

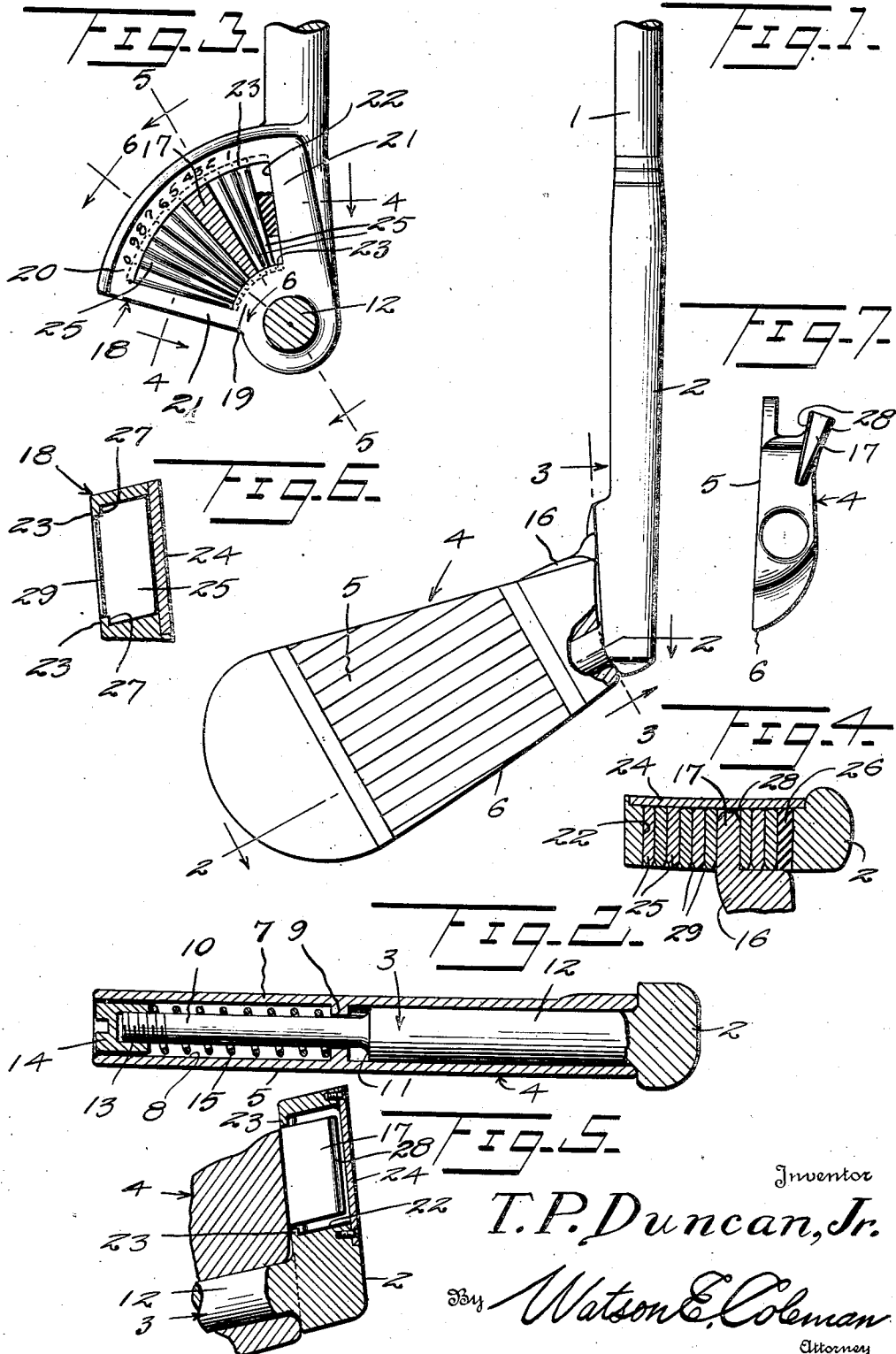
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T. P. DUNCAN, JR  
ADJUSTABLE GOLF CLUB HEAD

