2 Sheets—Sheet 1.

R. MACINTOSH.

Mechanism for Manufacture of Waxed-Ends.

No. 226,619. **Patented April 20, 1880.**

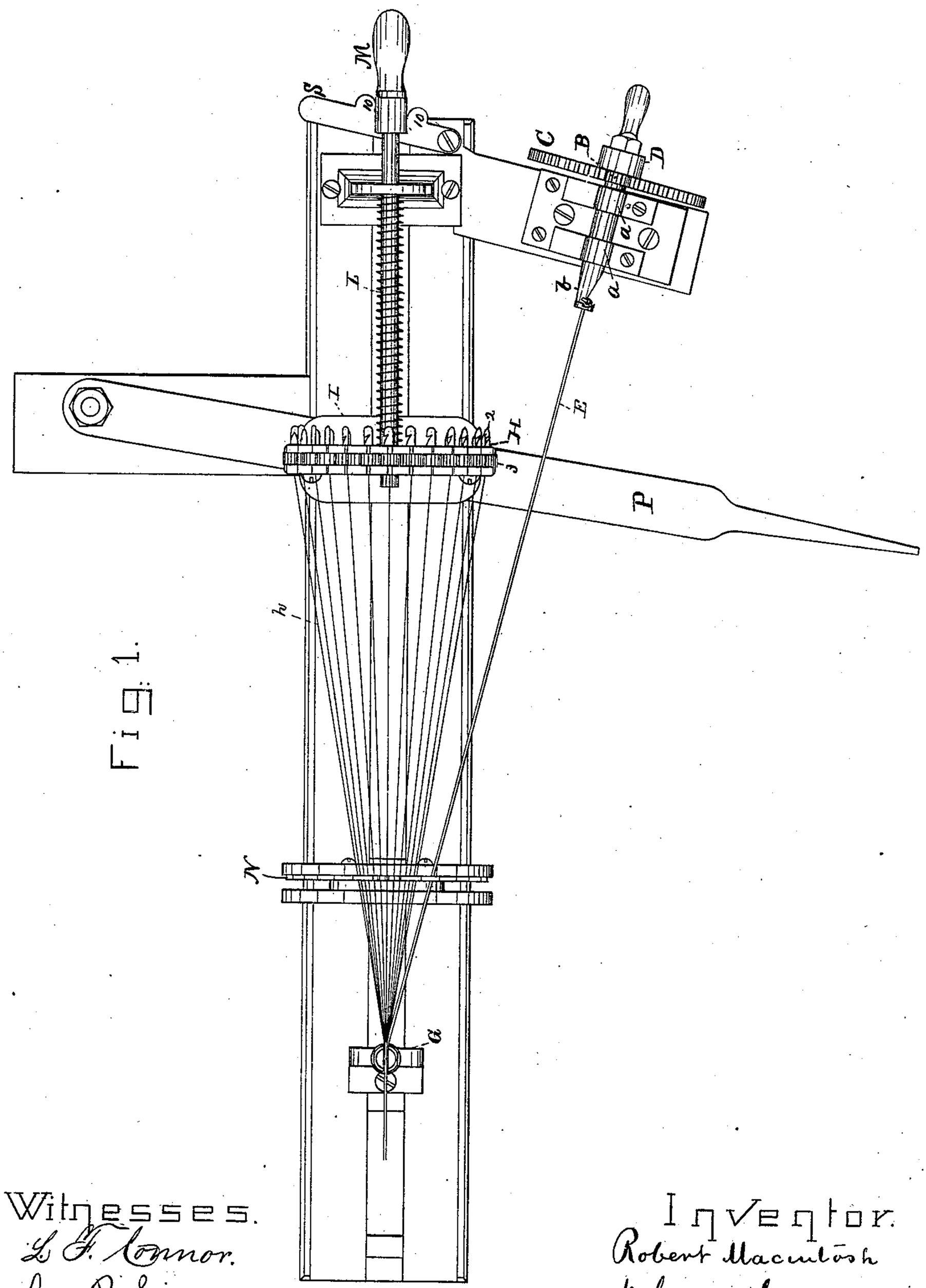


Fig. 1.

Witnesses.
L. F. Connor.
Jos. P. Livermore

Inventor.
Robert Macintosh
by Crosby Gregory Attys

2 Sheets—Sheet 2

R. MACINTOSH.

Mechanism for Manufacture of Waxed-Ends.

No. 226,619. **Patented April 20, 1880.**

Fig. 2.

