Nov. 6, 1928. 1,690,388

F. A. WALDRON

HEAD FOR GOLF CLUBS

Filed May 16, 1927

FIG. 1.

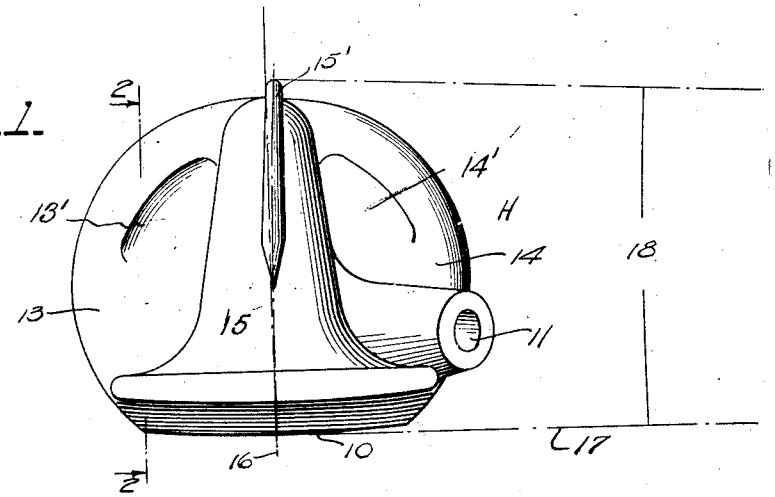


FIG. 2.

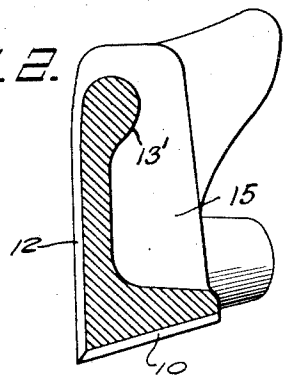


FIG. 3.

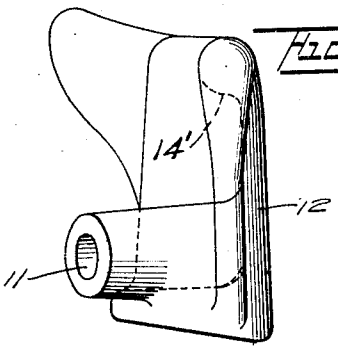
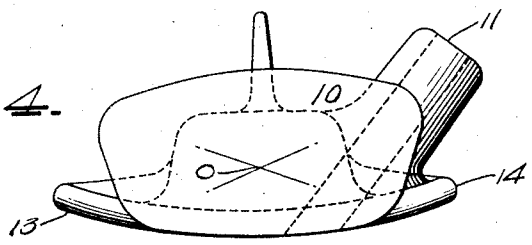


FIG. 4.



INVENTOR
Frederick A Waldron
BY
ATTORNEY

Patented Nov. 6, 1928. 1,690,388

UNITED STATES PATENT OFFICE.

FREDERICK A. WALDRON, OF WESTFIELD, NEW JERSEY.

HEAD FOR GOLF CLUBS.

Application filed May 16, 1927. Serial No. 191,561.

The present invention relates to heads for golf clubs, and is more particularly directed toward an improved golf club head made of metal or other heavy material. It is more particularly suitable in providing an improved driver, brassie, or spoon.

The object of the driver in the game of golf is to give distance and direction to the ball when struck by the club. Heretofore the design and method of construction of the driver has required it to be made out of tough wood, weighted by the insertion of lead or other metals at various points to improve the balance, and provided with contact surfaces in the most effective positions.

Some clubs have a striking face of the harder woods cemented to the head of the club. Recently hollow aluminum club heads have been devised, but these, however, have not provided a support directly back of the contact point of the club and the ball, thereby reducing the effect of the impact. The critical area, or "sweet spot", which is the area of a circle an inch in diameter or the equivalent, circumscribed around a point located at the center of the striking face of the club, would give slightly under the force of the blow.

The development of golf club design has heretofore been along conventional and traditional lines. The configuration of the club head was developed by experience and such rules of thumb as were available, retaining the form and appearance, without taking into consideration or appreciating the aerodynamics involved. Total mass and angle of club face were the controlling features and such matters as lateral and longitudinal stability during the swing or at the time of contact were ignored.

The present invention contemplates a one piece club head (such as a driver, brassie, or spoon), which is constructed by placing the dominating weight of the club in one solid and continuous mass with its maximum depth directly back of the critical area, or "sweet spot." This one piece club head has a striking face, and a hub for attaching the shaft shank and is provided with laterally extending flanges to improve the longitudinal stability. With this design the maximum results are obtained when the ball is struck within the critical area, or "sweet spot". This is due to the stabilizing effect of the flanges and the greater reaction given the ball, resulting in a correspondingly greater distance in the desired direction. By using metal or other material heavier than wood and being able to retain the same weight as a wood club, air resistance is also reduced.