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2 Sheets-Sheet 1



Inventor

T. P. Duncan, Jr.

Watson E. Coleman  
Attorney

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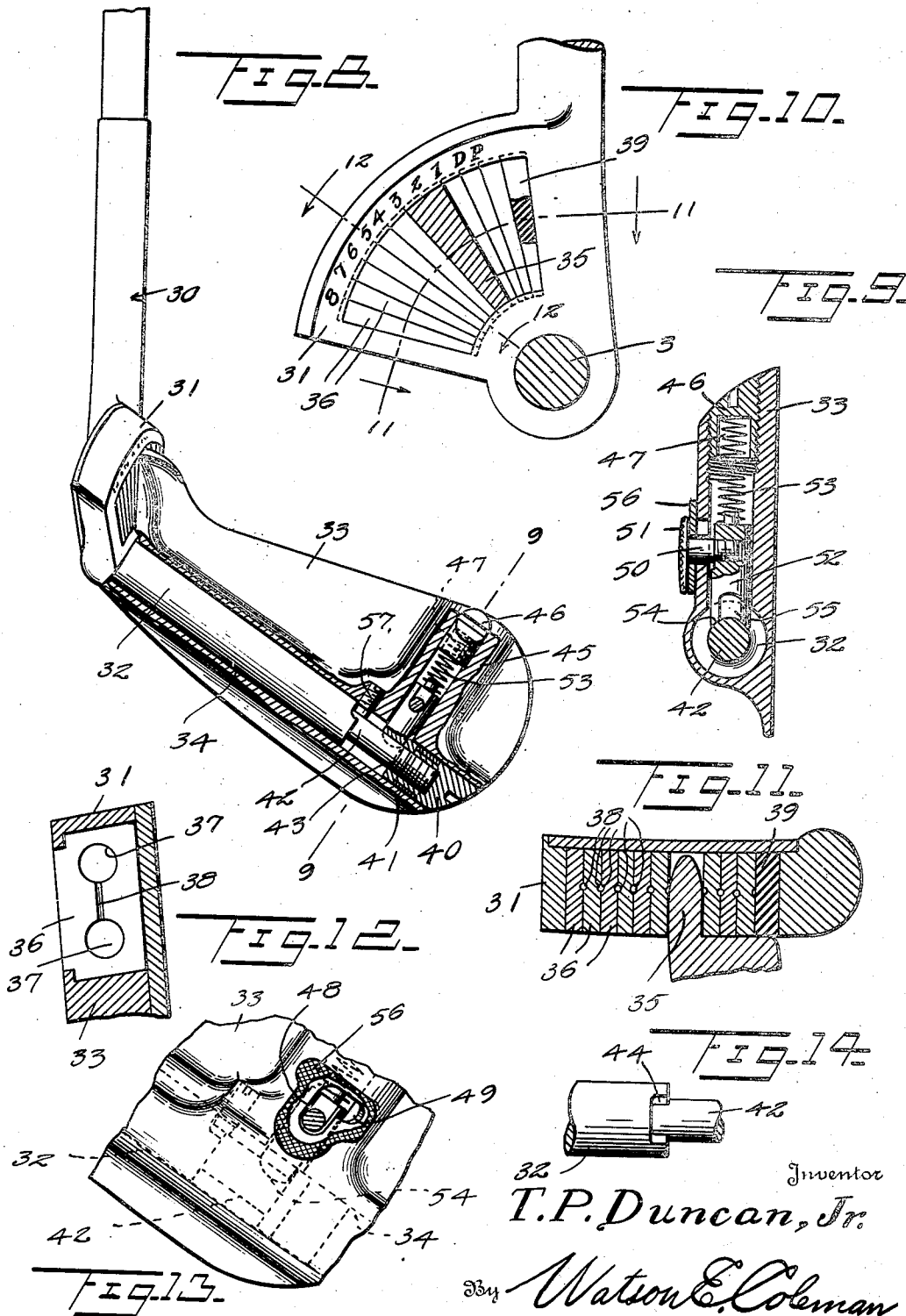
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Inventor  
T.P. Duncan, Jr.

