(No Model.)

E. K. WARREN.

WHIP.

No. 411,628. Patented Sept. 24, 1889.

Fig. 5.

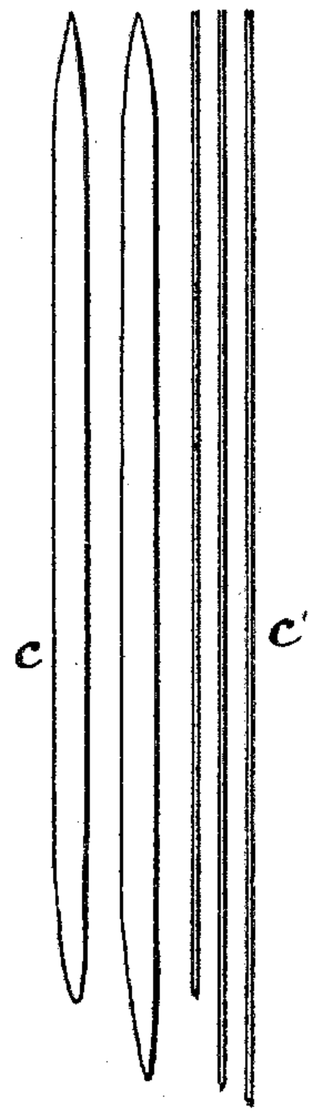

Fig. 6.

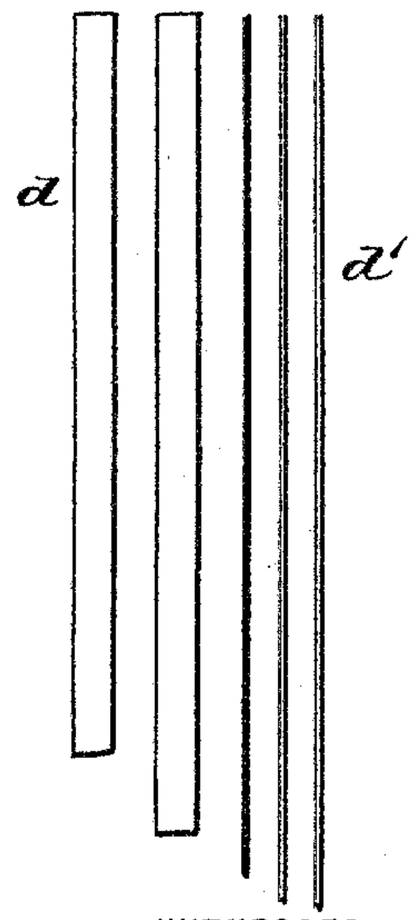

Fig. 1.

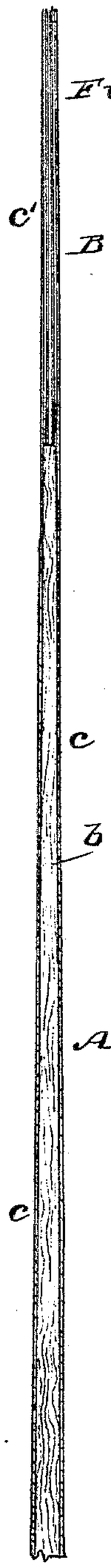

Fig. 2.

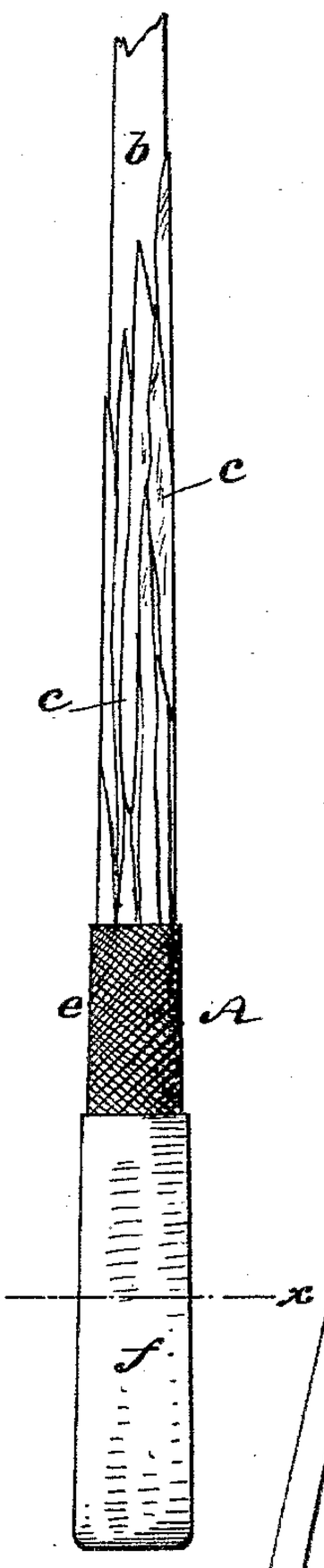

Fig. 3.

