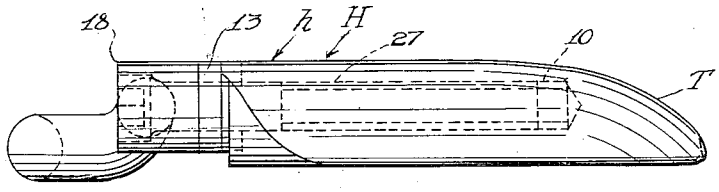
Jan. 15, 1957 C. V. WINTER 2,777,694

ADJUSTABLE HEAD GOLF CLUB

Filed March 27, 1952

Fig. 1



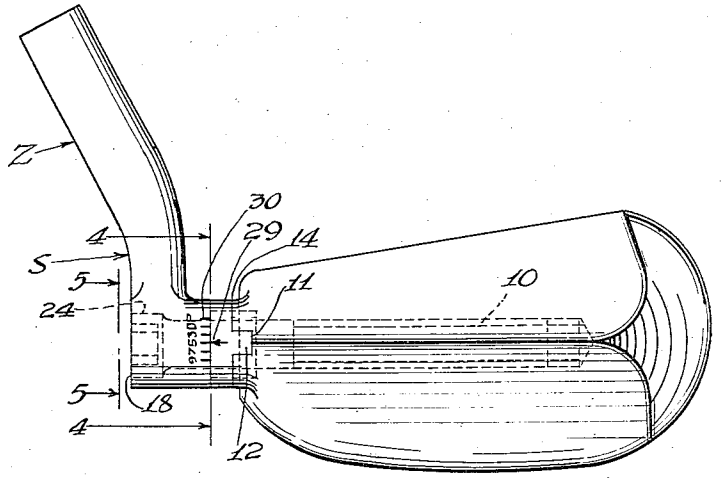


Fig. 2

Fig. 3

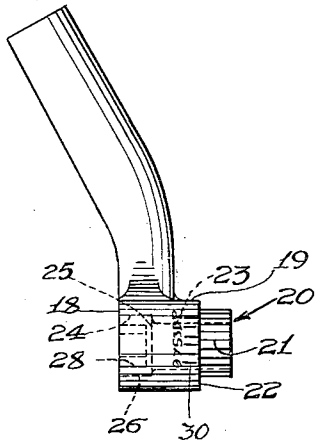


Fig. 5

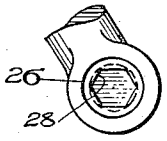
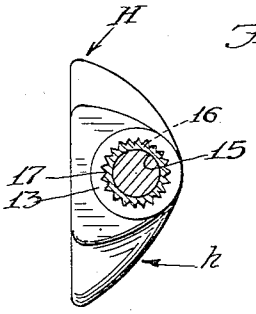


Fig. 4



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2,777,694

ADJUSTABLE HEAD GOLF CLUB

Charles V. Winter, Skokie, Ill.

Application March 27, 1952, Serial No. 278,795

1 Claim. (Cl. 273—79)

This invention relates to adjustable head golf clubs and is related broadly to the types of adjustable golf clubs in which the striking face of the club head is movable angularly with respect to the shaft of the club so as to provide a variation in the loft or angle of travel of a ball when struck by the face of a club head. Examples of this broad classification of golf clubs may be found in my United States Patent No. 2,329,313, issued September 14, 1943, upon an application filed August 20, 1941, under Serial No. 407,531, as well as shown in my co-pending applications filed on January 29, 1952, under Serial Nos. 268,853 and 268,854, entitled "Adjustable Golf Wood" and "Golf Clubs," respectively. Application No. 268,853 is now abandoned, and application No. 268,854 has matured into Patent No. 2,705,-147, issued March 29, 1955.

In the manufacture of such adjustable golf clubs it is necessary to provide means or mechanisms by which the angular adjustment between the striking face of the club head and the club shaft can be changed as desired and by which the desired adjustment may be maintained as long as desired. Due to the fact that movement between the golf club head and the shaft is permitted for adjustment purposes the means for holding the adjustment should be of sufficient strength and proper design to give the player the feeling that he is using a golf club formed into one unitary club while he is using the same. Any looseness between two movable parts tends to give the player a feeling of insecurity, and the impact of the club head upon the ball is so great as to tend to break or damage any holding parts which do not securely hold and prevent relative movement between the parts.

