis intersecting the perpendicular axis at or near the distal surface of the putter head;

[0022] **FIG. 6** is a simplified diagrammatic view showing a player aligning the subject putter to put a golf ball toward a cup disposed in the putting surface;

[0023] **FIG. 6a** is a simplified diagrammatic view showing a player advancing the subject putter to strike a golf ball toward a cup disposed in the putting surface;

[0024] **FIG. 6b** is a simplified diagrammatic view showing a player following through the putting motion after putting a golf ball toward a cup disposed in the putting surface; and

[0025] **FIG. 7** is a diagrammatic plan view depicting a preferred set-up position for the player, putter and golf ball relative to each other and to the hole using the putter and method disclosed herein.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026] Referring to **FIGS. 1 and 2**, ground-contact putter **10** of the invention preferably comprises shaft **12** having substantially transverse, cylindrical putter head **14** at one end and handgrip **16** at the other. Putter head **14** desirably further comprises substantially cylindrical sidewall **82** and end walls **84, 86**. Putter head **14** can be unitarily constructed from a single block of metal, such as aluminum, steel or alloys, or cast or molded from other metals, composite or polymeric materials, or from a combination thereof, by any suitable manufacturing technique. Whether made of one or several materials, putter head **14** preferably comprises a ground-contact surface **28** and a ball-strike surface **30**.

Ground-contact surface **28** is desirably relatively hard, slick and corrosion resistant, whereas ball-strike surface **30** may have slight resilience, surface texturing, or other features not present in ground-contact surface **28**. Ground-contact surface **28** should also be configured so as not to damage the underlying putting surface. By making putter head **14** so that ground-contact and ball-strike surfaces **28, 30**, respectively, extend arcuately around at least a portion of the circumference of the cylinder, it is possible to accommodate players of different heights and different preferences regarding the angle at which the putter shaft is held relative to the underlying putting surface when putting. Although putter head **14** is preferably cylindrical, it can also embody surface sections that are not cylindrical without departing from the scope of the invention, provided that at least the ground-contact and ball-strike surface sections are convex arcuate sections as would otherwise subtend a cylindrical surface.

[0027] Applicant has learned that striking a golf ball by the application of a horizontally directed force to a point about $\frac{1}{8}$ inch above the center of gravity of the ball will cause the ball to roll smoothly and evenly across a smooth putting surface. For this reason, the outside diameter of putter head **14** is desirably slightly greater than the diameter of a golf ball. The outside diameter of conventional golf balls varies according to the type and manufacturer but is believed to be less than two inches. Therefore, according to one particularly preferred embodiment of the invention, the outside diameter of the putter head **14** is about two inches, and most preferably $1\frac{15}{16}$ inches. The width of putter head **14** between end walls **84, 86** is desirably large enough to stabilize the forward motion of the putter head while it is being pushed toward the ball during the putting motion and also large enough to have a ball-strike surface comparable to those of other putters. The area of ground-contact surface **28** that frictionally engages the underlying putting surface should not, however, be so large as to cause excessive drag during putting. A width of about four inches is preferred for putter head **14**. Although ground contact surface **28** is generally cylindrical, and therefore curved around the longitudinal axis of the cylinder, ground contact surface **28** is desirably substantially flat along its length to prevent putter head **14** from rocking to either side as putter head **14** is advanced toward the ball during the putting stroke.

[0028] Shaft **12** can be made of any conventional material and using methods known in the art of golf club construction. Shaft **12** can be made, for example, of metal, graphite or boron fibers, engineered polymers or even wood. The lower end of shaft **12** can be inserted directly into putter head **14** in either perpendicular or a rearwardly slanting angular alignment, or, although not shown, can be attached in a straight or similar angular relationship using a hosel. According to a preferred embodiment of the invention as shown in **FIG. 1**, major longitudinal axis **18** through shaft **12** slants rearwardly at an angle ϕ relative to vertical axis **20** (axis **20** being perpendicular to the central longitudinal axis through transverse cylindrical putter head **14** and intersecting the longitudinal axis at the midpoint of putter head **14**) that can range up to about 20 degrees, and is most preferably at least about 10 degrees. The angular relationship of the putter shaft to the putter head is further discussed in relation to **FIG. 5** below.

