A golf club attachment comprising a sighting apparatus including a mirror to reflect the image of the area ahead of the club head in an upward direction to the eyes of the golfer which enables the golfer to align the face of the club head with a golf ball and the flagstick used on the putting green of a golf course. The attachment includes a housing, a clevis assembly in the housing, a first arm for mounting the housing to a golf club head and a second arm which supports a mirror reflecting surface. The mirror is rotatable about the longitudinal axis of the second arm and pivotable in a vertical plane passing through the longitudinal axis of the second arm. Indicia scales are provided on the housing for adjusting the position of the mirror relative to the housing.
GOLF CLUB ATTACHMENT

CROSS REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

In the game of golf, the golf ball must be directed across a relatively smooth grassy area, commonly called the "putting green," until it comes to rest in the "hole." The putting green is a smooth, relatively flat, closely cut grassy area surrounding the hole that normally enables an accurately hit golf ball to travel in a substantially straight path. While the green is usually conditioned to afford the golfer an optimum surface over which to putt, the major shortcoming of most golfers on the green is usually the green itself but the golfer's ineptness at stroking the ball towards the hole with the putter.

For the "duffer" or inexperienced golfer, and also for the experienced and professional golfer, one of the major difficulties of putting a golf ball is in placing the face of the putter exactly at right angles, both horizontally and vertically, to the line extending between the golf ball and the hole at the moment of impact of the club with the ball. Placement of the putter adjacent to the ball in this manner is especially difficult when the ball rests even a reasonably short distance from the hole since the golfer is usually unable to see the ball, club head and hole (or flagstick used to indicate the position of the hole) at the same time.

SUMMARY OF THE INVENTION

This invention comprises a removable attachment for a putter that enables the golfer to view the putter, golf ball, and a hole or flagstick simultaneously. The invention includes a mirror or other reflective surface which is easily attached to the head of the putter in such a manner that, when the player places the putter in position to putt the golf ball, the mirror will reflect an image of any object in the area in front of the face of the putter so that the object can be seen by the golfer in his normal stance above the golf club. The mirror is constructed so that it is adjustable with respect to the face of the putter, first about a horizontal axis extending in a direction at a right angle to the face of the head of the putter and about a second axis disposed at a right angle with respect to the first axis, and the mirror is movable in a vertical plane disposed parallel to the plane of the face of the putter, thus enabling the golfer to adjust the mirror and the image it reflects to suit his individual stance with reference to his preferred position with the ball when using the putter. The assembly comprises a relatively small light-weight support bar which is permanently connected by adhesive or the like across the back of the club head, and the mirror attachment is removably mounted above the club head by connection to the support bar, by sliding the attachment over the end and onto the support bar.

Thus, it is an object of this invention to provide a means for positioning the head of a golf club so that the face of the club head is disposed exactly at a right angle to the direction a golf ball must travel to enter the hole of a putting green.

Another object of this invention is to provide an attachment for a conventional putter that can be expediently connected to and disconnected from the putter and which reflects the image in front of the face of the putter in an upward direction above the head of the putter to the eyes of the golfer.

Another object of this invention is to provide apparatus for reflecting the area ahead of the face of a golf club in an upward direction to the eyes of golfer using the club.

Another object of this invention is to provide a sighting apparatus for temporary attachment to a conventional golf club without changing the configuration of the golf club, whereby the golf club, golf ball and the flagstick used to mark the position of the hole of the putting green can be viewed simultaneously, and the apparatus can be adjusted to accommodate players of various sizes using various putting stances.

Another object of this invention is to provide a sighting attachment for golf clubs for teaching golfers how to putt, the attachment being simple in construction, expedient to connect to and disconnect from a golf club, and well designed to meet the economics of manufacture.

Other objects, features and advantages of the present invention will become apparent upon reading the following specification, taken in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a front perspective view of the sighting attachment and the club head of a putter, showing the sighting attachment connected to the putter;

FIG. 2 is a front elevational view of the sighting apparatus and the club head of a putter, with portions of the club head and sighting apparatus broken away.

FIG. 3 is an end cross sectional view of the club head of the putter, the support bar and the connecting arm of the sighting apparatus.

FIG. 4 is a perspective view of a putter club head and the support bar attached to the club head, illustrating the configuration of the club head when used without the sighting attachment.

FIG. 5 is an exploded perspective view of the club head of a putter and the sighting attachment.

