

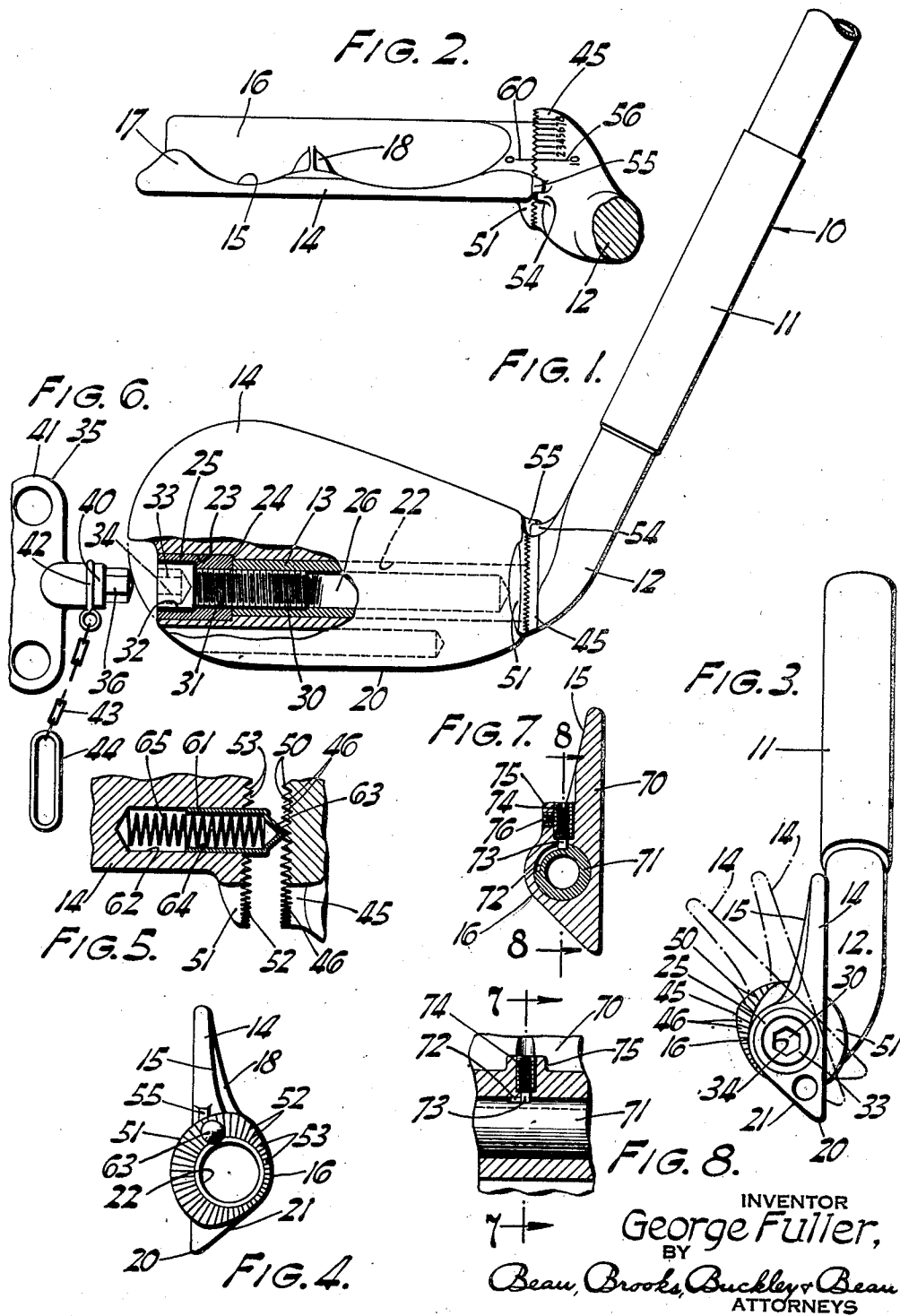
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G. FULLER

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GOLF CLUB

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GOLF CLUB

George Fuller, Buffalo, N. Y.

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My invention relates in general to golf clubs and in particular to that type of golf club having an adjustable head.

It is well known to those skilled in the art that attempts have heretofore been made to construct golf clubs with adjustable heads whereby the loft or lift of the club may be adjusted to a position suitable for the stroke at hand. Such devices, however, have depended upon tapers, ratchets or gears for holding the head in adjusted position and upon springs to lock the parts together. Such devices usually involve intricate and complicated mechanical construction which in many cases is not only bulky but adds considerably to the weight of the club.

The principal object of my invention has been to provide an adjustable golf club which shall be light in weight and which shall closely resemble the ordinary solid club.

Another object has been to provide a club having a head which may be adjusted through any desired range of positions by rotating the head in either direction, provision being made to lock the head in its adjusted position.