By *Watson E. Coleman*  
Attorney

## UNITED STATES PATENT OFFICE

2,179,034

## ADJUSTABLE GOLF CLUB HEAD

Thomas P. Duncan, Jr., Newport News, Va.

Application May 2, 1939, Serial No. 271,396

20 Claims. (Cl. 273—79)

This invention relates generally to improvements in golf clubs and pertains particularly to an improved adjustable club head and the present application constitutes a continuation in part of my application Serial No. 203,958, filed April 23, 1938, which was allowed January 20, 1939.

The present invention has for its primary object to provide an improved adjustable head for an iron golf club wherein adjustments may be made to give to the face of the head lofts ranging from that of a putter through the series to a number ten club or niblick.

Another object of the invention is to provide an improved iron club wherein the head may be easily adjusted to obtain any one of ten different clubs and the construction of the adjusting means is such that a firm union will be established between the head and the shaft of the club in whatever position the head may be placed so that all danger of breakage when the club is used will be avoided.

A still further object of the invention is to provide an improved iron golf club head which may be adjusted to give clubs of various types, in which such an adjustment may be made without requiring the manipulation of screws, nuts, or other elements but the head may be shifted in one direction relative to the club shaft and then moved to the desired position for the type of club wanted and finally shifted back to its original position where it will be firmly maintained.

Still another object of the invention is to provide an improved adjustable head golf club which is so designed that all possibility of the head shifting in any manner at the time of striking a ball is eliminated and in which the construction is such that the device is entirely fool-proof and, therefore, even though the adjusting mechanism is carelessly handled there is no possibility of the head coming loose from the shaft.

Still another object of the invention is to provide an improved adjustable head golf club in which novel means is provided for preventing sand or dirt from getting into the working parts and thus interfering with the easy adjustment of the same.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawings but may be

changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings—

Figure 1 is a view in elevation of the club embodying the present invention, looking at the face of the club head.

Figure 2 is a longitudinal section through the club head on the line 2—2 of Figure 1.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 3.

Figure 5 is a sectional view on the line 5—5 of Figure 3.

Figure 6 is a sectional view on the line 6—6 of Figure 3.

Figure 7 is a view looking at the heel end of the club head per se.

Figure 8 is a view in rear elevation of a modified form of the structure shown in Figure 1, parts being broken away to illustrate the adjusting mechanism.

Figure 9 is a sectional view taken on the line 9—9 of Figure 8.

Figure 10 is a sectional view taken transversely of the head looking toward the shaft.

Figure 11 is a sectional view on the line 11—11 of Figure 10.

Figure 12 is a sectional view on the line 12—12 of Figure 10.

Figure 13 is a fragmentary view of the rear side of the head showing the latching parts partly in elevation and partly broken away.

Figure 14 is a detail of a portion of the head supporting stem.

Referring now more particularly to the drawings and particularly to Figures 1 to 7 inclusive, the numeral 1 generally designates the shaft of the golf club embodying the present invention, the lower portion of the shaft being secured in the usual metal sleeve 2.

At the lower end of the sleeve 2 is the angularly directed stem 3, the angular relation of which with respect to the shaft and the sleeve is such as to support the club head 4 at the proper angle with respect to the shaft to suit the build of the player who is to use the club. It will, therefore, be understood that the angular disposition of the head 4 with respect to the shaft is not fixed in the position in which it is shown in Figure 1, but may be varied according to the requirements of the player.

The head 4 of the club has the usual scored

face 5 while the rear of the body is slightly enlarged longitudinally and adjacent the sole 6, as indicated at 7, and through this enlarged portion a bore or passage 8 is formed to receive the stem 3. Intermediate its ends the passage 8 has the constriction 9. The stem 3 has its outer half of reduced diameter as indicated at 10 so that there is thus formed a shoulder 11 between the reduced portion 10 and the inner or larger portion 12, and when the stem is in position in the bore 8, the reduced portion 10 will pass through the constriction 9 as shown in Figure 2 so that the shoulder 11 will be brought into close proximity thereto when the stem is in the position illustrated.