[0029] As shown in **FIGS. 3, 3a, 4 and 4a**, the putter shaft is preferably attached to the putter head by threads, but can

also be attached using welds, pins, epoxy or other similarly effective means. In **FIG. 3**, for example, the preferred attachment is by means of threads that engage cooperating threads in bore **24** of putter head **14**. Various techniques and commercially available products, e.g., tack welds, Loctite® adhesive, or other similarly effective means, can be used to prevent putter head **14** from accidentally loosening or becoming disengaged from putter shaft **12** during use.

[0030] Various preferred structural configurations for the putter head of the invention are further described and explained in relation to **FIGS. 3, 3a, 4** and **4a** of the drawings. While these configurations illustrate various embodiments of the invention, those of ordinary skill in the art will appreciate upon reading this disclosure that the inventive aspects of the subject putter can also be similarly applied in putter heads having somewhat different configurations, provided that the ground-contact surface section and the ball-strike surface section of the putter head are substantially cylindrical and that the shaft is attached to the putter head in such manner that the putter head can be pushed smoothly and with little frictional resistance across the putting surface to contact the golf ball at a point slightly above its center of gravity.

[0031] In **FIGS. 3** and **3a**, putter heads **14, 36** are rotated to one of an infinite number of preferred address positions, whereby shafts **12, 34**, respectively, will form an acute angle with an underlying putting surface as described in greater detail below. Referring to **FIG. 3**, putter head **14** is shown as having a solid core **22** with two separate surface sections **28, 30** inlaid opposite each other to form the ground-contact and ball-strike surfaces, respectively. Alternatively, as shown in putter head **36** depicted in **FIG. 3a**, core **38** can be surrounded or coated entirely by a single surface material **40** that is different from the material used to make the core. In **FIG. 4**, shaft **42** is attached to a solid metal head **44** having a substantially cylindrical surface **45**. In **FIG. 4a**, shaft **46** is attached to a thickened wall section of a putter head **48** having an internal void **50**. In each of **FIGS. 3, 3a, 4** and **4a**, the lower end of the shaft extends into and is held in a fixed positional relationship to the putter head so that when viewed from the front or back, as illustrated for example in **FIG. 4a**, the shaft is substantially perpendicular to the midpoint **51** of central longitudinal axis **49** through the putter head, and any angular deviation of the major longitudinal axis of the shaft away from perpendicular occurs in the same plane as the line of sight between the shaft, the center of the putter head and the ball.

[0032] **FIG. 5** depicts a putter **90** with shaft **52** partially broken away and putter head **54** contacting golf ball **56**. Both putter head **54** and golf ball **56** rest on underlying putting surface **58**. Shaft axis **76** is perpendicular to the cylindrical surface of putter head **54** at point **110** and, if extended, passes through midpoint **112** of the central longitudinal axis through putter head **54**. The outside diameter of putter head **54** is slightly greater than the outside diameter of golf ball **56** and the elevation **55** of the center of gravity of putter head **54** is preferably a distance **D** above the elevation **57** of the center of gravity of golf ball **56**. Although angle Θ between the major longitudinal axis **76** of shaft **52** and underlying putting surface **58** can be any acute angle less than about 90 degrees, angles ranging from about 30 to about 85 degrees, and most preferably from about 30 to about 45 degrees, can be most comfortable and effective for

the player. Where angle Θ is greater than about 45 degrees, the vertical component of force applied by the user through the handgrip of the shaft will be greater than the horizontal component, contributing to frictional drag between the underside of the putter head and the putting surface during the putting motion. Where angle Θ is less than about 30 degrees, the user may have to squat or stoop to an excessive extent in order to advance the putter head toward the ball.