As shown in my said prior Patent No. 2,329,313 there may be provided between the golf club head and the shaft a connection comprising a plurality of outwardly extending teeth or serrations surrounding an annular bore at the inner or heel end of the golf club head while a similar arrangement of teeth or serrations surrounds a threaded bolt shank carried by the lower end of the golf club shaft; these teeth or serrations mesh with each other when the threaded shank is passed through the bore of the club head and are designed to prevent rotation between the club head and threaded shank when a nut is tightened upon the threaded shank to clamp the club head to the shaft.

In order to obtain a plurality of angular adjustments between the striking face and the shaft and to hold these angular adjustments, I provided in my said prior patent a circle of small teeth surrounding the open bore at the heel end of the club head, and a similar number of counterpart teeth arranged around the shank carried by the golf shaft. In the ordinary set of individual clubs made with unitary heads and shafts the angular change from one club to the next may be in the range of 9° to 12° from the horizontal. If the toothed adjustment for the adjustable golf club is to give similar angles of relationship to the horizontal it is and has been considered desirable to use from 30 to 40 teeth, for example,

so that a movement of the club head through an arc defined by one tooth would be equivalent to the angular difference between the faces of two conventional clubs in sequence, such as the number 2 and 3 irons or the number 1 and 2 woods.

In view of the limitations of size of club heads, shanks, and shafts it can be seen that each one of these teeth or serrations would be of relatively small size and strength, and that a secure tightening of the nut upon the threaded shank would be necessary to hold the teeth tightly in mesh to prevent a stripping or deformation of some or all of the teeth due to the relative movement between the shank and head at the time of impact with a golf ball. The adjusting teeth of my said prior patent were exposed to the possibility of collecting dust or other foreign matter which might prevent complete meshing and also prevent secure locking of the movable parts together.

A broad object of this invention is the provision of an adjustable golf club, either wood or iron, in which the striking face of the club is subject to various angular adjustments with respect to the club shaft and in which provision is made for a more secure and lasting locking arrangement between the club head and club shaft.

A further object of this invention is the provision of such an adjustable club in which the meshing teeth or ribs are completely encased and protected from the entrance of dust and other foreign material, and in view of the fact that the adjusting teeth or ribs mesh with each other over a considerable distance, greater strength is provided in the meshing locking arrangement.

A further object of this invention is the provision of meshing teeth or ribs which are interlocked over such a considerable dimension that an inadvertent or careless failure to tighten a clamping bolt or nut sufficiently will not permit a stripping of the teeth or ribs by the impact of the club head against a golf ball, which would seriously damage or destroy the club as a useful unit.

Other and more detailed objects will appear more fully as this description proceeds in connection with the accompanying drawings in which:

Fig. 1 is a bottom plan view of one of my improved clubs, of the iron type as contrasted to the wood type, with a portion of the shaft and hosel broken away.

Fig. 2 is a rear elevation view of the club shown in Fig. 1.

Fig. 3 is a detail of the hosel, shank, and lateral extension of the shank carrying the longitudinally arranged V-shaped ribs around the periphery of the lateral extension.

Fig. 4 is an end elevation view of the club head showing the enlarged annular recess carrying longitudinally extending V-shaped ribs for receiving the ribbed shank carried by the hosel shown in Fig. 3, and

Fig. 5 is a detail view in elevation showing the outer or exposed end of the clamping screw employed to hold the hosel, shank and club head in desired adjusted relation.

Referring now to Fig. 1, the club illustrated comprises a head H having a toe portion T and a heel *h*. Extending longitudinally of the head and substantially centrally between its upper and lower edges is a threaded bore **10** which extends substantially to the toe, and ends within the interior of the club head. The open end of bore **10** communicates with a pair of oppositely laterally extending slots **11** which receive a pair of diametrically oppositely arranged lugs **12** carried by a ring-shaped cup **13**, and these lugs **12** are preferably forced into these slots **11** by a pressed fit. The extreme inner end of the club head provides a flat annular seat **14** for the support

of the portions of the periphery of the outer end of the ring-shaped cup 13 which extend between the lugs 12.

Referring now to Fig. 4 the cup 13 is provided with an axial bore 15 which is arranged coaxially with the bore 10 of club head H. An enlarged annular recess 16 is arranged concentrically around the bore 15 and its periphery carries a plurality of longitudinally extending V-shaped ribs 17 preferably from 30 to 40 in number. These V-shaped ribs, except for the fact that they are V-shaped in cross-section, resemble gear teeth and extend toward the heel of club head H but do not extend the full length of the cup 13; the relative dimensions of the cup 13 and these ribs 17 thus leave an end wall for cup 13, which seats in a flush relation upon the annular shoulder 14 carried by the heel *h* of the club head.