The outer or free end of the stem 3 is threaded as indicated at 13 to receive the nut 14 which is of cylindrical form and of a diameter to snugly fit in the outer end of the bore 8 to be completely housed therein as shown, and there is interposed between this nut and the constriction 9, the expansion spring 15 which surrounds the reduced portion 10 and bears at one end against the nut 14 and at the other end against the constriction so that it will constantly operate to draw the inner or heel end of the club head and the lower end of the sleeve 2 together.

At the top of the club head and at the heel end thereof, there is formed a shoulder 16 with which there is integrally formed a wing plate 17 which extends longitudinally of the club head and toward the sleeve 2 and is offset from the back of the head, being disposed in a plane oblique to the face 5. This wing plate 17 is adapted to engage in a frame 18 which is formed integral with the sleeve 2 and extends rearwardly therefrom with respect to the face 5 of the club head. This frame is substantially arcuate in form having the inner and outer portions 19 and 20 respectively, and the connecting side walls 21 which are in convergent relation toward the stem 3, thus forming the opening 22 having the concentrically related inner and outer edges which are in turn, concentric with the pin 3 on which the head 4 turns or oscillates.

The inner edges of the portions 19 and 20 of the wing plate receiving frame have the opposed flanges 23 and, as shown in Figure 3, the wing plate 17 is of a height equal to the distance between these flanges so that the plate will swing snugly in the frame when the club head is oscillated on the pin 3.

The back of the frame 18 is closed by the removable plate 24 and this plate retains in position within the frame a series of metal wedge plates 25 and a rubber wedge 26. Each of the wedge plates 25 and the wedge 26 is tapered slightly in thickness toward the stem 3 as shown in Figure 3 and the rubber wedge 26 constantly maintains a position in the frame opening nearest to the sleeve 2. Each of these wedge plates 25 as well as the rubber wedge 26 has the shoulder 27 at the corners adjacent the frame flanges 23, as shown in Figure 6, so that the wedge plates will be maintained by the flanges 23 from escape from the frame 18.

In practice, there will be nine of the metal wedge plates 25 in the frame 18 and the thickness of these wedge plates is such that with the rubber wedge 26, a sufficient space can be made in the frame to receive the wing plate 17 in any desired position between the rubber wedge 26 and the side 21 of the frame remote from the sleeve 2, and when the wing plate is in any one of the ten positions in which it may be placed in the frame

between the shiftable plates therein, the head 4 will be disposed with the face at a loft angle representing one of ten iron clubs starting first with the putter, when the wing plate 17 is between the rubber wedge 26 and the metal plate nearest thereto, and ending with the niblick, when the plate is in number 10 position. While the metal wedge plates 25 are shiftable in the frame, the rubber wedge 26 always stays at the side of the frame nearest the sleeve 2, and this wedge serves to maintain a tight engagement of the club head wing plate 17 between the other plates.

From the foregoing it will be readily apparent that with the mounting described for the club head 4 upon the stem 3, the adjustment of the club head to any one of the different positions desired is made by pulling the club head longitudinally on the stem 3 away from the sleeve 2 so as to compress the spring 15 and remove the wing plate 17 from the frame 18 so that the club head and the wing plate may be oscillated to the position desired for the type of iron club wanted for play. While the club head may be forced back on the stem 3 to effect engagement of the wing plate 17 in the frame in the position selected, it will be apparent that the tensioned spring 15 will also tend to pull the head back into working position.

In order that the insertion of the wing plate 17 between any two of the plates in the frame may be easily effected, the rear edges of the wing plate 17 are beveled off, as indicated at 28 in Figure 4, and the outer or exposed edges of the metal plates are similarly beveled as indicated at 29. This beveling of the wing plate and the metal plates facilitates the insertion of the wing plate as will be readily apparent from the showing of Figure 4.

In Figures 8 to 14 a modified form of the invention as illustrated in Figures 1 to 7 is shown, this modification relating particularly to the method of holding the club head against longitudinal movement with respect to the shaft, although a slight modification has been made also in the form of the wedge plates.

