Nov. 4, 1930. G. W. MATTERN 1,780,625

GOLF CLUB HEAD

Filed April 17, 1924

Fig. 1

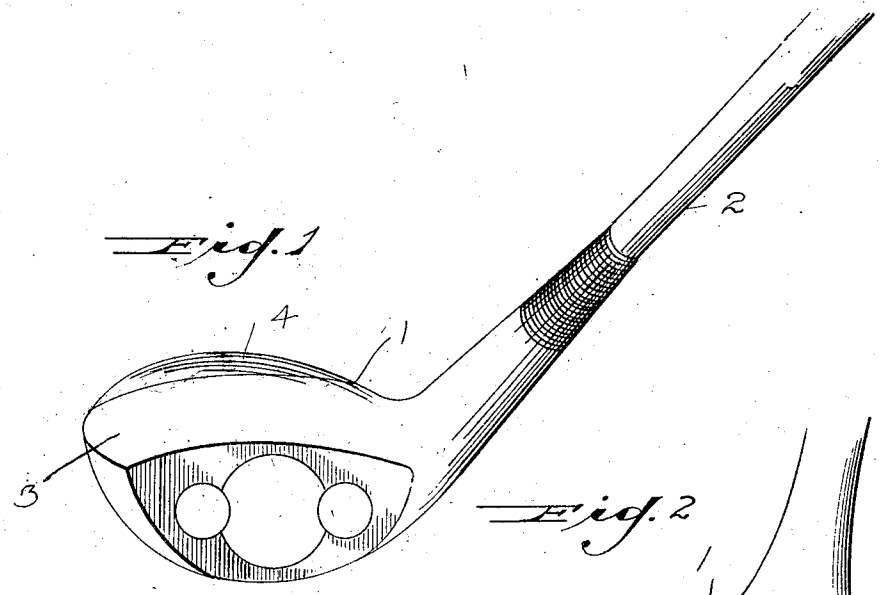


Fig. 2

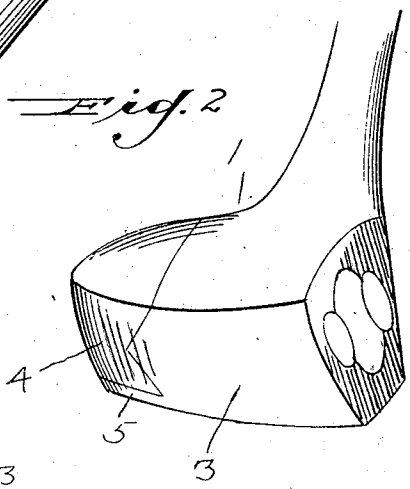


Fig. 3

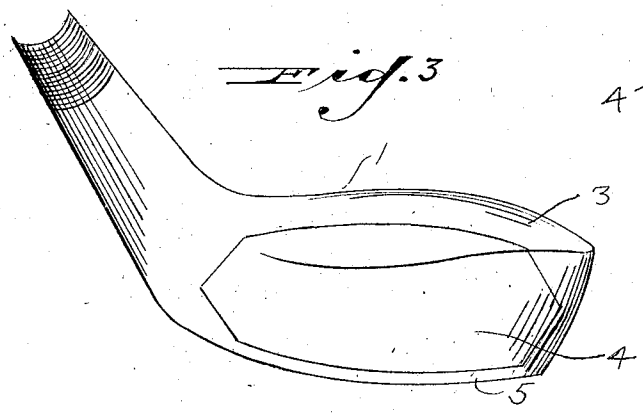
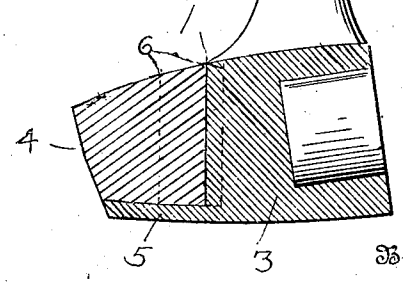


Fig. 4



Inventor

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Patented Nov. 4, 1930 1,780,625

UNITED STATES PATENT OFFICE

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GOLF-CLUB HEAD

Application filed April 17, 1924. Serial No. 707,121.

My invention relates to golf clubs and more particularly to golf clubs of the driver, brassie and spoon type. Such golf clubs are usually provided with wooden heads, which are quite susceptible to climatic and temperature variations. The preferred material is persimmon wood, although cheaper grades of clubs are made with heads of maple, beech and other woods. Such club heads, even when of best variety of wood have a tendency to swell and shrink, to weather check and to split and are frequently broken in play.

