Sept. 6, 1938. W. F. REACH 2,129,068

GOLF CLUB

Filed Aug. 25, 1934

Fig. 4.

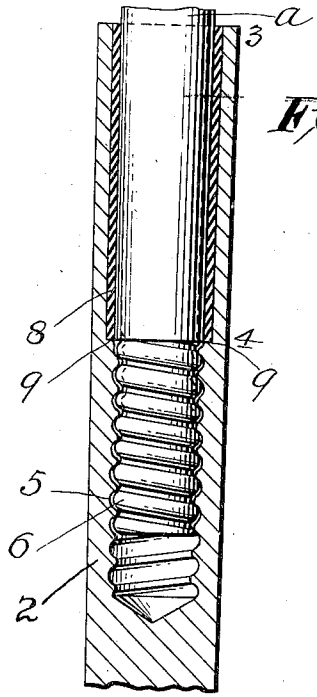


Fig. 1.

Fig. 2.

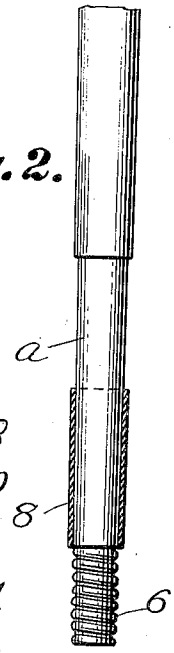


Fig. 6.

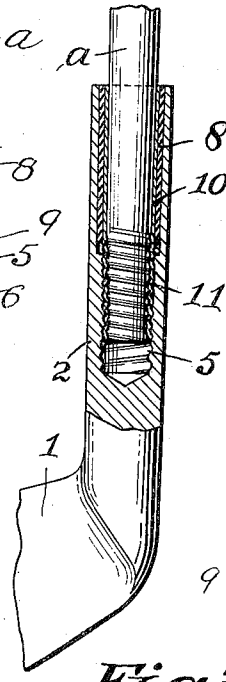


Fig. 3.

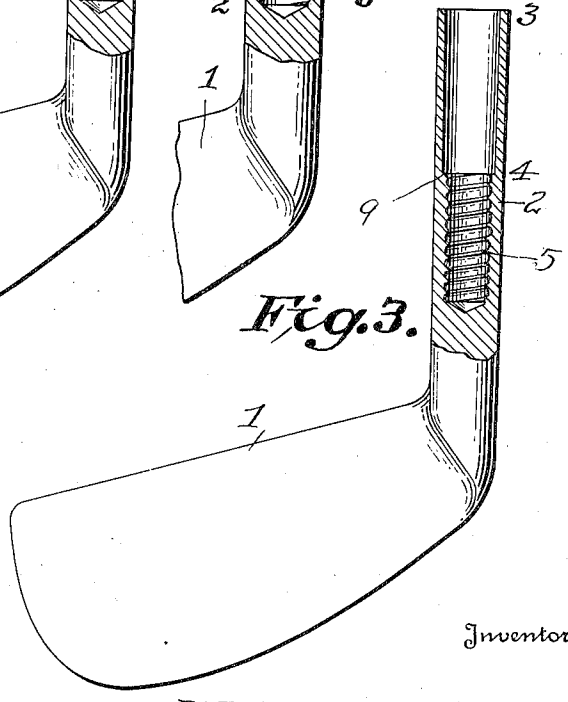


Fig. 5.

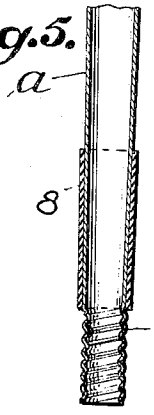
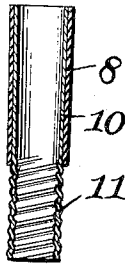


Fig. 7.



