This invention relates to sand wedge golf clubs, and more particularly to a type of golf club which is not only adapted to making blast shots from sand traps and similar hazards, and by which blast shots the golf ball is projected upwardly and forwardly for distances which are generally rather short, while the impact of the club head with sand below and adjacent the ball, for effecting the desired ball trajectory, causes a blasting action in the sand.

To be well suited to the use for which it is made, my sand wedge golf club differs in structure and in material respect from the clubs used in other circumstances and for achieving greater distances of ball flight, as well as for obtaining different flight and roll characteristics. For example, the club heads of the woods and most irons have masses and distributions of mass which are calculated to transmit practically the full impact of any swing directly to the ball and have club face angles suited to various heights and distances of flight when the ball is struck thereby, and particularly when the ball is hit at a position on the club head face which is commonly called the "sweet spot." The heads of most irons have the blade weighted along the rear surface, and particularly behind the "sweet spot," by increase of the blade thickness, so that the blade delivers a solid and sharply defined impact to a well hit ball.

In contrast to the club heads which have thick metal blade sections behind the "sweet spot" to promote rigidity and concentrate mass at that position, my herein disclosed sand wedge, in addition to having a loft angle and blade height adapting it to go under a ball in sand to lift the ball through a relatively high trajectory angle from a position well up on the blade, has its heavy mass concentrated along the bottom margin of the blade and extending rearwardly and downwardly therefrom to afford the weight for assisting the movement of the head through the sand and, at the same time, provides a sole surface which engages the sand in a manner and at an angle which counteracts the tendency of the reaction force of the sand against the front face to cause the club head to dig into the sand. The major portion of the blade, above the weighted lower portion, is of relatively uniform thickness and is purposely made quite thin. In fact the thin upper portion of the blade is enlarged and the concentration of the weight at the bottom is emphasized by an undercut between the back surface of the blade and the rearwardly and downwardly extending weight portions.

The thin section of my blade and the fact that this thin section extends over a major portion of the blade area above the bottom weight portion and the portion of the front face from which the ball is projected, causes the head to have a weak or dead reaction with the ball. The impact is deadened. This type of deadened reaction is further emphasized in the disclosed club head by the fact that the depth of the undercut between the blade and bottom weight portion is deeper at the longitudinal mid-region of the blade than at the opposite ends of the blade.

The undercut between the back surface of the blade and the weight portion thereof has an advantage in addition to the enlargement of the thin section of the blade at a desirable location, that it permits enlargement of the sole area of the club head to an amount effective for reaction with sand to limit the tendency of the club head to dig into the sand without exceeding a desirable overall weight for the club head.

From the foregoing, it may be readily understood that it is one of the general objects of this invention to provide a sand wedge golf club which is particularly suited, although not necessarily limited, to use in making blast or explosion shots out of sand traps and similar hazards in playing golf.

My invention has for another object the provision of a sand wedge golf club having a relatively thin blade of generally uniform thickness over a major portion of its area and embodying an integral portion extending rearwardly and downwardly from the rear surface of the blade to effect the provision of a relatively wide sole surface and concentrate mass along the lower margin of the blade.

As another object, this invention comprehends the provision of a sand wedge golf club wherein the major portion of the blade is relatively thin in section with a relatively wide bottom portion providing mass and a wide sole to the club head, and wherein there is an undercut between the mid-region of the rear surface of the blade and the thick bottom portion of the club head which extends over the area of the relatively thin blade section and enables the sole surface of the head to be widened while keeping the overall weight of the club head within a permissible limit.

Another object of this invention is to provide a sand wedge golf club having a relatively heavy head in which a major portion of the mass is concentrated below the mid-portion of the blade and in which the upper portion of the blade is sufficiently thin to have a relatively dead reaction and limited impact with a golf ball.

The invention further comprehends the provision of a sand wedge golf club having a relatively large face area and a high loft angle, together with a wide sole surface which slopes downwardly and to the rear from the blade to react against sand in blast or explosion shots in a manner and to the extent necessary to counteract the tendency of the force of sand against the ball striking face from causing the club head to dig more deeply into the sand when the ball is projected forwardly from the upper mid-portion of the ball striking face of the club head.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings in which similar characteristics of reference indicate similar particulars throughout the several views.

