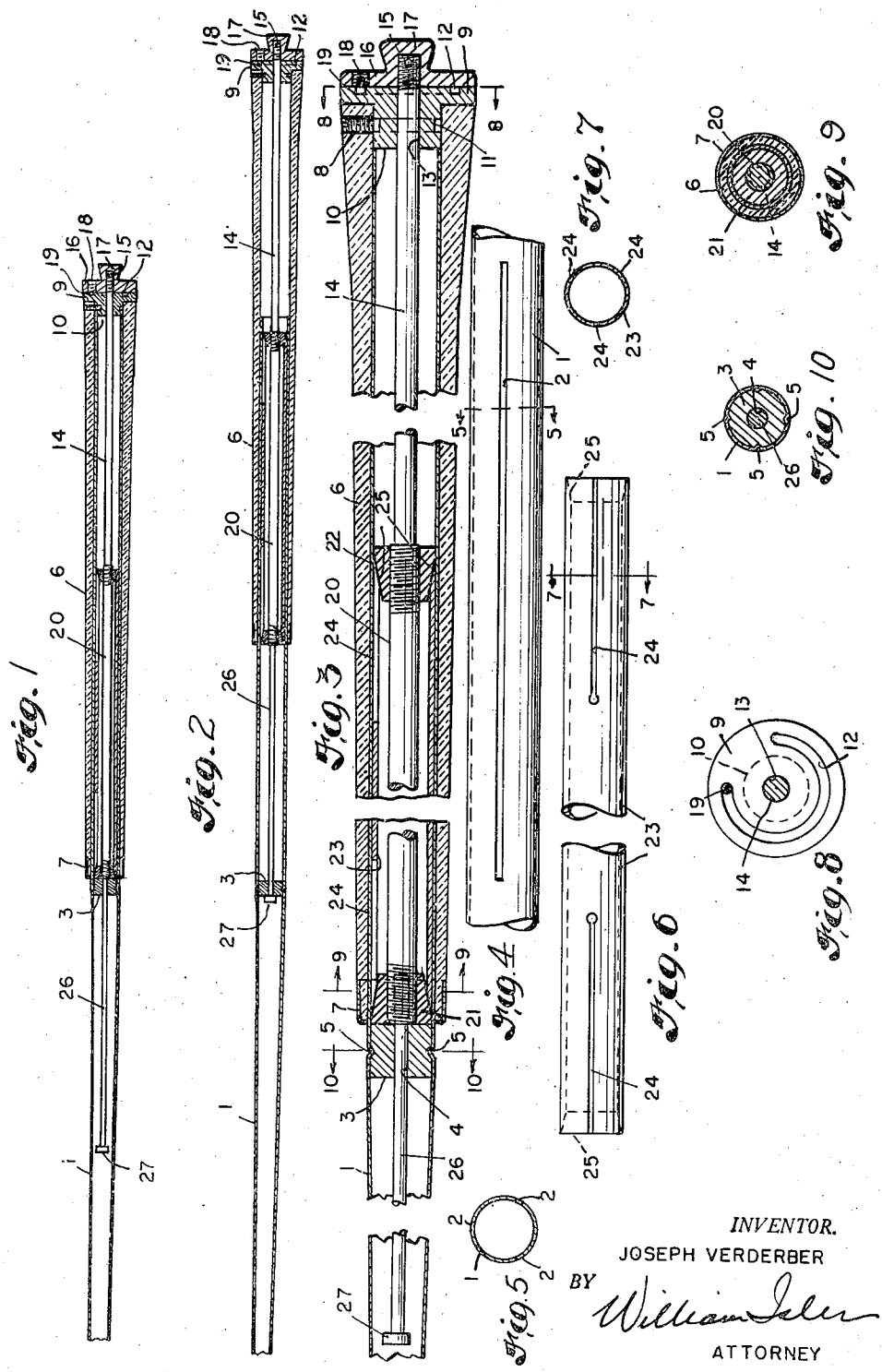
July 12, 1949. J. VERDERBER 2,475,927

GOLF CLUB

Filed May 31, 1945 3 Sheets-Sheet 1

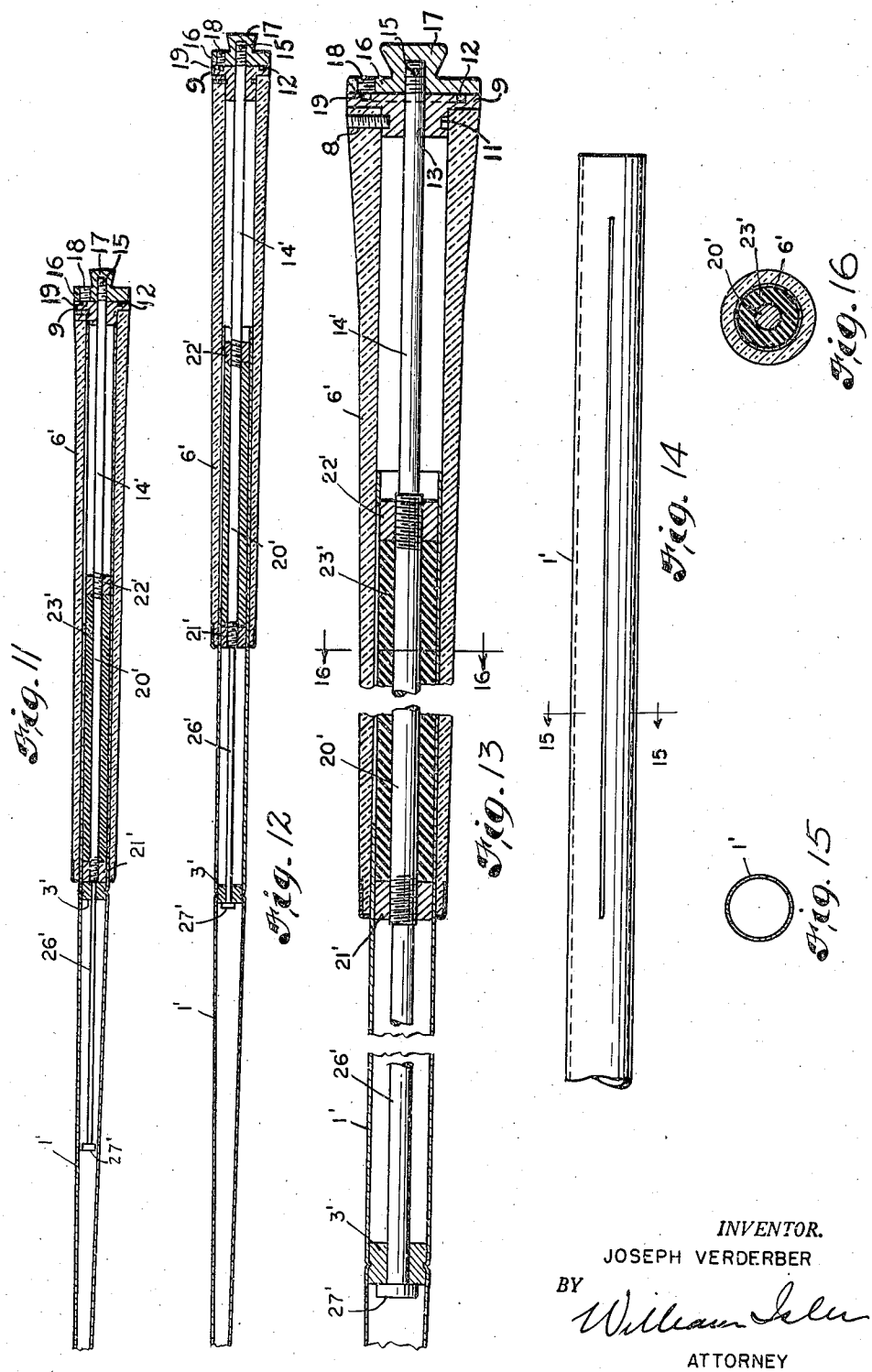


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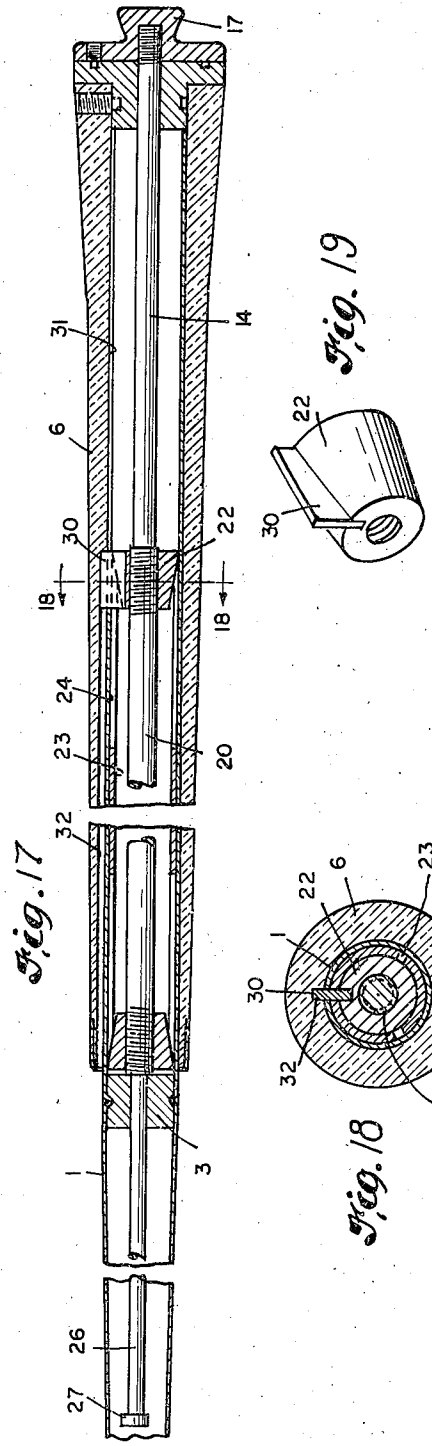


