

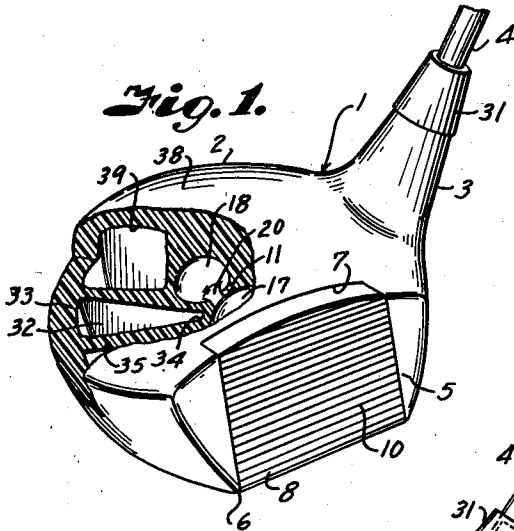
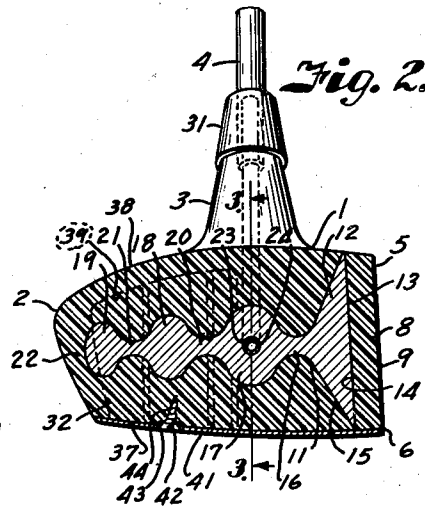
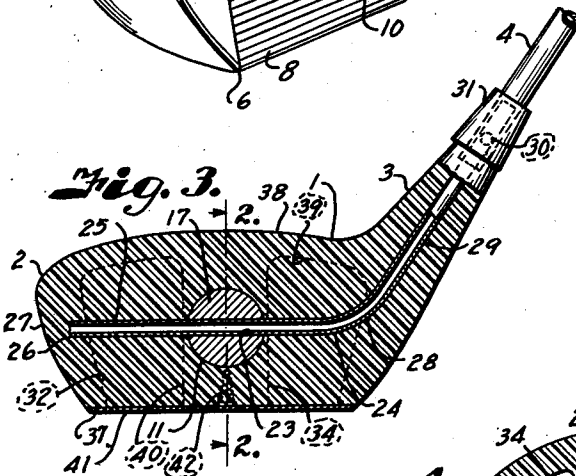
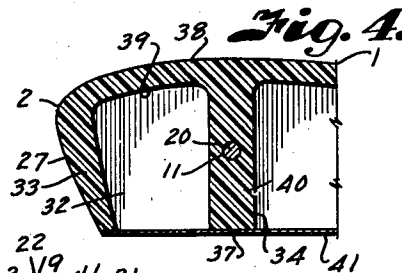
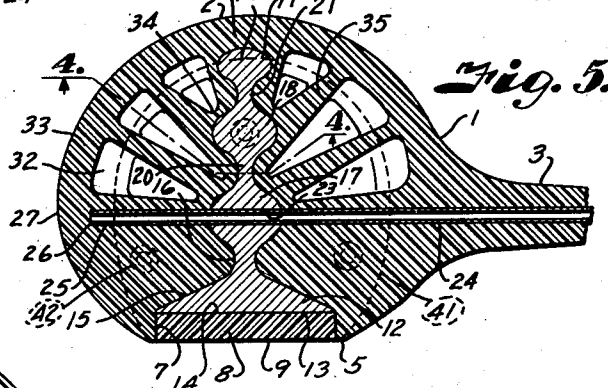
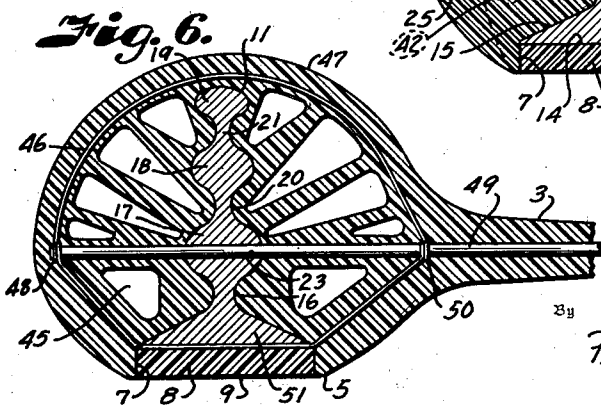
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GOLF CLUB

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GOLF CLUB

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This invention relates to golf clubs and more particularly to a club having a head heretofore known as a "wood," the principal object of the invention being to provide a golf club in which a relatively heavy member in combination with voids is used to form a club of desired total weight wherein the principal weight of the head is substantially behind the ideal point of impact of the club with the ball.

