356-138

CROSS REFERENCE SEARCH ROOM

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March 22, 1960 J. W. GILLON 2,929,631

GOLF CLUB WITH ANGLE OF VIEW INDICATOR

Filed Dec. 30, 1957 2 Sheets-Sheet 1

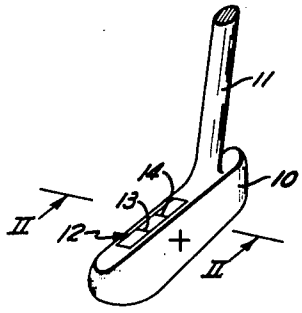


Fig. 1

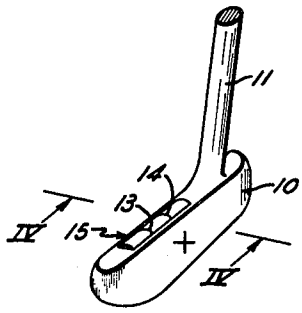


Fig. 3

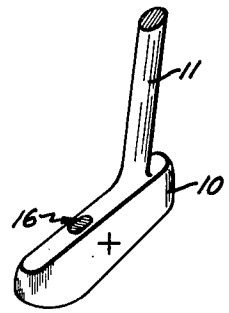


Fig. 5

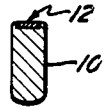


Fig. 2

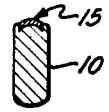


Fig. 4

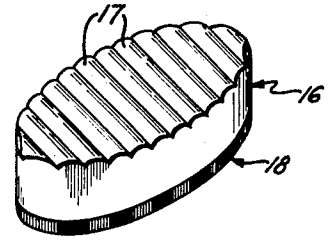


Fig. 6

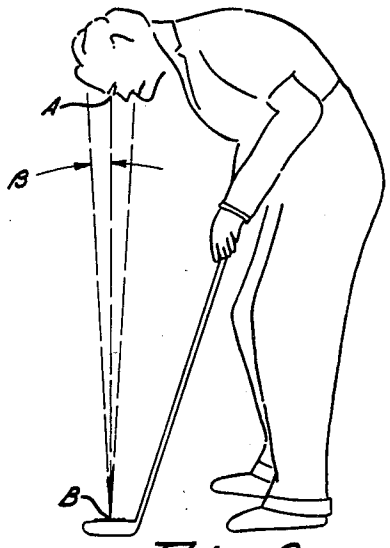


Fig. 8

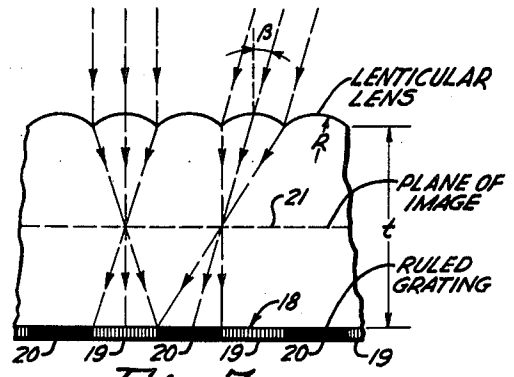


Fig. 7

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March 22, 1960 J. W. GILLON 2,929,631

