

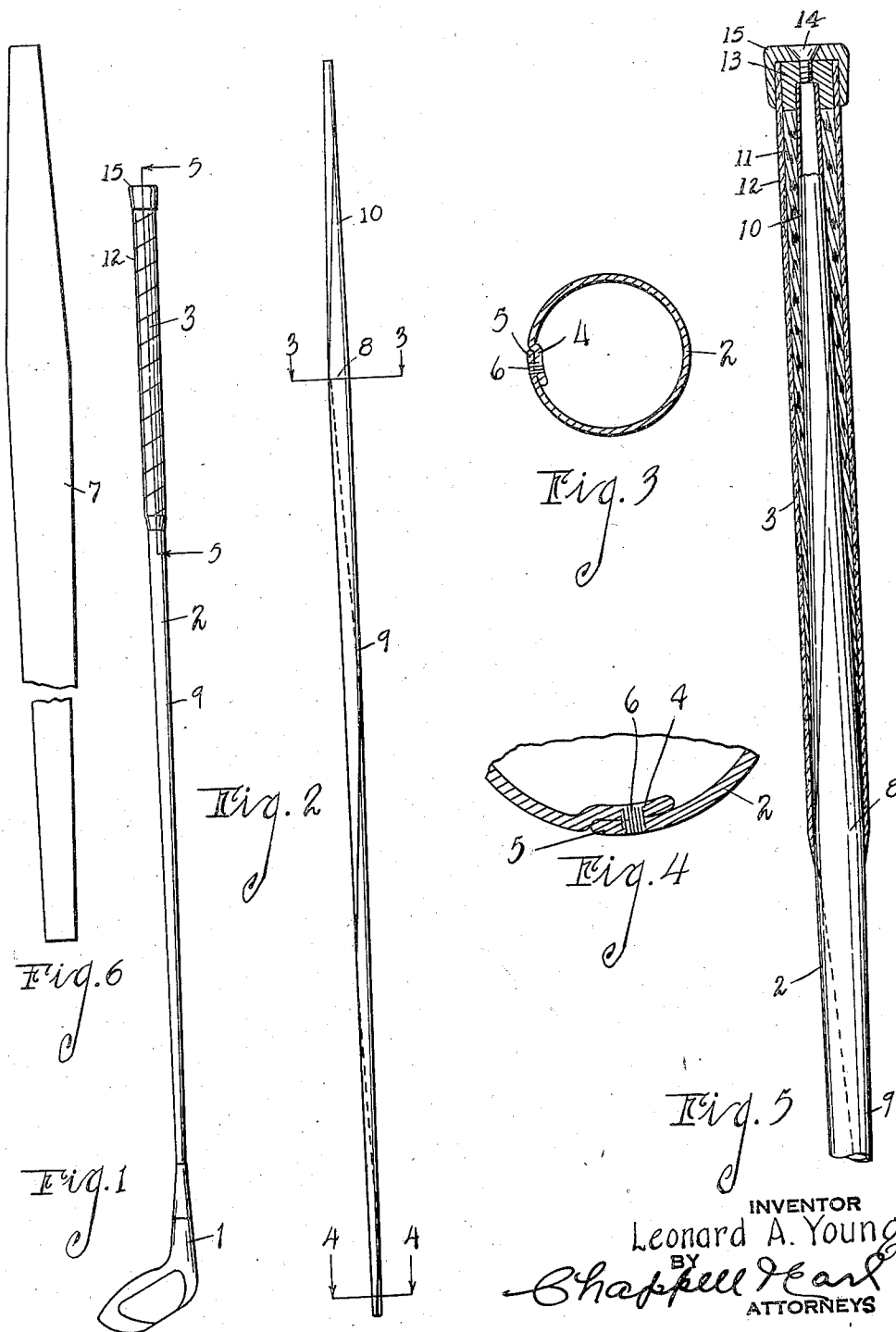
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SHAFT FOR GOLF CLUBS AND THE LIKE

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SHAFT FOR GOLF CLUBS AND THE LIKE

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5 Claims. (Cl. 273-80)

The main objects of this invention are:

First, to provide a metal shaft for golf clubs and the like which may be made in diameters closely approaching wood shafts as commonly employed, and at the same time has the desired resilience.

Second, to provide a shaft for golf clubs and the like in which the shock of impact with the ball is effectively absorbed in the shaft and not transmitted to or absorbed by the user.

Third, to provide a metal shaft for golf clubs and the like which has the desired resilience without the objectionable whipping which is sometimes found in metal shafts.

Fourth, to provide a metal shaft for golf clubs and the like which is well adapted to withstand the torsional stresses to which it is subjected in use.