While various other materials such as phenolic condensation materials, hard rubber, composition, fiber and aluminum have been suggested and tried as a material for golf club heads, these materials have not generally been successful and have not attained any considerable use, because deficient in some one or more of the requisite characteristics.

The ordinary and commonly known metals are entirely too heavy to form a club head of the driver or spoon shape. It has been discovered, however, that the metal magnesium, or magnesium alloys containing magnesium in a large proportion affords a suitable material from which club heads may be made, within the established range of weights of such clubs and which possess the requisite tensile strength and elasticity. Such magnesium heads are not materially heavier than the wooden club heads ordinarily employed and are not subject to the unfavorable conditions and deterioration of the wooden heads. Magnesium or magnesium alloy is found to be close grained material, having a specific gravity approximating that of wood, and which seemingly possesses peculiar characteristics, of rigidity combined with a degree of elasticity, enabling the player to acquire greater "distance". A golf club is subjected to a variable and wide range of forces when in play, the reaction to which cannot be easily or readily foretold. The inherent qualities of the magnesium golf club heads, or one composed in the main of magnesium is such that the reaction of the ball when struck by such head is not only equal to, but is thought to exceed that of a wooden golf club head. At the same time such head avoids the objectionable features of the wooden head.

In adapting magnesium to golf club manufacture, certain established requirements of conventionality of contour, weight and balance must be maintained. It is the practice to balance or weight a wooden club head by embedding in the rear side thereof a body of lead or other material of high specific gravity. Such added weight is compensated for by the higher specific gravity of the magnesium club head. In the case of light weight clubs, the balancing of a metallic head of the driver or spoon type is achieved conversely by seating in the rear of the head a body of characteristically lighter material, or one of less specific gravity. In such case, the metallic head is preferably rabbeted on its rear side, affording a rearwardly extending base flange, or ledge, coincident with the sole of the club, upon which a body of other material such as wood, ivory, celluloid, fiber, composition or other material of suitable characteristics and specific gravity may be fixedly seated. The weight and balance of the club is achieved by varying the proportions of such auxiliary body of characteristically different material, the main body of the club, however, with its integral hosel and integral rearwardly extending sole plate being of metal. While materials or metals other than magnesium may be employed in the present manner, as before stated, magnesium or magnesium alloy is to be preferred. Aluminum which has been sometimes suggested for such purpose possesses a specific gravity of 2.50, whereas the specific gravity of magnesium is approximately 1.75. For the present purpose the magnesium is preferably alloyed with aluminum in the approximate proportion of ninety-four per cent magnesium to six per cent of aluminum. To this compound may be added, a small quantity of antimony, bismuth or cadmium. Such alloy possesses a specific gravity of approximately 1.78 and a hardness of 70 Brinell. The relative proportions and added ingredients are mentioned for illustrative purposes only, and are not intended as limitations.

The object of the invention is to afford a

golf club head, which will not only be cheap and economical in manufacture, but will be more efficient in use, of increased durability, non-susceptible to weather, temperature and climatic conditions, and generally capable of withstanding hard usage without deterioration.

A further object of the invention is to provide a metallic golf club head of the driver or spoon type, which will not differ materially in weight and balance from those characteristics of the ordinary wooden club head, but which will possess an inherent characteristic making it possible to achieve greater distance, and affording improved reaction of the ball when struck.

A further object of the invention is to provide golf club heads of material having specific gravity somewhat greater than that of wood, thereby compensating for the usual added weight body of the ordinary wooden golf club head, and in the case of light clubs, providing in combination with the metallic head, in lieu of the usual weight or balance body, a body of less specific gravity, to comply with the conventional contour, size and weight requirement.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation or their equivalents, as hereinafter described and set forth in the claims.

Referring to the accompanying drawings, wherein is shown the preferred, but obviously not necessarily the only form of embodiment of the invention, Figs. 1, 2 and 3 are respectively, perspective views of a golf club head, of the driver or spoon type, embodying the present invention, shown in different positions. Fig. 4 is a transverse sectional view.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the accompanying drawings, 1 is a golf club head, and 2 the handle shaft. The head 1 is formed from metal preferably magnesium or an alloy of which magnesium forms the principal and dominating portion. While it has been discovered that magnesium and magnesium alloys possess peculiar qualifications and characteristics, adapting them to the present purpose, it is to be understood that in view of the fact that other alloys may be compounded or other metals of low specific gravity, substituted, the present invention is not intended to be limited specifically to a single material.

