

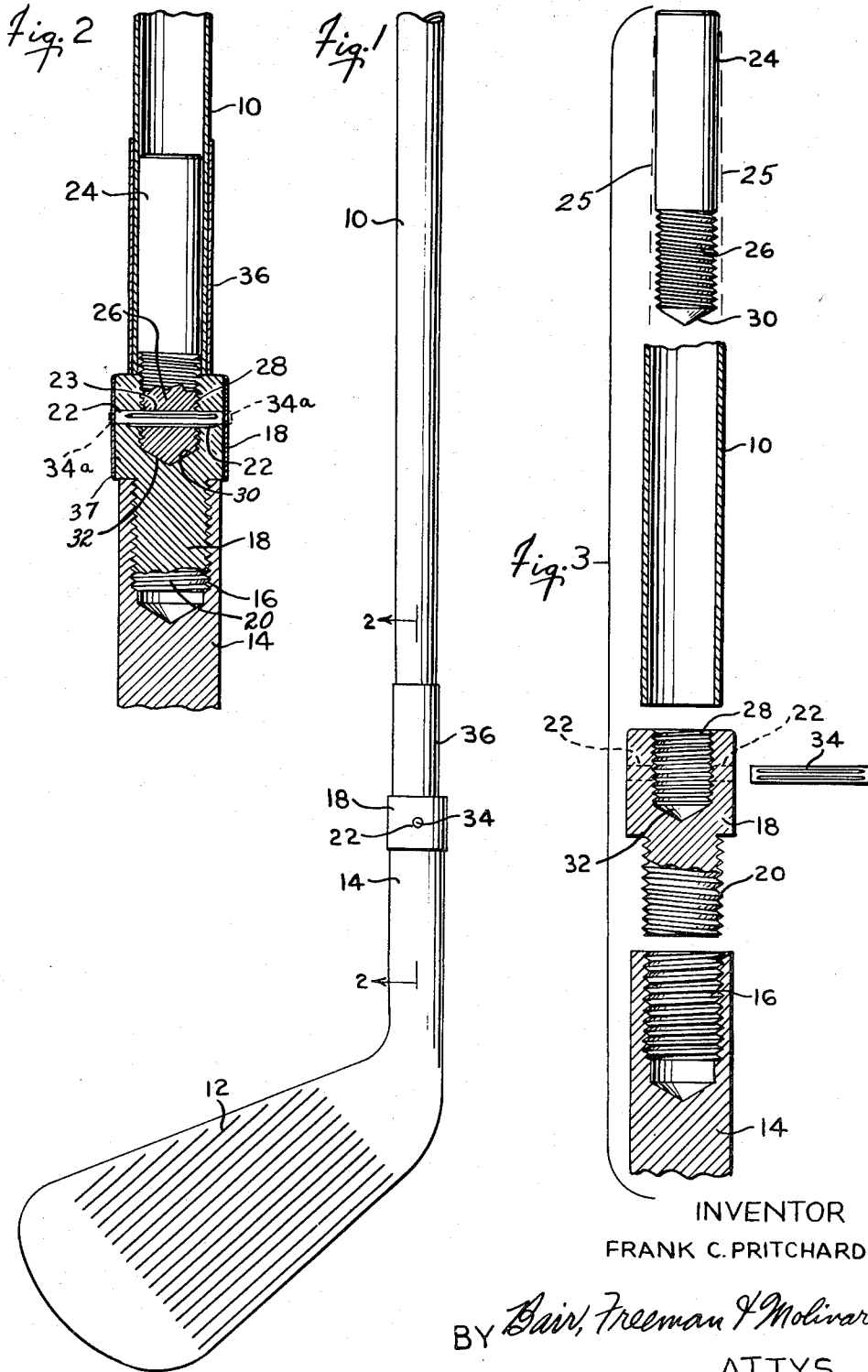
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GOLF CLUB SHAFT AND HOSEL CONNECTOR

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GOLF CLUB SHAFT AND HOSEL CONNECTOR
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This invention relates to golf club constructions, and more particularly to those of the type shown in my Patent No. 2,463,053 wherein a single tubular metallic golf club shaft is adapted to be selectively and detachably connected to any one of a series of different golf club heads.

One object of the invention is to provide novel and improved means for quickly and easily detachably connecting the golf club shaft to any one of a series of different golf club heads and wherein the assembled golf club will be properly balanced and the connection between the shaft and the head will be substantial and durable so as to render the club capable of proper and efficient use in the same manner as a permanent unitary golf club structure and wherein the life of the one shaft and plurality of heads is comparable to the usual set of golf clubs.

Another object is to provide a novel and improved connecting member between the hosel and shaft of a golf club which eliminates all chance of weak sections experienced with welded connections wherein the metal frequently crystallizes and causes fractures adjacent the area of the weld, thus sometimes causing misalignment of the shaft and the connector member, and also causing breakage or rupture of the welded joint resulting in the head of the club becoming free of the shaft with possible serious results.

More specifically, it is an object of the present invention to provide a novel connector member with which a tapered shaft plug is screw-threadedly associated in such manner that the plug may be inserted inside a tapered golf club shaft and the connector member screwed thereon to provide a rugged and durable connection between the tubular shaft and the connector member itself in which all parts are tightly associated with each other and eliminate the possibility of any loose play developing between the golf club shaft and the connector member during use of the golf club assembly.

A further object is to further insure the permanent character of the connection between the golf club shaft and the connector member by means of a pin inserted through the threaded parts of the tapered shaft plug and the connector member after they are tightly screwed together.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my golf club shaft and hosel connector, whereby the objects above contemplated are attained, as hereinafter more fully set forth, pointed out in my claim and illustrated in detail on the accompanying drawing, wherein:

FIG. 1 is a front elevational view of the lower portion of a golf club embodying my present invention;

FIG. 2 is an enlarged sectional view thereof on the line 2-2 of FIG. 1, and

FIG. 3 is an exploded sectional view illustrating the parts of FIG. 2.

