

March 8, 1927.

1,620,588

R. O. WILSON

ADJUSTABLE GOLF CLUB

Filed March 8, 1926

2 Sheets-Sheet 1

Fig. 1.

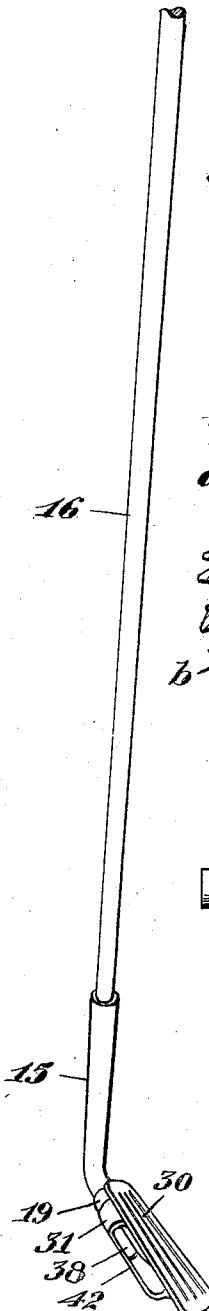


Fig. 2.

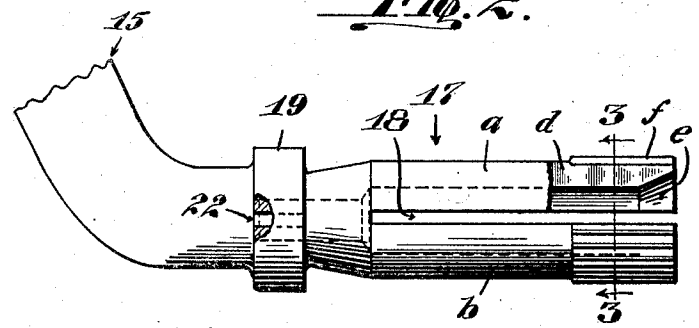


Fig. 3.

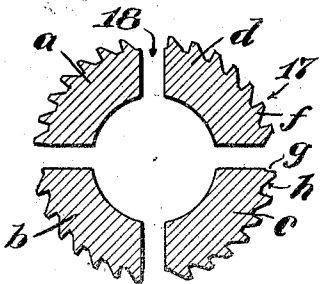


Fig. 4.

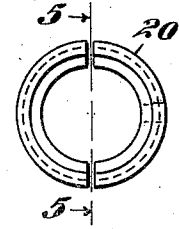


Fig. 5.

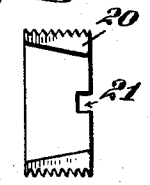


Fig. 6.

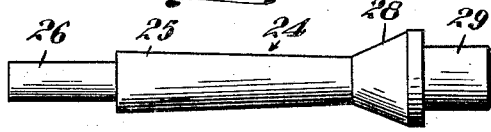


Fig. 7.

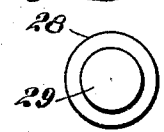
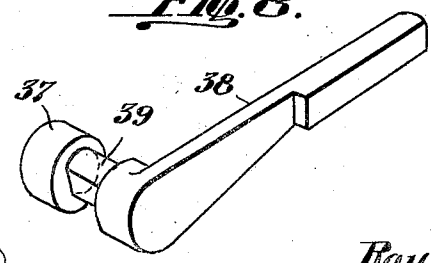


Fig. 8.



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2 Sheets-Sheet 2

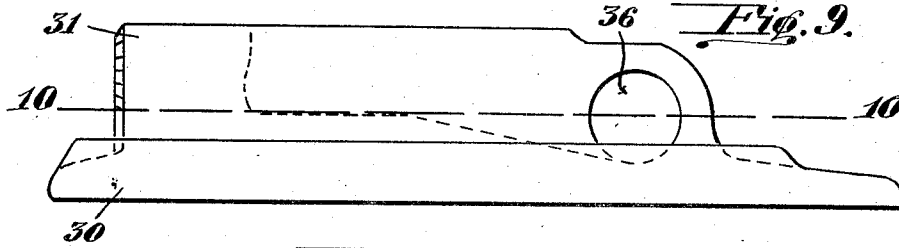


Fig. 9.