FIG. 6 is a schematic plan view of a green of a golf course, showing the hole, flagstick, ball and the head of a golf club embodying the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in more detail to the drawing, in which like numerals indicate like parts throughout the several views, FIG. 1 shows a golf club putter 10 having a shank 11, club head 12 and club head face 14. The shank 11 extends from the club head 12 in a direction so that when the club head 12 rests on the ground the shank will extend generally upwardly from the club head. The club head 12 has an upper surface 15, lower surface 16 and back surface 17. The upper surface and
lower surface are rounded at the end of the club head away from the shank 11 to form a toe 18, and the lower surface 16 is rounded at its end near the shank 11 to form a heel 19.

Sighting apparatus 20 includes a connecting arm 21, an adjustable housing 22, and a reflecting member or mirror 24.

As is shown in FIGS. 1 and 3 connecting arm 21 is rectilinear along its length and generally channel shaped in cross section and includes top span 25, back span 26, top flange 28 and bottom flange 29.

As shown in FIG. 4 rectilinear support bar 30 is L-shaped in cross section and includes base leg 31 and upright leg 32. Support bar 30 is positioned along back surface 17 of the club head at the junction of back surface 17 with upper surface 15 with the end of upright leg 32 being approximately in the plane of upper surface 15. The end of base leg 31 is connected to the back surface 17 of the club head by means of adhesive, screws, or by other conventional means. If the support bar is to be temporarily connected to the club head, two or more screws 33 are inserted through base leg 31 and into threaded bores in the back surface 17 of club head 12. If a more permanent connection is desired, adhesive (not shown) is applied to the facing surfaces of base leg 31 and the back surface 17 of the club head.

When support bar 30 is connected to club head 12 in the manner illustrated, a slot or channel 34 is formed between the back surface 17 of the club head and the inner surface of base leg 32.

As shown in FIG. 3, top flange 28 of connecting arm 21 is slidable from toe 18 (FIG. 4) into slot 34 and bottom flange 29 is slidable from toe 18 (FIG. 4) along the lower surface 35 of support bar 30. Top span 25 and back span 26 span the upper surface 36 and back surface 37 of the support bar 30. Set screw 38 extends through a threaded opening in back span 26 and is wedged against back surface 37 of the support bar to lock connecting arm 21 to club head 12.

As shown in FIG. 1 the adjusting housing 22 includes a front wall 44 and a rear wall 45 disposed parallel to each other and joined together by inner end wall 46 (FIG. 2). Front wall 44 and rear wall 45 terminate at their ends remote from inner end wall 46 in flanges 48 and 49 which are turned inwardly into abutting relationship to form outer end wall 50. Rear wall 45 defines quadrant cut-out slot 47 (FIG. 5), described more fully hereinafter. Front wall 44 is disposed generally parallel to the face 14 of the club head 12. Front wall 44, rear wall 45, and end walls 46 and 50 define the open ended adjusting housing 22 with the upper and lower ends of housing remaining open.

As is shown in FIG. 5, the front wall 44 and rear wall 45 of the adjusting housing 22 define aligned apertures 51 and 52, respectively, through which threaded screw 54 extends. A nut 55 is threaded on the screw 54 to firmly position it in the apertures. A U-shaped clevis or saddle 56 including body portion 58 and legs 59 and 60 is positioned between the walls 44 and 45 of the housing, the legs of the clevis being disposed adjacent to the walls. The legs of the U-shaped clevis 56 define aligned apertures in front and in rear walls 44 and 45, and screw 54 is inserted therethrough. A cylindrical sleeve 64 of a size defining an opening slightly larger than the screw 54 is positioned in alignment with the apertures of clevis 56 around screw 54. Thus, screw 54 extends through apertures 51 and 52 of walls 44 and 45 of housing 22, through apertures 61 and 62 of the legs 59 and 60 of clevis 56, through cylindrical sleeve 64, and is held in place by nut 55. With this arrangement, when nut 55 is tightened down on screw 54 walls 44 and 45 of housing 22 will be urged together so as to urge the legs of clevis 56 together, against the ends of cylindrical sleeve 64, thereby maintaining these elements in fixed relationship with respect to each other.

