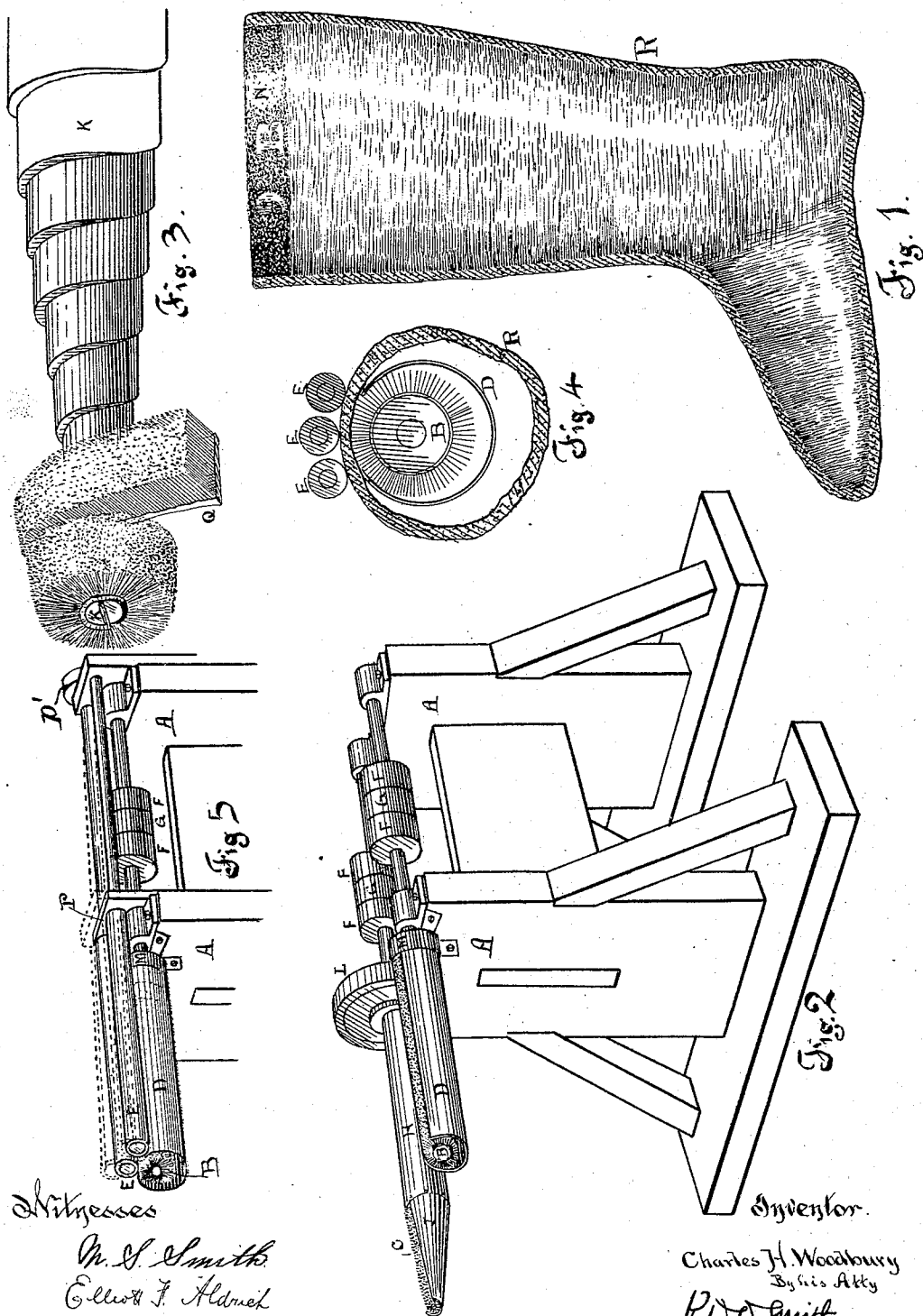


(No Model.)

C. H. WOODBURY.
MACHINE FOR FINISHING WOOL BOOTS.

No. 532,352.

Patented Jan. 8, 1895.



UNITED STATES PATENT OFFICE.

CHARLES H. WOODBURY, OF MISHAWAKA, INDIANA.

MACHINE FOR FINISHING WOOL BOOTS.

SPECIFICATION forming part of Letters Patent No. 532,352, dated January 8, 1895.

Application filed January 21, 1893. Serial No. 459,039. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WOODBURY, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented a new and useful Improvement in Machines for Finishing Wool Boots; and I declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a longitudinal section of a wool boot. Fig. 2 is a perspective view of my machine. Fig. 3 is an elevation of a part of my machine. Fig. 4 is a transverse section of another part of my machine. Fig. 5 is a perspective view of a modification.

There are two modes of making wool-boots. First, the boot is made of wool bats roughly shaped in the form of a gigantic boot, or, second, by knitting coarse loosely twisted yarn, in the form of a gigantic stocking. In either case the product is felted and shrunk to proper size in scalding water, and then shaped and dried on a tree. The process of felting causes the fibers to shrink and interlock with one another in the peculiar well known manner, and the resulting surface is irregular and hard.

