(No Model.)

D. F. MESSER.

METHOD OF FORMING FELT BOOTS, SHOES, &c.

No. 297,280. Patented Apr. 22, 1884.

Fig. 1.

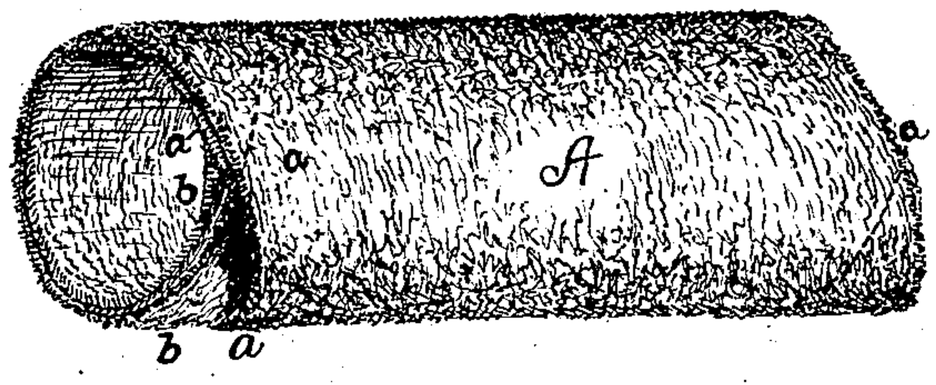


Fig. 2.

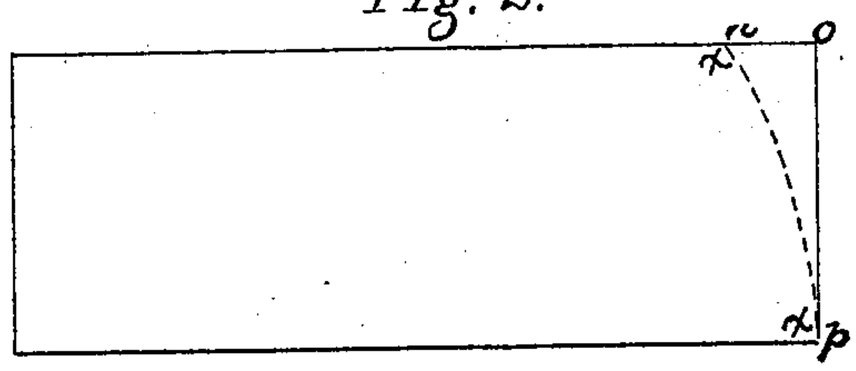


Fig. 3.

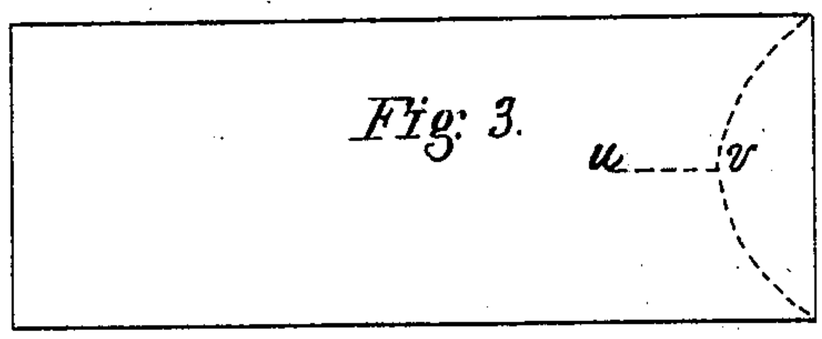
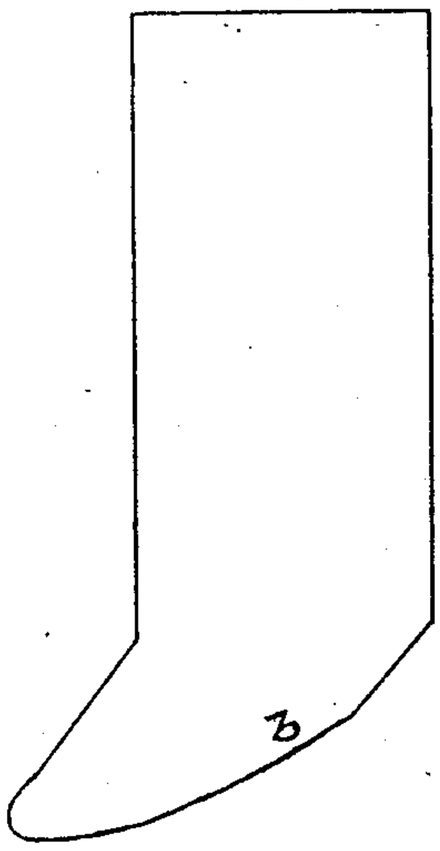


Fig. 4



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UNITED STATES PATENT OFFICE.

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METHOD OF FORMING FELT BOOTS, SHOES, &c.

SPECIFICATION forming part of Letters Patent No. 297,280, dated April 22, 1884.

