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M. B. REACH ET AL

GOLF CLUB

Filed May 12, 1926

Fig. 1.

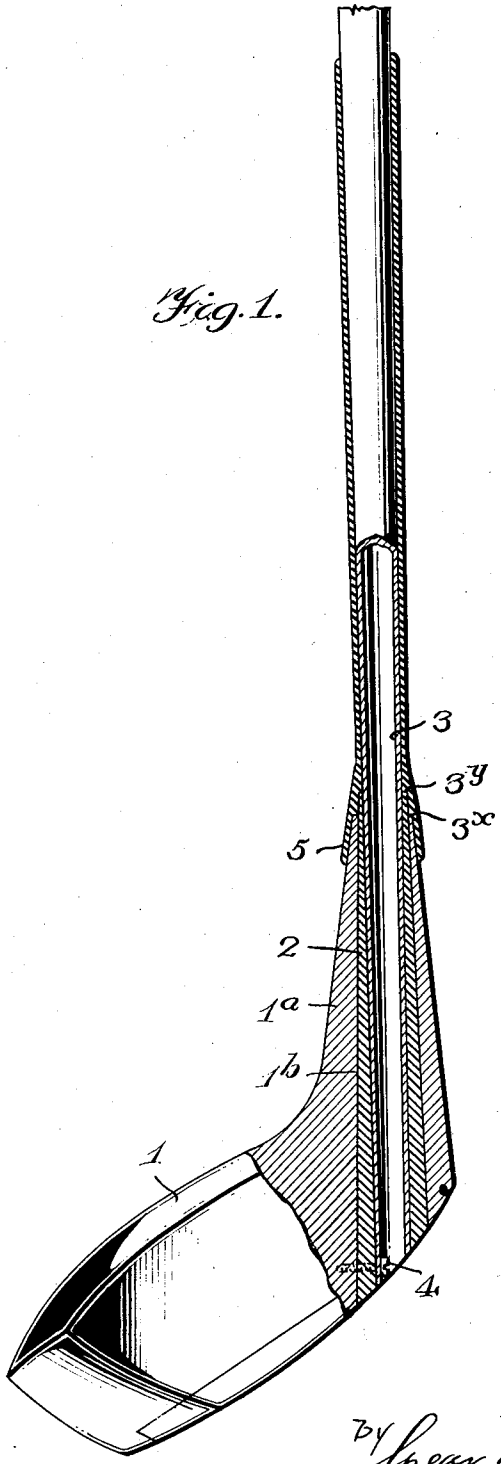



Fig. 2.

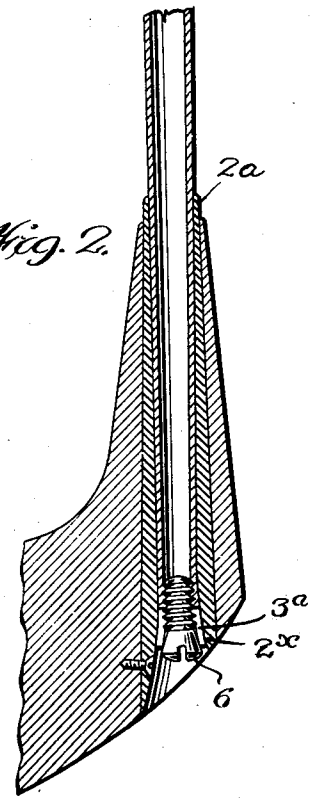
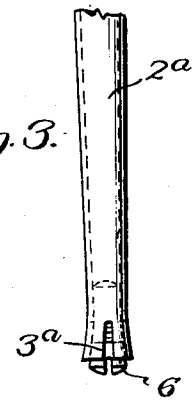



Fig. 3.




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# UNITED STATES PATENT OFFICE.

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## GOLF CLUB.

Application filed May 12, 1926. Serial No. 108,645.

Our present invention relates to improvements in means for securing tubular metal shafts to the wood heads of golf clubs. In the common practice of assembly there is considerable difficulty experienced in replacing any shaft breakage because of the manner in which the heads are assembled to the shafts and there would be considerable difficulty and inconvenience experienced on the part of professionals who would wish to supply custom made clubs if they attempted the assembly in their own shop. Among the objects of this invention it is desired to provide an assembly that will permit the professionals to purchase their clubs in a semi finished state and make them to order, and also to permit the professionals to replace a broken head or broken shaft from stock in their own shop without having to send the club back to the factory for repairs.

The common practice of assembling tubular metal shafts to wooden heads is to pass a screw through the shaft into the head at a point approximate to that shown at Fig. 1 and midway between this point and the top of the hosel the hosel and shaft are bored through and another screw inserted to prevent the metal shaft "working" in its wooden socket. In this boring operation, when the drill breaks through the outside wall of the steel shaft it throws up a burr which becomes imbedded in the wood and in an effort to dislodge the broken piece of shaft the head is frequently split and ruined.

Our invention includes a novel method of procedure and novel features of construction and arrangement and combinations of parts hereinafter described, the nature and scope of the invention being defined by the claims appended hereto.