Referring now to Fig. 2 the hosel Z carries a goose neck shank S having an enlarged lower extremity or base 18 from which protrudes laterally a cylindrical extension 19 shown in Fig. 3, and extending axially therefrom, and laterally of the base 18, is a reduced cylindrical extension 20. Around the periphery of the cylindrical extension 20 are V-shaped external ribs 21 running lengthwise of the extension 20, and of a size and number to form counterpart ribs to slide into mesh with the V-shaped ribs 17 carried upon the inner periphery 16 of cup 13.

Surrounding the extension 20 is an annular shoulder 22 carried at the end of extension 19, and when the V-shaped ribs 21 are slid into mesh with the V-shaped ribs 17 carried by the cup 13, this annular shoulder 22 forms a flush, face-to-face, contact with the annular free end of the cup 13.

Extending through the base 18, the cylindrical extension 19, and the ribbed extension 20, is an annular smooth bore 23 which ends in an enlarged annular recess 24 providing an annular shoulder 25 surrounding the interior end of the bore 23. Received within the enlarged recess 24 is the cylindrical head 26 of a bolt 27 which carries a plurality of threads at its opposite end for cooperation with the threads of the bore 10 carried in club head H. A portion of the bolt 27 intermediate its threaded end and the cylindrical head 26 is smooth and can rotate in the bore 23 carried in the extensions 19 and 20 of shank S. The cylindrical head 26 carries a socket 28 for the reception of a socket wrench head (not shown) to be used for tightening and loosening the bolt 27.

The outer periphery of the cup 13 may carry a marking arrow to cooperate with a plurality of numbered markers 30 carried on the periphery of extension 19, carried by shank S so as to indicate the position to which the head should be turned to give an angular loft comparable to that of the conventional type of club known by a number corresponding to the number on extension 19 opposite the marker 29.

From the foregoing and starting with the club adjusted and tightened as shown in Fig. 2, it is clear that a loosening of the bolt 27 by the insertion of a socket wrench into the socket 28 of the cylindrical head 26, will permit the ribs 21 of extension 20 to be slid to the left from their position shown in Fig. 2 so as to free them from meshing engagement with the V-shaped ribs of cup 13. After freeing the counterpart ribs from meshing with each other, the head H may be rotated in either direction so that the marker 19 is in alignment with one of the markers 30 which is used to indicate that the angular adjustment between the face of the club head and the hosel Z corresponds to the loft of a club head bearing

the number on extension 19 which is opposite the marker 29. After the player has made his choice of the type of angle he desires, he then slides the ribs 21 of the extension 20 into mesh with the ribs carried in cup 13, and tightens the bolt 27 so as to lock the counterpart V-shaped ribs tightly in mesh and to bring the annular shoulder 22 of extension 19 into a tight flush fit with the shoulder surrounding the open end of cup 13.

It can be seen that the V-shaped ribs are thoroughly protected from the entrance of dust or other foreign material, and due to the distance the ribs are in mesh, a very strong non-rotative connection is established between the hosel and head of the golf club.

While I have shown and described my preferred form of construction, I do not wish to be limited to the precise details shown and described, but wish to avail myself of any and all variations coming fairly within the scope of the appended claim.

What is claimed is:

An adjustable golf club comprising a head having a generally flat heel face and formed with a bore extending inward through the heel face and threaded adjacent to its inner end, said head being provided with a plurality of spaced cut-outs each extending inwardly through said heel face and opening laterally into said bore and through the outer surface of said head, a sleeve having an axial through bore and arranged with one end abutting the heel face of said head and the bore of said sleeve in axial alignment with the bore of said head, a plurality of lugs projecting from said one end of said sleeve and respectively removably force fitted in said cut-outs to fixedly secure said sleeve in said abutting relation with said heel face, a plurality of internal V-shaped ribs located about and extending longitudinally along the bore of said sleeve, a hosel base having one face firmly abutting the other end of said sleeve and formed with a through bore in axial alignment with the bores of said sleeve and head, a reduced annular extension on said one face of said base surrounding the bore of said base and extending through the bore of said sleeve and into the bore of the head terminating short of the threaded portion in the latter bore, a plurality of external V-shaped ribs located about the periphery of and extending longitudinally along said reduced extension in nonrotating interfitting engagement with the internal ribs of said sleeve, said reduced extension being slidably withdrawable from and reinsertable in said sleeve and head bores longitudinally of said interfitting ribs to nonrotatably connect said extension and sleeve in a selected position of relative rotation, and a headed bolt extending slidably inward through the bore of said base, said extension and sleeve and into threaded engagement with the bore of said head with the head of said bolt abutting said base to clamp together said base, sleeve and head.

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