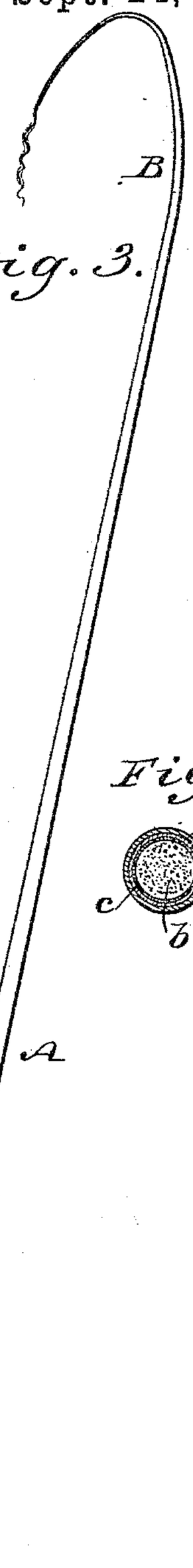

Fig. 4.

WITNESSES:

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EDWARD K. WARREN, OF THREE OAKS, MICHIGAN.

WHIP.

SPECIFICATION forming part of Letters Patent No. 411,628, dated September 24, 1889.

Application filed June 25, 1888. Serial No. 278,137. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD K. WARREN, of Three Oaks, in the county of Berrien and State of Michigan, have invented a new and useful Improvement in Whips, of which the following is a full, clear, and exact description.

This invention relates to whips the central portion or core of the main part or body of which, where strain in bending the whip is reduced, is composed of rattan or other suitable hard material, and outside of this core a superior or stronger and more elastic material or structure is arranged near to the outer surface of the whip where the resistance in bending is greater and greater strength and elasticity are required.

My invention consists in the construction and arrangement of parts, substantially as hereinafter described, and pointed out in the claims.

Any thin elastic bone—such as feather-bone or whalebone—may be used for the superior or more elastic material near the outer surface of the whip and to form the solid-like tip.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a longitudinal sectional view of a whip in part embodying my invention; Fig. 2, a longitudinal view of the body portion of the whip in part with certain coverings and linings broken away. Fig. 3 is an exterior longitudinal view of the whip complete, and Fig. 4 is a transverse section of the same upon the line *x x* in Fig. 2. Fig. 5 is a longitudinal view of pieces of feather-bone in splint-like and fiber form suitable for making the whip, and Fig. 6 is a like view of pieces of whalebone in thin strip and fiber form that may be used in place of the feather-bone or conjointly with it.

A indicates the main part or body portion of the whip, and B its tip end or portion.

The tapering rattan core in the main part or body portion of the whip is indicated by the letter *b*, and outside of this is built a layer or covering which constitutes one of the linings of the whip, and which, when made of feather-bone, is composed of quill splints or fibers *c c'*, arranged taperingly and longitudinally upon and around the rattan core *b* and overlapping one another, so as to wholly cover the latter and break joint with each other for the purpose of making the strength of the whip continuous; or said covering or lining may be made by stripping whalebone into thin pieces and reducing part of it to fiber, so as to make a thorough covering for the rattan, the same being used in short pieces and breaking joints, as in the case of the feather-bone. The finer splints or fibers *c'* or *d'* of the thin elastic bone may be used mainly for building up the tip portion B of the whip, and both the lining or covering outside of the core *b* and the tip portion B of the whip may be made up of short pieces of the whalebone or other elastic material, arranged so as to break joints, and whereby scraps or waste pieces may be utilized, thus materially reducing cost.

The upper part or tip portion of the whip is a solid mass of feather-bone or whalebone splints or fibers, and as the whip enlarges backward these splints or fibers virtually change from a tapering solid-like core at the tip to a tapering sleeve, covering, or lining, wholly inclosing the rattan core *b* and breaking joint, as described, at different points throughout its length.

By this construction the feather-bone or whalebone which constitutes the stronger or more elastic material is arranged entirely, as it were, upon the surface and so near the outside of the whip as to give the greatest resistance where it is most required in the bending of the whip, there being only on the exterior of such superior material the usual or any suitable thin covering or coverings or lining and covering, such as the lining *e*, of woven or any other suitable material, and outside finishing-covering *f*, or even the lining *e* might be omitted so far as my invention is concerned.

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

1. As an improved article of manufacture, a whip having a tapering core and an exter-

nal layer of bone formed of thin flat splints of bone bound flatwise longitudinally upon said previously-formed core with their longitudinal edges overlapped and arranged to break joint, and a binding material around the exterior of the layer of bone, substantially as set forth.

2. In a whip, the tapering resilient core provided with a covering composed of separate and independent thin flat splints and small fibers *c c'* of bone, arranged to break joint, as described, and bound upon the core throughout its length.

3. As an improved article of manufacture, a whip consisting in a resilient core of less length than the whip, a series of separate and independent flat splints *c* of bone, bound upon the core throughout its length, arranged to break joint, and extended beyond the end of the core and there bound together to form the tip B, and the outer lining inclosing the whole, substantially as set forth.

EDWARD K. WARREN.

Witnesses:

HENRY CHAMBERLAIN,

WM. C. HALL.