In this modified structure the shaft is indicated generally by the numeral 30 while the frame at the lower end of the shaft is designated by the numeral 31 and this frame, like the frame 18, is of arcuate form from the radial center of which extends the head supporting stem 32. The club head is indicated generally by the numeral 33 and is provided with the longitudinally extending integral sleeve 34 through which the stem 32 extends. At the inner or heel end of the head 33 the wing 35 is formed for extension into the frame 31 between the shiftable or separable wedge plates 36 which are of the same form generally as the plates 25 except that these plates 36 are provided with apertures 37 and on each face is a groove 38 which connects the apertures. The use or purpose of these apertures 37 and grooves 38 will be hereinafter described. The frame 31 also has therein the rubber wedge plate 39 which functions in the same manner as the rubber wedge 26. In this modified construction provision is made, as shown in Figure 10, for setting the head 33 in position for use as a putter, a driving iron or any one of the other eight iron clubs which go to make up a set of irons.

The front edges of the metal wedge plates 36 are flat so that they will present a solid flat face, as shown in Figure 11, and no sand or other dirt can work in between the plates while the club head is in a fixed position. If, however, during

the altering of the position of the head any sand should be forced in between the plates by the wing 35, it will be trapped in the apertures 37 or in the grooves 38 from which it will pass to the apertures and will thus be prevented from interfering with the insertion of the club head wing between a pair of plates.

At the outer end or toe end of the head, the sleeve is formed to receive a nut 40 which is provided with an encircling channel in which is secured a rubber body 41. This rubber body has contact with the wall of the sleeve 34 and prevents dirt working into the sleeve past the nut.

At the outer end of the stem 32, a short portion thereof is reduced, as indicated at 42, and this reduced terminal portion of the stem is threaded for engagement in the threaded passage 43 which is formed in the inner end of the nut 40. At the inner end of the reduced portion 42 of the stem, the shoulder which is formed where the reduced portion merges with the main portion of the stem, is provided with a dovetail notch or recess 44 which is in line with and of the same width as the lower part of the interior area of the frame 31 in which the wedge plates 36 are housed.

The back of the club head 33 at the outer or toe end is formed to provide the tubular boss 45 which, at its inner end, opens into the sleeve 34. The outer end of this boss is closed by the threaded nut 46, the inner end of which has a socket 47 therein. The rear side of the tubular boss 45 is provided with an angled opening which leads into the interior of the boss and has a longitudinally extending portion 48 and a laterally extending portion 49, the lateral portion being above the longitudinal portion, as shown in Figure 13. Into this angled slot there extends a pin 50 having upon its outer end the button 51.

Slidably disposed within the boss 45 is the latching pin 52 which has the inner end of the pin 50 coupled therewith, as shown in Figure 9, and interposed between the upper end of the latching pin 52 and the socket 47 in the nut 46 is an expansion spring 53 which normally holds the lower end of the pin 52 firmly in contact with the reduced end portion 42 of the stem on which the head is supported. This lower end of the latching pin 52 is suitably transversely channelled, as indicated at 54, to fit or rest firmly on the portion 42 of the stem and the side of the latching pin nearest the nut 40 is formed to provide a flattened face 55, which engages against the end of the nut, thus providing a relatively wide bearing or contact surface.

Interposed between the button 51 and the outer side of the boss 45 is a cover plate 56 for the angled slot through which the pin 50 extends. This cover plate moves with the pin 50 and is of proper size and shape to keep the arms of the angled slot covered at all times so that dust and dirt cannot get into the interior of the tubular boss.

Upon the side of the boss 45 nearest the shaft, there is threadably secured in the wall of the sleeve 34, a stop pin 57, the inner end of which normally engages in the dovetail notch 44 formed in the stem 32.