Fifth, to provide a shaft having these advantages which is very economical to produce.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawing in which:

Fig. 1 is an elevation of a wood head golf club embodying the features of my invention.

Fig. 2 is an elevation of my improved golf club shaft.

Fig. 3 is an enlarged cross section on line 3-3 of Fig. 2.

Fig. 4 is an enlarged fragmentary cross section on line 4-4 of Fig. 2.

Fig. 5 is an enlarged fragmentary view partially in section on line 5-5 of Fig. 1.

Fig. 6 is a plan view of a blank from which the shaft proper is formed, no attempt, however, being made to maintain proportions.

In the accompanying drawing 1 represents a wood golf club head, 2 the shaft, and 3 the grip. These parts are shown in Fig. 1 considerably conventionalized.

My improved golf club shaft is formed of a strip-like blank 7 of sheet metal, preferably tapered toward each end as shown in Fig. 6, and of a length approximately equal to the length of the shaft desired. This strip has an inwardly offset seam flange 4 formed on one longitudinal edge rolled into a tube with its opposite edge 5 overlapping as shown in Fig. 4. Owing to the opposite taper of the blank the resulting tube is tapered toward each end.

This tube is then spirally twisted as shown in

Fig. 2 which results in a spiral positioning of the seam flange and also a spiral positioning of the grain of the metal. After the tube is twisted the overlapping parts are welded together as indicated at 6 and the tube is then properly treated for hardening and tempering. Suitable tempering methods are well understood by those skilled in the art.

With the shaft thus formed it is tapered toward both ends from the point 8. The taper toward the head end 9 of the shaft is about three-fourths the length of the shaft, and the taper toward the upper or grip end 10 of the shaft is about one-fourth the length of the shaft. These proportions may be considerably varied. The shaft is preferably of approximately the same diameter at both ends. The overlapped joint parts serve as a torsion member and they are uniformly distributed about the shaft.

The grip 3 comprises a foundation 11 and a covering 12 of leather or other suitable material. The foundation is shown in the drawing as a one-piece internally tapered tube compensating for the upward taper of the grip portion of the shaft. When the grip is in position the shaft has the appearance of the usual type of golf club shaft tapered from end to end.

To facilitate the attachment of the grip a wood tip 13 is affixed to the end of the shaft, this tip being adapted to receive the retaining screw 14 for the cap 15 by means of which the covering is secured at the outer end of the grip.

With the shaft thus formed there is a substantial yielding or resilience in the grip end of the shaft which is very effective in absorbing the shocks of impact. This also makes it possible to make the shaft of larger diameter, thereby more closely approaching wood shafts in appearance without destroying the desired resilience. This resilience may be had without resulting in the objectional "whip" quite commonly present in metal shafts. Further, the desired flexibility may be had without reducing the thickness at a point where breakage is likely to occur, as is the case with golf shafts now quite largely used which are formed by drawing operations.

This method of manufacture results in a very uniform product and also may be very economically practiced. The tapering of the shaft toward each end is, however, a desirable feature when embodied in shafts formed by drawing operations, or it is practical to form a shaft in sections, the portions 9 and 10 being separately formed and then united by a suitable joint as

there is substantially no flexing at the point where the oppositely tapered portions join.

I have not attempted to illustrate the various parts in their relative proportions such as the taper or gage of metal, and these may be considerably varied. It is believed, however, that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A shaft for golf clubs and the like, formed of a metal strip conformed into a tube of cylindrical cross section, one longitudinal edge of said strip having an inwardly offset joint flange underlapping the adjacent edge, said tube being spirally twisted from end to end, said strip being substantially equal in length to the length of said shaft prior to being so conformed.

2. A shaft for golf clubs and the like formed of a strip of sheet metal conformed into a tube of cylindrical cross section and having overlapping and abutting seam portions, said tube being spirally twisted, said strip and tube being substantially equal in length.

3. A shaft for golf clubs and the like formed of a strip of sheet metal rolled into a tube of cylindrical cross section and having overlapping and abutting seam portions, said tube being spirally twisted from end to end, said strip and tube being substantially equal in length.

4. A shaft for golf clubs and the like formed of a metal strip conformed into a tube of cylindrical tapered cross section and having an internal inwardly offset longitudinal seam flange on one edge overlapped by the other edge, said tube being spirally twisted and said seam flanges being fixedly secured together at the ends of the shaft, said strip and tube being substantially equal in length.

5. A shaft for golf clubs and the like formed of a strip of sheet metal conformed to a tube of cylindrical cross section, the length of said strip being substantially the same as the length of said tube, and having abutting seam portions, said tube being spirally twisted to bring said seam portions into reinforcing engagement, the length of said tube being reduced by such twisting, and means securing said tube in twisted conformation.

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