

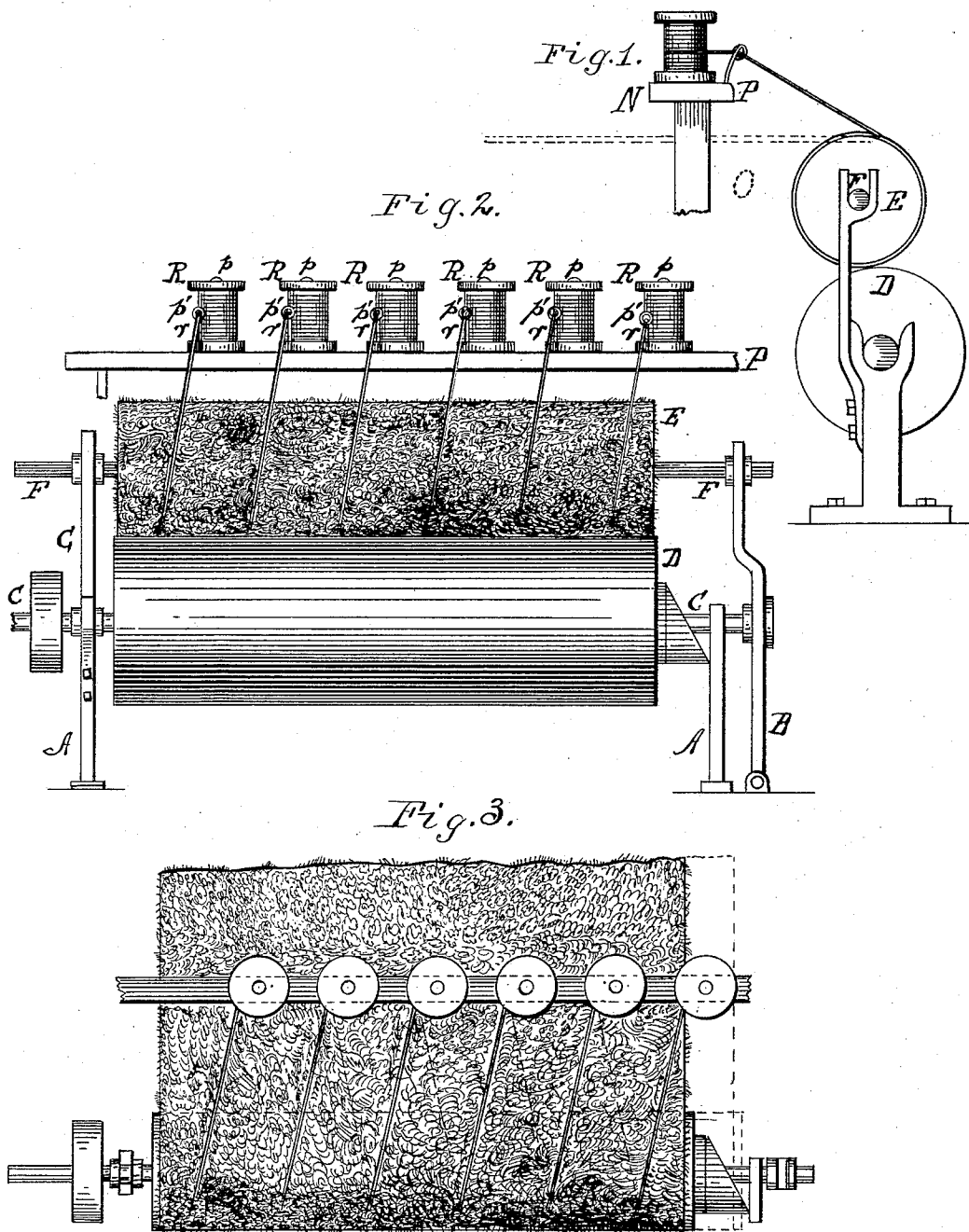
(No Model.)

