

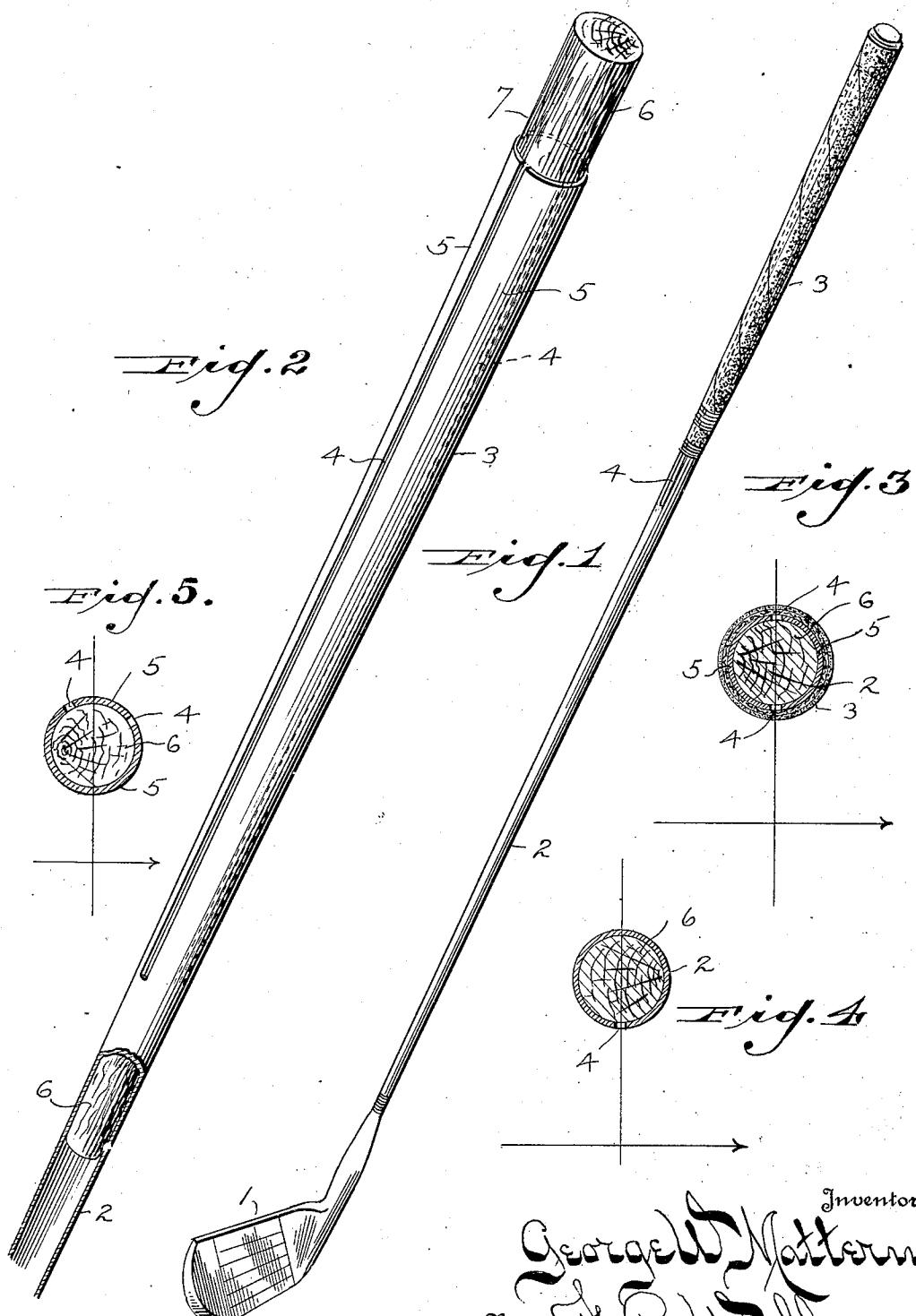
March 29, 1932.

G. W. MATTERN

1,851,439

HANDLE SHAFT FOR GOLF CLUBS

Filed Feb. 13, 1928



Inventor
George W. Mattern
By J. P. Waller
Attorney

UNITED STATES PATENT OFFICE

GEORGE W. MATTERN, OF DAYTON, OHIO, ASSIGNOR TO THE CRAWFORD, McGREGOR AND CANBY COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO

HANDLE SHAFT FOR GOLF CLUBS

Application filed February 13, 1928. Serial No. 254,140.