Other and further objects of the invention will appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the invention, one of the many possible embodiments in which the invention may take form, it being understood, that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a top plan view of the golf club head made up as a driver;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a side elevational view; and

Figure 4 is a front elevational view looking toward the striking face of the club head.

The club head designated in the drawing by the letter H, is preferably made of a single casting of an alloy of aluminum having the desired properties such as hardness, resistance to shock, etc. It may, however, be made of a suitable phenol-condensation product.

The striking face of the club head is indicated at 10 with the center of the "sweet spot" designated at *o*. It is of the usual configuration found on wooden club heads for the same purpose, and is disposed at the same angle relative to a hub 11 provided for the attachment of the handle shank, not shown. It may be milled to any desired curvature and angle of loft. The club head is also provided with suitable means for guiding and steadying it vertically on the downward swing so as to afford greater longitudinal stability at the time of contact. In a driver this means may conveniently be produced by forming integral flanges 13 and 14 to provide wings or fins which extend laterally from the lower portion 12 of the club. These wings or fins extend to each side of the striking face so as to be directly in the air stream, and at the terrific speed attained at the latter part of the swing materially stabilize the club. The lower surface of the club permits a constant address to the ball.

The mass of material is concentrated directly back of the critical area, or "sweet

spot", as indicated at 15 so as to materially reinforce the striking area. The air passing by the ends of the striking face passes above the upper surface of the flanges 13 and 14. It impinges upon deflecting surfaces 13' and 14' which change its course, thereby producing a force component at right angles to the direction of motion and opposite to the "digging" in tendency common in wood clubs brought about by the aeronautical lift produced in such clubs owing to partial vacuum above the upper rear surface thereof.

In order to improve the lateral stability of the club during the swing, I have provided an integral, thin rudder, or fin 15 which projects above the top face of the club and forms a guide during the downward swing. This rudder or vane is preferably placed with its trailing edge to one side of a line drawn perpendicular to the face of the club, a distance equal to the versed sine of the angle formed by the radius of the swing as a base and the distance from the face of the club to the end of the wing as the perpendicular. In Figure 1, the arc of swing is indicated by the arc 16, the radius by the line 17 which makes an angle 18 with the trailing edge of the vane. In practice this offset will be about 0.05 inches on a wing 1.5 inches long.

This golf club head may be made in one solid piece out of any suitable material whose specific gravity is greater than the heaviest wood to have the same weight as the usual wooden head (loaded if necessary), as well as the same reaction on the player. The weight and balance may be most accurately predetermined, but, on account of the lowering of air resistance and the concentration of the mass behind the striking face, greater striking force may be obtained, resulting in increased distance and greater accuracy of direction.

It is obvious that the invention may be embodied in many forms and constructions, and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not limit myself in any way with respect thereto.

It is of course understood that the shape of the club head may be suitably varied when making up brassies and spoons.

What is claimed is:

1. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having a solid mass of material concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, the face extending a substantial distance to each side of the critical area, a bottom flange extending rearwardly from the face and directly united at its center with the concentrated mass of metal back of the "sweet spot", the bottom flange being wider than the striking face to facilitate longitudinally stabilizing the club, and provisions for attaching the club head to a club handle or shaft.

2. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, a flange extending rearwardly from the face, said flange having inclined surfaces against which the air stream passing over the flange impinges to produce forces tending to oppose the tendency of the club head to dig in, and provisions for attaching the club head to a club handle or shaft.

3. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, the face extending a substantial distance to each side of the critical area and being integral with a rearwardly extending flange, the flange extending laterally beyond the club face for the purpose of longitudinally stabilizing and guiding the club during the downward swing, and provisions for attaching the club head to a club handle or shaft.

4. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, a substantially vertical vane or fin carried at the upper rear portion of the club head, and provisions for attaching the club head for laterally stabilizing the club during the downward swing to a club handle or shaft.

5. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, a vane or guide at the upper rear portion of the club head, and provisions for attaching the club head to a club handle or shaft, the trailing edge of the vane being off center a distance substantially equal to the versed sine of the angle formed by the radius of the swing as a base and the distance from the face of the club to the end of the wing as the perpendicular.

6. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, the face extending a substantial distance to each side of the critical area and being integral with a rearwardly extending longitudinally stabilizing flange projecting either side of the striking face, a substantially vertical vane or fin projecting above the striking face and carried at the upper rear portion of the club head for laterally stabilizing the club

during the downward swing, and provisions for attaching the club head to a club handle or shaft.

7. A golf club head for drivers, brassies, and the like, comprising a solid unitary member having its principal weight concentrated directly back of the center of the critical area or "sweet spot" of the face of the club head, a vane or guide at the upper rear portion of the club head, and provisions for attaching the club head to a club handle or shaft, the trailing edge of the vane being displaced from the center a slight amount toward the club handle.

8. A golf club head for drivers, brassies or the like, having a striking face and a rearward extension projecting either side of the striking face which is provided with upwardly inclined surfaces against which the air stream impinges to produce forces tending to oppose the tendency of the club head to dig in.

FREDERICK A. WALDRON.