2 Sheets—Sheet 1.

A. A. HAWLEY.
MAKING FELT FOOT WEAR.

No. 340,667.

Patented Apr. 27, 1886.



WITNESSES
Thos. Houghton.
James O. Brophy,

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per W. H. Singleton,
Attorney

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Fig. 6.



Fig. 5.

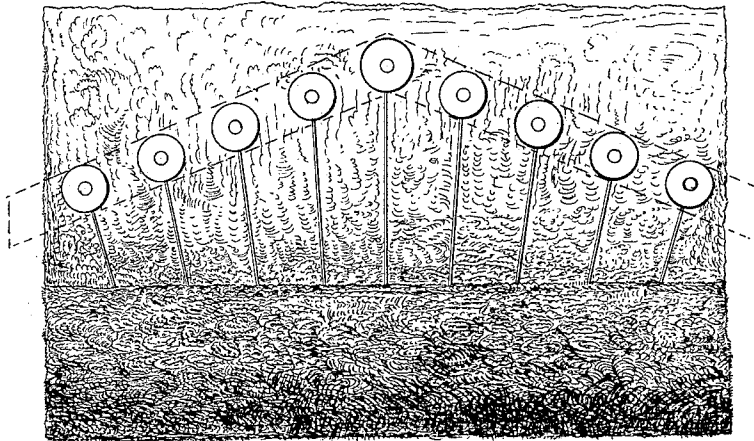
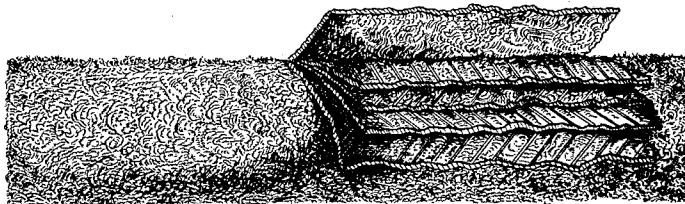


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALFRED A. HAWLEY, OF KENNEBUNK, MAINE, ASSIGNOR TO THE MERINO SHOE COMPANY, OF SAME PLACE.

MAKING FELT FOOT-WEAR.

SPECIFICATION forming part of Letters Patent No. 340,667, dated April 27, 1886.

Application filed February 17, 1886. Serial No. 192,293. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. HAWLEY, a citizen of the United States, residing at Kennebunk, in the county of York and State of Maine, have invented certain new and useful Improvements in Making Felt Foot-Wear; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is an end view of the mechanism for carrying out the process; Fig. 2, a face or front view; Fig. 3, a top view; Fig. 4, the improved bat; Fig. 5, a modified arrangement of the mechanism, and Fig. 6 the completed boot.

This invention relates to improvements in felt boots, stockings, &c., which may be called "felted foot-wear," and more particularly to that class in which the felt has been strengthened by the introduction of a woven or knit—*i. e.*, textile—fabric within said felt or the felting material. Heretofore this has been done either by incorporating a full-length stocking with the felt, the stocking being coextensive with the felt in the finished article, or by using a piece of tubular textile fabric, or by using simply a piece of textile fabric, which is introduced at the special point to be strengthened. In all of these forms the material composing the textile fabric has to be woven or knit, so as to be in form for incorporating.

It is the object of the present invention to dispense with the use of a fabric as such, and to incorporate the threads thereof directly and as thread with the felting material without any preliminary handling, as knitting or weaving.

To this end the invention consists in the mechanism, process, and product hereinafter set forth.

In the annexed drawings, in which Sheet 1 represents my improved mechanism, the letters A, A', B, C, D, E, F, and G indicate a combination of parts forming a former-roll frame, such as is shown in United States Patent No. 304,726, granted September 9, 1884.

