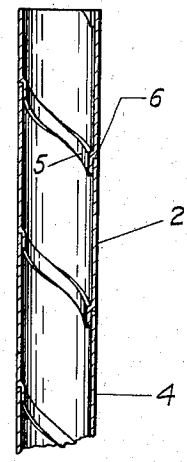
July 16, 1935. G. D. HARTLEY 2,007,970

GOLF CLUB AND SHAFT THEREFOR

Filed March 28, 1931



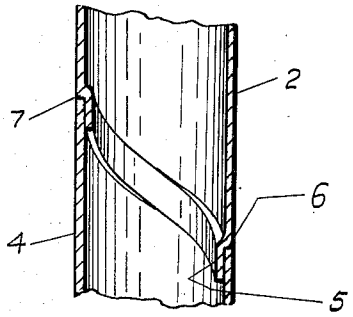


FIG. 3

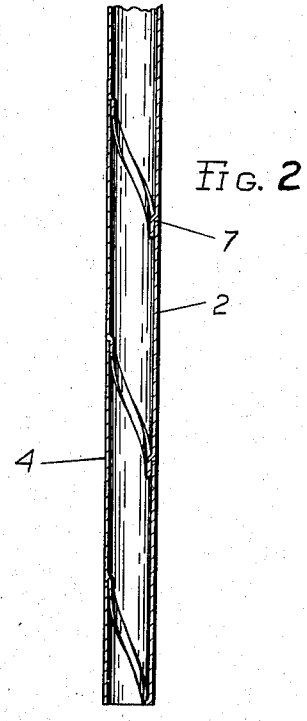


FIG. 2

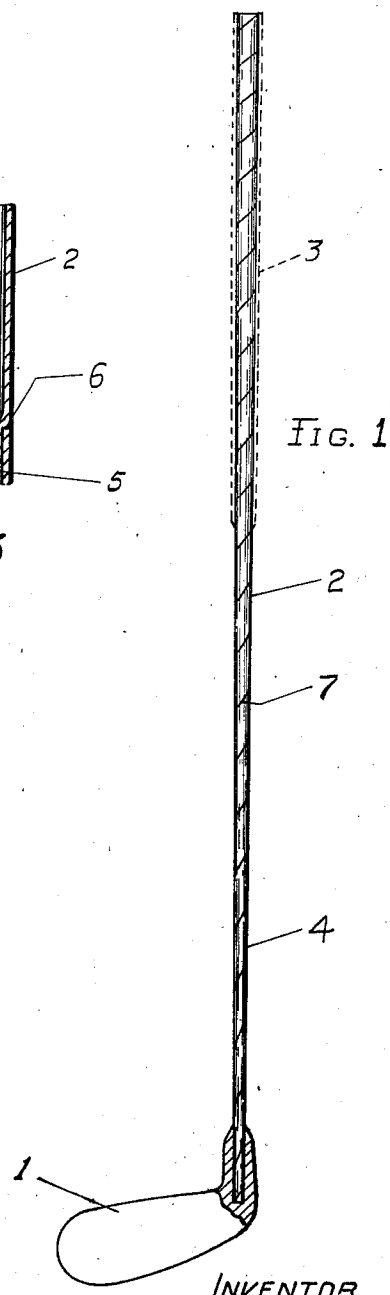


FIG. 1

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GOLF CLUB AND SHAFT THEREFOR

George D. Hartley, Worcester, Mass., assignor to Wiley W. McMinn, Orange, N. J.

Application March 28, 1931, Serial No. 526,018

7 Claims. (Cl. 273—80)

My invention relates to golf clubs and more especially to shafts of improved construction for such clubs. In some aspects my invention is an improvement over those disclosed and claimed in co-pending applications Serial No. 495,904, filed November 15, 1930 and Serial No. 513,613, filed February 5, 1931, of Charles L. Ritchie and Wiley W. McMinn, respectively.