In the adjustment of the head 33 on the stem 32 the golfer first shifts the pin 50 transversely of the head from the portion 48 of the slot in which it is located, away from the reduced portion 42 of the stem and when the latching pin 52 has been sufficiently shifted, the actuating pin 53 can then be oscillated across the boss 45

into the arm portion 49 of the slot. This will hold the latching pin raised from the reduced part 42 of the head supporting stem. The head may then be shifted longitudinally of and on the stem 32 so as to withdraw the wing 35 from between the spacer plates and the head may then be oscillated on the stem until it is in the desired position for a particular form or style of club. For example, if the head is rocked in a clockwise direction so as to swing the wing 35 toward the rubber wedge 39 it may be inserted between this wedge and the face plate 36 to be used as a putter. The stop pin 57 limits the longitudinal movement of the head on the stem, striking the inner end of the nut 40 as the head is pulled out and as the head is returned or shifted toward the shaft, it enters the dovetail slot 44, thus limiting its inward movement. After the head has been oscillated to the desired adjusted position, the latching pin 52 should then be returned to its position on the portion 42 of the stem by reversely moving the actuating pin 53. However, if the golfer should forget to reset the latching pin 52 where it will engage the inner end of the nut 40, no material harm will result, for even though the head of the club may shift longitudinally on the stem 32 and thus come out of its set position, it cannot fly off as the stop pin 57 will prevent this.

From the foregoing it will be readily apparent to those who are familiar with the art that with a club constructed in accordance with the invention as herein disclosed, any one of ten different types of golf clubs may be obtained in a single club without the sacrifice of any of the features which are to be had in individually constructed or designed clubs. At the same time, it will be readily apparent that the adjustments of the club head may be made easily and quickly and that after the desired head adjustment has been obtained, it will be secured firmly in such position so that there will be no movement of the parts which would interfere with the golfer's swing or with the driving of a ball and there will be no danger of the head coming off.

I claim:

1. In a golf club, a shaft, a head, pivotal means between the shaft and head permitting disposition of the head in a selected position relative to the shaft, said head being shiftable in the direction of its length away from the shaft, and co-operating means between the head and the shaft facilitating securing the head in a selected adjusted position and comprising a frame carried by the shaft, a plate member carried by the head and extensible into and out of the frame, the plate being movable from one side of the frame to the other when the head is oscillated on said pivotal means, and means which are movable in the frame for engaging the plate member to maintain the same in an adjusted position in the frame.

2. In a golf club, a shaft, a head, a stem carried by the shaft and having the head oscillatably and slidably mounted thereon facilitating disposition of the head with the playing face at a selected loft angle, resilient means normally urging the movement of the head longitudinally on the stem toward the shaft, a member integral with said head, receiving means for said member integral with the stem, said member being adapted to assume different positions in the receiving means when oscillated upon the stem, and a series of relatively shiftable units within the member receiving means for securing the

member in a selected position in the receiving means.

3. A golf club comprising a shaft, a head, a stem integral with the shaft and extending longitudinally through the head, the head being oscillatable and longitudinally movable on the stem, resilient means normally urging the movement of the head on the stem toward the shaft, an arcuate frame carried by the shaft, a flat plate integral with the head and adapted to position in the frame and extend from the top to the bottom thereof, and a plurality of movable spacing units in the frame between opposite sides thereof and adapted to have the wing plate selectively inserted therebetween to maintain the head face at a desired loft angle.

4. A golf club comprising a shaft, a head, a stem integral with the shaft, said head having a longitudinal bore in which said stem positions facilitating oscillation of the head relative to the shaft, spring means within the bore normally urging movement of the head on the stem toward the shaft, means integral with the shaft forming a frame extending rearwardly with respect to the face of the club head, a plurality of plate members disposed in said frame and tapered to radiate from said stem, said plate members being shiftable in an arcuate path concentric with the stem, and a wing plate integral with the club head and extending longitudinally from the inner end and adapted for insertion into said frame between selected ones of said plates.

5. A golf club comprising a shaft, a head pivotally coupled with the shaft to oscillate on an axis extending longitudinally of the head, a plurality of elements maintained in a group adjacent the lower end of the shaft for relative movement along an arcuate path within a limited area concentric with said axis, means constructed and arranged to support said elements for movement in said path, and means carried by said head and movable therewith upon oscillation of the head which is adapted for selective engagement between said elements.