A further object of my invention has been to provide means for securely holding the head in initial adjusted position while the player determines whether such position is correct, after which the head may be securely locked without danger of changing its adjustment.

Moreover, my device is provided with an index pin by which the user may repeatedly set the head to any desired angle, together with stops for limiting the rotation of the head beyond the putter position.

Moreover, the adjustment of the head of my club is effected by the relative rotation of serrated or notched surfaces which may be counted as the head is rotated, whereby accurate adjustment may be made by a golfer who may not, for any reason, be able to see the graduations provided on the club, but could readily sense the number of clicks or hear them.

Furthermore, the head of my club is so shaped that, when in the niblick position, a supporting surface of considerable area will be brought to a position of parallel relationship to the turf at the time of the impact with the ball.

The above objects and advantages have been accomplished by the device shown in the accompanying drawing, of which:

Fig. 1 is a side elevation, partly in section, of a golf club embodying my invention.

Fig. 2 is a plan view of the same.

Fig. 3 is an end elevation, showing the head in a number of possible positions.

Fig. 4 is a face view of the head taken from the inner end thereof showing the detent.

Fig. 5 is an enlarged, fragmentary, sectional elevation of parts of the golf club taken through the center line of the detent.

Fig. 6 is a side elevation of a wrench for actuating the retaining screw of the golf club head.

Fig. 7 is a cross-sectional view of a modified form of stop for the head, taken on line 7—7 of Fig. 8.

Fig. 8 is a fragmentary, longitudinal, sectional view of the modification shown in Fig. 7 and is taken on line 8—8 of Fig. 7.

In the drawing, 10 shows the shaft of the club, which has a shank 11 at its lower end. This shank is formed with a solid neck 12 from which extends the spindle 13 of my device. The spindle is preferably formed integrally with the shank 11 so that a very rigid structure is brought about. The spindle is so arranged in relation to the shank that the face of the head lies in a plane behind the plane of the shank which gives to the club a better balance or hang and positions the face as shown in Figs. 2, 3 and 4.

The head 14 of my club is made of solid metal and is formed on its back face 15 with a longitudinally arranged reinforcing boss 16. The metal of the head is made relatively thin for the sake of lightness and it is reinforced by means of a number of stiffening ribs 17 and 18. This boss 16 is preferably semi-cylindrical in form and is joined to the lower edge 20 of the head by means of a supporting surface 21. This surface will lie substantially parallel with the turf when the head is in the niblick position, whereby an extended area is presented to the turf if needed during the drive.

The reinforcing boss 16 is formed with a longitudinal bore 22 extending from the inner end to a point near the outer end where a counterbore 23 is preferably formed. The bore 22 is substantially the same diameter as the spindle 13 and the head is thereby rotatably mounted upon the spindle. The counterbore 23 is somewhat larger than the bore 22 whereby a shoulder 24 is formed. A sleeve 25 is mounted within the bore 23 and is designed to bear against the shoulder 24.

The spindle 13 may be provided with a bore 26 extending the entire length thereof in order to decrease the weight of the golf club and the outer end of this bore is provided with suitable screwthreads for the reception of a retaining screw 30. This screw passes through a suitable

bore 31 formed through the sleeve 25 and which is also provided with a counterbore 32 for the reception of the head 33 of the retaining screw 30. This retaining screw is preferably of the socket head type such as, for instance, the "Allen" type having a hexagonal recess 34 in its head with which a hexagonally shaped wrench is engaged when the screw is to be actuated. A convenient wrench is shown in Fig. 6 in the form of a key 35 having a stud 36 for insertion into the socket of the screw head, shown for convenience as hexagonal, for engagement with the hexagonal recess 34 of an Allen type screw. A shank 40 is formed adjacent to the stud, at the outer end of which is a thumb piece 41, whereby the stud 36 may be conveniently operated. The shank 40 is preferably formed with an annular groove with which a ring 42 is pivotally engaged. A chain 43 having a ring 44 at its outer end may be attached to the ring 42 and suspended from the player's belt or other conveniently located place where it will be accessible when the golfer desires to change the angle of the head.

The neck 12 of my club shaft is formed with a shank boss 45 which surrounds the inner end of the spindle 13 and in the face of which is formed a series of V-shaped grooves 46 whereby a plurality of interspaced and radially arranged ridges 50 are provided. The inner face of the head 14 surrounding the bore 22 is provided with a head flange 51 which is also provided with a series of radially arranged ridges 52 formed by interspaced grooves 53. The ridges 50 and grooves 46 are so proportioned that they interengage, respectively, with the grooves 53 and ridges 52. The spindle 13 is preferably of such length that the sleeve 25 will firmly bear against the shoulder 24 and force the head endwise to such a position where the interengaged ridges 50 and 52 will be firmly held in engagement.