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UNITED STATES PATENT OFFICE

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GOLF CLUB

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Application August 25, 1934, Serial No. 741,494

3 Claims. (Cl. 273—80)

The invention is an improvement in cushion neck golf clubs designed to provide a cushion connection between the club head and the shaft to absorb the shock consequent upon striking the ball, and thus prevent the force of the blow from being transmitted to the hands and arms of the player.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

One object of the invention is to provide a construction effective in operation and of such simple construction that the number of elements is reduced to a minimum, the main elements being the club head, the shaft with a screw threaded connection with the hosel and a renitent or resilient cushion sleeve interposed between the shaft and hosel, the parts being so related that the club head and shaft may have relative movement under the control and restraint of the resilient cushioning sleeve, despite the screw threaded connection between them.

The invention is shown in the accompanying drawing in which

Figure 1 is a central longitudinal section through a part of the hosel and resilient sleeve, the other parts being shown in elevation.

Fig. 2 is a view of the shaft with its attached cushion sleeve, the latter being in section.

Fig. 3 is a detached view of the club head with the hosel shown in section.

Fig. 4 is an enlarged view in respect to Figs. 1 to 3 of the screw threaded connection between the shaft and hosel with adjacent parts of said elements and the torsional sleeve all in section.

Fig. 5 is a sectional view of the lower end of the hollow metallic shaft and the renitent sleeve.

Fig. 6 is a view of a form of the invention in which the shaft is readily removable.

Fig. 7 is a sectional view of the metallic sleeve carrying the rubber sleeve.

In the drawing 1 is the golf club head. The hosel thereof is shown at 2, having a downwardly tapered socket therein indicated as lying between the characters 3 and 4. Below this tapered smooth bore of the hosel there is a screw threaded socket 5.

The shaft *a* is of metal, tubular in construction with a screw threaded lower end 6. The screw threads are formed by swaging or bending the metal wall of the shaft into the form of a spiral rib or thread and not by cutting into the metal. This screw threaded end is cylindrical, that is to say, it is of one diameter throughout and the screw threaded socket 5 in the hosel is also of cylindrical form to correspond. The shaft above the screw threaded end is tapered downwardly and this taper conforms in degree to the tapered bore of the hosel above the screw threaded socket. This tapered lower part of the shaft has affixed thereto, by vulcanization, the torsional sleeve 8 of cushioning material, desirably of rubber. The sleeve is located immediately above the screw threaded end of the shaft. This renitent sleeve is tapered downwardly to conform on its inside to the shaft and on its outside to the downwardly tapered bore of the hosel.

The fit between the screw thread of the shaft and the screw thread of the socket in the hosel is a loose one, the degree of looseness being sufficient to permit the head 1 and shaft to have relative rotary movement, under control of the cushion sleeve.

In assembling the shaft and its affixed rubber sleeve with the hosel shellac is applied to the exterior of the rubber sleeve to act as a lubricant against the wall of the tapered bore of the hosel. This enables the shaft and head to be turned rotatively in relation to each other so that the screw threaded shaft will enter the screw threaded socket as the shaft is turned, until finally the shaft will be seated within the hosel with the rubber sleeve bearing upon the wall of the tapered bore of the hosel under sufficient pressure to make the renitent sleeve act as a connection between these parts capable of yielding torsionally or circumferentially to allow sufficient displacement rotatively of the hosel and head relative to the shaft to absorb the shock of the blow when the ball is struck and thus protect the hands and arms of the user. After thus yielding circumferentially to the force resulting from the blow the said rubber sleeve will return the club head to its previous normal relation to the shaft. The fit of the screw threads of the shaft and hosel is such that the rotative movement of the club head relative to the shaft can readily take place, and this is true also of the recovery action of the parts during which they would rotate relatively to each other in the reverse direction.

The screw threads while allowing relative rotative action between the golf club head and the shaft will maintain the shaft in the prescribed longitudinal relation to the hosel, that is to say, it will serve to hold the shaft against any backing out tendency due to the rubber being held in place under strong pressure.