6. In a golf club, a shaft, a head, means pivotally coupling the head to the shaft for oscillation of the head on an axis extending longitudinally of the same, a rigid element forming a part of the head at the end adjacent the shaft, a plurality of movable spacer elements arranged in side by side relation in an arcuate row concentric with said axis, means for supporting said elements in said relation, said rigid element being insertible in said row between selected ones of the elements, the head being shiftable longitudinally in one direction for removing the rigid element from between the spacer elements, and means normally urging the head to move in the opposite direction.

7. In a golf club, a shaft, a head, means pivotally coupling the head to the shaft for oscillation of the head on an axis extending longitudinally thereof, a plurality of shiftable elements occupying a side by side relation at the head end of the shaft and having a limited range of movement whereby a space may be formed in a number of selected locations, means for supporting said elements in the said relation, and means carried by the head for engagement in the formed space through oscillation of the head to a selected playing position.

8. In a golf club, a shaft, a head, means coupling the head to the shaft to facilitate oscillation of the head on its long axis, a frame forming body carried by the shaft at the head end

thereof, a member carried by the head for insertion into the frame in different locations therein determined by the degree of oscillation of the head, and a plurality of shiftable spacer members in the frame formed to cooperate with said head carried member to fill the frame and maintain the head firmly in a desired position.

9. In a golf club, a shaft, a head, means coupling the head to the shaft to facilitate oscillation of the head on its long axis, a frame forming body carried by the shaft at the head end thereof, a member carried by the head for insertion into the frame in different locations therein determined by the degree of oscillation of the head, a plurality of shiftable spacer members in the frame formed to cooperate with said head carried member to fill the frame and maintain the head firmly in a desired position, and means contacting with said spacer members for absorbing shock incident to the use of the club.

10. In a golf club, a shaft, a head, means coupling the head to the shaft to facilitate oscillation of the head on its long axis, a frame forming body carried by the shaft at the head end thereof, a member carried by the head for insertion into the frame in different locations therein determined by the degree of oscillation of the head, and a plurality of shiftable spacer members in the frame formed to cooperate with said head carried member to fill the frame and maintain the head firmly in a desired position, one of said spacer members being formed of resilient material.

11. In a golf club, a shaft, a head, pivot means between the head and shaft permitting oscillation of the head on its long axis, resilient coupling means between the head and pivot constantly urging the head toward the shaft, means integral with the shaft forming an enclosed area at the rear of the head, a member extending rigidly from the end of the head adjacent the shaft and extensible into said area, and a plurality of individually movable units in said area adapted to assume different positions therein with respect to said member for holding the member against movement in the said area and to secure the head against oscillation.

12. In a golf club, a shaft, a head, pivotal means between the head and shaft facilitating oscillation of the head on its long axis, a member extending rigidly from said head at the end thereof adjacent the shaft, a plurality of shiftable elements disposed in side by side relation at the head end of the shaft and having a limited range of movement whereby an area may be formed in a number of selected locations into which said rigid member may be extended, means for supporting said elements in said relation, and one of said elements being of resilient material.

13. In a golf club, a shaft, a head, pivot means between the shaft and the head permitting oscillation of the head on its long axis, means integral with the shaft forming an enclosed area at the heel of the head, a member extending rigidly from the heel end of the head into said enclosed area, a plurality of individually movable units in said area adapted to assume different positions therein with respect to said member for holding the member against movement in said area and to secure the head against oscillation, and means normally holding said head with the member in said enclosed area, said means being so constructed and arranged as to permit longitudinal shifting of the head for selective adjust-

able engagement of the member in the enclosed area between said units.

14. In a golf club, a shaft, a head, a stem extending laterally from the shaft and formed rigid therewith, said head being supported upon said stem for oscillation on its long axis, means integral with the shaft forming an enclosed area at the heel of the head, a member extending rigidly from the heel of the head into said area, a plurality of individually movable units confined in said area and adapted to be shifted therein with respect to the member for holding the member against movement in the said area and to secure the head against oscillation on the stem, said stem having a terminal portion of reduced diameter, and means associated with said terminal portion which is so constructed and arranged that said head will be releasably held with the member engaged in said area.

