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M. B. REACH

2,361,415

GOLF CLUB

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Fig. 1.

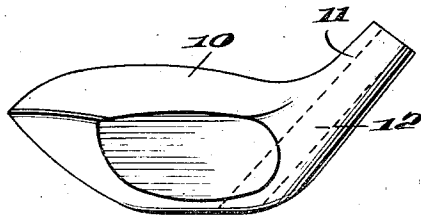


Fig. 2.

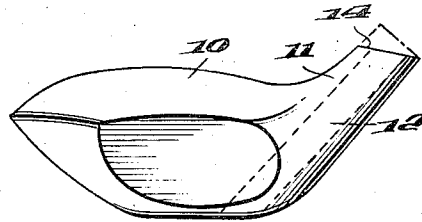


Fig. 3.

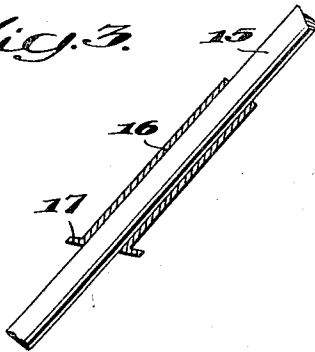


Fig. 4.

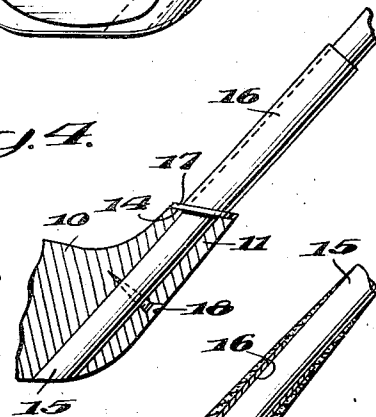


Fig. 5.

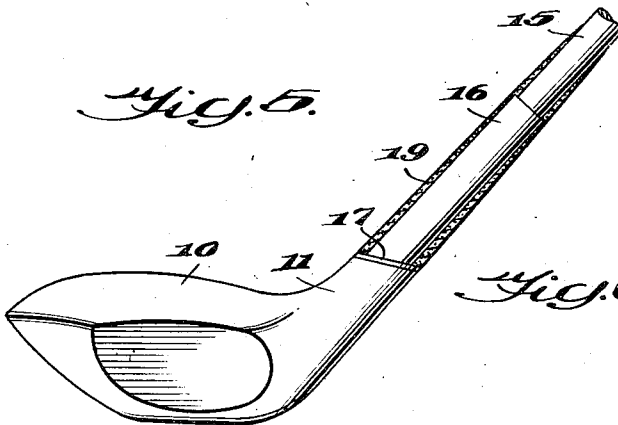
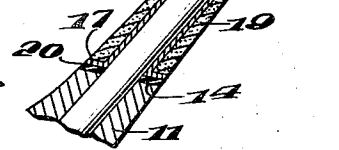


Fig. 6.



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GOLF CLUB

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7 Claims. (Cl. 273—80)

The present invention relates to golf clubs, and more particularly pertains to improvements in the joint between the club head and the shaft in golf clubs of the wood type.

One of the disadvantages of wood type golf clubs in the past is that the club often breaks in the hosel or neck area, and this weakness results from deficiencies in the structure of the joint between the club head and the shaft. In the past it has been customary to taper the neck or stem so as to blend or merge this part of the hosel artistically with the relatively small shaft. Such tapering of the hosel portion leaves but a thin annular section of material around the shaft which provides an inherent weakness in conventional golf clubs. Another cause of the breakage in the hosel or neck area of such wood type clubs results from the torsional stresses set up during impact of the club head with the ball. The club head in the vicinity of the relatively small stem is therefore subjected to considerable twisting action relative to the shaft and these forces are often sufficient to rupture the club head in the hosel portion whereby the club is no longer of further use.

It is accordingly an object of the present invention to provide an assembly of the club head and the shaft wherein the disadvantages of the prior constructions as hereinabove referred to are avoided.

Another object of the invention resides in providing a joint structure between the shaft and head of a golf club having an artistic appearance, and wherein the torsional stresses developed during a tendency of the hosel portion of the club head to turn on the shaft are distributed over a relatively large part of the hosel.

A more specific object of the invention pertains to the provision of a transverse shoulder on the hosel or stem of a golf club head arranged at an angle to a plane perpendicular to the axis of the shaft including a flange on the shaft arranged substantially parallel to the oblique shoulder for preventing relative turning movement between the shaft and the club head without setting up destructive stresses in the neck or hosel portion of the club head.

A still further object of the invention resides in providing resilient material in the joint between the golf club head and the shaft to provide shock absorbing means in the joint and for the further purpose of sealing the connection between the club head and the shaft.

Other objects and features of the invention will be more apparent upon consideration of the

accompanying drawing and the following detailed description wherein an exemplary embodiment of the invention is disclosed.

In the drawing:

Figure 1 is a front elevational view of a club head of the wood type showing the initial step in shaping the hosel or stem.

