Golf Club with Metallic Shaft and Hosel

Inventor:
William F. Reach,

By Sears, Ronaldson & Hall, Attys.
My present invention relates to improvements in golf clubs of the type having metal shafts and metal hosels.

An object of the invention is to provide a golf club of this character having a metal shaft secured to the metal hosel by means which, while holding the shaft in permanent connection with the hosel yet permits of the desirable torsional cushioning effect.

The invention aims to provide such a connection by permanently affixing a torsional cushioning layer or sleeve to the metal shaft as by vulcanizing, and forcing the affixed sleeve into the bore of the hosel with a drive fit, and supplementing the drive fit connection between the cushion sleeve and hosel, by extending the upper end of the hosel beyond the sleeve, compressing the extended end over the end of the sleeve and toward but spaced from the shaft and out of metal to metal contact therewith, to prevent separation of the affixed shaft and sleeve from the hosel.

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

In the accompanying drawing is shown an elevation partly in section of a golf club embodying my invention.

Referring to the drawing, the numeral 1 indicates the club head, which is representative of any type such as a mid-iron, mashie, or a metal club head of the driver type, or any head having a metal hosel. The numeral 2 indicates the tubular steel shaft of customary form.

The bore of the hosel 10 is made sufficiently larger in internal diameter to provide a space between it and the shaft when the latter is inserted, which space is designed to receive a sleeve 3 of cushioning torsional material such as rubber. The shaft end and bore of the hosel may be made cylindrical, the latter being of larger diameter as stated, but this cylindrical feature is not material, as they may be made with a slight taper without departing from the scope of my invention.

Prior to the insertion of the shaft end in the bore of the hosel the sleeve of distortable material is permanently affixed on the shaft end.

The material I prefer to use for the torsional cushioning sleeve is rubber, which is preferably vulcanized on the shaft or otherwise strongly or permanently affixed thereto, as by a suitable cement, whereafter the end of the latter with its affixed sleeve is inserted in the bore of the hosel, which is of a size to enable the shaft end and affixed sleeve to be inserted therein with a driving fit.

The rubber sleeve, it will be observed, does not extend to the upper end of the hosel, but on the contrary, the hosel is long enough, compared to the length of the sleeve, to extend beyond the upper end of the sleeve and thus there is provided a projecting or extended portion 15 of the hosel which surrounds the shaft.

As shown, the hosel may be tapered exteriorly from about point B to its upper end A, and the thus thinned upper end readily may be reduced in external and internal diameter by a rolling or die action.

After the shaft with the affixed cushioning sleeve is secured in the hosel with a drive fit, the upper extended end 15 of the hosel beyond the end of the sleeve, is subjected to pressure and is thereby caused to contract over the end of the sleeve and toward the shaft.

In this reduction the extended upper end of the hosel does not contact with the shaft, but is spaced therefrom so that there is no metal to metal contact between the hosel and the shaft. The internal diameter of the contracted extension 15 of the hosel is less at the upper end of the sleeve than the external diameter of the upper end of the sleeve, but greater than the internal diameter thereof whereby the annular space 4 is provided. This reduced end or ferrule 15 will lock the shaft and its affixed sleeve within the hosel of the club head, and resist any tendency for the head and shaft to be relatively displaced in a direction lengthwise of the club.

For obtaining the proper degree of torque, reliance is had upon the initial frictional grip or driving fit connection of the rubber sleeve upon the interior wall of the hosel.
As an example of one relation of the parts, it may be said that the diameter of the lower or small end of the shaft may be, say, .355". The taper may be .092" per foot. The hosel may be reamed with a straight reamer to make a cylindrical bore. The rubber sleeve is cylindrical exteriorly to fit this bore.

Instead of the above dimensions and formation, I may, for instance, use a shaft of the above dimensions and form, with a rubber sleeve tapered exteriorly to correspond to the taper of the shaft, i.e., .092" per foot, and the bore of the hosel is reamed with a taper reamer so that it tapers towards the lower end in conformity with the taper of the rubber sleeve and shaft.

The above dimensions are given simply as examples and I do not desire to limit the invention to these nor to the particular embodiment shown.

I claim:

1. A golf club comprising a head having a metal hosel in one piece throughout, a metal shaft, a sleeve of torsional, resilient shock absorbing material capable of restoring itself to normal condition after distortion permanently affixed to said shaft and having a driving fit with the wall of the bore of the hosel, said hosel extending above the upper end of the sleeve, said extended upper end of the hosel being compressed toward the shaft and thereby reduced in internal diameter above the sleeve to retain the sleeve and its affixed shaft in place in the hosel, said compressed extended end of the hosel surrounding said shaft in spaced relation thereto without metal to metal contact with the shaft at any point.

2. In a golf club according to claim 1, said reduced internal diameter of the compressed extended end of the hosel, being less at the upper end of the sleeve than the external diameter of the upper end of the sleeve, and greater than the internal diameter thereof.

3. A golf club comprising a head having a metal hosel in one piece throughout, a metal shaft, a sleeve of rubber material vulcanized to said shaft and fixed in the bore of said hosel with a driving fit, said hosel extending above the upper end of the rubber sleeve, said extended upper end of the hosel being compressed toward the shaft and thereby reduced in internal diameter above the rubber sleeve to retain the rubber sleeve and its vulcanized shaft in place in the hosel, said compressed extended end of the hosel surrounding and spaced from said shaft without metal to metal contact with the shaft at any point.

4. In a golf club according to claim 3, said reduced internal diameter of the compressed extended end of the hosel, being less at the upper end of the sleeve than the external diameter of the upper end of the sleeve, and greater than the internal diameter thereof.

5. A golf club comprising a head having a metallic hosel, said hosel being in one piece throughout, a metal shaft, a sleeve of torsional resilient cushioning material capable of restoring itself to normal condition after distortion permanently affixed to said shaft and connected to the hosel, said extended above the upper end of the sleeve, said extended upper end of the hosel being compressed toward the shaft and thereby reduced in internal diameter above the sleeve to retain the sleeve and its permanently affixed shaft in place in the hosel, said compressed extended end of the hosel surrounding said shaft in spaced relation thereto without metal to metal contact with the shaft at any point.

6. A golf club according to claim 5 in which said sleeve is of rubber and is vulcanized to the shaft.

7. A golf club comprising a head having a metal hosel, a metal shaft, a sleeve of rubber vulcanized to the exterior of said shaft and fixed in the hosel with a driving fit, said hosel extending above the upper end of the rubber sleeve and being compressed at said extended portion towards the shaft and thereby reduced in internal diameter above the rubber sleeve to thereby overlie the upper end of the sleeve, said extended end of the hosel being spaced apart from the shaft, the said rubber sleeve forming the sole connection between the shaft and hosel and permitting a yielding action both torsionally and laterally between the hosel and shaft from the point where the contracted upper end of the hosel is spaced apart from the shaft throughout the lower end of the latter.

In testimony whereof, I affix my signature.

WILLIAM F. REACH.