15. In a golf club, a shaft, a head, a stem extending laterally from the shaft and formed rigid therewith, said head being supported upon said stem for oscillation on its long axis, means integral with the shaft forming an enclosed area at the heel of the head, a member extending rigidly from the heel of the head into said area, a plurality of individually movable units confined in said area and adapted to be shifted therein with respect to the member for holding the member against movement in the said area and to secure the head against oscillation on the stem, said stem having a terminal portion of reduced diameter forming a shoulder, a nut threaded onto the end of said terminal portion and lying within the body of the head and spaced from the shoulder, and a latching member carried by the head and movable transversely thereof for engaging in the space between said terminal portion shoulder and the inner end of said nut to hold the head against longitudinal movement.

16. In a golf club, a shaft, a head, a stem extending laterally from the shaft and formed rigid therewith, said head being supported upon said stem for oscillation on its long axis, means integral with the shaft forming an enclosed area at the heel of the head, a member extending rigidly from the heel of the head into said area, a plurality of individually movable units confined in said area and adapted to be shifted therein with respect to the member for holding the member against movement in the said area and to secure the head against oscillation on the stem, said stem having a terminal portion of reduced diameter, latch means carried by the head and shiftable relative to the said terminal portion of the stem, means for shifting the latch means, and means for effecting a coupling connection between the latch means and the stem preventing longitudinal movement of the head on the stem.

17. In a golf club, a shaft, a head, a stem extending laterally from the shaft and formed rigid therewith, said head being supported upon said stem for oscillation on its long axis, means integral with the shaft forming an enclosed area at the heel of the head, a member extending rigidly from the heel of the head into said area, a plurality of individually movable units confined in said area and adapted to be shifted therein with respect to the member for holding the member against movement in the said area and to

secure the head against oscillation on the stem, said stem having a terminal portion of reduced diameter, latch means carried by the head and shiftable relative to the said terminal portion of the stem, means for shifting the latch means, means for effecting a coupling connection between the latch means and the stem to hold said head against longitudinal movement, and fixed means carried by the head and having a cooperative relation with the stem for limiting the longitudinal movement of the head on the stem.

18. In a golf club, a shaft, a head, a stem extending rigidly from and carried by the shaft, said head having a longitudinally extending sleeve for the reception of the stem, the stem having a terminal portion of reduced diameter, a nut threaded onto said terminal portion and disposed within the sleeve, the nut having the same diameter as the unreduced portion of the stem and being spaced from said unreduced portion, a member extending rigidly from said head at the heel end thereof, a plurality of shiftable elements disposed in side by side relation at the end of the shaft adjacent the heel of the head and having a limited range of movement whereby an area may be formed in a number of selected locations into which said rigid member may be extended, means for supporting said elements in said relation, a spring pressed latch carried by the head and movable transversely thereof for engagement in the space between the nut and the adjacent unreduced end of the stem, and a fixed stop member carried by the head and engageable in said space for limiting the longitudinal movement of the head on the stem.

19. In a golf club, a shaft, a head, a stem rigid with and extending laterally from the shaft, said head being supported on the stem for oscillation on its long axis, the stem having a portion of reduced diameter adjacent the end remote from the shaft, means at the heel end of the head facilitating connection of the head with the shaft in a number of different positions to which the head may be oscillated on the stem, said head having a passage formed transversely therein and directed toward the said reduced portion of the stem, a shiftable latch in said passage adapted for detachable engagement in said stem portion, and a fixed pin member carried by the head and engaging in said stem portion at the side thereof nearest the shaft, said pin acting to limit lengthwise movement of the head on the stem.

20. In a golf club, a shaft, a head, a head supporting stem rigid with the shaft, means for selectively coupling the head with the shaft in a number of play positions through the oscillation and longitudinal movement of the head on the stem, a latch carried by the head for rectilinear and rotary movement relative to the stem, means for coupling the latch with the stem when the latch is moved toward the stem, means for securing the latch when moved away from the stem and rotated, the latching means when secured permitting the head to be shifted away from the shaft for oscillating the head to an adjusted position, and fixed means carried by the head forming a stop connection between the head and stem to limit the longitudinal movement of the head on the stem.

THOMAS P. DUNCAN, JR.