Since the head of my device can be operated in either direction when adjusting the position thereof, it is preferable to stop the rotation of the head when it has reached the limit of possible adjustment in one direction as, for instance, the putter position. This is brought about by providing a stop lug 54 carried by the neck 12 and adjacent the shank boss 45, and by a cooperating stop lug 55 carried by the head 14 and adjacent the head flange 51.

It is desirable to have my golf club graduated so that the head when set at various angles will correspond to the various well-known clubs. In some instances, a player may find that a certain angle (different from the angle of stock clubs) may best suit his stroke, in which case the number of the graduation for this angle may be noted for repeated settings. In order to bring about the visible setting of my club head the shank boss 45 is provided with a plurality of lines 56 terminating at the base of the V-shaped grooves 46 formed therein. Each of these lines is identified by an index of some sort, preferably a numeral. The head 14 is provided with a registering index line 60 which may be brought opposite any one of the lines on the shank boss in well-known manner.

Since it is desirable to hold the head in an initially adjusted position in a non-locking manner to allow the golfer to determine the correctness of the selected angle before he makes the drive, I provide spring-pressed means for temporarily holding the head in any desired position, comprising a spring actuated detent 61 slidably mounted in a bore 62 formed in the head 14 and

the flange thereof. This detent has its outer end formed with a V-shaped point 63 for engagement with the V-shaped grooves 46 formed in the shank boss 45. The detent is formed throughout substantially its entire length with a bore 64 open at the inner end. A helical spring 65 is mounted within the bores 62 and 64. One end of the spring bears against the bottom of the bore 62 and the other end against the inner face of the point 63, whereby the normal tendency of the detent is to be pushed out of the bore 62. As shown in Fig. 5, it will be obvious that when the retaining screw 30 is loosened sufficiently to allow the V-shaped ridges 50 and 52 to pass each other when rotating the head, the end 63 of the detent will ride over the ridges 50 and come to rest within a registering groove 45 when the head has been moved to the desired position. Thus the golfer may initially adjust the head by freely rotating the same in either direction to what he believes is the desired position thereof and thereafter place the head in position at or near the ball to determine whether the selected angle is correct. The detent will keep the head in such initial position during this operation and, since it engages with one of the V-shaped grooves, it will cause the grooves and ridges of the coacting surfaces to be brought into registration and held there until such surfaces are brought into their final locked position by means of the retaining screw. After adjustment, movement of the retaining screw causes the head to be moved axially upon the spindle to bring the serrations in the coacting surfaces of the head and spindle into locking engagement, independently of the detent means. If the golfer is unable for any reason to see the graduations on the club, he may first move the head to the putter position by bringing the stop lug 55 in contact with the stop lug 54, after which he may rotate the head toward the desired position and count the number of notches, as viewed in Fig. 3. When the detent passes over the ridges 50 the golfer may hear the clicks or determine the correct number by the sense of feel. Since it is also desirable to separate the engaging teeth of the head flange and shank boss upon loosening of the screw, so that immediate adjustment of the parts might be brought about, the spring 65 is made sufficiently strong to slide the head along the spindle as the screw is loosened.

When my club is to be adjusted to a different angle, it is only necessary for the golfer to loosen the retaining screw 30 by means of the conveniently located key 35, whereupon the spring 65 through the medium of the detent will force the head 14 endwise upon the spindle 13, whereby the coacting ridges 50 and 52 will be disengaged sufficiently to permit the head to be rotated to the desired position against the tension of the detent 61. When the head has been adjusted to the desired position, it is only necessary to return the retaining screw to its locking position.

In Figs. 7 and 8 I show a modified form of stop for the head 70. In these figures 71 represents the spindle which is formed in its periphery with an arcuate slot 72, with which the smooth cylindrical end 73 of a stop screw 74 is engageable. The slot 72 is so positioned and proportioned that the screw end 73 will contact with one end of the slot when it is in the putter position, as shown in Fig. 7, the slot being of sufficient length so as to permit sufficient rotative movement to allow placing the head in any desired angular position. The slot 72 is considerably wider than the diameter of the screw end 73, as shown in Fig. 8, thereby

permitting the necessary axial movement for disengagement of the serrated surfaces at the joint between the head and the shaft, shown and described in connection with the other form of my invention. The screw 74 passes through a boss 75 formed on the back of the head, as shown in Fig. 7, and a set screw 76 passes into the boss and engages with the screw 74 to lock it in its adjusted position.

While I have shown the adjacent coacting faces of the head flange 52 and the shank boss 45 provided with radially arranged V-shaped ridges formed by interspaced, V-shaped grooves, it is obvious that any other suitable form of serrations may be formed on these interengaging surfaces, and the shank boss, for instance, may be formed with a series of recesses or indentations of semi-spherical shape engageable by suitable semi-spherical protuberances formed on the adjacent face of the head flange. In such an arrangement, the conically shaped end 63 of the spring-pressed detent 61 would engage with one of such semi-spherical recesses when the head was brought to its desired adjusted position, after which the other semi-spherical protuberances would be brought into engagement with the registering semi-spherical recesses of the shank boss for holding the head non-rotatively in position upon the spindle when the retaining screw is drawn up to locking position.