Fig. 17

Fig. 19

Fig. 18

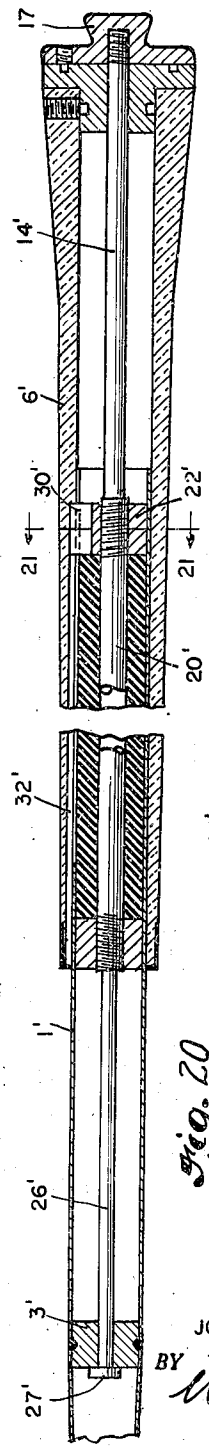


Fig. 20

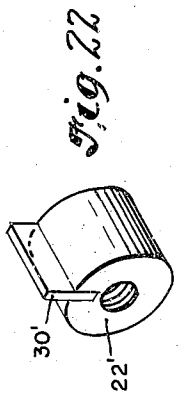


Fig. 22

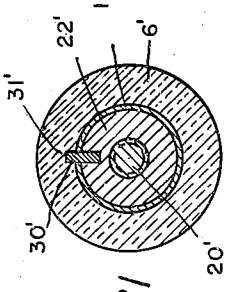


Fig. 21

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GOLF CLUB

Joseph Verderber, Cleveland, Ohio

Application May 31, 1945, Serial No. 596,839

13 Claims. (Cl. 273—80)

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This invention relates, as indicated, to golf clubs, but has reference more particularly to adjustable length shafts for such clubs.

