

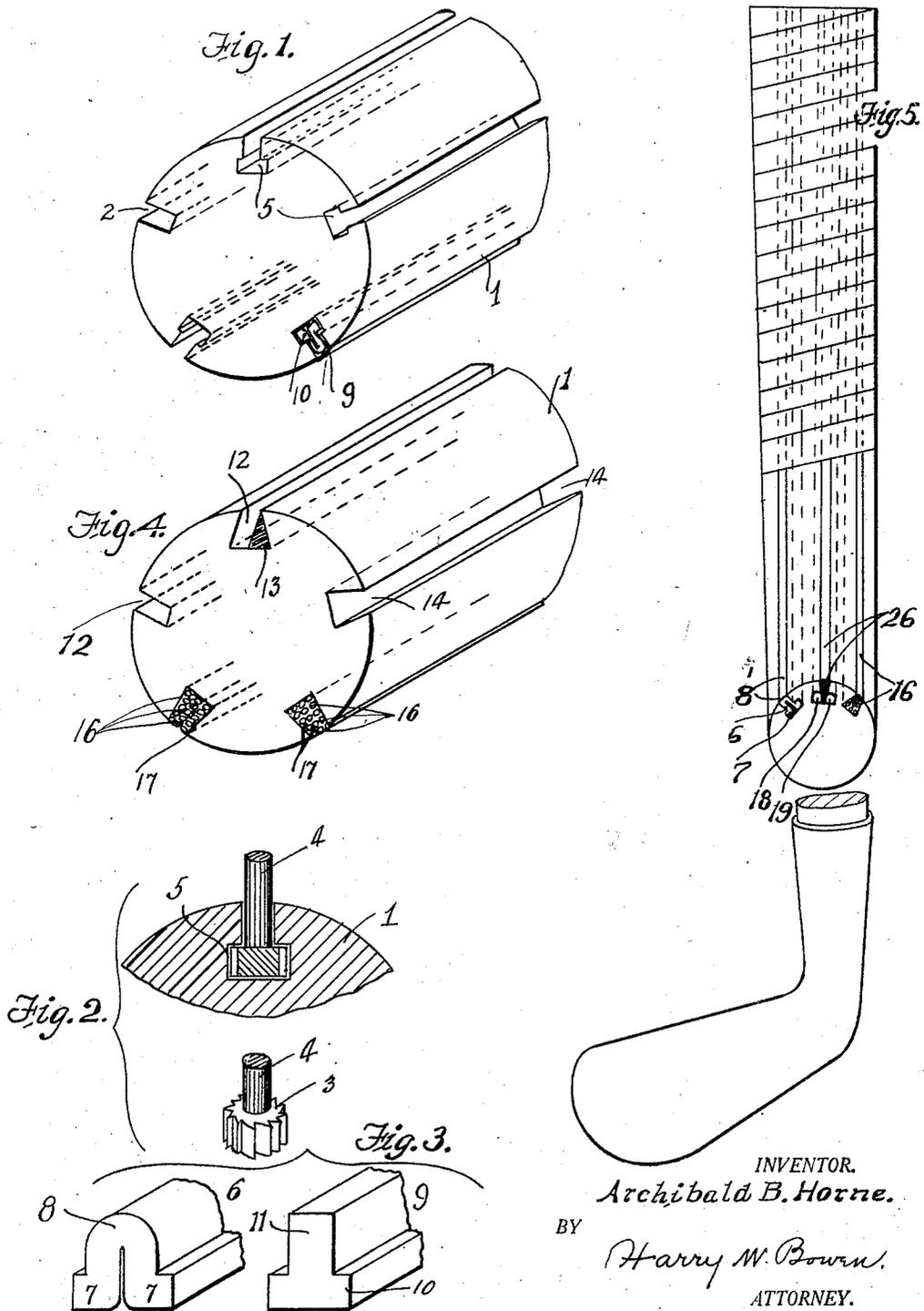
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A. B. HORNE

GOLF CLUB SHAFT OR HANDLE

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INVENTOR.
Archibald B. Horne.
BY
Harry M. Brown.
ATTORNEY.

UNITED STATES PATENT OFFICE.

ARCHIBALD B. HORNE, OF SPRINGFIELD, MASSACHUSETTS.

GOLF-CLUB SHAFT OR HANDLE.

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To all whom it may concern:

Be it known that I, ARCHIBALD BOWER HORNE, a citizen of the United States of America, residing at Springfield, county of Hampden, State of Massachusetts, have invented certain new and useful Improvements in Golf-Club Shafts or Handles, of which the following is a specification.

This invention relates to improvements in golf clubs, and more particularly to the construction of the shaft or handle part of the club.

An object of the invention is to construct the shaft or handle, of a golf club so that it will possess the necessary strength and resiliency and at the same time one which will be comparatively inexpensive as regards the cost of manufacture.

At the present time, so far as I am aware, the better golf club shafts are constructed of high grade hickory. At the present time, on account of the constantly growing shortage of this particular kind of wood, many attempts have been made to substitute other and suitable material, as for example, steel tubing, also by constructing the shaft by building up the same with several layers of wood or other material.