Application filed February 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, DANIEL F. MESSER, a citizen of the United States, residing at Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in the Method of Forming Felt Boots, Shoes, &c., of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a perspective view of the cylindrical bat, showing the sliver crossed upon itself. Fig. 2 is a diagram showing the first cut. Fig. 3 is a diagram showing the second cut. Fig. 4 is a diagram showing the bat after it is cut, the foot portion being distended.

This invention relates to improvements in the methods of or processes for forming felt boots, shoes, &c.

The invention has for its object to produce an article in which there is less shrinkage, and in which the shrinkage is more even. It is a well-known fact that when wool shrinks, as in felting, it shrinks more in the direction of the staple or lengthwise of the fiber. As a bat is formed with the length of the sliver across the bat, the staple is transverse the latter. Hence when a bat is felted it will narrow more than it will shorten, and therefore in proportion the resultant article will be longer than the bat was, considering its width. Now, if the sliver be arranged in forming the bat so that the staple will not be across the bat, but obliquely thereto, the shrinkage will be equalized throughout the bat, and as the staple crosses itself it is strengthened. Moreover, the article made therefrom will be stronger and better adapted to resist any strain, as the crossing fibers cause them to aid one another in their resistance.

The invention consists, broadly, in forming a cylindrical bat and cutting it as hereinafter described; but a better article is made by crossing the staple, as already stated. However, I do not propose to limit myself to a bat in which the fibers cross, although this will produce a better article. My invention is broader than this, and includes a cylindrical bat, however the staple may be arranged.

In carrying out my invention I form a cylindrical bat, A, such as is shown in Fig. 1. This bat is formed in any way, usually by winding upon a cylinder which has a diameter adapted to form the inside of the bat, so it will be of the shape and size for a boot, shoe, &c. As the sliver is wound around so as to form the bat, a lengthwise or reciprocating motion is given to the bat, so that the sliver will cross upon itself. Sufficient motion should be given only to make the sliver cross its entire width, and not so much as would only make the edges of the sliver lap, but the whole sliver should cross, making the bat of uniform thickness, except the extreme ends. Fig. 1 shows this crossing of the staple.

The letter *a* represents the fibers extending obliquely in one direction, and *b* those extending obliquely in the other, so that they cross. It is to be understood that this is the same sliver and staple crossing on itself in one unbroken sheet, the different reference-letters being used to indicate the different positions of the sliver in the bat. After this bat is formed, it is cut at one end on, substantially, the line *x x*, as shown in Fig. 2, the portion *n o p* being removed. This starts the bat for the shape of the boot, and also removes the thin portion of the bat at that end. The other end is also cut, so as to remove the thin portion there; or, if desired, the bat may be made large enough for two boots, when both ends are to be cut alike, and the bat severed in the middle. After the bat is cut on the line *x x*, it is then cut on the line *u v;* or, of course, either cut may be made first, only it is simpler to make the cut on the line *x x* first. This produces a blank such as is shown in Fig. 4, the cut end being spread open. This blank is placed upon the jigger, the leg is hardened, and the edges *b* are lapped over and hardened together, forming the foot, as is usual in this kind of work. It is then felted, treed, and surfaced, as usual. The hardening, felting, treeing, and surfacing steps being common, need no special description.

It is obvious that after the cylindrical bat is formed various steps may be employed to shape it for the boot before the bat is hard-

ened; hence I do not limit myself to the precise steps. I regard the cylindrical bat as my broad invention. The other parts or steps described are all valuable, but may be varied. The process might be varied by cutting the bat obliquely at or near its middle, severing it into two portions, and then each of these be cut as along the line *u v*. This is substantially the same as the method already set forth, as it is obvious that to carry out the spirit of the invention it is not essential to make the cuts at one end; but the cut along the line *x x* is to be made across the bat and sufficiently at an angle to give the shape to the foot.

In United States Patent No. 275,249 is shown a cylindrical cone about which the sliver is wound, completely covering the ends as well as the sides of the cone. To remove this sliver thus wound it is cut diagonally of the cone, forming two shoe-upper blanks. By my invention I form a cylindrical bat distinct in itself.

Having described my invention, what I claim is—

1. As an improvement in the art of forming felt boots, shoes, &c., the cylindrical woolen bat, as set forth.

2. As an improvement in the art of forming felt boots, shoes, &c., the cylindrical woolen bat in which the staple is crossed upon itself, as set forth.

3. As an improvement in the art of forming felt boots, shoes, &c., the method which consists in, first, forming the sliver into a cylindrical bat; second, cutting such bat on the line *x x;* third, cutting such bat on the line *u v;* fourth, hardening the blank thus formed, bringing the edges *b b* together, and then felting, &c., all as described.

4. As an improvement in the art of forming felt boots, shoes, &c., the method which consists in, first, forming the sliver into a cylindrical bat in which the sliver crosses itself; second, cutting such bat on the line *x x;* third, cutting such bat on the line *u v;* fourth, hardening the blank thus formed, bringing the edges *b b* together, and then felting, &c., all as described.

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

DANIEL F. MESSER.

Witnesses:

MURRAY HANSON,

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