A positioning block 65 is attached to body portion 58 of clevis 56 by means of cap screw 66 extending through aperture 68 in body portion 58 into threaded aperture 69 (FIG. 2) extending into the bottom surface of positioning block 65. Positioning block 65 is rectangular in shape, and defines a through bore 70 extending in a direction perpendicular to the axis of the screw 66. A threaded aperture 71 extends inwardly from the upper surface of the positioning block 65 and intersects through bore 70, and a set screw 72 is received therein. Clevis 56 includes an extension leg 74 (FIG. 2) connected to the edge of its leg 60 adjacent to inner end wall 45 of housing 22. Extension leg 74 is bent at a right angle with respect to clevis leg 60 and protrudes through quadrant cut-out slot 47 of housing rear wall 45. Extension leg 74 supports a calibrating quadrant 75 which includes a series of bench marks 76 radiating outwardly from an axis coincident with the axis of through-bore 70 of positioning block 65.

As is shown in FIG. 1, sighting apparatus 20 includes a support frame 77 positioned above club head 12. Support frame 77 includes a flat base plate 78 (FIG. 2), inwardly turned side tabs 79 and 80, inwardly turned bottom tab 81 (FIG. 5) and a pair of inwardly turned top tabs 82 and 83. Tabs 79-83 cooperate to retain mirror 24 or other reflective surface against the surface of the flat base plate 78 (FIG. 2). Top tabs 82 and 83 delineate a sighting area 85 on mirror 24.

As shown in FIG. 2, support frame 77 is supported on support arm 86 which is round in cross section at each of its ends and is square in cross section between its ends. As shown in FIG. 5, round end portions 88 and 89 are separated from square central portion 90 by slots 91 and 92. Inwardly turned bottom tab 81 of support frame 77 surrounds the square central portion 90 of support arm 86, and the bottom edges of inwardly turned side tabs 79 and 80 nest in slots 91 and 92, so that mirror support frame 77 and support arm 86 are rigidly connected together. The rounded end portion 88 of support arm 86 is received in the through bore 70 of the positioning block 65, and retained therein by set screw 72. By loosening set screw 72, support arm 86 and sighting apparatus 20 can be rotated in positioning block 65 to virtually any desired position.

As shown in FIG. 1, front wall 44 and rear wall 45 of adjusting housing 22 each have an arcuate upper edge 94 and 95, respectively; the center of the arc of each edge 94 and 95 being coincident with the center of screw 54. Front wall 44 and rear wall 45 are calibrated near their arcuate upper edges with bench marks radiating outwardly from the axis of the screw 54. With this arrangement, the position of the set screw 72 or positioning block 65 with respect to the walls 44 and 45 can be easily determined by aligning these elements with the bench marks of the walls. Also, as shown in
FIG. 5 when support arm 86 of the sighting apparatus is allowed to pivot in the through-bore 70 of positioning block 65 the position of the sighting apparatus with respect to the club head 12 can be determined easily by aligning the support frame 77 with the bench marks 76 of the calibrating quadrant 75.

OPERATION

When the golfer desires to attach the sighting apparatus to a putter as shown in FIG. 4, he applies an adhesive substance to the flat end of the base leg 31 of support bar 30 and clamps the support bar and club head together until the adhesive has cured, with the support bar positioned as illustrated in FIG. 4. The support bar is fabricated from a lightweight material, so that the additional weight of the support bar added to the weight of the heavier club head is not noticeable. As shown in FIG. 5 the connecting arm 21 of the sighting apparatus 20 can be connected to the club head 12 by sliding the top flange 28 and back flange 29 into slot 34 between support bar 30 and club head 12 and along lower surface 35 of support bar 30 from the toe 18 toward the heel 19 (FIG. 1) of the club head. When the sighting apparatus has been properly positioned on the club head, set screw 38 is rotated and wedged against the back surface 37 of support bar 30 to set the connecting arm.

When the golfer desires to putt a golf ball over the surface of the green toward the hole or flagstick used to indicate the hole, he places the club adjacent to the ball in the usual manner so that the face 14 of the club head 12 extends in a plane such that its lateral and vertical axes are generally disposed at right angles to the line between the ball and the hole or flagstick. The golfer then looks at the image reflected in the mirror 24 to see if the face of the club is properly aligned with the ball. If the golfer sees the image of the flagstick parallel to the side tabs 79 and 80, and bisecting the surface of the mirror 24, he can rest assured that the face of the club is properly aligned.

