(No Model.)

A. A. HAWLEY & H. HYSON.

PROCESS OF MAKING SEAMLESS FELTED WOOL BOOTS AND SHOES.

No. 306,747. Patented Oct. 21, 1884.

Fig. 1.

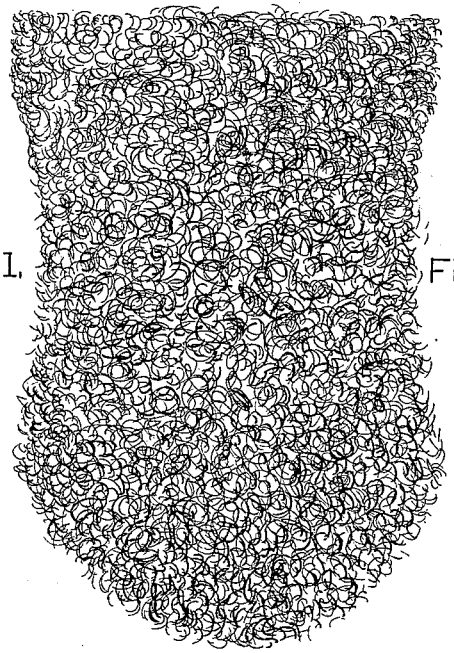


Fig. 2.

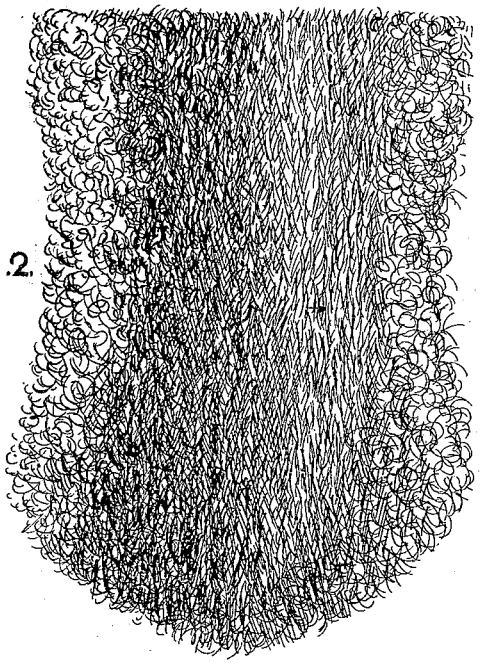


Fig. 3

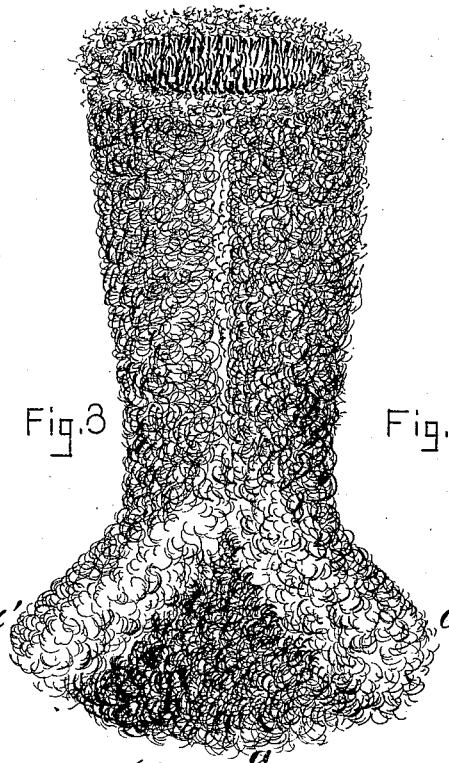


Fig. 4.

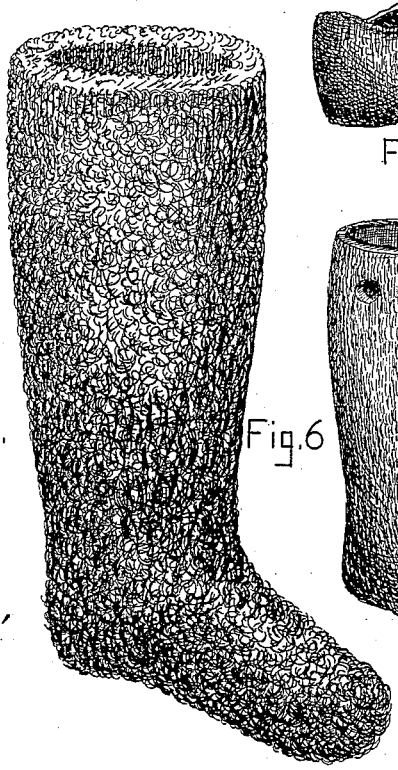
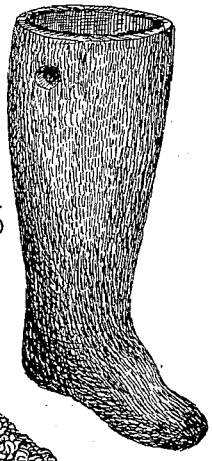


Fig. 5.

Fig. 6



Witnesses.
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UNITED STATES PATENT OFFICE.

ALFRED A. HAWLEY AND HENRY HYSON, OF BALTIMORE, MARYLAND, ASSIGNORS TO THE MERINO SHOE COMPANY, OF KENNEBUNK, MAINE.

PROCESS OF MAKING SEAMLESS FELTED WOOL BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 306,747, dated October 21, 1884.