The screw threaded connection in the combination set up, under the blow of striking the ball,

will tend to tighten up, and thus tend to pull the shaft into the hosel, the screw thread having its turns in the proper direction for this end.

It will be seen from the above that the screw threaded connection performs the double function of holding the parts together against undesired relative displacement lengthwise or in an axial direction, but also as a swivel connection allowing them to have relative rotative movement under control of the renitent member.

The lower end of the renitent member is arranged adjacent, though preferably not in contact with, a shoulder 9 surrounding the threaded upper end of the socket of the hosel.

As an example of the loose fit of the screw threaded shaft end with the screw threaded socket in the hosel, the outside diameter of the screw threaded part of the shaft may be .326'' and the inside diameter of the screw threaded socket in the hosel may be .334'', a difference of .008''.

In order to provide for ready removal of the shaft and at the same time maintain the cushion sleeve organization in the same condition without regard to whether the shaft is in place or removed, I may employ a metallic sleeve having the cushion sleeve between its exterior (preferably tapered) and the wall of the hosel. This metallic sleeve at its lower end would have a cylindrical screw threaded extension like that above described, engaging a similar socket in the hosel, so as to allow relative rotative movement of the hosel and sleeve, as described above in connection with the screw threaded connection between the shaft and hosel. The shaft in this instance would be connected with the interior of the metallic sleeve by a screw thread connection and preferably this would be a connection similar to that above described, i. e., the shaft would have a cylindrical screw threaded extension, formed by pressing or rolling the metal, and above this would be a plain tapered part of the shaft. The interior of the metallic sleeve would be plain tapered to correspond with the plain taper of the shaft and it would have a cylindrical screw threaded portion. This screw threaded connection, however, would not involve loose fitting parts, but would screw up tight to make a practically solid joint at this point.

This form of the invention is shown in Figs. 6 and 7 in which the tapered rubber sleeve 8 is vulcanized to the steel sleeve 10, the cylindrical screw threaded extension of this sleeve being shown at 11. This screw threaded extension has a loose engagement with the screw thread in the hosel socket so as to permit the torsional action under control of the rubber sleeve to be attained. The interior of the sleeve will be plain tapered and the shaft will correspond, and the cylindrical screw threaded extension of the shaft will screw tightly into the interior of the screw threaded cylindrical extension of the sleeve.

I claim:

1. In combination in a golf club a hosel having a downwardly tapered bore with a shaft having a tapered portion complementary to the tapered bore of the hosel, said hosel and shaft in completely assembled condition having a two directional rotary screw threaded cylindrical joint between their lower ends, and a cushion sleeve between the tapered portions of said hosel and shaft and affixed thereto in such a manner as to prevent relative rotation between the inner and outer surfaces of the sleeve and said shaft and hosel.

2. In combination in a golf club head provided with a hosel, a shaft, and a connection between the shaft and hosel including a renitent sleeve interposed between the two substantially throughout the upper portion of the hosel with the surface of its bore affixed to the shaft and its peripheral surface affixed to the hosel in such a manner as to prevent relative rotation between said renitent sleeve surfaces and the shaft and hosel respectively, and a rotary joint below said cushion sleeve comprising a screw thread in the wall of the hosel and a cooperating screw thread associated with the shaft, said screw threads and said hosel and shaft being relatively movable circumferentially in both directions with said parts completely assembled, and said renitent cushion sleeve allowing said movement in one of said directions, under impact of the club head on the ball and causing said movement in the other of said directions to restore the parts to normal position, said screw threads holding the shaft and hosel against axial displacement.

3. In combination in a golf club a hosel having a bore, together with a screw thread in the fixed wall at the lower end of said bore, a metallic sleeve having a screw threaded lower end portion engaging loosely the screw thread of the hosel for a turning action between said parts in both directions, a cushion sleeve between the metallic sleeve and the wall of the hosel and a shaft in and removably attached to the said metallic sleeve by a screw thread on the shaft tightly engaging a screw thread on the interior of the metallic sleeve.

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