GOLF CLUB WITH ANGLE OF VIEW INDICATOR

Filed Dec. 30, 1957 2 Sheets-Sheet 2

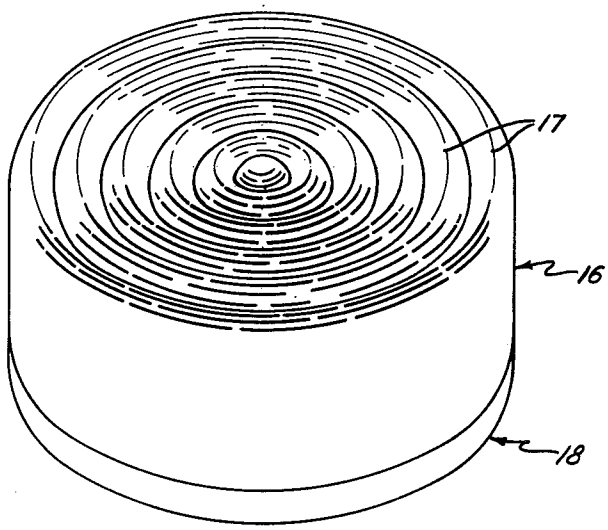


Fig. 9

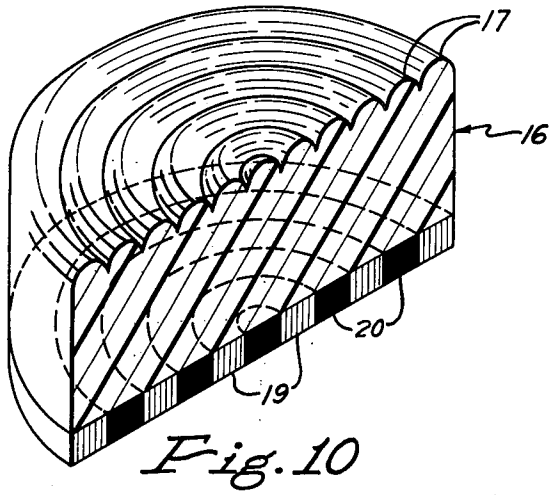


Fig. 10

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GOLF CLUB WITH ANGLE OF VIEW INDICATOR

John Warren Gillon, San Mateo, Calif.

Application December 30, 1957, Serial No. 705,920

2 Claims. (Cl. 273—163)

This invention relates to a golf club having a device which will indicate to the golfer when his eye is in proper angular position in relation to the head of the golf club.

When using certain golf clubs, especially the putter, it is well recognized by the authorities that the eye of the golfer should be directly over the part of the club head which is to contact the ball. This helps the golfer to draw a correct imaginary line of flight from the ball to the cup, and to move the club head along that line.

When using clubs other than the putter, the eye should be in a different angular relation, but still there is a preferred angular position of the eye relative to the head of the golf club.

The present invention provides the head of the club with an optical device which gives to the golfer an optical indication when his eye is in proper angular relation with the optical device. The optical device is located on the upper surface of the club head with its center alined with the center of impact of the club head.

Thus the optical device will indicate to the golfer when his eye is in proper position to get the best possible alinement for the stroke.

These, and other objects and advantages will become apparent as the description proceeds.

In the drawings,

Fig. 1 is a perspective view of a putter blade equipped with one form of the invention.

Fig. 2 is a section on line II—II of Fig. 1.

Fig. 3 is a view similar to Fig. 1, but showing a modification.

Fig. 4 is a section on line IV—IV of Fig. 3.

Fig. 5 is a view similar to Fig. 1 but showing a further modification.

Fig. 6 is a perspective view on an exaggerated scale of the optical device used in Fig. 5.

Fig. 7 is a diagrammatic section illustrating the optical principles of the device of Figs. 5 and 6.

Fig. 8 is a diagram illustrating the use of a golf club equipped with the invention.

Fig. 9 is a perspective view of another form of the device.

Fig. 10 is a vertical cross-section through the device of Fig. 9.

Referring more particularly to Figs. 1 and 2, the putter head **10** is provided with a shank **11** which is attached to a suitable shaft in any preferred manner. The center of impact of the striking face is indicated by the "*x*." A flat mirror **12** is inserted into the top surface of the putter blade, and a pair of spaced-apart control lines **13** and **14** are drawn across the mirror at right angles to the face. These control lines **13** and **14** are so located that a point midway between them is alined directly behind the center of impact of the putter face.

When using this putter the golfer places his head directly over the blade of the putter and adjusts his position until he can see his eye in the mirror between the lines **13** and **14**. This will indicate to him that his eye

is approximately at the point A (Fig. 8), which is vertically above the point B, which is alined with the center of impact of the putter face.

An improved arrangement of the device is illustrated in Figs. 3 and 4, in which a mirror **15** slightly curved about its long axis is used. This form of mirror permits the golfer to see a cylindrical image of his entire face in the mirror when addressing the ball, thus making it easier for him to judge when his eyes fall between the lines **13** and **14**, and hence are directly over the center of the putter blade.

A preferred embodiment of the invention is illustrated in Figs. 5 and 6, where a lenticular device is used in combination with a ruled grating so as to exhibit to the eye a change of color with a change of the angle of viewing.

As shown in Fig. 6 the lenticular device is formed from an oval block **16** of a suitable transparent material such as clear plastic. The top surface of the block **16** is formed with a plurality of semi-cylindrical lenticular ridges **17** which serve as lens elements. The ridges **17** are arranged at right angles to the face of the club.