Since the shank 11 of some golf clubs extends from the club head 12 at an angle different from that shown in the drawing, it is possible that the golfer may prefer to locate and practice putting the ball at a greater or less distance from his feet and in a position different from the one it might have occupied when utilizing a club as shown in the drawing. Accordingly, as shown in FIG. 1, in such a case, it may be necessary to adjust mirror 24 about the axis extending through screw 54 so the golfer will be able to use his normal stance when putting. The nut 55 can be loosened on screw 54 and sighting apparatus 20 pivoted about screw 54. When the sighting apparatus is properly repositioned as indicated and defined by bench marks disposed about the arcuate upper edges 94 and 95 of walls 44 and 45, respectively, of housing 22, nut 55 can be tightened on screw 54 to secure the sighting apparatus in its new position, which will be so selected as to show the vertical flagstick as a vertical image in the mirror when the golf club is in the proper putting position.

Again, as shown in FIG. 2, on another occasion, it might be preferred to practice putting the ball located at a greater or less distance from the flagstick at which time it will be desirable to change the angle of sighting apparatus 20 about the axis of support arm 86 so that the golfer may continue to see the vertical flagstick as an image in the mirror. Accordingly, set screw 72 can be loosened, the sighting apparatus 20 pivoted in through-bore 70 of positioning block 65 to a new position, indicated and define by the bench marks of calibrated quadrant 75. Since the sighting apparatus 20 pivots about two axes and cannot rotate around a vertical axis, which is the axis perpendicular to the plane of the upper surface 15 of the club head 12, sighting apparatus 20 will always be maintained in directional alignment with the face 14 of the club head. Thus, sighting apparatus 20 can be adjusted at will about its two remaining axes without fear of improperly aligning the reflective surface of mirror 24 with the direction along which it is desired to stroke the golf ball.

In using the sighting apparatus in conjunction with the putter 10, the golfer can experiment with several golf stances to attain the most comfortable and desirable stance without fear of misaligning the face 14 of the club head. For instance, if the golfer desires to stand erect with his head positioned to the heel side of the club head, sighting apparatus 20 (FIG. 1) can be pivoted about the axis extending through screw 54 (FIG. 5) to accommodate this position. Furthermore, if the golfer desires to stand slightly behind the ball so that his head is positioned slightly behind the face of the club head, he may desire to pivot support arm 86 (FIG. 5) and sighting apparatus 20 (FIG. 1) in through-bore 70 (FIG. 5) of the positioning block 65 to accommodate his new position. Of course, in changing the position of sighting apparatus 20 in either manner, accurate adjustment can be attained and any former position can be redefined and duplicated and resumed again and again by aligning sighting apparatus 20 with the bench marks 76 of calibrating quadrant 75 and by aligning positioning block 55 with the bench marks of the walls 44 and 45 of adjusting housing 22.

The golfer can watch the image reflected in the mirror 24 of the sighting apparatus 20 when swinging the putter 10 so as to determine if his putter is maintained in proper alignment throughout the entire length of his stroke and during all the backward and the forward movement of that stroke. In this manner, inadvertent twisting of the putter in the hands of the golfer during his putting stroke can be avoided and a true putting stroke can be repeated, time after time.

Referring now to FIG. 6, it can be seen that when the face 14 of the club head 12 is placed behind a ball 100 the mirror 24 will reflect or show the image 101 of the vertical flagstick 102 in the hole 104 of the putting green. If the face 14 of the putter 12 is not disposed at right angles to the line between the flagstick 102 and the ball 100, the image 101 of the flagstick 102 will appear to slant across the face of the mirror 24. In this manner, the golfer will receive indication that the face of the putter is not in perfect alignment with the ball 100 and hole 104. If the golfer pivots the face of the putter until it is exactly at right angles to the line between the flagstick and the ball, the image 101 of the flagstick 102 will be parallel to the side tabs 79 and 80. Thus, the golfer will have assurance that the club head is correctly aligned, or in the language of the player, is correctly lined up.

After the golfer becomes accustomed to using the putter 10 in this manner, as shown in FIG. 6, he may be
able to utilize sighting apparatus 20 to play a rolling or sloping green where the ball will not be expected to travel in a straight path across the surface of the green. If the green slopes or angles downwardly toward the right side of the hole, as from the bottom of FIG. 5 toward the hole, sighting apparatus 20 and club head 12 can be purposely misaligned so that face 14 of the club head is disposed at the angle shown in FIG. 6 so that the club will strike the ball to the higher or left side of the hole. Of course, the golfer receives indication of purposely misaligned club head by the image 101 of the flagstick 102 being angled across the face of mirror 24. Furthermore, after a substantial amount of practice: the golfer can anticipate the precise angle that his golf club is to be misaligned so that the club and sighting apparatus can be accurately utilized in this manner.