In my copending application, Serial No. 583,902, I have described golf clubs having angularly adjustable heads.

In order to utilize such clubs to the best advantage, I find it highly desirable to provide means for adjusting the length of the shaft, and it is a primary object of this invention to provide such means.

Another object of the invention is to provide means whereby the handle or gripped portion of the club may be moved relatively to the shaft of the club, in order to vary the effective length of the club.

Another object of the invention is to provide means tightly locking or wedging the handle in adjusted position, whereby any tendency of the handle to move from such position during use of the club is effectively precluded.

A still further object of the invention is to provide means for quickly and easily setting or releasing the aforesaid handle locking means.

A still further object of the invention is to provide stop means for determining the extreme limits of adjustment of the handle.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a fragmentary longitudinal cross-sectional view of a golf club shaft, showing the shaft fully telescoped into the handle, making the shaft as short as possible;

Fig. 2 is a view similar to Fig. 1, but with the handle in its most extended position;

Fig. 3 is a view, on an enlarged scale, of a portion of Fig. 1;

Fig. 4 is a fragmentary elevational view of the upper end of the club shaft;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a side elevational view of the handle locking tube;

Fig. 7 is a cross-sectional view, taken on the line 7—7 of Fig. 4;

Fig. 8 is a cross-sectional view, taken on the line 8—8 of Fig. 3;

Fig. 9 is a cross-sectional view, taken on the line 9—9 of Fig. 3;

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Fig. 10 is a cross-sectional view, taken on the line 10—10 of Fig. 3;

Fig. 11 is a view similar to Fig. 1, but showing a modification of the invention;

Fig. 12 is a view similar to Fig. 2, but of the modified form of the invention;

Fig. 13 is a view similar to Fig. 3, but of the modified form of the invention;

Fig. 14 is a fragmentary elevational view of the upper end of the club shaft of the modified form of the invention;

Fig. 15 is a cross-sectional view, taken on the line 15—15 of Fig. 14, and

Fig. 16 is a cross-sectional view, taken on the line 16—16 of Fig. 13.

Fig. 17 is a view similar to Fig. 3, but showing means for preventing relative rotation between the various parts during adjustment of the handle or use of the club;

Fig. 18 is a cross-sectional view, taken on the line 18—18 of Fig. 17;

Fig. 19 is a perspective view of the plug shown in Fig. 18;

Fig. 20 is a view similar to Fig. 13, but showing means for preventing relative rotation between the various parts during adjustment of the handle or use of the club;

Fig. 21 is a cross-sectional view, taken on the line 21—21 of Fig. 20, and

Fig. 22 is a perspective view of the plug shown in Fig. 21.

Referring more particularly to Figs. 1 to 10 inclusive, reference numeral 1 designates the upper portion of a tubular metallic shaft of a golf club having a series of circumferentially-spaced longitudinally-extending parallel slots 2 therein, adjacent the upper end of the shaft, these slots facilitating outward spreading of the walls of the shaft in the region of the slots.

Secured within the shaft 1 at a predetermined distance from the upper end of the shaft is a stop plug 3 having an axial passageway 4 therethrough, the plug being rigidly held in position by means of a plurality of indentations 5 in the shaft, which indentations extend into corresponding recesses in the outer wall of the plug, as clearly shown in Figs. 3 and 10. The function of this plug will hereinafter appear.