[0033] It is recognized that, depending upon the internal configuration of putter head **54** (including that portion of the shaft that is disposed inside the head), the center of gravity of the putter head can be either higher or lower than the center of the circle defined by a cross-section taken through the cylindrical sidewall for any given angular position of shaft **52** relative to underlying putting surface **58**. In general, it is preferred that both center point **112** of the cylinder defined by the sidewall of the putter head and the center of gravity of the putter head be at elevations that are slightly higher than the elevation of the center of golf ball **56**.

[0034] Referring to **FIG. 5a**, longitudinal axis **76** through shaft **52**, when extended, preferably intersects perpendicular axis **77** at a point **114** that is approximately two-thirds of the distance along axis **77** between point **110** and midpoint **112** of putter head **54**. The angle ϕ between axis **76** and axis **77** can be zero, but can range up to 20 degrees or more and is preferably at least about 10 degrees. Angle Θ can vary as described above in relation to **FIG. 5**. Point **114** is preferably also the bottom center of the bore (seen, for example, as bore **24** in **FIG. 3**) into which the putter shaft is inserted, and is adjacent to the bottom center of the putter shaft.

[0035] Referring to **FIG. 5b**, longitudinal axis **76** through shaft **52**, when extended, preferably intersects perpendicular axis **77** at a point **114** that is distal and diametrically opposite to proximal point **110** on the surface of putter head **54**. It is understood that the position of point **114** relative to putting surface **58** can vary according to angle ϕ and angle Θ , as described above in relation to **FIG. 5**.

[0036] The method of the invention is further described and explained in relation to **FIGS. 6, 6a, 6b** and **7**. Referring to **FIG. 6**, player **92** preferably grasps the handgrip of shaft **68** of ground-contact putter **60** of the invention in one hand. Whether or not the major longitudinal axis through the handle is slanted rearwardly away from perpendicular alignment with the putter head, the putter should be able to sight along the putter shaft to assist in lining up the putt in a desired ball-strike direction. The feet of player **92** are preferably both positioned behind and slightly to the side of the line between putter head **70** and ball **62**. After reading the topography of putting surface **64** and determining the desired ball-strike direction and line of travel of ball **62** to hole **66**, player **92** preferably positions putter head **70** so that, when putter **60** is moved forwardly toward ball **62**, the line of travel will be the same as the desired ball-strike direction and the cylindrical sidewall of putter head **70** will be centered on ball **62**.

[0037] Referring to **FIG. 6a**, putter **60** is pushed forwardly along line **72** by player **92**, with putter head **70** maintaining constant contact with underlying putting surface **64**, so that putter head **70** contacts ball **62**, causing ball **62** to move across putting surface, hopefully toward hole **66**. During the putting motion, player **92** can optionally step forward, moving foot **108** slightly ahead of foot **106** if desired,

although this is not recommended as it can introduce another angular variation into the putting stroke. As with conventional putters and putting methods, the force applied to the ball through the putter head will affect both the pace and trajectory of the putt. Referring to **FIG. 6b**, player **92** will desirably continue to follow through after putter head **70** strikes ball **62**, as indicated by lines **72** and **74**. Putter head **70** continues to maintain contact with underlying putting surface **64** during the follow-through.

[0038] A preferred set-up position for aligning putter shaft **68** and putter head **70** with golf ball **62** and hole **66**, where putting surface **64** has no break and the desired line of travel **100** is a straight line, is depicted in **FIG. 7**. Feet **106**, **108** of the player are most preferably placed side-by-side behind imaginary transverse line **104**, which is a short distance behind imaginary transverse line **102** and a little to the side of line **100** between ball **62** and hole **66** so that the player does not straddle the putting line. By laying putter **60** on the ground, the player can easily align the putt. Once the putt is aligned, the player simply needs to grasp the handgrip of putter shaft **68** with the nearer hand and, without lifting putter head **70** off the ground, rotate shaft **68** upwardly to a comfortable height at which to commence the putting stroke as described in relation to **FIGS. 6a, 6b** above.