Fig. 2 is a similar view illustrating the manner in which an oblique shoulder may be formed on the hosel portion of the club head.

Fig. 3 is a side elevational view of a portion of the shaft illustrating the ferrule and flange thereon in section.

Fig. 4 is a sectional view of the stem portion of the club head showing the manner in which the shaft and flange thereon are associated with the shoulder on the hosel.

Fig. 5 is a side elevational view of the assembled shaft and club head illustrating the wrapping in section.

Fig. 6 is a sectional view illustrating a resilient member between the flange and the oblique shoulder on the stem of the club head.

In carrying out the invention, the club head indicated at 10 in the drawing is formed in the usual conventional manner. Such a club head includes a stem or hosel portion 11 which may be formed as an integral part of the club head 10. The hosel or stem 11 is elongated and extends upwardly and angularly from the rear portion of the club head. When the club head is formed of wood the hosel or stem portion is usually conically tapered to such an extent that the neck blends or substantially merges with the shaft to which the club head is attached. This relatively thin portion of the neck or stem provides a weak structure so that the stresses set up in the neck portion of the club during use are often sufficient to cause breakage or splitting of the wood in the hosel portion of the club head.

The present invention provides means for strengthening a golf club at the juncture between the club head and the shaft, and particularly in golf clubs of the wood type. The improved assembly is such as to apply the torsional strains to the upper end of the hosel or stem portion without setting up material twisting stresses in the upper end of the stem on the club head. These advantages are obtained by shaping the upper end portion of the hosel so as to provide a substantial shoulder of material surrounding an opening 12 for the shaft. The shoulder may be formed by cutting off the thin conical tapered part of the stem in a manner as shown in Fig. 1.

The upper end portion of the hosel or stem 11

is however shaped to provide a plane surface or shoulder 14 arranged obliquely to a plane perpendicular to the axis of the shaft or the opening 12 in the hosel 11. The angular relationship of the shoulder 14 with respect to the transverse shoulder is clearly illustrated in Fig. 2 wherein the substantially flat surface of the shoulder 14 is arranged at an acute angle to the axis of the opening 12 in the hosel or stem portion of the club head. The shoulder 14 thus forms the upper end surface of the hosel 11 and this annular shoulder surrounds the opening 12.

A shaft for the club head is shown at 15 in Fig. 3, and this shaft may be formed of any suitable material such as metal. The shaft is of a conventional design and is adapted to extend into the opening 12 arranged in the hosel 11 and the club head 10 whereby the club head is mounted on the shaft.

Another feature of the invention pertains to the provision of a flange 17 on the shaft 15. The flange 17 preferably embraces the shaft 15 to provide an annular shoulder thereon complementary to the shoulder 14 at the upper end of the stem or hosel 11. The flange 17 is arranged in a plane at an angle to a plane perpendicular to the axis of the shaft 15. Thus the flange 17 is arranged at an acute or obtuse angle with respect to the axis of the shaft 15. The under face of the flange 17 is preferably flat and arranged at such an angle on the shaft 15 so as to be parallel to the shoulder 14 when the shaft is arranged in the opening 12. This assembled relationship is illustrated in Fig. 4, and it will be noted therefrom that the shaft flange 17 lies flat against the shoulder 14.

The flange 17 may be secured to the shaft 15 in any suitable manner. In the exemplary embodiment illustrated in the drawing the flange 17 is rigidly attached to the shaft by means of a tubular member 16. The flange 17 is preferably formed as an integral part of the tubular member or sleeve 16. The tubular member may be secured to the shaft 15 in any suitable manner to prevent rotation of the sleeve on the shaft and to prevent axial movement of the tubular member 16 on the shaft. Thus the sleeve 16 may be welded, brazed or sweated on the shaft 15.

The shaft 15 may be retained within the opening 12 by any conventional means such as a screw indicated at 18 in Fig. 4. It will be observed that the flange 17 lies flat against the shoulder 14 and the screw 18 is applied with the parts in this assembled position so that the flange 17 is retained against the shoulder 14 or the angular shaped end of the stem or hosel 11. Thus any tendency of relative movement between the club head and the shaft 15 is prevented by reason of the angular relationship of the shoulder 14 and the flange 17 with respect to the axis of the shaft 15. Any tendency of relative turning movement between the club head and the shaft 15 will set up a camming action between the flange 17 and the shoulder 14. Thus the forces tending to split the hosel portion of the club head are applied in a more or less compressional manner axially of the hosel in contrast to torsional stresses set up in a conventional type connection between the hosel and shaft of a golf club.

