Jan. 9, 1934. J. M. OLDHAM 1,942,445

METHOD OF MAKING SHAFTS FOR GOLF CLUBS AND THE LIKE

Original Filed Oct. 30, 1931

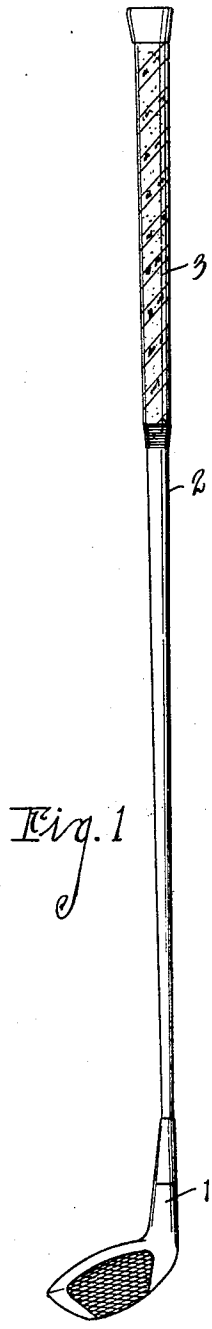


Fig. 1

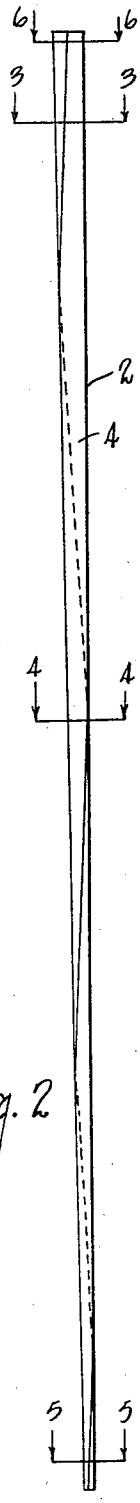


Fig. 2

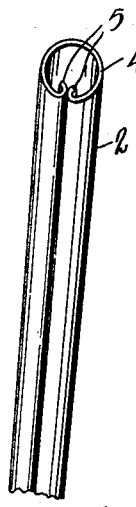


Fig. 7

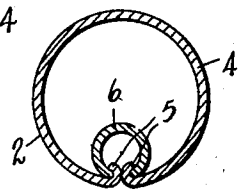


Fig. 3

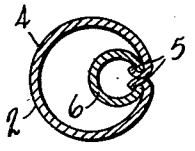


Fig. 4



Fig. 5

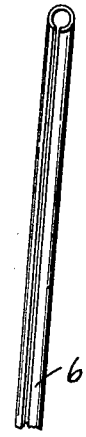


Fig. 8

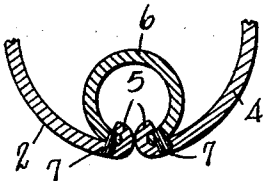


Fig. 6

INVENTOR
John M. Oldham
BY Chappell & Earl
ATTORNEYS

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METHOD OF MAKING SHAFTS FOR GOLF CLUBS AND THE LIKE

John M. Oldham, Detroit, Mich., assignor to Leonard A. Young, Detroit, Mich.

Original application October 30, 1931, Serial No. 572,129. Divided and this application June 20, 1932. Serial No. 618,179

3 Claims. (Cl. 29—156)

This application is a division of my application for Letters Patent for shafts for golf clubs and the like and method of making filed October 30, 1931, Serial No. 572,129.

The main objects of this invention are:

First, to provide an improved method of making golf clubs and like shafts from steel.

Second. to provide an improved method of making steel shafts for golf clubs and the like which are well adapted to withstand torsional stresses and at the same time secure the desired resilience and balance.

Third, to provide a method of making shafts for golf clubs and the like which results in shafts reinforced at their reduced lower end and adjacent the hosel so that they are not likely to break at that point when in use.