Fig. 1 is a part sectional view and elevation of the wooden headed type of club.

Fig. 2 is the longitudinal section of a modification.

Fig. 3 is a view of a detail.

In proceeding according to our invention and referring specifically to Fig. 1, the hosel $1^a$ of the club head 1 is provided with a bore $1^b$ which is tapered preferably throughout its entire length with the larger end of the bore at the base of the club, or, in other words, the bore is tapered upwardly. Within this bore we place a sleeve 2 having its external wall upwardly tapered to correspond to the internal bore of the hosel and having an inner bore which is tapered downwardly and reversely to its outer wall.

The entire bore of the sleeve conforms in taper to the tapered end of club shaft 3 which is also tapered downwardly. The sleeve 2 may be made of different materials with satisfactory results, preferably a material which has qualities of cohesion adapted to adhere to the metal shaft or a quality of compressibility without elasticity that will provide a snug driving fit. In one of the successful forms of our experiments we have made the sleeve of a cellulose compound of pyroxolin nature sold under the tradename of "fiberloid." With this construction the sleeve is inserted from the base of the head and forced firmly into place being anchored by a screw passing through at 4. The sleeve is of sufficient length to project above the upper edge $3^x$ of the hosel. The sleeve is wrapped with a pyroxolin material for a distance that brings this wrapping above the upper end $3^y$ of the sleeve. In making the assembly the surface of the steel shaft or the interior surface of the sleeve is provided with a coating of solvent of its cellulose compound and inserted in the sleeve, the solvent causing contacting surfaces of the material of the shaft and the material of the sleeve to unite in a homogeneous whole. A wrapping of fiberloid is then started at point 5 which unites with the upper end of the wooden hosel, and passing beyond that, unites with the protruding portion of the sleeve, and then unites with the fiberloid coating on the steel shaft and forms a complete union between these three surfaces.

The ordinary method of finishing off a golf club at this point is to use a wrapping of linen thread. We consider the use of fiberloid much superior in that it may be extended up the shaft for a distance to provide against any hitting of the shaft with the shorter length iron headed clubs. This is an important detail because caddies and players frequently drop a bagful of clubs on the ground and if the two wooden clubs happen to lie on the bottom the weight of six or seven iron heads can do considerable damage to the shaft.

Another form of the invention is to provide a sleeve of soft metal preferably of aluminum alloy, which is compressible and non-elastic and into which the shaft may be driven home, being anchored by any suit-

able means. One form of anchorage may be that shown in the detail in Figs. 2 and 3 where the end of the shaft is slotted as at $3^a$ for a small distance, threaded on the inside and provided with a tapered expanding screw 6 that will expand the end of the shaft against an enlarged tapered bore $2^x$ at the lower end of the sleeve $2^a$. It will be seen that while in the two forms described the sleeves are of different material, the essence of the assembly is the same. In each case the professional may have a stock of wood heads which are bored to fit the tapered sleeve and this tapered sleeve adjusts itself to any variation that occurs in the original bore through atmospheric changes. If the bore in the hosel has enlarged somewhat the sleeve is driven home and screwed at that point. If, however, the original bore has shrunken in its dimensions the sleeve is driven in not quite so far and anchored with a screw at that point, any protruding portion at the base of the club being filed away. Such sleeves also adapt themselves to the slight variations which occur in the diameters of the several shafts, and in case of any loosening in the fit of the shaft and head due to the impact of blows and vibrations the screw in the sleeve may be withdrawn, the sleeve driven tighter into the bore of the hosel, the original screw hole plugged and a new one made locating the sleeve in its new position. The fiberloid substitute for the linen thread whipping or wrapping is desirable in both forms of construction.

It will be obvious that if desired the fiberloid sleeve of Fig. 1 might be provided with a flared lower end for use in connection with a split shaft as in Fig. 2, or in other words, that the sleeve of Fig. 2 might be made of fiberloid instead of aluminum alloy as described.

We claim:

1. A golf club having a hosel provided with an upwardly tapered bore, a sleeve inserted in said bore and having its exterior of a corresponding taper, said sleeve having its inner wall downwardly tapered, and a club shaft having a downwardly tapered extremity inserted in said sleeve with a drive fit.

2. A golf club according to claim 1 in which the sleeve is of compressible non-elastic material in its relation to the shaft.

3. A golf club having a hosel provided with an upwardly tapering bore, a sleeve of compressible non-elastic material inserted in said bore and having its exterior of a taper corresponding to the bore of the hosel, said sleeve having its inner wall tapering downwardly, and a club shaft having a downwardly tapered extremity inserted in said sleeve with a drive fit.

4. A golf club having a hosel with an upwardly tapered bore, a sleeve of fiberloid seated in the hosel, having its exterior tapered to correspond to the bore of the hosel and having a downwardly tapered bore, and a shaft seated in the bore of the sleeve and tapered downwardly to fit said bore, substantially as described.

In testimony whereof, we affix our signatures.

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