My invention relates to golf clubs, and more particularly to the modification of tubular metallic shafts for such clubs to enable the simulation of the inherent characteristics of the traditional hickory shaft. Tubular metallic shafts of both tapered and cylindrical stepped formation are quite extensively employed as substitutes for the customary hickory shafts. While such tubular shafts possess the desirable characteristics of being non-breakable and being substantially unaffected by climatic, temperature and humidity changes, they are lacking in certain other characteristics of the usual hickory shaft, which induces the harmonious action of the club as a whole and affords a characteristic feel which the skilled player has learned to expect and prefers to experience, and which to a very great degree determines the quality of his playing. One of the objections to the metallic shaft for golf clubs is its inability to respond to torsional strain. At the moment of impact the natural wooden shaft tends to twist or yield torsionally, thus absorbing the shock and by the reaction from such torsional movement gives to the ball an impetus and action in flight, which cannot be obtained by the ordinary metal shaft. The result of this inability to respond to this strain and shock is to transmit to the player's hands excessive vibration, frequently causing numbness, or a disagreeable stinging sensation. This excessive vibration and lack of responsiveness of a metallic shaft to torsional strains, which are ordinarily absorbed by the traditional wooden shaft, causes undue fatigue to the hands and wrists of the golfer. These objectionable features of the metallic shafts substantially offset the good characteristics and to some extent the metallic shaft has fallen into disrepute, for these reasons.

The present invention is a further development of that shown in Patent No. 1,601,033 issued Sept. 28, 1926, wherein the handle portion of the tubular steel shaft is shown longitudinally split in different radial planes to form a considerable number of longitudinal fingers or integral strips whereby the resistance of the shaft to both torsional and bending moment is substantially equalized

throughout the circumference of such shaft. It is found that such patented construction is quite efficient and quite satisfactory for certain kinds of clubs, particularly the distance clubs, or those employed for longer shots. Such clubs in which maximum responsiveness to torsional strain and also whip action is desirable are all of the wooden head clubs, to wit, the driver, spoon and brassie, and certain irons including the driving cleek, the driving iron, mid-iron and mid-mashie. However, for clubs of the pitching or approach group employed for shorter shots, a shaft which is more stiff and firm than those of the distance group of clubs, but lacking the intense rigidity of the normal unmodified metallic shaft is most desirable. Such clubs are usually played with less than a full stroke or swing, and in playing out of bunkers, hazards, or high grass it is sometimes necessary to "take turf". In order to afford better control and to afford proper response and harmonious action of the pitching or approach group of clubs, including the mashie iron, the mashie, the spade mashie, mashie niblick, jigger, niblick and putter, without however transmitting to the hands of the golfer the objectionable vibration and shock, it has been found that such result can be obtained by longitudinally splitting the handle grip portion of the tubular metallic shaft only in its vertical axial plane. That is to say, the best result is obtained in the pitching or approach group of clubs by longitudinally splitting the shaft either on its exact top side or its bottom side as the club rests with its sole upon the ground, or such shaft may be longitudinally slit on both the top and bottom sides, thus leaving two substantially semi-cylindrical strips or tongues which are laterally disposed in the direction of the swinging movement of the club. Such slitting of the tubular shaft only in its vertical axial plane permits a limited degree of whip action or bending moment in the direction of the stroke greater than in a direction at right angles thereto and also permits a limited degree of torsional yielding of the shaft at the moment of impact sufficient to relieve the shock and absorb vibration without, however, interfer-

ing with control of the stroke, and while still maintaining sufficient rigidity of the shaft to render the approach shot effective. While the change in the present case over the disclosure in the prior patent which was better adapted for use in clubs of the distance group is seemingly small, golf is an art in which the small differences and distinctions, which seem of minor importance in other arts, become the determining factors of successful or good golfing. So, in the present instance, it has been found that by splitting the handle shaft only in its vertical axial plane either on the top or bottom or at diametrically opposite points, the same efficiency can be given to the approach group of clubs as was given to the driver group by the construction shown in the prior patent referred to.

Within the split end of the tubular shaft there is inserted a core, which is preferably of wood, but which might be rubber, fiber or other material. The core is preferably of a light, rather soft or resilient material, and if of wood, bass wood, light pine, or balsa wood is preferred.

The object of the invention is to improve the construction of metallic shafts for golf clubs, polo mallets, croquet mallets, and the like whereby they will not only possess greater efficiency but will be responsive to torsional and bending strain and will relieve the shock and vibration, whereby the golfer's hands and wrists will be less fatigued.

A further object of the invention is to provide a modified metallic shaft which will afford better control of the club and while sufficiently resistant to secure accuracy will possess sufficient yielding tendency to insure a harmonious action of the club as a whole, and which will simulate the characteristics and "feel" of the customary hickory shaft.

With the above primary and other incidental objects in view, as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claim.

Referring to the accompanying drawings, wherein is shown the preferred, but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a perspective view of an assembled golf club in which the present invention is embodied. Fig. 2 is an enlarged detail view of the upper portion of the handle shaft of the golf club showing the longitudinal slit by which the present efficient action is achieved. Fig. 3 is a transverse sectional view on line 3—3 of Fig. 2. Fig. 4 is a similar sectional view showing however, a single slit in the tubular shaft. Fig. 5 is a further modification.