FIG. 1 is a front elevational view of a club head embodying my invention and is shown in a position such as that assumed in addressing a ball; FIG. 2 is an end sectional view taken substantially along the line 2—2 of FIG. 1; and FIG. 3 is a side view of my club head and is shown in use in striking a golf ball from a sand hazard.

In the exemplary embodiment of my sand wedge golf club which is shown in the accompanying drawings for illustrative purposes, the club 10 has a shaft 12 and a head 13 which are secured together by fastening means such as a cross pin 14 with the shaft 12 in substantially coaxial relationship to a hosel 15 on the club head. The head of this sand wedge club is made of metal, such as forged steel, and includes, in addition to the hosel 15, a blade 16 which extends outwardly from the hosel 15 and provided with a generally flat ball striking face 17 which extends upwardly towards the rear of the club head and downwardly to a relatively sharp forward edge 18, so as to form a loft angle B with a plane extending through the axis of the shaft and hosel and which extends longitudinally of the blade 16 in a generally parallel relationship to the front edge 18 of the club head. For the type of use to which my sand wedge club head is adapted, the loft angle B is desirably between 50° and 55°.

Along the forward or lower margin of the blade 16, and extending rearwardly therefrom is an integral weight
portion 19 which defines a sole 20 of the club head and adds mass to the head which assists the smooth movement of the head through sand in making an explosion or blast shot from a sand trap or similar hazard. The slope of the sole 20 with respect to the ball striking face 17 and the width of the sole measured rearwardly from the front edge 18 are also of importance to the action of the club head in making explosion or blast shots from sand. The sole 20 is, in the disclosed club head, the sole 20 forms an angle D with the ball striking face 17. In the disclosed club head, this angle D is between 41° and 48°. With these angles established, in the club illustrated, when the club is held in a ball addressing position, with the shaft axis in a vertical plane, as illustrated in FIG. 2, wherein the plane through the shaft axis and extending longitudinally of the blade in generally parallel relationship to the front edge 18 forms an angle A of substantially 90° to a horizontal line, the sole 20 slopes downwardly and to the rear at an angle C which is approximately 5° to 10°. Thus, in moving through sand, the downward and rearward slope of the sole 20 affords an upward force component against the toe of the club which tends to counteract the downward force of sand against the ball striking surface which would tend to cause the club head to dig into sand in passing therethrough.

In addition to the concentration of the weight portion along the lower forward margin of the blade, the major portion of the upper part of the blade, above the weight portion 19 is of practically uniform thickness and is kept thin in section, so as to afford a dead reaction with the ball. As herein depicted, a recess 22 is provided along the longitudinal midportion of the rear of the club head which extends between the weight 19 and the blade 16. This recess increases the height of the uniform thickness portion of the blade in comparison to the portion which is backed by the weight portion 19, and thereby serves to deaden the action of the blade.

The structural combination of this club, its relationships of parts and weight distribution provide a strong club with inertia, power and surface dispositions for effectively plowing through sand, while the ball striking portion of the blade is weak enough to have a dead reaction and relatively low impact with a ball, so that the ball will not travel far in comparison to the distances for which other iron clubs are used. In the club illustrated, one surface of the recess 22 is a continuation of a rear surface 23 of the blade and the depth of the recess is such that over 70% of the maximum height of the ball striking face of the club is formed by the thin section longitudinal portion of the blade, while less than 30% of the blade height is backed by the weight portion 19, at which weighted portion, it would tend to have a sharper or heavier impact with a ball. In the disclosed structure, the upper portion of the blade is less than ¾” in thickness and is desirable between ¼” and ½” thick. Also, the width of the sole 20 from the forward edge 18 of the club and near the longitudinal mid-portion of the blade is between approximately 1” and 1¼”.