Obviously, these and other modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims and I do not, therefore, wish to be limited to the exact embodiments herein shown and described, the forms shown being merely preferred embodiments thereof.

Having thus described my invention, what I claim is:

1. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted upon said spindle, said shaft being being provided with a boss located at the inner end of the spindle and formed with a plurality of V-shaped ridges and interspaced grooves, said head being formed in its inner end with a flange having its face formed with a plurality of V-shaped ridges formed by interspaced, V-shaped grooves, said ridges and grooves of said head being engageable, respectively, with said grooves and ridges of said shaft for locking the head upon the spindle in non-rotatable manner, a spring-pressed plunger carried by said head and having a conically-shaped point for engagement with the ridges and grooves of the shaft for temporarily adjusting the head upon the spindle, and means for forcing the head endwise upon the spindle and locking the engagement surfaces in place.

2. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, spring-pressed detent means carried by said shaft and said head for temporarily holding said head in any adjusted position, and locking means independent of the detent means for locking said head upon said shaft in non-rotatable manner.

3. A golf club, comprising a shaft, an integral spindle carried by said shaft and having its axis in a plane located behind the axis of the shaft, a head rotatably mounted and axially movable upon said spindle, spring-pressed detent means carried by said shaft and said head for temporarily holding said head in any adjusted position,

and locking means independent of the detent means for locking said head upon said shaft in non-rotatable manner.

4. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, said head and said spindle having interengaging surfaces so formed as to prevent their relative rotation when engaged and locked against relative axial movement, non-locking spring-pressed detent means emerging from one of said surfaces and engaging with the opposite surface for temporarily holding the parts in their adjusted position, and means for forcing and holding said surfaces together, whereby the head will be held upon the shaft in non-rotative manner.

5. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, said head and said spindle having interengaging surfaces so formed as to prevent their relative rotation when engaged and locked against relative axial movement, a non-locking spring-pressed plunger emerging from one of said surfaces and engaging with the opposite surface for temporarily holding the parts in their adjusted position, and means for forcing and holding said surfaces together, whereby the head will be held upon the shaft in non-rotative manner.

6. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted upon said spindle, said shaft being formed with a plurality of V-shaped ridges and interspaced grooves adjacent the inner end of the spindle, said head being formed in its inner end with a plurality of V-shaped ridges formed by interspaced, V-shaped grooves, said ridges and grooves of said head being engageable, respectively, with said grooves and ridges of said shaft for locking the head upon the spindle in non-rotatable manner, a spring-pressed plunger carried by said head for engagement with the ridges and grooves of the shaft for temporarily adjusting the head upon the spindle, and means for forcing the head endwise upon the spindle and locking the engaging surfaces in place.

7. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, non-locking detent means carried by said spindle and said head, said detent means normally tending to move said head endwise on said spindle toward the outer end thereof for permitting adjustment of said head, and locking means between said head and spindle and formed with coacting serrated surfaces, said detent means coacting with one of said serrated surfaces.

8. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, non-locking detent means for yieldably holding the head in its initially adjusted position and locking means for permanently fixing the head and spindle in their adjusted positions, said detent means serving to temporarily hold said head in its adjusted position until said locking means is actuated.

9. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, non-locking detent means for yieldably holding the head in its initially adjusted position, locking means carried by said head and said spindle and formed with serrated coacting surfaces, and said detent means engaging with one of said co-

acting surfaces to register said coacting surfaces and hold them in such registration until lockingly engaged.

10. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, a shoulder formed on said shaft adjacent the inner end of said spindle, notches formed in the face of said shoulder, non-locking spring-pressed detent means carried by said head and engageable with said notches for causing a clicking sound upon relative rotation of the parts, suitable stop means carried by said shaft and said head for limiting their relative rotative movement and initiating a starting point, whereby said head may be adjusted from the position at the starting point by counting the number of clicks, and means for locking said head upon said shaft in non-rotatable manner.

11. A golf club, comprising a shaft, an integral spindle carried by said shaft, a head rotatably mounted and axially movable upon said spindle, a shoulder formed on said shaft adjacent the inner end of said spindle, notches formed in the face of said shoulder, a non-locking spring-pressed plunger carried by said head and engageable with said notches for causing a clicking sound upon relative rotation of the parts, suitable stop means carried by said shaft and said head for limiting their relative rotative movement and initiating a starting point, whereby said head may be adjusted from the position at the starting point by counting the number of clicks, and means for locking said head upon said shaft in non-rotatable manner.

GEORGE FULLER.