Application filed January 3, 1884. (No model.)

To all whom it may concern:

Be it known that we, ALFRED A. HAWLEY and HENRY HYSON, both of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and useful Improvement in the Art or Process of Making Seamless Felted Wool Boots and Shoes, of which the following is a specification.

Our invention relates to the formation of the bat and felting it into the form desired, the object of it being to produce a bat and a boot or shoe made from it which will be uniform in thickness in all its parts and have a uniform tensile strength in all directions, and also to make a better boot or shoe with less wool and less labor than has been heretofore required for such; and it consists in the manner of depositing the wool to make the bat and the manner of hardening and felting the bat into a boot or shoe, hereinafter described.

Heretofore in the manufacture of seamless felt boots and shoes a sliver of wool as it comes from the card has been wound about and upon a former approximating in form to the form of boot or shoe to be made, and an effort has been made in so winding the wool about a former to cross the fibers of the wool by shifting the position of the axial line of the former; but only a partial crossing of fibers could be made, as the line of the former could not be shifted so as to vary from the line of the card-cylinders more than thirty-five or forty degrees, and at each shifting of the axial line of the former there would be a folding of the sliver, so that the bat produced would be of uneven thickness, and the boot or shoe produced from it would have thick and thin places in the fabric, and consequently a large number would be imperfect and many wholly worthless.

Our present invention will render it practical and easy to make a bat of wool from which a boot or shoe is to be formed with half the fibers of wool crossing the other half of the fibers in it at right angles, and uniform in thickness in all its area, and from such bats to produce boots and shoes the felted fabric of which will be of uniform thickness; or, if it is desired to increase the thickness on the sole, an additional bat may be laid on for that purpose.

To practice our invention we run a sliver of wool from the card onto a cylinder revolving in front of the card, the length of the cylinder being equal to the width of the card, and its circumference should be equal to its length, or about so. At each revolution of the cylinder, when the card is working, a layer of wool sliver is wound onto it. This will be continued until wool enough to make half the required thickness of bat is wound upon the cylinder. The wool is then cut on a line parallel to the axis of the cylinder, and the wool taken off and laid out flat on a bench or table prepared for it. Another winding of wool slivers on the cylinder then is made until enough is wound on to make half the thickness required for the bat. This is cut, as before described, and the wool taken off the cylinder and laid across the cut of wool before taken from the cylinder, with the line of its fibers at a right angle to the line of the fibers of the layer of wool first placed on the table. These two layers of wool are sufficient to make the required thickness of felt for the boot or shoe to be produced. A pattern, the form of which is shown in Figure 1 of the drawings, is laid on, and the wool cut by it. A bat for a boot is thus produced. This bat is then placed on a hardening-table of proper dimensions, and with a jigger to correspond is hardened from the end which is to make the top of the boot through the middle of the bat, leaving a strip of wool along both sides of that part of the bat which is to make the leg to and into that part which is to make the foot, leaving a strip of unhardened wool around it, as shown in Fig. 2 of the drawings. The leg part of the bat is then folded so that the strips of unhardened wool on each side overlap each other and a part of the unhardened wool on each side torn away to make a chamfered edge of wool, so that when the two edges are hardened together the thickness where they are joined will be the same as of the other parts of the leg; or, if it is desirable to re-enforce the boot on the line of joining, a little extra wool may be left there for that purpose. The unhardened wool of the leg part of the boot will then be hardened in the ordinary way, forming the leg and leaving the foot open, as shown in Fig. 3. The unhardened strip of wool around the edges of the bat which is to form

the foot is then folded, overlapping each other along the sides of the foot and around the toe, thus giving a double or more or less increased thickness of wool to make the fabric for the bottom of the boot, as may be desired. These overlapping edges of unhardened wool, which will form the sole of the boot, are then hardened on a hardening apparatus constructed on an arm which enters through the leg, as shown in Patent No. 203,147, to A. A. and R. B. Hawley, and the bottom and toe of the boot closed, as shown in Fig. 4, with a sole of such greater thickness than the upper and leg as may be found desirable. The boot or shoe then goes through the process of felting or fulling in the usual manner, until it is brought to the proper consistency, as shown in Fig. 5, and is then treed or formed and finished in the usual manner of forming and finishing such boots.

It is obvious that a shoe can be made in exactly the same manner by making and working a bat without wool for a leg-covering. Fig. 6 shows a shoe made in this way. Boots and shoes made in this way cost less than those made by methods heretofore practiced, as by regulating the thickness of the different parts a boot of better quality can be made with less wool, and the cost of labor in carding and hardening, and also in the treeing or forming, is considerably less.

We claim as new and our invention—

The above-described improvement in the art or method of making seamless felted wool boots and shoes, consisting of depositing a sufficient quantity of wool in a flat bat, having about one half of its mass of fibers lying across and at about a right angle to the other half, cutting from such a bat a piece of suitable form and dimensions to make a boot or a shoe, hardening the middle portion from the end which is to make the top of the boot or shoe to a point in the bat which will make the toe, folding, chamfering, overlapping, and closing it on the back side by hardening the wool, folding in that part of the bat which is to make the foot of the boot or shoe, overlapping its unhardened edges, so as to double or increase the quantity of wool where the tread will come, closing the foot by hardening the wool which will form the tread, and felting the whole to proper consistency, all substantially as described.

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Witnesses:
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