Like parts are indicated by similar characters of reference throughout the several views.

In the accompanying drawings, 1 is the golf club head, 2 the shaft and 3 the hand grip portion. For purpose of illustration an iron of the approach or pitching type has been shown. It is to be understood that the present invention is applicable to the handle shaft of any type of golf club, but is particularly adapted to any of those of the present approach or pitching group. The head 1 of the club is of metal, from which it acquires its designation as an "iron". The handle shaft 2 is metallic and of tubular form. That illustrated is uniformly tapered, although at the present time a popular type of metallic handle shaft is of stepped formation wherein successive portions are of cylindrical form, but of different diameter. The present invention is equally applicable to either style of shaft. The larger end of the tubular handle shaft 2, which forms the handle portion, is longitudinally slotted as at 4. The shaft 2 is positioned in the head 1 in such relation that the longitudinal slit or slits as the case may be in the handle shaft are disposed in the vertical axial plane. That is to say the slit 4 is positioned either on the top or on the bottom of the tubular shaft when the club rests with its sole upon the ground. The handle shaft is preferably slit at diametrically opposite points, that is to say, both at the top and the bottom sides of the shaft. This affords two parallel semi-cylindrical tongues or fingers 5 which are disposed laterally at the forward and rear sides of the shaft in the direction of the swinging stroke. For irons of some styles, and particularly to meet the requirements and peculiarities of individual golfers different effects may be obtained by splitting the handle shaft at one side only instead of at diametrically opposite points. In the event the shaft is slit at one point only the slit is preferably turned to either the top or the bottom side of the shaft. Obviously, however, other effects may be achieved, which may appeal to individual players by otherwise positioning such longitudinal slit or slits in the shaft.

Driven longitudinally within the split portion of the shaft is a core or insert 6, the lower end of this core being tapered to substantially agree with the bore of the shaft and preferably, though not necessarily, extends beyond the extremity of the split portion. The opposite end of the insert may be projected somewhat beyond the end of the split tubular shaft as indicated at 7. In lieu of wood, rubber, fiber or other material employed as an insert, the split portion of the shaft may be suitably packed with cotton, waste, or filled with a waxy composition, or with cork.

The handle grip portion is wrapped with tape, or the like, to maintain the semi-circular fingers 5 in position about the insert core 6, and the usual padding and leather grip cover

is applied, as shown at 3 in Fig. 1. For ordinary usage the slit portion of the metal shaft does not extend beyond the covered grip portion 3. However, this is not essential and to meet the requirements and peculiarities of golfers the slits 4 may be extended to various degrees beyond the limit of the wrapped handle grip portion 3. Obviously, by varying the extent of the slits 4 and by varying their number as well as their radial position relative to the axis of the shaft, varying degrees of resiliency or yielding effect to torsional strain may be achieved.

Not only will the composite handle shaft thus provided imitate with great simulation the inherent characteristics of a natural wood handle shaft, and be responsive to torsional strain and will absorb excessive vibration thus protecting the hands and wrists of the golfer, but it will also obviate the breaking of the club, to which the golf club fitted with the normal unmodified rigid metallic shaft is quite liable. The resistance of the usual rigid form of metallic golf shaft to torsional strain causes many clubs to be broken, and the shaft to be loosened in the hosel or bent or strained incident to the unresponsiveness of the shaft to the impact of the club with the ball.

To accommodate the club action to the peculiarities of an individual player or to achieve different reaction, it is sometimes desirable to split the handle shaft at other than diametrically opposite points. That is to say, the longitudinal slits may be spaced less than a half turn apart, and likewise different action and results may be had by varying the position of the longitudinal slit more or less away from the vertical plane when the sole of the club rests upon the ground. For the present purpose, however, not more than two such slits are ordinarily employed. Some players prefer more torsional reaction or more whip than others and the different manner in which various players strike the ball may be compensated for by positioning the longitudinal slits in different circumferential positions or by differently spacing such slits, and in some cases by employing only one such slit instead of two.

From the above description it will be apparent that there is thus provided a construction of the character described, possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions and arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention is described in language more or less specific as to structural features it is to be understood that the invention is not limited to the specific details shown, but that the means and construction herein disclosed

comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claim.

Having thus described my invention, I claim:

A golf club having a tubular metallic shaft, the handle portion of which is longitudinally split on both the top and bottom sides in a vertical axial plane of the shaft when the sole of the club is resting upon the ground, the splits providing a greater bending movement in the direction of the stroke than at right angles to it.

In testimony whereof, I have hereunto set my hand.

GEORGE W. MATTERN.

70

75

80

90

95

100

105

110

115

120

125

130