The principal object of my invention is to provide a form of hollow metal shaft for golf clubs which is of such improved construction that it may not only have all the advantages of the shafts described in both of said co-pending applications, but is adapted to be more readily, practicably and economically manufactured than either of such shafts and also, for a given weight metal stock, is of greater strength than the same.

My invention also resides in the method of producing shafts of the improved construction referred to.

A golf club embodying my invention comprises a tapering metal shaft having a striking head secured to its smaller end and a suitable handle or grip formed at or on its larger end portion, as by wrapping leather and/or other suitable material thereon; the shaft being formed from a long strip of suitable metal, preferably steel, which is twisted or wound, or otherwise turned, into helical or spiral form to produce a long hollow or tubular member substantially in the straight tapered form of the finished shaft, such member, having adjacent edges portions of its convolutions overlapping and positively and rigidly secured to each other, preferably by being autogenously welded together. The bulge in the hollow member or shaft due to the spiral joint produced by the overlapped edge portions of its convolutions, may be formed wholly on the outside, or partly on both the outside and the inside, or wholly on the inside of such member, preferably the latter.

The metal strip from which the tapering hollow member or shaft is produced, is preferably subjected adjacent one edge thereof to a bending action so as to laterally offset the corresponding edge portion of the strip an amount substantially equal to the thickness of the strip. This offset edge portion constitutes, of course, one of the overlapping edge portions of the convolutions of the hollow member or shaft produced from the strip and is preferably offset inwardly with respect to said hollow member when formed. The other of said overlapping edge portions in the formed hollow tapering member, preferably closely overlies said offset portion outwardly of the latter, and accordingly is substantially flush with the outer surface of said member. After the said overlapped edge portions have been autogenously welded or otherwise positively fastened firmly together, the hollow member or shaft produced may be ground or otherwise turned down to the desired thickness and its outer surface finished to a substantially smooth even tapering form.

The above described steps of bending the metal strip to form the offset edge portion, of twisting or winding the strip into the hollow tapering member and of overlapping the adjacent edge portions of the convolutions of such hollow member, may be and preferably are carried on or performed substantially simultaneously by a suitable automatic machine. The overlapped edge portions of the hollow member thereafter are welded or otherwise suitably fastened securely together.

Other objects and features of my invention will be hereinafter more specifically described and claimed.

For a clear understanding of my invention, attention is directed to the drawing accompanying and forming part of this specification and in which:

Figure 1 is a view in elevation, partly in section, of a golf club embodying my invention and provided with a preferred form of my improved shaft;

Fig. 2 is an enlarged central longitudinal sectional view, partly broken away, of the shaft of the club shown in Figure 1; and

Fig. 3 is an enlarged fragmental sectional view of the shaft.

Referring to the drawing, the golf club shown comprises a striking head 1, a hollow tapering tubular member or shaft 2 formed of suitable metal, preferably steel, having its smaller end portion suitably secured within the usual socket provided in the shank of head 1, and a handle or gripping portion 3, shown in dotted lines in Fig. 1, applied to the larger end portion of the shaft and which may be formed of leather and/or other material wound on said shaft and suitably secured thereto.

The improved shaft 2 is made from a single and relatively narrow strip 4 of thin metal, preferably steel, by spirally twisting, winding or turning the strip through a plurality of turns into helical form so as to produce a straight tapering hollow member and, preferably at the same time, by offsetting one of the edge portions of the strip and overlapping such edge portions, all as hereinbefore