The upper portion of the shaft 1 extends telescopically into a handle or grip 6, preferably formed of a plastic, and having a metallic ferrule 7 secured to its lower end, the shaft fitting snugly against the cylindrical inner wall of the handle. The handle, in accordance with conventional practice, has a tapered outer wall.

Secured to the upper end of the handle 6, as by means of a set screw 8, is a disc-like member 9 having an extension 10 of reduced diameter which extends into the upper end of the handle and has an annular groove 11 in its outer wall, into which the set screw 8 extends, the set screw bearing against the bottom of the groove to lock the member 9 against rotation relatively to the handle. The outer face of the member 9 has an arcuate recess or groove 12 therein, which is concentric with the axis of the member 9.

The member 9 has an axial bore 13 therein, through which the upper end of a rod 14 extends, the rod having a threaded end portion which is secured as by a pin 15, to a button 16, provided with a knob 17 for facilitating rotation of the button 16 relatively to the member 9, the button being disposed in contact with the member 9. The button 16 is provided with a screw 18, having an unthreaded portion 19 of reduced diameter, which extends into the arcuate groove or recess 12 in the member 9.

The rod 14 has a lower portion 20 of somewhat enlarged diameter, the ends of which are oppositely threaded and in threaded engagement with a pair of spreader plugs 21 and 22, having conical outer walls, which confront each other, as shown in Fig. 3.

Disposed within the shaft 1, between the conical walls of the plugs 21 and 22, is a cylindrical spreader tube 23 having in each end thereof a series of circumferentially-spaced longitudinally-extending parallel slots 24, which facilitate spreading of the walls of the tube in the region of these slots. The ends of the tube 23 are tapered or beveled as at 25 to correspond to the taper of the walls of the plugs 21 and 22. The tapered ends 25 normally bear against the tapered walls of the plugs 21 and 22.

The club further includes a rod 26 of lesser diameter than the rod 14, and which is threadedly secured to the plug 21, in axial alignment with the latter. The rod 26 is slidable in the stop plug 3, and has an end portion 27, of enlarged diameter, which is adapted to coact with the plug 3, for a purpose to be presently described.

Having thus described the construction of the club, the manner in which it is used will now be described.

In Figs. 1 and 3, the handle or grip 6 is shown in its most contracted position, in which the club is as short as it can possibly be made. This position is determined by the abutment of the plug 21 with the stop plug 3. In this position, the handle or grip is locked against axial movement relatively to the shaft 1 of the club, due to the pressure exerted by the plugs 21 and 22 against the tapered ends 25 of the tube 23, this pressure being, in turn, transmitted to the walls of the shaft 1 and from these walls to the handle or grip 6, the handle or grip being in this manner frictionally locked to the shaft. The outward movement of the tube 23 and the shaft 1 resulting from this pressure is facilitated by the provision of the slots 2 in the shaft and the slots 24 in the tube 23.

When the handle or grip 6 is locked in the aforesaid manner, it will be noted that the screw 18—19 is disposed at one end of the groove 12 of the member 9, as shown in Figs. 3 and 8.

When it is desired to adjust the handle or grip 6 relatively to the shaft 1, the handle is held in one hand, and the button 16 is rotated by means of the other hand in a counter-clockwise direction, as viewed in Fig. 8, until the screw 18—19

abuts the end of the groove 12 shown at the right in Fig. 8. This causes the rod 14—20 to be rotated, which, in turn, causes the spreader plugs 21 and 22 to recede from each other, relieving the pressure between these plugs and the tube 23, between the tube 23 and the shaft 1, and between the shaft and the handle or grip 6, permitting the handle to be then moved to any desired position relatively to the shaft.

The handle may then be locked to the shaft by rotating the button 16 to the position indicated in Fig. 8.

The end portion 27 of the rod 26 coacts with the plug 3 to limit the extent of adjustment of the handle or grip 6, as clearly shown in Fig. 2.