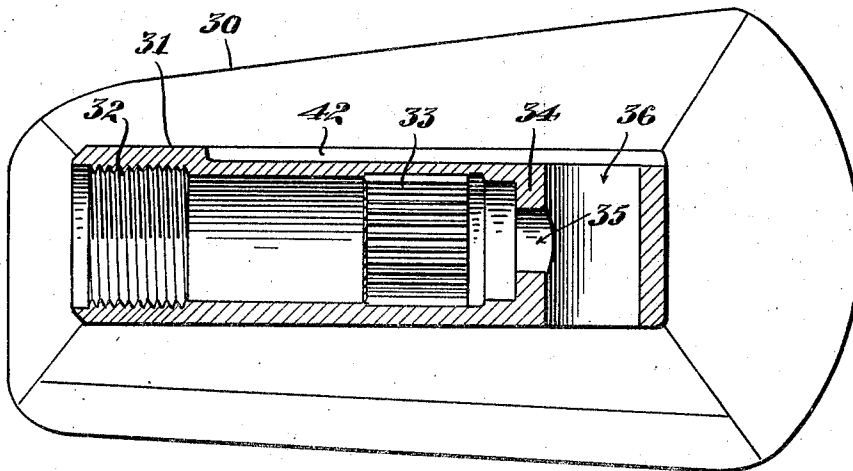


Fig. 10.

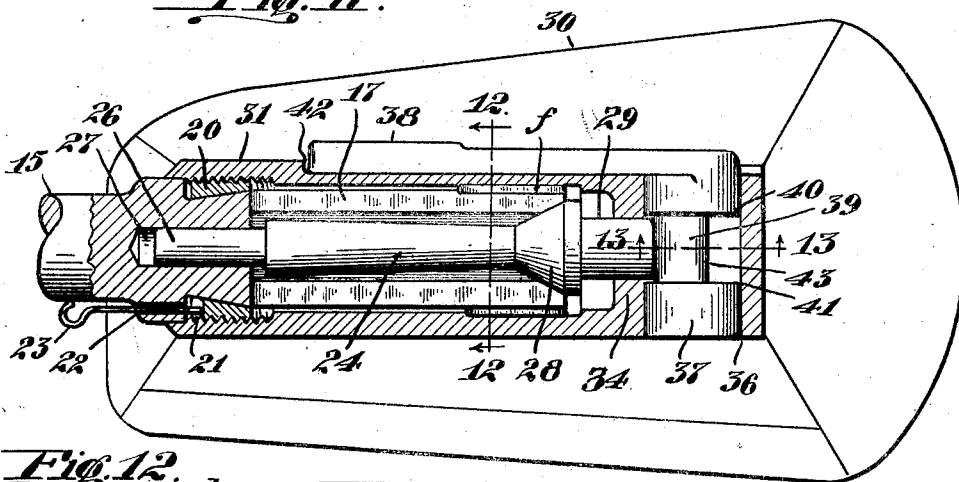
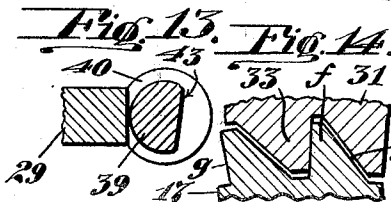
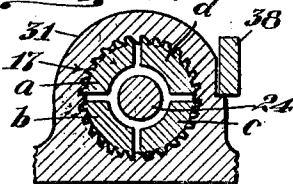


Fig. 11.



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UNITED STATES PATENT OFFICE.

RAY O. WILSON, OF LOS ANGELES, CALIFORNIA.

ADJUSTABLE GOLF CLUB.

Application filed March 8, 1926. Serial No. 93,066.

This invention relates to a golf club of the adjustable head type and has as its primary object the provision of a golf club in which the head may be disposed in various positions around a longitudinal axis extending obliquely from the shank and handle, whereby the driving edge of the head may be presented at various angles or inclinations according to requirements in effecting different drives and whereby one club may be employed to accomplish the several drives that ordinarily require the use of a series of clubs of different character.

Another object is to provide a means for effecting an interlocking connection between the golf club and an arbor on which it is supported which will admit of the head being disposed in various fixed positions circumferentially of the arbor and whereby the head and arbor will be so securely interengaged as to inhibit accidental displacement of the head relatively to the arbor under the action of the forces to which the head is ordinarily subjected in making drives.

Another object is to provide a mounting for an adjustable golf club head which is simple in construction and which may be easily and quickly operated in making adjustments of the head, and which is so formed as to permit ready assemblage and demounting of the parts.

With the foregoing objects in view, together with such other objects and advantages as may subsequently appear, the invention resides generally in forming a golf club shank with an expansible arbor on which the golf club is turnably mounted, and in providing a means for expanding the arbor into interlocking engagement with golf head, and further resides in forming the expansible arbor and a sleeve on the head with interengageable teeth so formed and arranged as to effect interlocking engagement on expansion of the arbor and operable to inhibit turning movement of head relatively to the arbor.