described. The offset edge portion 5 preferably projects inwardly of the member 2 an amount substantially equal to the thickness of strip 4 and an abrupt bend providing a substantially right angular shoulder 6, is formed between said edge portion and the main portion of the strip. In the formation of the hollow member or shaft 2 the said offset portion 5 is overlapped by the other edge portion of strip 4, and said overlapping edge portions are fastened securely together, while maintaining the adjacent convolutions of said member in a tightly wound condition so that the outer overlapping edge portion closely overlies the portion 5 with its edge substantially engaging the shoulder 6, as shown in Figs. 2 and 3. Preferably the said overlapped edge portions of member 2 are integrally secured together throughout the entire length of the spiral joint between the convolutions of such member, and preferably these edge portions are so secured together by autogenous welding. The overlapping of the edge portions as described, renders it possible easily to perform this welding operation in an effective, rapid and economical manner. Moreover the spiral joint formed by the integrally connected overlapping edge portions, greatly reenforces the shaft or member 2, being in fact materially stronger than the corresponding joints in the constructions disclosed in the co-pending applications hereinbefore referred to. This renders it possible to employ thinner and lighter metal stock for shafts made in accordance with my invention than is practicable in the constructions of said applications, while obtaining the same or greater strength and resistance to torque and without sacrificing any of the other advantages obtainable by either of such constructions. As stated above, the edge of the outer overlapping portion of the spirally extending joint is substantially in engagement with the shoulder 6, and the spiral seam 7 between said edge and shoulder will therefore be very close. Accordingly when the shaft 2 has been turned down and polished, or otherwise finished, this seam 7 will not be prominent; in fact, in most cases it will be hardly noticeable.

The strip 4 from which the shaft 2 is made, is preferably, though not necessarily of uniform width and thickness. When this strip is of uniform width, the convolutions of the shaft produced therefrom will be of substantially uniformly increasing width from the larger to the smaller end of the shaft, as shown in Figs. 1 and 2. If, desired, however, said strip may be of uniformly tapering width; and such a strip must be used where it is desired to obtain a shaft in which all the convolutions will be of uniform width. Also strips which uniformly or otherwise vary in thickness from end to end, may be employed where it may be desired to obtain shafts having a certain resiliency, or "snap", or other special characteristics demanded by some players.

Having now described my invention, what I claim as new and desire to protect by Letters Patent, is as follows:

1. A golf club comprising a striking head and a tapering shaft secured at its smaller end to said head, said shaft comprising a long metal strip spirally twisted through a plurality of turns into hollow form and having the adjacent edge portions of its convolutions overlapping and fixedly secured together.

2. A shaft for a golf club comprising a tapering member, said member consisting of a long narrow metal strip spirally twisted through a plurality of turns into hollow form and having edge portions of adjacent convolutions thereof overlapping, the overlapped portions being securely and positively fastened to each other, said strip being of substantially uniform width.

3. A hollow tapering shaft for golf clubs formed of a long metal strip, said strip being spirally twisted through a plurality of turns substantially into the form of the shaft, the shaft having the edge portions of its convolutions overlapping and integrally secured together, the said convolutions increasing in pitch from the larger to the smaller end of the shaft.

4. A hollow tapering shaft for golf clubs formed of a long metal strip, said strip being spirally twisted through a plurality of turns into a member substantially of the form of the shaft, said member having the edge portions of adjacent convolutions overlapping and integrally secured together, the pitch of the convolutions decreasing from the smaller towards the larger end of the shaft for at least a portion of the length of the shaft.

5. A golf club comprising a striking head and a hollow shaft having a tapered portion and secured at one end to said head, said shaft being formed of a long metal strip spirally wound through a plurality of turns about an axis transverse to its length, certain convolutions of said strip being formed and arranged to produce the said tapered portion of the shaft, and adjoining convolutions of said strip overlapping and being fixedly secured together.

6. A golf club comprising a striking head and a tapering shaft secured at its smaller end to said head, said shaft comprising a long metal strip of varying width spirally wound through a plurality of turns about an axis transverse to its length into hollow form, said strip having successive convolutions overlapping and fixedly secured together.

7. A tubular member having a tapered portion, said member comprising a long metal strip of uniform width spirally wound through a plurality of turns into hollow form, certain convolutions of said strip being formed and arranged to produce the said tapered portion of the tubular member, and adjoining convolutions of said strip overlapping and being fixedly secured together.

GEORGE D. HARTLEY.