In that form of the invention shown in Figs. 11 to 16 inclusive, the construction is somewhat similar to that of the previously described form of the invention, but in this case, instead of using a metallic spreader tube, such as the tube 23, a tube 23' of rubber or other soft or resilient material is interposed between the shaft and the lower portion 20' of the rod 14' and is adapted to be engaged at its ends by means of spreader plugs 21' and 22'. The plugs 21' and 22', in this case, instead of being tapered, are cylindrical.

In Figs. 12 and 13, the handle or grip 6 is shown in its most extended position, in which the club is as long as it can possibly be made. This position is determined by the abutment of the end portion 27' of the rod 26' with the stop plug 3'. In this position, the handle or grip is locked against axial movement relatively to the shaft 1' of the club, due to the pressure exerted by the plugs 21' and 22' against the ends of the tube 23', this pressure causing the tube 23' to be contracted axially and the rubber of the tube to be bulged radially outwardly into frictional engagement with the inner wall of the shaft. This pressure, in turn, is transmitted by the shaft to the handle or grip, so that the grip becomes frictionally locked to the shaft.

In order to lessen the friction of the tube 23' on the inside wall of the shaft 1', the tube 23' may, if desired, be provided with a facing or external cover in the form of a split tube or tubing of steel or other metallic material. Such a cover will preferably be vulcanized or otherwise permanently secured to the rubber tube 23'.

When it is desired to adjust the handle or grip relatively to the shaft, this is accomplished in the same manner as described in connection with the preferred form of the invention.

The plug 21' coacts with the plug 3' to limit the extent of adjustment of the handle or grip, as clearly shown in Fig. 12.

Due to the fact that the groove 11 is an annular groove, the member 9 may be reset, as desired to change the location of the ends of the groove 12 relatively to the set screw 8, for the purpose of compensating for wear between the tapered plugs and associated parts of the club.

It is thus seen that I have provided a golf club having a novel adjustable handle whereby the effective length of the club or club shaft may be varied in an efficient and highly desirable manner, and in which the handle may be locked by a wedging action to prevent displacement thereof during use of the club.

While in most cases, it is unnecessary to provide means for preventing relative rotation between the handle of the club and the shaft, it is desirable and necessary to provide such means in cases where the club handle is provided with a flat area for aiding in properly gripping the club.

In such cases, it is necessary to maintain the proper relation between the flat spot on the handle and the club head, irrespective of the adjustment of the handle.

For this purpose, I have shown in Figs. 17, 18 and 19 means for preventing relative rotation between the club handle, the shaft, one of the tapered plugs and the spreader tube.

In Figs. 17, 18 and 19, the plug **22** is provided with a radially-extending key **30**, which extends into one of the slots **24** of the spreader tube **23**, as well as into a longitudinal slot or keyway **31** in the shaft **1** and a longitudinal slot or keyway **32** in the handle **6**. The location of the slots **31** and **32** is such as to permit a wide range of longitudinal adjustment of the handle relatively to the shaft, and irrespective of such adjustment, the key **30** is effective to prevent rotation between the parts **22**, **23**, **1** and **6**.

Similar means for preventing relative rotation between the club handle, the shaft and one of the plugs is shown in Figs. 20, 21 and 22. In this case, the plug **22'** is provided with a radially-extending key **30'**, which extends into a slot **31'** in the shaft **1'** as well as into a longitudinally-extending slot or keyway **32'** in the handle **6'**. The location of the slots **31'** and **32'** is such as to permit a wide range of longitudinal adjustment of the handle relatively to the shaft, and irrespective of such adjustment, the key **30'** is effective to prevent rotation between the parts **22'**, **1'** and **6'**.

It is understood, of course, that the rotation preventing means of Figs. 17 to 22 inclusive is applicable to all clubs, of the type shown in Figs. 1 to 16 inclusive, irrespective of whether or not the handles of these clubs are provided with the flat areas referred to above.