The invention further resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed and illustrated by way of example in the accompanying drawings, in which:—

Fig. 1 is a perspective view of the golf club;

Fig. 2 is a view in side elevation with por-

tions broken away of the expandible arbor;

Fig. 3 is an enlarged detail in cross section, as seen on the line 3—3 of Fig. 2 in the direction indicated by the arrow;

Fig. 4 is a view in end elevation of a two-piece divided nut;

Fig. 5 is a view in elevation of one of the halves of the nut as seen on the line 5—5 of Fig. 4;

Fig. 6 is a view in side elevation of an expander insertable in the expandible arbor as shown in Fig. 12;

Fig. 7 is an end view of the expander shown in Fig. 6;

Fig. 8 is a perspective view of the expander operating cam;

Fig. 9 is a view in side elevation of the golf club head;

Fig. 10 is a horizontal section and plan view as seen on the line 10—10 of Fig. 9;

Fig. 11 is a view in horizontal section and plan illustrating the manner of assembling the head on the arbor and showing the head and arbor in interlocking engagement with each other;

Fig. 12 is a detail in cross section as seen on the line 12—12 of Fig. 11;

Fig. 13 is a detail in section as seen on the line 13—13 of Fig. 11;

Fig. 14 is an enlarged detail in section showing the interengaging teeth on the arbor and head.

Referring to the drawings more specifically, 15 indicate the golf club shank fitted with the usual shaft 16 which shank is formed with an expandible arbor 17, the axis of which projects obliquely in relation to the shank 15. The arbor 17 is tubular and is formed with a series of longitudinally extending slots 18, here shown as four in number whereby the arbor is divided into four members *a*, *b*, *c* and *d*, as shown in Fig. 3. The inner margins of the outer ends of the members *a*, *b*, *c* and *d* are beveled as indicated at *e* in Fig. 2 and formed on the outer periphery of these members are longitudinally extending ratchet teeth *f* having flat faces *g* extending substantially on radial planes leading from the axis of the arbor and having inclined flat faces *h* extending obliquely in relation to the front faces *d*. The inner end portion of the arbor tapers inwardly to its intersection with an annular shoulder or flange 19 forming a wedge seat for a divided nut 20, shown in Figs. 4 and 5; the nut being formed with an internal

taper to conform to the tapered inner end portion of the arbor and being formed externally with conventional screw threads.

The nut 20 is formed with an end notch 21 adapted to be presented to an opening 22 formed in the flange 19 to be engaged by a removable pin or key 23 as shown in Fig. 11 whereby the nut 20 may be held against rotation on the arbor in effecting assemblage and adjustment of the golf head on the arbor, as will presently be described.

Insertable in the arbor is an expander 24, particularly shown in Fig. 6, which embodies a shank 25 formed at its inner end with a reduced portion 26 slidably engageable with a socket 27 formed in the shank 15. The outer end of the shank 25 carries a tapered head 28 adapted to engage the inclined faces *e* from the outer end of which head projects a stem 29.

A golf club head 30 is formed with a longitudinally extending sleeve 31 having internal threads 32 at one end thereof adapted to be screwed into engagement with the divided nut 20 and which sleeve is formed with a series of ratchet teeth 33 corresponding in shape to the teeth *f* on the arbor; the teeth 33 extending longitudinally of the bore of the sleeve 31, as shown in Fig. 10. The sleeve 31 is formed with an end wall 34 having an opening 35 adapted to receive the stem 29 on the expander 24 and is formed with a transverse opening 36 for the reception of a rock shaft 37 formed on a handle 38. The rock shaft is formed with a reduced intermediate portion constituting a cam 39 arranged to operatively abut against the outer end of the stem 29 on the expander; the reduced cam portion of the rock shaft being of a length substantially corresponding to the diameter of the stem 29 so as to provide spaced shoulders 40 and 41, between which the stem 29 extends to hold the rock shaft against longitudinal movement in the opening 36. The handle 38 is formed on the rock shaft 37 so that it may be positioned in a longitudinal recess 42 formed on the side of the sleeve 31 with the handle 38 extending alongside of the sleeve 31 when the cam 39 is disposed to move the expander 24 to its advanced position.