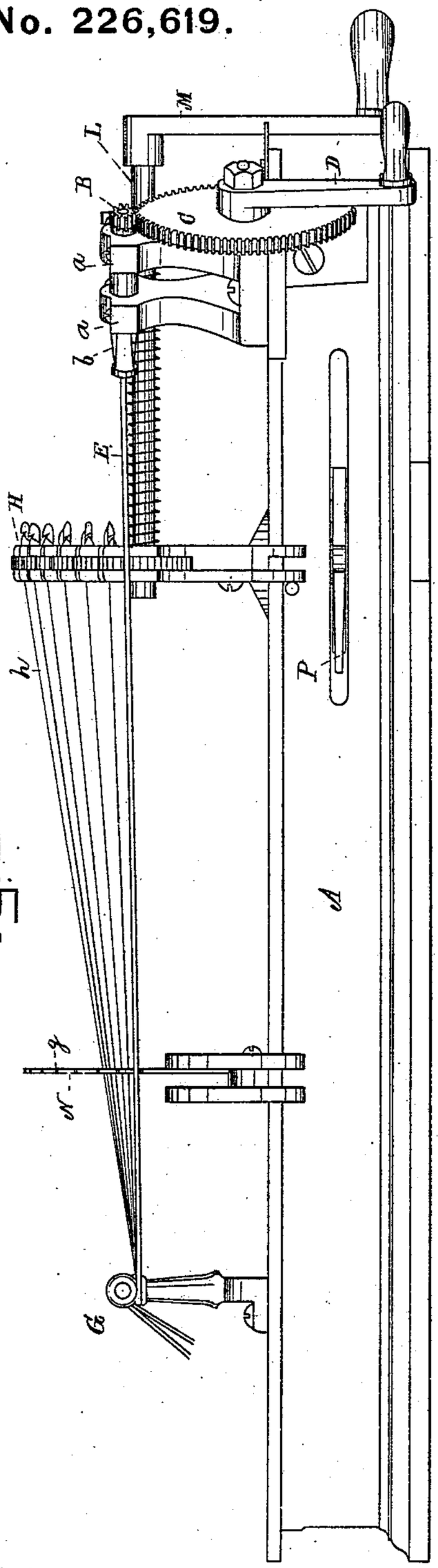


Fig. 4.

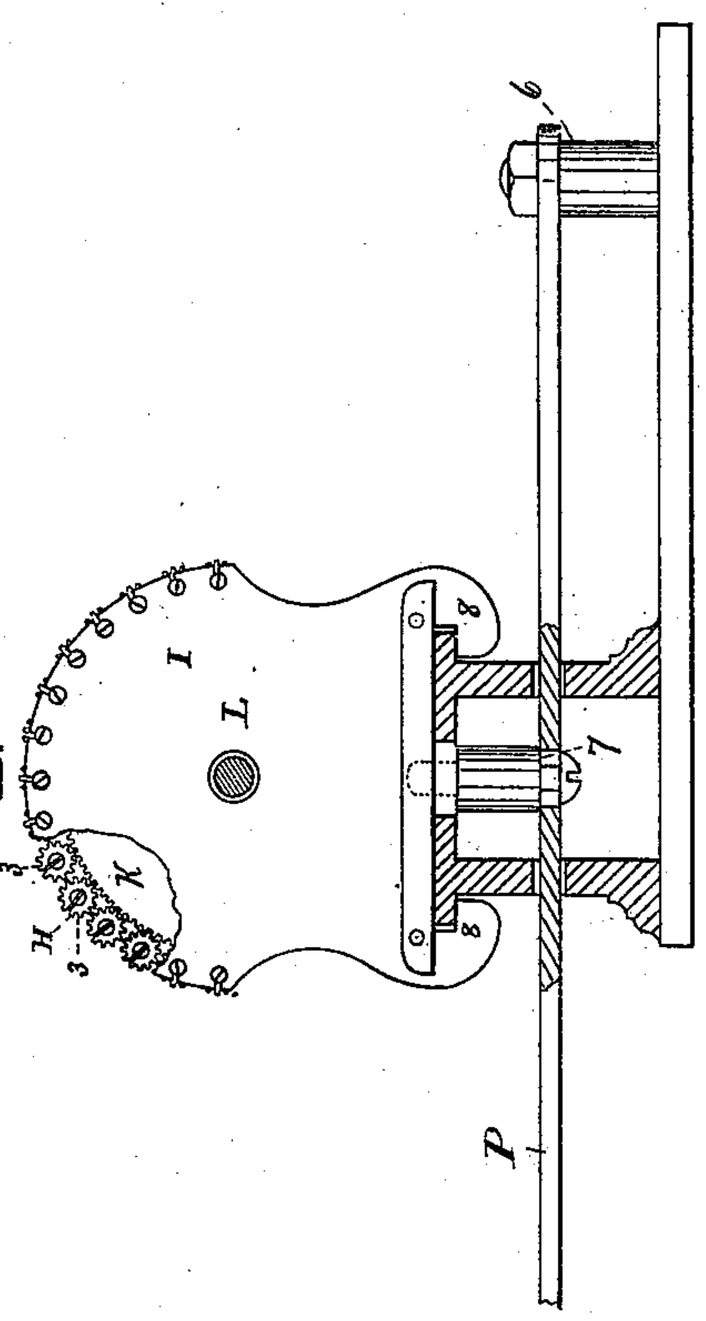


Fig. 3.