The joint structure hereinabove described facilitates the finishing of the club whereby the appearance of the club at the connection between the club head and the shaft is artistic and provides a slenderized blending of the hosel and shaft. Thus after the shaft has been affixed to the club head as shown and described in connection with

Fig. 4, a wrapping may be applied around the tubular member 16 to form a slenderized cone tapering from the flange 17 and merging with the shaft as shown in Fig. 5. The wrapping 19 may consist of any suitable material such as plastics and preferably extends above the upper end of the tubular member 16 so that substantially all structural features of the joint between the shaft and the club head are covered by the wrapping. The wrapping 19 may be applied in excess of the necessary thickness, particularly at the base of the cone adjacent the flange 17 after which the excess material may be rubbed down or otherwise removed to register with the lines of the neck portion of the club.

In some assemblies it may be desirable to interpose some yieldable or resilient material in the joint between the head and the shaft as a convenience in assembly, and to provide against shrinkage and to insure against open joints, and to add decorative color to the golf club. Thus a washer 20 may be arranged in the joint as shown in Fig. 6. This washer 20 may be applied simply by positioning the washer on the shoulder portion 14 before introducing the shaft 15 into the opening 12. The washer 20 may also be arranged over the lower end of the shaft 15 adjacent the flange 17 before introducing the shaft into the opening of the hosel portion of the club head. The washer 20 may be made of some resilient material such as rubber or some synthetic material to compress slightly under the camming action of the flange 17 relative to the shoulder 14 or upper end portion of the hosel 11. The washer 20 will thus serve as a retarding agent and soften the shock to the hands of a player upon impact of the club head with the ball. The resilient washer 20 may be more desirable when the club head is formed of some material other than wood whereby the shock absorption of wood is no longer present in the club head material. The washer 20 also provides means for maintaining a closed joint between the flange 17 and the upper end 14 of the hosel regardless of small shrinkages in the materials of the adjacent parts. The washer 20 may likewise be formed of a material having a color in contrast to the adjacent parts of the club, and of a different color with respect to the other clubs, so as to indicate different types of clubs.

While the invention has been described with reference to the specific structural details and with regard to various types of materials in forming the jointure between the club head and shaft, it will be appreciated that changes in the structural features may be made and other materials may be employed in carrying out the invention. Such modifications and changes may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A golf club comprising, a head including a hosel portion, a shaft, said hosel portion having an opening therein receiving said shaft, a shoulder on said hosel portion arranged at an angle to a plane perpendicular to the axis of said opening, a flange on said shaft arranged at an angle to a plane perpendicular to the axis of the shaft and substantially parallel to the surface of said shoulder, and said flange being positioned close enough to said shoulder to provide a camming action between the flange and said shoulder upon rotation of the hosel with respect to the flange.

2. A golf club comprising, a head, a stem on said head terminating in a substantially flat surface, a shaft extending into said stem, a flange

carried by the shaft in substantially flat engagement with said surface, and said flange and said flat end surface of the stem being arranged at an acute angle with respect to the axis of said shaft.

3. A golf club comprising, a head, an elongated stem extending from the head with the upper end thereof forming a plane transverse surface at an obtuse angle with respect to the axis of the stem, a shaft extending axially of said stem, a flange embracing said shaft adjacent said plane surface and substantially parallel thereto, means providing a connection between the flange and the shaft, and means restraining the shaft from movement away from the stem and thereby maintaining the flange adjacent said transverse surface to set up a camming action between the flange and said transverse surface upon turning of the stem relative to the flange.

4. In a golf club, a head including an integral stem portion extending upwardly therefrom, said head and said stem having an opening therein, a shoulder on said stem adjacent said opening arranged transversely to the axis of said opening and at an obtuse angle with respect to the axis of the opening, a shaft extending into said opening, a tubular member rigidly secured to said shaft, a flange on the tubular member arranged in substantially flat engagement with said shoulder, and means for retaining the shaft within said opening to maintain the flange adjacent said shoulder.

5. A golf club comprising, a head including a hosel portion, a shaft, said hosel portion having an opening therein receiving said shaft, a shoulder

on said hosel portion arranged at an angle to a plane perpendicular to the axis of said opening, a flange on said shaft adjacent said shoulder arranged at an angle to a plane perpendicular to the axis of the shaft and substantially parallel to the surface of said shoulder, and a washer arranged between the shoulder and said flange.

6. A golf club comprising, a head including a hosel portion, a shaft, said hosel portion having an opening therein receiving said shaft, a shoulder on said hosel portion arranged at an angle to a plane perpendicular to the axis of said opening, a flange on said shaft adjacent said shoulder arranged at an angle to a plane perpendicular to the axis of the shaft and substantially parallel to the surface of said shoulder, and a resilient washer embracing the shaft between the shoulder and said flange.

7. A golf club comprising, a wood head, an integral elongated wood stem extending from the head terminating in a substantially flat transverse surface, a shaft extending longitudinally into the stem, a tubular member rigidly secured to said shaft, an integral flange on the tubular member arranged in substantially flat engagement with said end surface, said flange and said flat end surface of the stem being arranged in a plane at an angle to a plane perpendicular to the axis of the shaft, and means retaining the shaft in the stem whereby a camming action is developed between the flange and said flat end surface upon relative rotation of the stem with respect to the shaft.

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