It has been found to be desirable that the total weight of a "wood" golf club should be between 12.75 ounces and 14.5 ounces depending upon the size of the player. In some instances such clubs have been made wherein the weight is approximately 15.5 ounces but such a weight is usually considered too heavy. Players also desire a "click" sound at the time of impact of the club head with the golf ball. Therefore the attempts to make clubs of heavy material with large hollow portions in the head to lighten the total weight have been unsuccessful due to hollow or dead sounds which have characterized such clubs.

Other objects of the invention are, therefore, to provide a molded club of suitable plastic or the like with a core of material having a greater specific gravity than the plastic, such as metal imbedded in the club head supporting a striking face of either plastic or fiber, the interior of said club head having a plurality of spaced integral ribs for structural strength, weight distribution, overall balance, swing weight and proper sound effects on impact with the golf ball; to provide a golf club structure in which weights, ribs and voids are arranged for accurate control of total weight of said club at time of molding eliminating unscientific methods of weighting and balancing clubs as by drilling holes in finished club heads; to provide for connecting the principal weight portion of the club head with the club shaft for effecting maximum transmission of forces therebetween and reduction of stress in the material forming the outer portion of the club head; to provide a golf club structure which is suitable for molding of plastic and the like into a conventional shape and of desired overall weight, balance and swing weight wherein the full effect of the inertia of the principal weight of the club head is imparted to the ball with the desired click sound at the time of impact; to provide for reinforcing thin walls of the club head with wire or mesh tying the molded plastic walls to add structural strength to a light weight, strong, non-solid plastic golf club; to provide a golf club head which requires a minimum of finishing or machining and is economical to man-

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ufacture in a proper shape and balance; and to provide improved elements and arrangements thereof in a golf club of the character described.

In accomplishing these and other objects of this invention I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing wherein:

Fig. 1 is a perspective view of a golf club head embodying the present invention, portions of the head being broken away to show the arrangement of the core and voids therein.

Fig. 2 is a transverse sectional view through the club head on the line 2-2, Fig. 3.

Fig. 3 is a longitudinal sectional view through the club head on the line 3-3, Fig. 2.

Fig. 4 is a sectional view through a portion of the club head on the line 4-4, Fig. 5.

Fig. 5 is a horizontal section through a club head showing the arrangement of the striking face, core and shaft connection therein.

Fig. 6 is a horizontal section through a modified club head showing a reinforcing member in the outer portion thereof.

Referring more in detail to the drawing:

1 designates a golf club embodying the features of the present invention which preferably consists of a head 2, shank 3 and shaft 4. The head is preferably molded or otherwise formed of plastic material such as stearates, cellulose nitrate or other plastic having suitable hardness and toughness to withstand the shock received in driving the golf ball. The head and shaft are preferably of conventional shape and size, said head having a front striking face 5 inclined upwardly and rearwardly from the lower edge 6 thereof to form the proper pitch to the striking face, said pitch being conventional as in a driver, brassie, spoon, etc. The entire striking face may be integral with the club head and formed of the same plastic material from which such head is molded, however, it is preferable to provide the face of said head with a recess 7 extending from the bottom to the top of the club head and of suitable width and depth to receive an insert 8 of suitable plastic or fibre preferably of substantially the size of an insert in the face of conventional golf clubs. The insert 8 is cemented or otherwise secured in the recess 7 whereby the forward face 9 of said insert lies flush with the forward face of the plastic portion of the club head 2. The striking face of insert 8 is provided with grooves 10 as in conventional practice.