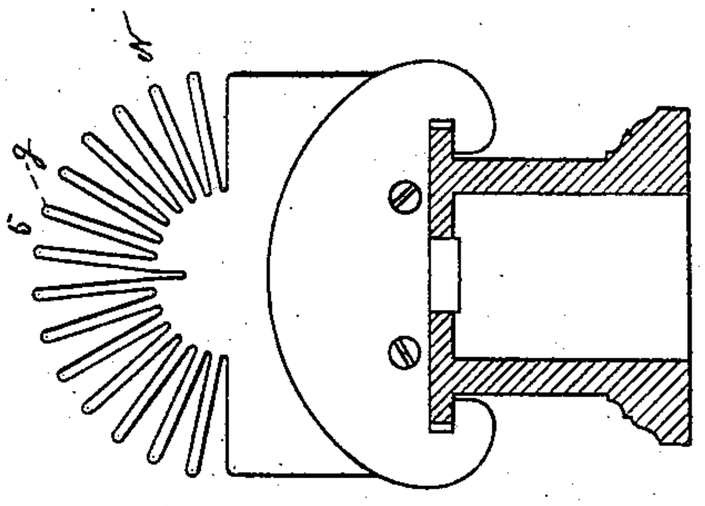
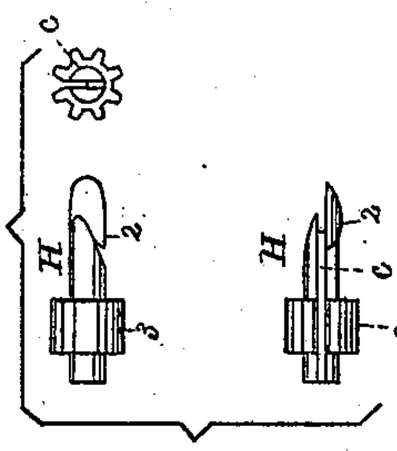


Fig. 5.



Witnesses.

L. F. Connor.

Jos. P. Livermore.

Inventor.

Robert Macintosh

by Crosby Gregory Attys

UNITED STATES PATENT OFFICE.

ROBERT MACINTOSH, OF BOSTON, MASSACHUSETTS.

MECHANISM FOR THE MANUFACTURE OF WAXED ENDS.

SPECIFICATION forming part of Letters Patent No. 226,619, dated April 20, 1880.

Application filed February 2, 1880.

To all whom it may concern:

Be it known that I, ROBERT MACINTOSH, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Mechanism for the Manufacture of Waxed Ends, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for the manufacture of waxed ends for boot and shoe, harness, and other work, and in an improved method of manufacturing waxed ends, as hereinafter described.

In the manufacture of waxed ends by hand, as now commonly practiced, it is customary to measure off more or less linen thread from a ball, according to the length of waxed end it is desired to make, then to untwist the same and draw upon the thread to gradually pull apart the fibers and leave a frayed end, and then another length of thread, laid parallel with the first length, is untwisted and separated from the ball-thread in a like manner, this process being continued until a sufficient number of strands have been accumulated to make a thread of the proper diameter and strength when waxed.

By my invention I double and twist and produce by machinery a thread containing a proper number of cords or strands, according to the diameter and strength required for the waxed end to be produced. This thread may be of indefinite length, and be put up in balls or skein form.

In the manufacture of waxed ends after my plan one of the ends of this large thread is fastened to a spindle and is untwisted sufficiently to enable its individual strands to be separated, and then the ends of the several strands into which the larger thread is so formed are transferred into the untwisting-sleeves, which are operated substantially simultaneously to untwist the fibers of each of the said individual strands, after which the thread is subjected to longitudinal strain, which draws upon and parts the several untwisted strands, causing them to be pulled apart in such manner as to fray and form floss-like ends suitable for the attaching thereto of the usual bristle. In this way I am enabled to produce rapidly by machinery more uniform waxed ends than can be produced in the old plan by hand, and at a great saving in labor.