On the bottom of block **16** is a ruled grating **18** with the rulings arranged parallel to the lens ridges **17**. As shown in greater detail in Fig. 7, the ruled grating consists of alternate bands of red, shown at **19**, and black, shown at **20**.

The lens device of Fig. 6 is set into the top of the putter, as indicated in Fig. 5.

Each of the semi-circular ridges **17** serves as an individual lens, and when the eye is vertically above the series of lenses, the images of the red bands **19** are focused at the plane of image **21**. (See the left-hand side of Fig. 4.)

When the eye is at the angle β, the alternate black bands **20** are focused at the plane of image.

The angle β is established by well-known optical laws which relate the lens radius R, the thickness t, index of refraction μ, and lens and grating spacings a and a'. In a preferred form of the invention these parameters are selected to produce an angle β of about 10°.

With such an arrangement, when the eye of the golfer is 10° away from the vertical center line, the lens device will show black, but when the eye is at the position A of Fig. 8, directly on the vertical center line, the device will show red.

It is a well-known optical law that the brightness at an extra-axial point decreases approximately as the fourth power of the cosine of the angle of obliquity β of the chief axial ray. The result is that the red color seen in the lenticular device will be at maximum brightness when the eye is directly above the lenticular device, but will fall off rapidly in brightness as the golfer moves his head away from the vertical line.

Thus, by noting the change of color from black to red the golfer will know that he has brought his eye within 10° of the true vertical line, and then by further adjusting his eye position to obtain maximum brightness of the red color he can easily bring his eye to a final position within 1° of the true vertical.

In the forms of the invention thus far described, it has been assumed that the golfer will have little difficulty in positioning his eye above the club head along a line parallel to the intended line of flight. The optical indicating device has been provided to secure proper positioning once the eye is in the vertical plane perpendicular to the line of flight, i.e., along a line parallel to the line extending from the toe to the heel of the club.

However, the invention also contemplates providing an optical device which will provide guidance for properly positioning the head in all directions, i.e., in planes both perpendicular to, and parallel to the intended line of

flight. A device for this purpose is illustrated in Figures 9 and 10. In this form of the invention the semicylindrical lenticular ridges **17**, and the bands **19**, **20** are in the form of concentric circles, and the golfer will perceive the correct indication only when his eye is directly above the lenticular device.

While the invention has been described above as applied to a putter and putting, it should be understood that it is not so limited, but may be applied to other types of golf clubs to assure the golfer that his head is in the correct position for the type of shot in which he is engaged, whether it be driving, approaching, chipping, or the like.

In each case it is assumed that the head of the club will normally be held so that the optical device will have a normal level position to serve as a base for the sightings.

In the embodiments described the optical indicating device has been set into the top of the club head, but obviously the optical device may be a separate part attached to the club head in any suitable manner.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. An elongated golf club head having a toe and a heel, and a center of impact intermediate the toe and heel;

the club head having a topmost surface adapted to be level with the ground when the club is held in playing position;

the club head carryng only one optical device, the optical device being set into the topmost surface of the club head;

the optical device having its center alined with the center of impact of the club head, and being level with the ground when the club is held in playing position;

the optical device having a plurality of lenticular ridges located above a grating and which cooperate with the grating to give a changing optical indication with a change of angle of view;

the parts being so constructed and arranged that the optical device gives an optical indication when the eye of the golfer is alined vertically above the longitudinal center of the club head, and on a line with the center of impact.

2. An elongated golf club head having a toe and a heel, and a center of impact intermediate the toe and heel;

the club head having a topmost surface adapted to be level with the ground when the club is held in playing position;

the club head carrying only one optical device, the optical device being set into the topmost surface of the club head;

the optical device having its center alined with the center of impact of the club head, and being level with the ground when the club is held in playing position;

the optical device having a plurality of lenticular ridges which are located above a grating provided with bands of alternate colors;

the parts being constructed and arranged so that when the eye of the golfer is alined vertically above the longitudinal center of the club head the golfer will see one color in the optical device, and when his head is substantially displaced from said center he will see another color in the optical device.

References Cited in the file of this patent

UNITED STATES PATENTS

1,556,062	Baugh	Oct. 6, 1925
2,463,798	Paisley	Mar. 8, 1949