It is to be understood that the forms of my invention, herewith shown and described, are to be taken as preferred examples of the same, and that various changes in the shape, size and arrangements of parts may be resorted to, without departing from the spirit of my invention, or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In a golf club, a hollow shaft, a handle slidably mounted on said shaft, concentric therewith, a threaded element rotatably mounted within said handle, threaded means on said element, responsive to rotation of said element, disposed within said shaft for frictionally interlocking said handle and shaft at selected positions of effective length, and means carried by said handle for limiting the extent of rotation in each direction of said element.

2. In a golf club, a hollow shaft, a handle slidably mounted on said shaft concentric therewith, means disposed within said shaft for frictionally interlocking said shaft and handle at selected positions of effective length, an element rotatably mounted within said handle and threadedly engaging said means for selectively actuating said interlocking means, and means carried by said handle for limiting the extent of rotation of said element.

3. In a golf club, a hollow shaft, a handle slidably mounted on said shaft, said handle being axially movable relatively to the shaft to vary the effective length of the club, means disposed within said shaft for frictionally interlocking the handle and shaft, said means comprising a radially expansible tubular member, threaded plugs engaging with the ends of said member, the threads of one plug being of opposite hand to those of the other plug, means in threaded engagement with said plugs and adapted when rotated in one direction to cause said plugs to simultaneously move toward each other and, when rotated in the opposite direction, to cause said plugs to simultaneously recede from each other, and means carried by said handle for limiting the extent of rotation in each direction of said second-named means.

4. In a golf club, a hollow shaft, a handle mounted on said shaft, said handle being axially movable relative to the shaft to vary the effective length of the club, an expansible member having opposite ends contained within said shaft, threaded plugs engaging the ends of said member, a threaded element in engagement with said plugs and operable to move said plugs to expand said member when said element is rotated in a selected direction, whereby said handle and shaft are frictionally interlocked against movement relatively to each other, and means carried by said handle for limiting the extent of rotation in each direction of said element.

5. A combination, as defined in claim 4, in which said expansible member comprises a metallic sleeve.

6. A combination, as defined in claim 4, in which said expansible member comprises a resilient non-metallic cylinder.

7. A combination, as defined in claim 4, in which said expansible member comprises a rubber cylinder.

8. In a golf club, the combination of a handle, a hollow shaft slidably mounted within said handle and extensible axially therefrom, said shaft having a radially expansible portion, and means contained within said shaft for selectively applying radial pressure to said expansible portion whereby to frictionally interlock said handle and said shaft at predetermined positions of extension of said shaft and means carried by the handle for moving said pressure applying means.

9. In a golf club, the combination of a handle, a hollow shaft slidably mounted within said handle and extensible axially therefrom, said shaft having a slotted portion provided thereon, said slotted portion being adapted to expand into frictional engagement with said handle when radial pressure is applied thereto, and means contained within said shaft for selectively applying radial pressure to said slotted portion of said shaft whereby to frictionally interlock said handle and said shaft at predetermined positions of extension of said shaft.

10. A combination, as defined in claim 9, in which said means comprise a radially expansible member, and means carried by the handle for expanding said member.

11. A combination, as defined in claim 9, in which said means comprises a radially expansible, tubular member, plugs engaging the ends of said member, and means for adjustably changing the distance between said plugs.

12. A combination, as defined in claim 9, in which said means comprises a radially expansible tubular member, plugs engaging the ends of said member, and a rotatable element in threaded engagement with said plugs, whereby rotation of said element in one direction causes radial expansion of said member and rotation of said element in the opposite direction relieves said radial expansion.

13. A combination, as defined in claim 9, in which said means comprise a radially expansible tubular member, threaded plugs engaging the

ends of said member, the threads of one plug being of opposite hand to those of the other plug, and a rotatable element in threaded engagement with said plugs, whereby rotation of said element in one direction causes said plugs to move toward each other and rotation of said element in the opposite direction causes said plugs to recede from each other.

JOSEPH VERDERBER.

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