The present invention contemplates a golf club set comprising a single tubular metallic shaft and a series of different club heads to be selectively and detachably connected to the shaft as in my patent above mentioned. The set of heads may be composed of one or more wood heads and any desired number of iron heads.

On the accompanying drawing I have used the reference numeral 10 to indicate a golf club shaft and 12 an iron type golf club head. The shaft 10 is of conventional metallic tubular stock tapered downwardly

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from the upper end to the lower end. The lower end of the shaft and the upper end of the hosel 14 of the golf club head 12 are connected together by a connector member 18 wherein the connection of the member 18 to the shaft 10 is a permanent type and the connection of the member 18 to the hosel 14 is of a detachable type.

The detachable connection just mentioned comprises internal threads 16 formed in the hosel 14 and external threads 20 formed on the connector member 18 as in my previous patent. The permanent connection between the connector member 18 and the shaft 10, however, differs from the previous patent and comprises a tapered shaft plug 24 formed of drill steel or the like and dimensioned to fit snugly within the lower end of the tubular shaft 10 as shown in FIG. 2. Parallel lines 25 show the degree of taper.

FIG. 3 shows the plug being inserted into the tube and it is obvious that after insertion it may be threaded into the connector member 18, the plug 24 being externally threaded at 26 for this purpose and the connector member itself having an upwardly opening socket which is internally threaded at 28. The lower end of the plug 24 is cone-shaped as indicated at 30 to tightly interfit with respect to a cone seat 32 at the bottom of the socket in the member 18.

The dimensions of the parts are such that the plug 24 may first be driven tightly into the lower end of the shaft 10 and the threaded part will project a distance slightly less than the depth of the threaded socket 28. The plug is then screwed into the socket of the connector member 18, and just before the cone end 30 engages the cone seat 32 the lower end of the shaft will engage the upper end of the connector member so that the last turn or so of the plug until it is seated at 32 will more tightly wedge the plug into the shaft. Thus all three parts 10, 18 and 24 are tightly associated without any possibility of lost play developing between them during subsequent use of the golf club assembly.

To insure that the connection just described remains permanent, after the parts 18 and 24 are screwed together, a pin 34 is used to hold them assembled. First the connector member and the plug are drilled through as illustrated at 22-23-22 in FIG. 2 and the pin 34 (which is a tight frictional fit) is inserted. The drilled openings 22 in the connector member 18 are shown dotted in FIG. 3. As shown in FIG. 2, the ends of the pin 34 initially project as shown dotted at 34a and these dotted portions may be ground off flush with the surface of the connector member 18 to provide a neat appearance and eliminate all projections.

The cooperating threaded parts of the hosel 14 and the connector member 18 may be heat-treated so that the connection between the shaft and the club head is increased in strength and capable of withstanding the stresses and strains set up therein incident to the club impacting a golf ball. Hardened threads for the members 14 and 18 also insure longer life and reduced wear incident to numerous operations of connecting and disconnecting the shaft relative to the club heads.

After the shaft 10 and the connector member are assembled as described, the external surfaces thereof may be finished in any well-known manner and a suitable hand grip may be provided on the upper end of the shaft. A section of plastic tape or the like 36 may be applied to the shaft (and to the connector member 18 over the pin 34 as shown at 37 if desired) which serves to give the golf club assembly a neat and attractive finished appearance.

By virtue of the detachable connection between the hosel 14 and the connecting member 18, the golf club shaft may be quickly and easily connected to and connected from the hosel of any desired type of club head

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and it may be understood that the threads 16 and 20 are formed left hand as illustrated for right-hand clubs, and right hand for left-hand clubs, so that when the ball is impacted by a club, the club head will normally tend to tighten with respect to the shaft.

The permanent connection between the connecting member 18 and the shaft 10 is of the type that eliminates all butt welding and/or spot welding and the consequent possibility of crystallization and fractures during use of the golf club. The tapered or wedge fit between the plug 24 and the shaft 10, augmented by the threaded connection 26-28 provides a connection of exceptional holding power and durability, and the use of the pin 34 prevents any possibility of subsequent looseness developing in the joint by unscrewing tendency or action encountered during use of the golf club.

Some changes may be made in the construction and arrangement of the parts of my golf club shaft and hosel connector without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may reasonably be included within its scope.

I claim as my invention:

A golf club shaft and connector member assembly comprising a tubular tapered golf club shaft element having its small end lowermost, an elongated tapered plug located in the lower portion of said tubular tapered shaft and having an integral screw-threaded end portion thereof projecting downwardly beyond the lower end of said tubular shaft, said plug being movable axially within said tubular shaft, and a connector element in end-on relation to said lower end of said tubular shaft and having a threaded socket into which the screw-threaded portion of said plug is adapted to be screwed, said tapered plug, the portion of said tubular tapered shaft receiving said tapered plug, the length of said screw-

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threaded end portion of said plug and the length of said threaded socket in said connector element all being so dimensioned relative to each other that in their initial assemblage said tapered plug may be firmly wedged in said tapered tubular shaft when the lower end surface of said shaft engages endwise against the upper end of said connector element surrounding said threaded socket while the terminus of the threaded end of said plug is spaced a pre-selected distance from the inner end of the threaded socket, and in their final full-tightened assemblage the terminus of the threaded end of said plug may be caused to engage the inner end of the threaded socket while said tapered plug moves axially within and relative to said tubular shaft which has its lower end in engagement with said connector element to thereby increase the wedging forces developed between said plug and said tubular shaft, and to increase the engagement force of the lower end of said tubular shaft against said connector element.

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