Arranged in the club head and preferably molded therein is a core 11 formed of aluminum, brass, magnesium, or other suitable material

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having greater specific gravity than the plastic forming the club head and of such size and weight to concentrate weight or striking power in the club head immediately behind the striking face 9 and increase the driving force of the club. The core is preferably arranged on a line slightly below the vertical center of the club head and consists of a plate 12 having a forward face 13 substantially coextensive with the insert 9 and adapted to lie against the rear face 14 of said insert. The plate 12 is provided with rearwardly converging faces 15 terminating in a small neck portion 16 arranged on the axis of the core. The neck portion 16 connects the plate 12 with an enlarged portion or mass 17 having its center substantially in a plane aligned with the shaft of the club. Spaced rearwardly of the mass 17 are enlarged portions or masses 18 and 19 each diminishing in size relative to the one forward thereof, small neck portions 20 and 21 on the axis of the core connecting the respective masses. The rearward mass 19 is spaced as at 22 from the rear surface of the club head. The particular size and shape of the neck portions and the enlarged mass portions of the core are arranged to cooperate with the remainder of the club head to provide accurate weighting, balancing and swing weight to the club.

It is desirable for the enlarged portion 17 of the core to be suitably connected with the shaft 4. Therefore the portion 17 is provided with an opening 23 extending therethrough parallel to the bottom of the club. Extending through the opening 23 and suitably secured to the core is a connecting member 24 which may be a rod but preferably for the lightness in weight is formed of a metal tube of such length that the portion 25 extending through the opening 23 terminates as at 26 in slightly spaced relation to the outer face 27 of the head. Adjacent the connection of the shank 3 and club head 2 the connecting member is bent as at 28 to form an upwardly extending inclined portion 29 preferably arranged on the axis of the shank. The upper end of the inclined portion is suitably connected to the shaft 4 as by telescoping therein and suitably secured as by a pin 30 adjacent the upper extremity of the shank which is enclosed in a suitable ferrule 31 or other closure to make a neat appearance as in conventional practice.

The shaft 4 and a connecting member 24 provide a direct connection between the shaft and the core 11 to effect transmission of forces from the shaft to the weight whereby the full effect of inertia, the weight and the forces imparted thereto are delivered directly behind the point of impact between the striking face and the ball to increase the driving force delivered thereto. However, it is obvious that the shaft may be suitably connected to the club head as in conventional practice with slight modification to accomplish a similar effect, control the weight, distribute stress and obtain the desired click sound from impact of the club face with the ball.

The rear portion of the club head is provided with a plurality of voids 32 preferably being arranged substantially radially of the core, the outer portion of said voids being spaced as at 33 from the periphery of the club head. Each of the voids are wider adjacent the edges of the head and taper toward the core terminating as at 34 in spaced relation to the core. This arrangement of the voids provides ribs or webs 35 between the respective voids, said ribs being wider adjacent the core than at the outer extremity

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where they connect with the outer portion of the head. The voids extend upwardly from the bottom face 37 of the club head and terminate below the upper face 33 of the club head as at 33, providing sufficient efficient material between the voids and the upper face for adequate strength in the club head. This arrangement of voids and ribs provides outwardly radially arranged members for transmitting stress through the respective portions of the club as well as providing a vertical web 40 in which the core is located concentrating the principal portion of the weight of the club head behind the point of impact with the ball.

The lower face 37 of the club head is covered by a sole scuff plate 41, said scuff plate extending over the lower openings of the voids to completely cover same. The sole plate 41 is secured in place on the bottom of the club head by screws 42 which extend through opening 43 in said sole plate and screw into openings 44 in the head.

In assembling a golf club constructed as described the connecting member 24 is inserted into opening 23 of the core and secured thereto. Said core and connecting member are then placed in a suitable mold having portions thereon for forming the recess 7 and the voids 32. A suitable plastic material is placed in the mold around the core by injection of other suitable plastic molding process to form the club head in the shape of a club "wood." After the club head is removed from the mold the surface is in a finished condition and requires no polishing or the like. The insert 8 is then placed in the recess 7 and cemented or otherwise secured thereto. The sole or scuff plate 41 is then applied to the bottom 37 of the club head and secured thereto by the screws 42 being threaded into the openings 44 in the club head. The joint between the shaft, connecting member 24, and shank 3 is then completed and covered with a ferrule 31 to make a completed club.

The form of invention illustrated in Fig. 6 is substantially the same as shown and described relative to Figs. 1 to 5 inclusive. Additional voids 45 are provided in the club head and a wire or mesh 46 arranged between the voids and the outer extremity 47 of the club head, said wire or mesh being secured as at 48 adjacent to the terminal end of the connecting member 49 and as at 50 adjacent the point of connection of the shank and club head. The wire or mesh also extends to the edges of the plate member 51 of the core and across the face thereof behind the insert 8. This wire or mesh adds to the structural strength and may be used to reinforce the ribs, provide a light, strong, plastic non-solid golf club head. This form of the club head is molded and assembled substantially as described relative to the preferred form.