While some players may desire a comparatively heavy golf club, or one having more weight than that desired by other players, to meet such conditions, the entire golf club head 1, may be formed from magnesium, or a magnesium alloy, without any insert or embedded portion of different characteristics. To modify the weight of the club head, while retaining its traditional shape and proportion and to afford the desired balance of the metallic head, the present head is recessed at its rear side and an insert or complementary body 4 of characteristically different material such as celluloid, wood, fiber, ivory or the like is fixedly attached to the main body 3. A particularly acceptable material for this purpose is the casein product galalith. This is somewhat analogous to loading or weighting a wooden head with a body of lead or other ballast. In preparing the main body 3 of the head to receive such complementary insert or addition 4, the head is rabbeted as its rear side leaving at the base or sole of the club a rearwardly extending flange or ledge 5. The sole of the club is thus continuous from the front to the rear and integral with the main body, which carries the hosel or neck, to which the handle shaft is connected. The insert is seated in the rabbet formed by the rearwardly extending flange or ledge 5, and is secured by cementing or by means of screws, studs or other attachment. To further insure a firm and secure seat for the complementary body 4, and to afford a slight differentiation of weight or balance, either the complementary insert 4, or the main body of the club head 3 may be provided with a triangular or grooved depression in the face of the seating rabbet and the opposing member is correspondingly formed to agree with such recess. In Fig. 3 the complementary member 4 is shown recessed with a prismatic face formed upon the main body 3 of the club head, and agreeing with such grooved depression. In Fig. 4 this relation is reversed, and V-shaped groove or depression is formed in the main club head member 3, while the complementary body 4 is shown provided with the prismatic or convex face agreeing with such recess. To vary the weight and balance of the club over an extended range, the relative proportion of the complementary insert 4 and the main body 3, of the head may be varied by making one or the other member proportionately smaller, and the opposing member proportionately larger, as indicated by dotted lines 6 in Fig. 4. The extended flange or ledge 5 forms a sole plate beneath the complementary body 4, integral with the main body 3 of the club head. It is obvious that in lieu of this construction, a separate sole plate might be employed, overlapping and attached to the respective bodies 3 and 4. However, the preferred construction is the integral rearward projecting ledge or flange 5 as before described. While the striking face of the club may comprise a continuous metallic surface of the main body 1, such body if desired may have formed therein a mortise in which is embedded a body of non-metallic material as is customary in golf club manu-

facture. Such inset body 7 may be of wood, fiber, ivory or the like, the preferable material, however, being a casein product known commercially as galalith.

Magnesium possesses the necessary combination of physical properties not possessed by any of the other metals heretofore tried, which specially adapts it for golf club heads. It combines in a workable alloy the necessary weight, strength and hardness for the purpose, a combination of qualities better than wood without the objectionable characteristics of wood. By the composite construction described, the traditional contour of the club head may be retained with a degree of lightness and balance to suit the whims and desires of individual players. Such material possesses characteristics of combined rigidity and elasticity in such degree with other inherent unforeseen qualities, which experiment and experience have shown render it ideally responsive to the strains and stresses of golf play, and afford unexpected accuracy and distance in the flight of the driven ball.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprises the preferred form of several modes of putting the invention into effect and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

I claim:

1. In a golf club of the driver, brassie or spoon type, a non-hollow metallic body including an integral neck or hosel, said body being continuous from the striking face of the club head to a line rearwardly of the hosel, an angular recess formed in the rear portion of said metallic body and a body of non-metallic material fitted in said recess forming the back of the club and top and side surfaces conforming to and forming continuations of those surfaces of the metallic body.

2. In a golf club of the driver, brassie or spoon type, a golf club head including a hosel comprising a body of continuous metal from its striking face to a line to the rear of the hosel and having in the striking face a mortise, a non-metallic insert seated in said mortise, the rear portion of said metallic body being rabbeted to form an angular offset the bottom of which forms an integral extension plate continuous with the sole of the club, and body of non-metallic material seated in said rabbet and forming a continuation of the top, back and side surfaces of the club head.

3. A golf club head of the driver type comprising a metallic body having a socket opening through its driving face, closed at its rear end to form an abutment wall, an impact body within said socket, seating against the abutment wall, a hosel portion integral with the body of the club head, the head being rabbeted rearwardly of said hosel portion and abutment wall to afford an integral rearwardly extending sole portion and a non-metallic weighting and balancing body located in said rabbet and contoured in agreement with said metallic body to conform to the conventional shape of a golf driver or the like.

In testimony whereof, I have hereunto set my hand this 7th day of April, A. D. 1924.

GEORGE W. MATTERN.