Objects pertaining to details and economies of my invention will appear from the description to follow. A structure which is made in accordance with my method and the steps illustrating my method are illustrated in the accompanying drawing, in which:

Fig. 1 is a front elevation of a wood head provided with a shaft produced by my method.

Fig. 2 is a slightly enlarged elevation of the shaft of my method.

Figs. 3, 4 and 5 are enlarged cross sections on lines 3—3, 4—4 and 5—5 respectively of Fig. 2.

Fig. 6 is an enlarged fragmentary section on line 6—6 of Fig. 2 showing further details of the method and the resulting structure.

Fig. 7 is a perspective view of the outer tube illustrating one of the steps of the method.

Fig. 8 is a perspective view of the inner joint and/or torsion tube.

Referring to the drawing, 1 represents a wood golf club head, 2 the shaft and 3 the grip. The details of the grip and head forming no part of this invention, they are not illustrated.

My improved shaft comprises an outer tapered tube 4 of cylindrical cross section formed of a strip of sheet metal rolled upon itself, the edges of the strip being turned inwardly and conformed to channel-shaped flanges 5. These flanges are clamped in abutting engagement by means of the inner tube 6 which is longitudinally split formed of a strip of steel rolled into tubular form.

This combined torsion and joint tube is of substantially uniform diameter from end to end, its diameter being such that it is a close fit in the outer tube for a substantial portion of the lower end of the shaft. This fitted relation is shown in Fig. 5. The fitting engagement, however, extends a substantial distance above the section line on Fig. 2. The inner tube 6 is of substantially less diameter than the outer tube at its upper end as is clearly shown by Figs. 3, 4 and 5.

In the manufacture of my improved shaft a tapered blank or pattern is formed of sheet steel, its longitudinal edges being conformed to provide the flanges 5. The pattern is then rolled into a tapered tube with the flanges in abutting relation. This tube is then spirally twisted as indicated in Fig. 2, the spiral twisting resulting in a spiral positioning of the grain and in positioning the flange 5 in a spiral relation to the tube. The shaft is then welded at its ends as indicated at 7, hardened, and tempered.

The torsion or joint tube 6 is then slid longitudinally into the main tube in engagement with the flanges 5 as indicated, which results in spiraling the tube 6.. If desired, the torsion tube 6 may be welded at its ends to the ends of the main tube to prevent vibration or any movement of the parts.

With the parts thus arranged my improved shaft possesses the desired resilience and torsional qualities of a hickory shaft, for example, is economical to manufacture and has the desired resilience without undue "whipping" qualities frequently incident to metal shafts. The shaft is very strong, even though the gage of the material from which it is formed is quite thin.

I have not attempted to illustrate the parts in relative size or gage of material. I desire to point out, however, that in the effort to secure desired resilience metal shafts are sometimes drawn so thin that they lack durability. My improved shaft possesses great strength and at the same time the desired resilience.

I have not attempted to illustrate finish as this may be varied as desired.

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

1. The method of making shafts for golf clubs consisting of forming a longitudinally split outer tube with inturned flanges on its longitudinal edges, spirally twisting such tube, hardening and tempering, and inserting a straight split inner tube longitudinally into said outer tube with the edges of the inner tube in clamping engagement with the flanges of the outer tube whereby the inner tube is spiraled.

2. The method of making shafts for golf clubs consisting of forming a longitudinally split outer tube with inturned flanges on its longitudinal edges, spirally twisting such tube, welding at its end, hardening and tempering, and inserting a

straight split inner tube longitudinally into said outer tube with the edges of the inner tube in clamping engagement with the flanges of the outer tube whereby the inner tube is spiraled.

3. In a method of making shafts for golf clubs and the like, the steps which comprise forming a longitudinally split outer tube with inturned flanges on its longitudinal edges, spirally twisting such tube, welding said edges to the tube at its ends, and inserting a straight split inner tube longitudinally into said outer tube with the edges of the inner tube in clamping engagement with the flanges of the outer tube.

JOHN M. OLDHAM.