Figure 1 represents, in top view, one of my waxed-end-forming machines; Fig. 2, a side elevation thereof; Fig. 3, a section to show the comb in front view; Fig. 4, a section to show the untwisting mechanism for the individual strands, and Fig. 5 details of the untwisting-sleeves.

Upon the bed A of the apparatus, at one end, are suitable boxes *a*, in which is held the spindle *b*, it having at its rear end a pinion, B, engaged and driven by the gear C, driven by the handle D. The front end of this spindle *b* is suitably notched and shaped in any usual way to receive and hold the end of the large or many-stranded thread E, from which the waxed ends are to be made. As herein shown, a knot is tied in the end of the said thread, as in Fig. 1, as it is slipped into a radial or other slit at one side of the center of the spindle.

The large or many-stranded thread is held more or less remote from its end by the thread-holder G, suitably slotted or otherwise shaped for that purpose, while the spindle *b* is being revolved in the proper direction sufficiently far to untwist the several or individual strands which, united, form the large thread. These individual strands being so untwisted back to the holder, the knot at the end of the thread is cut off, and the separate or individual strands are taken and placed one by one in the open eyes or slots *c* (see Fig. 5) of the untwisting-sleeves H, having hooked ends 2 and pinions 3. The said sleeves are placed in bearings about the edge of a horizontally-movable slide-frame, I, which also supports a toothed gear, K, on a shaft, L, having attached to it a handle, M, by which the said gear may be turned to revolve simultaneously all the several untwisting-sleeves whose pinions are in engagement with the gear K.

When taking the separate individual strands from the spindle they are placed in separate dents or spaces 5, between the teeth *g* of the comb N, it acting to keep the strands separated at a point between the holder G and the untwisting-sleeves, and also acting to prevent the twist from being taken out of the individual strands *h*.

A lever or handle, P, pivoted at 6, is connected with a suitable stud, 7, at the lower end of the frame I, and the latter has ears 8, made to embrace the frame A, so that, when it is desired, the said slide-frame may be moved horizontally by the lever P, which is done as often as the twist has been substantially removed from the individual strands held by the untwisting-spindles, such movement of the slide-frame separating all the said untwisted threads *h* at some point between the sleeves H and the comb N, drawing apart the said threads, leaving the ends of the several strands connected with the main body of the large thread E in a frayed or floss-like condition, ready to receive a bristle in the usual way.

The large thread, so uniformly and evenly twisted and made, when cut into lengths and untwisted and frayed at its ends, as described, is ready to be sold, and it may or may not be sold with the bristle attached.

I do not desire to limit my invention to the exact devices shown and described for untwisting the large thread or the individual strands, and instead of them I may employ any other usual or well-known twisting or untwisting devices common in spinning or twisting machines; and so, also, instead of the lever for moving the frame I, I might employ gearing.

In operating the apparatus care is taken to take out only the original twist and not untwist so much as to commence to twist in the opposite direction.

It is obvious that I may, if desired, employ the waxed ends so prepared for use with saddlers' needles rather than with bristles.

To prevent the handle M and shaft L from being moved except at the proper time I have shown as pivoted upon the frame A a locking-lever, S, provided with lugs 10.

Heretofore several separate strands of shoemaker's thread taken from several balls have been placed in rotatable untwisting devices, which have untwisted all of said strands between their end and the balls and at a distance from said ends equal to the length of waxed end desired, and these several strands drawn apart in some way, or frayed, have been laid side by side and all twisted together automatically, instead of by hand, as ordinarily done by the shoe-maker. A waxed end so made has not that uniformity as to diameter, nor is it as smooth and even as to its surface, nor is it as strong and solid as though made by the plan herein described.

I claim—

1. The holder for the large twisted thread E and the series of untwisting sleeves or devices to hold and untwist the individual strands of the said thread, as described, combined with mechanism, substantially as described, to separate the carriage for the untwisting-sleeves from the thread-holder and draw upon and part the individual untwisted strands to fray their ends, substantially as described.

2. The holder for the prepared thread E and the comb, combined with the series of untwisting sleeves or devices to untwist the several strands and keep them separated, substantially as described.

3. The holder for the prepared thread and the comb, combined with the series of untwisting-spindles and their holding-frame, fitted to the guideways, and mechanism to rotate the sleeves and separate them from the comb, substantially as described.

4. That improvement in the art or method of manufacturing waxed ends which consists in twisting together several strands to form a thread of the diameter desired for the waxed end, then untwisting the said twisted thread, separating its strands for a short distance, untwisting each separate strand, and parting the said untwisted strands while held at both ends to fray their ends and adapt them to receive a bristle, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT MACINTOSH.

Witnesses:
G. W. GREGORY,
N. E. C. WHITNEY.