In the use of this sand wedge golf club, many factors have to be taken into account by the player, such as the dryness and hardness of the sand in a trap or hazard, but generally speaking, the sand trap below or to the rear of a ball 24, as shown in FIG. 3, so that the ball is projected upwardly and forwardly from a position well up on the ball striking face and above the weighted lower margin of the blade. In moving through the sand, the downward and rearward slope of the sole 20 affords a reaction with the sand which counteracts the force of the sand against the ball striking face which would normally tend to make the club head tend to dig more deeply into the sand. The overall mass of the club, accompanied by the aforementioned features and the concentration of the mass along the lower forward margin of the relatively thin blade of the club afford the ability for the club head to move with relative smoothness through a generally dense sand medium to provide the ability to follow through in the execution of a stroke, even though sand is moved and lifted along with the ball.

Having thus described and disclosed my invention, it will be understood that obvious modifications other than those illustrated in the drawings may be resorted to within the scope and spirit of the invention as defined by the appended claims.

I claim: 1. A sand wedge golf club comprising a shaft, a metal head including a hosel and a blade extending outwardly from the hosel, said head being secured to the shaft with a shaft and hosel in coxial relationship to one another, said blade having a rear surface and a generally flat front surface including a ball striking portion, which front surface is inclined upwardly to the rear and downwardly to the front edge thereof with respect to a plane containing the axis of the shaft and extending longitudinally of the blade, the upper portion of the blade, including a major portion of the area thereof, being of relatively uniform thickness, said blade also including an integral weight portion extending rearwardly along the bottom margin thereof, which weight portion has a sole surface substantially straight in section and which extends 5° to 10° to the horizontal downwardly and to the rear when said plane containing the axis of the shaft is vertically disposed, said sole surface and said flat front face being joined through means providing a relatively sharp sand cutting edge therebetween, and there being a recess of concavely curved depth longitudinally of the blade and having maximum depth at the longitudinal mid-region of the weight portion and minimum depths at opposite longitudinal ends for effecting an extension of the portion of the blade which is of relatively uniform thickness and a reduction of the marginal area of the blade which is backed by the weight portion, said edge being in substantially parallel relationship to one another, said ball striking surface being inclined upwardly to the rear at an angle of between 50° and 55° with respect to a plane containing the axis of the shaft and extending longitudinally of the blade having an integral weight portion thereon and adjoined thereto through less than 30% of the maximum top to bottom dimension of the blade and through a section which varies longitudinally of the blade so as to diminish in thickness at the mid-region of the length of the blade, said weight portion extending rearwardly from the bottom of the ball striking surface and defining a relatively wide sole having a bottom surface which adjoins the ball striking surface at a relatively sharp front sand cutting edge along the bottom of the ball striking surface, a major portion of said bottom surface having an angle with respect to said plane which is obtuse in a direction which is rearward relative to the ball striking surface so that said sole surface extends downwardly and to the rear from said cutting edge.

2. A sand wedge golf club as defined in claim 1, wherein said angle between said plane and the ball striking surface of the blade is between 50° and 55°.

3. A sand wedge golf club comprising a shaft, a metal head including a blade and a hosel extending outwardly from the blade in obtuse angular relationship thereto, said shaft being secured to the hosel, said blade having a rear surface and a substantially planar ball striking surface in substantially parallel relationship to one another, said ball striking surface being inclined upwardly to the rear with respect to a plane containing the axis of the shaft and extending longitudinally of the blade, said blade having an integral weight portion thereon and
adjoined thereto through a curved longitudinal section which covers less than 30% of the maximum top to bottom dimension of the blade and which has a minimum thickness at the longitudinal mid-region of the blade and maximum thicknesses at the longitudinal end regions of the blade, and said weight portion extending rearwardly from the bottom of the blade and having a minimum thickness greater than that of the upper portion of the blade, there being an undercut region between the major portion of the longitudinal mid-region of the blade and said weight portion, and said weight portion defining a sole surface which is generally straight from front to rear with a rounded front margin adjoined to said ball striking surface through a relatively sharp sand cutting edge along the front of said ball striking surface, whereby said substantially planar ball striking surface slopes up.

wardly and to the rear from said sand cutting edge and said sole surface extends downwardly and to the rear from said sand cutting edge.

5. A sand wedge golf club as defined in claim 4, and wherein one surface of the undercut is a continuation of the rear surface of the blade, and the angle between the ball striking surface of the blade and the bottom of said weight portion is between 41° and 48°.

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