It is apparent, therefore, that the present invention provides a golf club structure which is reliable, practically indestructible and adapted to quantity manufacture in which a proper shape and balance for the club may be scientifically and economically attained.

What I claim and desire to secure by Letters Patent is:

1. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, a ball striking face on the forward wall, a weight member engaging the forward wall and

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extending rearwardly therefrom substantially to the rear wall, and a plurality of rearwardly diverging ribs integral with and extending downwardly from the top wall connecting the weight member and rear wall to form a supporting structure for said weight member, said ribs being connected adjacent the weight member for entirely enclosing said weight member in plastic material and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball.

2. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, a ball striking face on the forward wall, a weight member engaging the forward wall and extending rearwardly therefrom substantially to the rear wall, a central bridge integral with and extending downwardly from the top wall connecting the forward and rear walls and surrounding the weight member, and a plurality of spaced ribs integral with and extending downwardly from the top wall having connection with the central bridge and diverging rearwardly therefrom to form a supporting structure for the weight member and increase the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball.

3. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, a ball striking face on the forward wall, a weight member engaging the forward wall and extending rearwardly therefrom substantially to the rear wall, a plurality of rearwardly diverging ribs integral with and extending downwardly from the top wall connecting the weight member and rear wall to form a supporting structure for said weight member, said ribs being connected adjacent the weight member for entirely enclosing said weight member in plastic material and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, and means connected to the weight member and extending through the neck adapted for connection with the club shaft.

4. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, a ball striking face on the forward wall, a weight member engaging the forward wall and extending rearwardly therefrom substantially to the rear wall, a plurality of rearwardly diverging ribs integral with and extending downwardly from the top wall connecting the weight member and rear wall to form a supporting structure for said weight member, said ribs being connected adjacent the weight member for entirely enclosing said weight member in plastic material and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, means connected to the weight member and extending through the neck adapted for connection with the club shaft, and a sole plate secured on the under side of the body.

5. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, a ball striking face on the forward wall,

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a weight member engaging the forward wall end extending rearwardly therefrom substantially to the rear wall, a central bridge integral with and extending downwardly from the top wall connecting the forward and rear walls and surrounding the weight member, a plurality of spaced ribs integral with and extending downwardly from the top wall having connection with the central bridge and diverging rearwardly therefrom to form a supporting structure for the weight member and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, means connected to the weight member and extending through the neck adapted for connection with the club shaft, and a sole plate secured on the under side of the body.

6. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, an insert in the forward wall forming the striking face thereof, a weight member engaging said insert and extending rearwardly therefrom substantially to the rear wall, a central bridge integral with and extending downwardly from the top wall connecting the forward and rear walls and surrounding the weight member, a plurality of spaced ribs integral with and extending downwardly from the top wall having connection with the central bridge and diverging rearwardly therefrom to form a supporting structure for the weight member and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, and a sole plate secured on the under side of the body.

7. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, an insert in the forward wall forming the striking face thereof, a weight member engaging said insert and extending rearwardly therefrom substantially to the rear wall, a central bridge integral with and extending downwardly from the top wall connecting the forward and rear walls and surrounding the weight member, a plurality of spaced ribs integral with and extending downwardly from the top wall having connection with the central bridge and diverging rearwardly therefrom to form a supporting structure for the weight member, said ribs being progressively less in thickness toward the rear wall for increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, means connected to the weight member and extending through the neck adapted for connection with the club shaft, and a sole plate secured to the under side of the body.

8. A golf club head comprising, a molded body of plastic material having integral top, forward and rear walls and terminating at one side in a neck adapted for connection with a golf club shaft, an insert in the forward wall forming the striking face thereof, a weight member having an enlarged head engaging said insert, said weight member extending rearwardly from the insert substantially to the rear wall and having a plurality of axially arranged enlarged portions rearwardly spaced relative to the insert, a plurality of rearwardly diverging ribs integral with and extending downwardly from the top wall connecting the weight member and rear wall,

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said ribs diverging from each of the enlarged portions of the weight member and being progressively less in thickness toward the rear wall, said ribs being connected adjacent said weight member for entirely enclosing said weight member in plastic material and increasing the effective mass at the center of the head behind the normal point of impact of the striking face on a golf ball, wire reinforcing means in the forward and rear walls adjacent the periphery of the body, a tubular member extending through the weight member and secured thereto and to the wire reinforcing means on opposite sides of the weight member, said tubular member extending through the neck and adapted for connection with the

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club shaft, and a sole plate secured on the under side of the body.

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