In assembling the head 30 on the arbor 17 the expander is first positioned within the arbor with its inner end portion 26 seating in the socket 27 whereupon the divided nut 20 is seated on the tapered inner end portion of the arbor with the nut 21 engaging the demountable pin 23. Paper shims are interposed between the contiguous faces of the halves of the nut 20. The sleeve 31 is then advanced over the outer end of the arbor with the rock shaft 37 disposed in the opening 36 and positioned so that the low face 43 of the cam 39 will be arranged opposite

the opening 25, whereupon the sleeve is screwed into engagement with the divided nut by rotating the head around the arbor which causes the sleeve to advance relatively to the arbor with the stem 29 on the expander extending through the opening 35. When thus screwing the sleeve on the nut 20, the teeth *f* on the arbor will be positioned out of engagement with the teeth 33 on the sleeve 31 so that the sleeve may be rotated relatively to the arbor to position the teeth 33 opposite the teeth *f*. When the head has thus been advanced to the desired position longitudinally of the arbor and turned to the desired position axially thereof, the rock shaft 37 is turned through the medium of the handle 38 to cause the cam to thrust the expander 24 inwardly and cause the tapered head 28 thereof to effect wedge engagement with the outer end portions of the members *a*, *b*, *c* and *d* of the arbor and thereby expand the latter so as to force the teeth *f* thereon into interlocking engagement with the teeth 33 on the sleeve 31, as shown in Figs. 12 and 14. The cam 39 will then be disposed as shown in Fig. 13 and the handle 38 will be positioned in the recess 42 as shown in Figs. 1 and 11. The longitudinal thrusts imposed on the sleeve 31 by the cam bearing against the end of the expander will be opposed by the dovetailed connection afforded by the divided nut 20 and the tapered inner end portion of the arbor. After thus effecting the desired adjustment of the head on the arbor the pin 23 may be removed.

When the head and arbor are thus interengaged, the radial faces *g* of the teeth *f* will abut against corresponding faces on the teeth 33 throughout the contiguous peripheral faces of the arbor and sleeve, thereby effectively inhibiting rotation of the head on the arbor.

When it is desired to readjust the head on the arbor, the rock shaft 37 with the cam 39 is turned so as to free the expander, whereupon on rotating the head so as to cause the inclined faces of the teeth 33 to slide over the inclined faces on the teeth *f*, the members *a*, *b*, *c* and *d* of the arbor will be moved inwardly, thereby forcing the expander outwardly, thus freeing the head so that it may be turned to any desired position axially of the arbor.

In effecting this adjustment, the sleeve may be rotated around the arbor without unscrewing it from the nut 20, as the latter, when not engaged by the pin 23 is free to turn on the arbor. The head is then re-engaged with the arbor by manipulating the handle to actuate the cam and expander as before described.

The nut 20 is designed so as to afford a clearance between it and the shoulder or flange 19, which permits the sleeve 31 being

advanced longitudinally relatively to the arbor when the cam 39 is positioned to free the expander so as to permit adjustment of the spacing of the axis of the rock shaft 37 relative to the end of the arbor in disposing the cam in proper operative relation to the expander, so that when the lever 38 is disposed alongside of the sleeve 31 the cam 39 will dispose the expander in proper position to cause the teeth on the arbor and sleeve to be tightly interengaged.

I claim:

1. In an adjustable golf club, a shank, an expansible arbor thereon, a head carried by said arbor and turnable thereon, an expander for said arbor, and means for operating said expander for effecting interlocking engagement between said head and arbor.

2. In a golf club, a sectionally expandible arbor, a head carried by said arbor and turnable axially thereof, means for expanding said arbor, and means operable on expansion of said arbor to effect interlocking engagement between the head and arbor.

3. In a golf club, a sectionally expandible arbor, a head carried thereon, interengageable teeth on said arbor and head, and means for expanding said arbor to effect engagement of said teeth.

4. In a golf club, an expandible arbor, a longitudinally movable expander in said arbor, a head carried by said arbor, interengageable teeth on said arbor and head,

and a cam carried by said head operable to actuate said expander to effect engagement of said teeth.

5. In a golf club, an expandible arbor, having a tapered inner end portion, an externally threaded nut seating on the tapered portion of the arbor, a head including a sleeve encompassing said arbor and having screw engagement with said nut, means for expanding said arbor, and means operable on expansion of said arbor to effect interlocking engagement between the head and arbor.

6. In a golf club, a tubular arbor formed with a plurality of longitudinally extending slots and having a toothed outer periphery, a head including a sleeve encompassing the arbor and having teeth on its inner periphery, an expander arranged for longitudinal movement in relation to said arbor, and a cam for effecting operation of said expander to cause interengagement of the teeth on the arbor and sleeve.

7. In an adjustable golf club, a shank, an expansible arbor thereon, a head carried by said arbor and turnable thereon, an expander for said arbor, and means for operating said expander for effecting non-rotational relation between said head and arbor.

In testimony whereof, I have affixed my signature.

RAY O. WILSON.