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E. K. WARREN & J. H. HOLDEN.

STIFFENING CORD OR TAPE.

(Application filed Dec. 9, 1897.)

(No Model.)

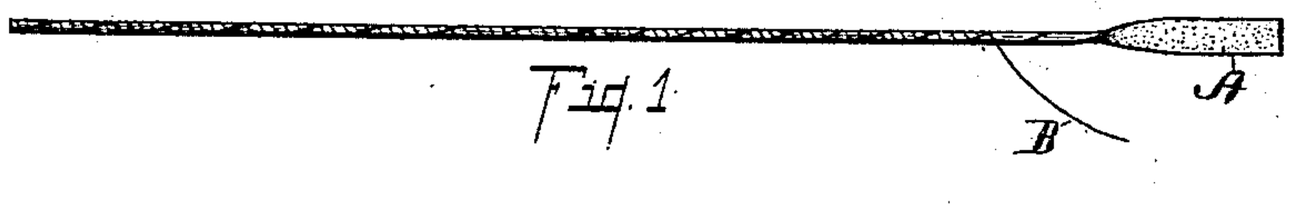

Fig. 1

Fig. 2

Fig. 3

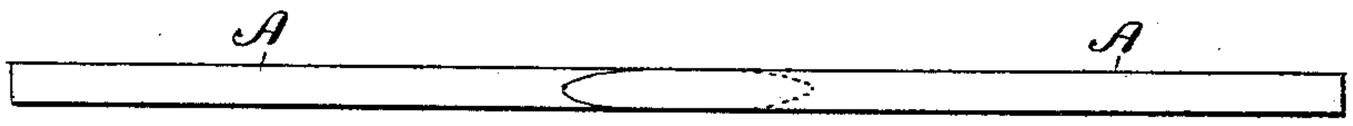

Fig. 4

Fig. 5

Witnesses.
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UNITED STATES PATENT OFFICE.

EDWARD K. WARREN AND JONAS H. HOLDEN, OF THREE OAKS, MICHIGAN.

STIFFENING CORD OR TAPE.

SPECIFICATION forming part of Letters Patent No. 616,645, dated December 27, 1898.

Application filed December 9, 1897. Serial No. 661,312. (No model.)

To all whom it may concern:

Be it known that we, EDWARD K. WARREN and JONAS H. HOLDEN, citizens of the United States, residing at Three Oaks, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Stiffening Cords or Tapes, of which the following is a specification.

This invention relates to improvements in stiffening cords or tapes or corset-stiffeners manufactured from the quill portion of feathers. This material as heretofore manufactured has been made up comparatively of the finely-divided fibers of the quill portion of feathers bound together in cords or strands by a wrapping thread or twine, and these strands are assembled into blades or tapes. When cords or stiffening blades or tapes are made in this way, they possess great utility and elasticity, but the pith surface is as liable to be outside as the enamel.

It is the object of this improvement, first, to provide a structure in which the enamel portion of the quill portion of the feather will always come to the outside to give the cord or tape a finished appearance, and, second, to provide a means of constructing light cords of this material which shall be very resistant owing to the fact that the enamel portion is outside, where its utility is greatest.

A further object is to provide a structure in which the wrapping thread or strand can be dispensed with when desired.

Further objects will definitely appear in the detail description to follow.

We accomplish the objects of our invention by the devices and means described in this specification.

The invention is definitely pointed out in the claims.

The invention is illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail view, of about full size, of the usual construction of stiffening-cord, one end of the same being shown in the process of manufacture to show how it is formed. Fig. 2 is a detailed view of a portion of the same, formed complete with the usual wrapping-thread thereon to retain it together. Fig. 3 is a detailed view of the same with the wrapping strand or thread B omitted. Fig. 4 shows the blade of the quill portion of the feather from which the cord is produced and how the same is spliced together to secure the necessary length. Fig. 5 is a much enlarged detail end view of a stiffening-cord made according to our invention which has been rolled flat where it is desired that the cord be flat.

In the drawings similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A represents the blade, formed from the quill portion of feathers. It is formed, as indicated in Fig. 4, by cutting out strips of the quill, removing the pith therefrom, and splicing them together by overlapping the ends, which are suitably cemented with the enamel always on the same side, so that one side of the ribbon or strip thus formed is enamel while the other side is the pith side. The ribbon is then twisted, as indicated in Fig. 1, until it forms a spiral, the edges of the tape fitting together with the enamel side out and the pith side in. The pith side is indicated inside in Fig. 1. When the strand is so twisted, it is retained ordinarily and preferably by a wrapping-thread B, wound spirally around the same. However this is not a necessity, as a suitable cement may be placed on the pith side, so when the ribbon or blade is twisted in the manner indicated the strand will be retained by the cement. The cement, however, is not an absolute necessity to secure the blade or ribbon in this form, as the results can be practically secured by heating the blade until it is thoroughly softened and then twisting it in the form desired and retaining it there until the same is cool, when it will be found to retain its form indefinitely. In practice these methods are employed all together, as each one assists the other and the stiffening-cord thus produced is very firm and very elastic. Any one of the means enumerated, however, is sufficient to form a very satisfactory cord or strand. This strand may be wrapped around a suitable core of cord or textile thread to increase its size when it is desired to make a large-sized cord of it. The blade can be rolled flat after it has been twisted, as clearly appears in Fig. 5, which shows the end view, much enlarged, of the cord after it has been rolled.

From what we have stated it must be clear that our improved stiffening-cord can be greatly varied in its details.

The stiffening-cord produced in this manner is adapted to all the uses to which any stiffening-cord of this class can be applied. A number of these can be bound together to form a flat blade, which is the usual way in the manufacture of stiffening-blades from this same material. The single cord can be suitably covered for any purpose, or a number of them can be assembled together and covered in any convenient way. As this matter of assembling the cords together is not a part of this invention, we merely mention the fact, not deeming it necessary to illustrate the same.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A stiffening-cord made up of a strip of the quill portion of feathers twisted into a spiral with the enamel side of the feather out and the pith side in.

2. A stiffening-cord made up of a strip of the quill portion of feathers twisted into a spiral with the enamel side of the feather out and the pith side in, the interior or pith side of the blade being cemented to retain it in position.

3. A stiffening-cord made up of a strip of the quill portion of feathers twisted into a spiral with the enamel side of the feather out and the pith side in, the interior of the blade being cemented, and a wrapping-strand being wound spirally on the outside of the same to retain it in position.

4. A stiffening-cord made up of a strip of the quill portion of feathers twisted into a spiral with the enamel side out and the pith side in; and a wrapping-strand being wound spirally on the outside of the same to retain it in position.

5. A stiffening-cord made up of the quill portion of feathers twisted into a spiral form with the enamel side out and the pith side in.

6. A stiffening-cord made up of the quill portion of feathers twisted in a spiral form with the enamel side out and the pith side in, with a suitable means of retaining the same in position.

In witness whereof we have hereunto set our hands and seals in the presence of two witnesses.

EDWARD K. WARREN. [L. S.]
JONAS H. HOLDEN. [L. S.]

Witnesses:
F. W. CHAMBERLAIN,
MORRIS G. MCGAWN.