To this patent reference is made for a full description of the construction and operation of these parts, only so much being given here as is necessary for a clear understanding of the present invention. Between the carding-machine (which it is not necessary to show in the drawings) and the former-frame is placed a suitable support or frame, N, the top or cross bar, P, of which is arranged across and above the path of the sliver O, as shown. To the top of the cross-bar P are secured a series of pins, *p*, any number desired being used, and in front of each pin is placed a thread-guide, *p'*.

In carrying out my process a spool, R, of thread is placed on each pin *p*, with the thread *r* passed through the guide *p'*. The thread may be of wool or cotton. The former is preferred, as it makes a better article. As the sliver O comes from the doffer of the carding-machine it is passed to the drum or "cone" E and wound thereon. At the same time the cone E and the roll D are given a reciprocating or endwise movement, as fully explained in the patent already referred to, and as indicated in Fig. 3 of the drawings in this case. As the sliver is wound on the cone E the threads *r* are placed on the sliver, and are carried with it around the cone. This causes the threads to wind on themselves as the frame reciprocates, as indicated in Fig. 3. Enough of the threads is fed to the sliver, and then the threads are severed. After the sliver for a boot is wound it is removed from the cone forming the bat shown in Fig. 4. In this figure the bat is shown as cut so as to indicate the several layers of the felting material with the threads lying on each, such layers indicating the way in which the threads of one layer cross those of the next. The bat thus made is manipulated in the usual way, by cutting, hardening, fulling, &c., and made up into the completed article shown in Fig. 6.

In winding the threads they may be incorporated as described—*i. e.*, alternating with the layers of the sliver—or several layers of thread may be wound at any given place among the layers of the sliver, the travel of the sliver being checked, or the thread may be wound first and then the sliver, or the sliver first and then the thread, according to what place in the finished article the thread is to

occupy. In winding on the thread it may go the whole width of the sliver and be the whole length of the completed article, or it may be only a part of the width of the sliver.

5 However, it should be placed so as to come at the ankle and instep of the finished article. The traverse of the former-frame is to be regulated according to the degree desired for the threads to cross. The greater the traverse
10 the more will the threads be nearer the major axis of the bat; hence, in shrinking the bat will reduce more in proportion than if the threads were farther from the major axis. If the threads be of cotton, the felt in shrinking
15 will draw them together.

If desired, the former-frame may be stationary, and the spool-supporting frame be given a traverse.

20 In Fig. 5 is shown a modified form of the mechanism. Here the spool-thread-supporting frame instead of being straight is made angular.

Other kinds of former-frames may be used and the old steps may be varied. The cone
25 E may be a drum, and the bat be cut open and made flat, and the article made from this.

My invention consists, broadly, in incorporating threads, as distinct from prepared fabric, with the felting material, and I do not
30 wish to limit myself by the other steps, which may be varied, as is evident to those skilled in the art; also, other articles than those of foot-wear may be made of this material.

35 Having described my invention, what I claim is—

1. A machine for making articles of the

kind described, provided with a frame for supporting spools of thread, as set forth.

2. The combination of a carding-machine, a former-frame, and a thread-spool supporting-
40 frame, as set forth.

3. As an improved step in the process of making articles of the kind described, the incorporating with the sliver, threads as distinguished from a prepared fabric, as set forth.
45

4. The process of making articles of the kind described, which consists in incorporating threads with the sliver forming a bat, and then manipulating said bat in any of the ordinary ways, as set forth.
50

5. As an improvement in the art of making articles of the kind described, a bat consisting of felting material with which are incorporated simple threads as distinguished from a prepared fabric, as set forth.
55

6. As an improved article, felted foot-wear in which are incorporated threads as distinguished from a prepared fabric, as set forth.

7. As an improved material, felt with which is incorporated simple threads as distinguished
60 from a prepared fabric, as set forth.

8. As an improved material, felt with which is incorporated threads crossing one another, in manner as set forth, as distinguished from threads in a prepared fabric.
55

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED A. HAWLEY.

Witnesses:

WALLACE E. MASON,
W. L. DANE.