Broadly stated, my improvement comprises a golf club shaft, the main body portion of which may be constructed of a cheaper or lower grade quality of hickory, or other wood, and reinforcing the same by inserting strips of flexible fibrous material in grooves formed in the shaft, and cement the strips in the grooves.

As an embodiment of my improvement I insert fibrous material of different kinds as ramie, hemp, silk or intestines of animals in longitudinally arranged grooves of the shaft and employing a suitable glue or other adhesive substances for retaining the same in place in the grooves.

A further object is to form the shaft with a plurality of longitudinally arranged grooves of such shape that there is no possibility of the inserted material becoming loosened or displaced and the method of constructing the grooves being comparatively simple.

Referring to the drawings which illustrate the features of my improvement—

Fig. 1 is a perspective view of a portion of the shaft of a golf club showing one form of finished groove therein.

Fig. 2 is a detail view showing a step in

the process of manufacture in forming the grooves.

Fig. 3 illustrates two forms of the T-shaped steel inserts.

Fig. 4 is a view of a portion of a shaft showing another form of the groove in the shaft.

Fig. 5 is an assembled view, partly in section, showing the different forms of grooves with the inserts therein.

Referring to the drawings in detail:

1 designates as a whole the golf club shaft which is composed of some suitable material, as hickory, and if desired, a grade of less flexibility and strength than the first class quality. This shaft is first formed with a series of longitudinal grooves or saw kerfs 2, of suitable width and depth, next the bottom portions of the groove are formed by

means of the small circular saw or milling tool shown in Fig. 2 at 3, to which the driving shaft 4 is connected. The shaft 4 of the saw is attached to a suitable driving member and moved along in the groove 2, the saw 3 at the same time forming the bottom portion 5 of the finished grooves. The completed T-shaped groove is now formed and ready to receive the metal insert strips.

Fig. 3 illustrates two forms of steel insert strips which are designed to be inserted in these grooves. The form shown at 6 is a bent or folded structure, the flanges 7 enter the part 5 of the groove and the folded part 8 enters the portion 2 of the groove. The T-shaped form 9 shown in Fig. 3 is a strip of rolled steel, the webs 10 and 11 of which are located in the portions 5 and 2 respectively of the grooves. The T-shape of groove effectually prevents the inserted metal strips from working loose, or becoming displaced by use. At the same time, the shaft or handle of the club is materially strengthened, with the result that the elasticity and flexibility of the same is preserved. The torsional features are also preserved. Another important feature is that the main body portion of the wood of the shaft is retained since the material removed for the grooves is a comparatively small volume and by inserting the strips of metal steel as shown the strength of the shaft is greatly increased.

Referring now to the structure of shaft shown in Fig. 4. The shape of the grooves, as shown in this figure, are divergent from the outer surface of the shaft towards the

center, radially considered. These grooves may be formed in different ways, or methods. The longitudinal kerf 12 is first cut out by means of a saw, then the triangular shaped piece 13 is removed with another saw or milling tool which produces the completed wedge shaped groove 14 ready to receive the reinforcing piece. Located in these grooves are fibres of ramie, hemp, silk, or animal intestines 16. They are retained in place by means of glue, cement, rubber, or other suitable binding material as for example, bakelite varnish, water glass, silicate of sodium, bichromated glue, albuminous materials which is indicated at 17. After the fibrous material has been inserted and the binder has hardened, the outer surface of the shaft is turned off or smoothed so that it is flush with the main or body part of the shaft.

It should be noticed that the entrance or outer part of the groove is narrower than the inner part, with the result that the fibres will not work loose or come out by bending or twisting the shaft. This construction, like that already described, serves the purpose of retaining the main or body part of the shaft or in other words, the proportion or volume of the removed material to the total volume of the shaft is very small. At the same time the strength and resiliency of the shaft is maintained. The fibres may be inserted in any suitable way, as assembling them in a form and then inserting them at the end of the handle or shaft.

The inserted fibres of hemp, silk, or animal intestines being elastic will serve to maintain the elastic or springy properties of the shaft.

It is evident that the inserts cannot be

removed except by exerting pressure on the ends of the metal strips shown in Figs. 3 and 5 or the fibrous strips shown in Figs. 4 and 5.

What I claim is:

1. A golf-club shaft formed of wood and having grooves cut lengthwise of the same, the bottom portions of the grooves being wider than the top or outer portions, said grooves having insert pieces of fibrous material located therein for strengthening the shaft whereby the inserts are retained against displacement.

2. A golf club shaft having a series of grooves substantially triangular in cross section, the apex portions of the grooves being located in the circumference or outer surface of the shaft, and inserts in the grooves consisting of a fibrous material and an adhesive for securing said material in the said grooves as described.

3. An article of manufacture comprising a golf club shaft of wood and formed with grooves therein, the inner or bottom portions of which are greater in extent than the outer or top portions, fibrous inserts in the grooves for strengthening the shaft, and conforming to the cross sectional area of the grooves, and an adhesive substance for securing the inserts in the grooves.

4. A golf club shaft having wedge shaped longitudinally extending grooves therein, inserts of fibrous material secured in the grooves, and means for securing the same against displacement.

5. A golf club shaft having grooves therein, the volume of the grooves being small in comparison with the total volume of the handle, and inserts consisting of hemp in the grooves, as described.

ARCHIBALD B. HORNE.