[0039] Other alterations and modifications of the invention will become apparent to those of ordinary skill in the art upon reading the present disclosure, and it is intended that the scope of the invention disclosed herein be limited only by the broadest interpretation of the appended claims to which the inventor is legally entitled.

1. A ground-contact putter comprising an elongated shaft having first and second ends, the first end having a handgrip and the second end being attached to a substantially cylindrical head oriented substantially transversely to the shaft, the head having a center.

2. The putter of claim 1 wherein the head further comprises a core, two ends and a substantially cylindrical sidewall.

3. The putter of claim 2 wherein the sidewall further comprises a ground-contact section and a ball-strike section.

4. The putter of claim 2 wherein the core and sidewall are made of different materials.

5. The putter of claim 3 wherein the ground-contact section and the ball-strike section are made of different materials.

6. The putter of claim 1 wherein the shaft and the putter head each comprise a major longitudinal axis.

7. The putter of claim 6 wherein the major longitudinal axis of the shaft is perpendicular to the major longitudinal axis of the head and the two axes intersect in the center of the head.

8. The putter of claim 6 wherein the major longitudinal axis through the shaft slants up to about 20 degrees rearwardly from an axis perpendicular to the major longitudinal axis of the head and passing through the center of the head, and wherein the shaft axis and the perpendicular axis intersect at a point other than the center of the head.

9. The putter of claim 8 wherein the major longitudinal axis of the shaft slants about 10 degrees rearwardly from the axis perpendicular to the major longitudinal axis of the head.

10. The putter of claim 8 wherein the shaft axis and perpendicular axis intersect at a point on a distal surface of the putter head.

11. The putter of claim 1 wherein the head is made of metal.

12. The putter of claim 2 wherein at least a portion of the core is hollow.

13. The putter of claim 2 wherein the head comprises a polymeric material.

14. The putter of claim 3 wherein the ground-contact section comprises a polymeric material.

15. The putter of claim 1 wherein the putter head has a cross-sectional diameter that is slightly greater than the diameter of a golf ball.

16. The putter of claim 1 wherein the putter head, when resting on a level putting surface, has a center of gravity disposed at an elevation about $\frac{1}{8}$ inch higher than the center of gravity of a golf ball resting on the same putting surface.

17. The putter of claim 1 wherein the central longitudinal axis through the putter head, when the head is resting on a level putting surface, is disposed at an elevation about $\frac{1}{8}$ inch higher than the center of a golf ball resting on the same putting surface.

18. The putter of claim 3 wherein, when the putter head is rotated to a position where the ball-strike surface faces forwardly and the ground-contact surface faces downwardly, an angle ranging between about 30 and about 85 degrees is formed between the shaft and a substantially level putting surface underlying the putter head.

19. The putter of claim 3 wherein the angle formed between the shaft and the support surface ranges between about 30 and about 45 degrees.

20. A method for use by a player in putting a golf ball from a resting position on a putting surface toward a cup position in the same putting surface using a putter comprising a shaft having a handgrip at one end and a transverse cylindrical putting head at the other end, the putting head having a generally cylindrical sidewall, the method comprising the steps of:

gripping the handgrip with one hand;

resting the putter head on the putting surface a few inches behind the golf ball with the cylindrical sidewall facing the golf ball;

sighting along the putter shaft in an intended ball-strike direction while aligning the putter head so that the cylindrical sidewall is centered on the ball and is generally perpendicular to the intended ball-strike direction;

without lifting the putter head off the putting surface, adjusting the elevation angle between the shaft and the putting surface to an angle between about 30 and about 85 degrees;

and thereafter moving the handle forward, simultaneously applying force down the shaft to the putter head, causing the putter head to slide forwardly across the putting surface toward the ball, striking the ball in the desired ball-strike direction.

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