While the sighting device has been illustrated as being connected to a putter with a shank extending from one end of the club head, the sighting device can be connected to putters of virtually any shape, including putters having shanks connected to the club head intermediate the heel and toe of the club head. Since the vertical width of base leg 31 of support bar 30 is relatively small, support bar 30 also can be connected to club heads having curved back surfaces. The adhesive applied to the facing surfaces of the support bar and club head will be of sufficient thickness to compensate for any difference in curvature in the surfaces of the back of the club head and the support bar. Moreover, if the radius of curvature of the back surface of the club head is so short that a proper cementitious connection cannot be made, the support bar can be connected by means of screws or the like, as illustrated in FIG. 4.

While a set screw has been illustrated to hold the connecting arm on support bar 30, the connecting arm and support bar can be formed with a protrusion - detent coupling (not shown) to snap the parts together, or by other temporary coupling means.

While this invention has been described in detail with particular reference to preferred embodiments thereof, it will be understood that variations and modifications can be effected within the spirit and scope of the invention as described hereinbefore and as defined in the appended claims.

I claim:

1. A sighting device for connection to a golf club of the type including a club head with an approximately flat ball striking surface, a heel portion at one end and a toe portion at its other end, said sighting device comprising a housing, means for connecting said housing to a club head adjacent the toe portion of the club head, and a flat mirror supported by said housing, means for pivoting said mirror in a plane parallel to the ball striking surface of the club head and for rotating said mirror about an axis normal to said plane, and a scale imposed on said housing at a position alignable with said means for pivoting said mirror, whereby the position of said mirror with respect to said housing can be determined by comparing the scale with said means for pivoting said mirror.

2. A sighting device for attachment to a club head of a golf club, said sighting device comprising a housing means for connection to a club head, support means for selectively connecting said housing means adjacent the toe surface of a club head, a rectilinear mirror-support arm connected at one of its ends to said housing means and constructed to extend over and along the upper surface of the club head, a mirror connected to said mirror-support arm, said housing means including a first adjusting mechanism for rotating said mirror-support arm around its longitudinal axis, and a second adjusting mechanism for pivoting said mirror-support arm about an axis extending at a right angle with respect to the longitudinal axis of said mirror-support arm.

3. The sighting device of claim 2 and further including scale means for indicating the position of said mirror with respect to said housing means.

4. The sighting device of claim 2 and further including scale means for indicating the position of said mirror around the longitudinal axis of said mirror-support arm and the position of said mirror around the axis extending at a right angle with respect to the longitudinal axis of said mirror-support arm.

5. A sighting device for connection to a golf club comprising a housing including front and rear walls, a clevis assembly in said housing pivotally connected to said front and rear walls about an axis normal to said front and rear walls, means for maintaining said clevis assembly in a fixed relationship with respect to said housing, a rectilinear support arm carried by said clevis assembly, a reflecting member including a flat reflective surface carried by said support arm with the plane of the reflective surface parallel to the longitudinal axis of said support arm, means for rotating said reflecting member about the longitudinal axis of said support arm while maintaining the plane of said reflective surface parallel to the longitudinal axis of said support arm, means for maintaining said reflecting member in a fixed relationship with respect to said clevis assembly, first scale means for indicating the position of said reflecting member with respect to said clevis assembly about the longitudinal axis of said support arm, and second scale means for indicating the position of said reflecting member with respect to said housing about the axis normal to said front and rear walls, and means for rigidly connecting said housing to a golf club.

6. A sighting device for attachment to the club head of a golf club comprising a housing, a connecting arm rigidly connected at one of its ends to said housing and extending away from said housing for connection to a club head, a rectilinear support arm pivotally connected at one of its ends to said housing and extending from within said housing away from said housing normally in approximately the same general direction as said connecting arm extends from said housing, and a reflecting member with a flat reflective surface joined to said support arm with its flat reflective surface parallel to the longitudinal axis of said support arm and with a connection which permits said reflecting member to rotate about the longitudinal axis of said support arm while the plane of said reflecting member is maintained parallel to the longitudinal axis of said support arm.