To improve the appearance of the surface and to add to the warmth of the boot, it has been customary, on the outer surface to draw the fibers out to form a nap, or to grind it away on a pouncing machine to render it smooth. For the purposes for which boots are used the napping process is preferable, but it has not heretofore been practiced or thought to be practicable to raise a nap on the inner surface. The soft woolly nap surface, however adds greatly to the comfort of the wearer and the warmth of the boot.

Before my invention herein described, so far as I am aware, no one had ever produced a wool boot with a nap raised from the material of the boot on its inner surface, nor a machine capable of raising a nap on the inner surface of a boot or shoe.

Having now indicated the nature of my improvement, I will particularly describe the apparatus as I have constructed and used it, not intending however to limit myself precisely as to its several details.

A, is the framework which supports the operative parts of my machine. For conven-

ience I mount upon the same frame two nappers B, C, the former for the leg portion and the latter for the foot portion of the boot. The napper might be adapted to unite both functions, but it is more convenient and desirable to employ separate instruments. The napper consists of a cylinder or a cone covered with what is known as napping wire clothing. This consists of fine hard drawn wire bent in the form of staples, forced through a foundation of stout fabric, leather or other flexible material, the ends of the wire staples being protruded at right angles from the said foundation. For my purposes, this clothing is prepared in a long narrow strip which being wound spirally upon a cylinder causes the wire to stand out radially and constitute a cylindrical brush. For the conical end or napper C, adapted to enter the foot, it is necessary to fashion a helical pyramidal head K, upon which the clothing strip Q may be wound without buckle or kink.

It will be apparent that the cylindric or conical napping brush may be made by wrapping a properly sized rectangular or conical piece of clothing around a proper cylinder or cone as the case may be, but it is equally manifest that the mode described above is much more simple and effective.

The diameter of the cylindrical brush must be considerably less than the interior diameter of the boot leg R to permit it to be inserted readily, and it is also necessary that it shall be covered with a shield at all points except on a line along one side, because it would be impractical to submit the boot to all sides of the card at once. I therefore provide a cylindrical shield D, open along one side, for the brush B. This brush and shield are sufficiently long to reach into the heel of the boot, and to operate it. The boot leg is slipped over the shield, and pressed lightly down upon the napping brush. The teeth penetrate the surface slightly and comb up the surface fibers. This action of the brush wires will cause the boot to rotate and thus present all portions of the interior surface to the brush for treatment. To relieve the attendant of the duty of superintending this action all the time I have employed two or more rollers E, E, which rest upon the boot and press it down upon the napping brush

with proper pressure while the brush is acting.

The shafts of rollers E, E, are mounted in bearings on the frame A, but at one end said bearings are attached to said frame by a slide P, whereby said bearings may be elevated or depressed a little and thus move the free ends of the rollers E E upward to admit the boot or downward to press upon the same.

The conical napper or brush C, is mounted on the end of a shaft which projects from its housing far enough to reach through the leg and to the toe of the boot. That part of said shaft which extends through the leg of the boot is inclosed within a tube or shield H, and the conical napping brush is inclosed within a conical shield I which is attached to and supported by the tube H, and said shield I is also slotted or open along one side to permit the napping brush to reach the surface of the boot into which it is inserted. The irregular contour of the foot causes it to fit the shield I rather tightly, and I have found it convenient to cause the shield I to revolve within the boot and thus permit the brush wires to successively reach all parts of the interior surface during the revolution of the shield. This revolution of the shield may be accomplished by providing the tube H with proper bearings on the frame A or on the shaft which carries the napper C, and providing said tube with a pulley L, or other proper means whereby it may be caused to revolve automatically. In napping the foot therefore, it is only necessary for the attendant to put the boot on the napper C and hold it there during one revolution of the tube H.

It is desirable to be able to revolve the napping brushes in either direction, because long continued action in one direction will correspondingly wear the points of the napping wires until their efficiency will be impaired. By causing them to rotate for a time in one direction and then for a time in the other direction, the points will be retained in effective condition. I therefore provide the napper shafts with rollers F, F, G the rollers F, F, being loose rollers. Upon one a straight belt is placed and a cross belt upon the other and either one of said belts may be placed on the fast pulley G.

It is desirable sometimes to leave unnapped a part of the interior of the boot leg whereon the size or other marks may be placed, as it is undesirable to place such marks on the outside surface. Such portion of the surface

may be protected from the action of the napper by means of a loose ring M, on the shield D, said ring being moved to such position as required. In Fig. 1 the band N indicates the unnapped portion inside the leg, left for the above mentioned marks, which are always put on immediately after the boot has been removed from the tree.

If desired the shafts of one or both the pressure rollers E, E may be provided with pulley P' and belted so that they may act as feed rollers as well as pressure rollers.

Power to propel the mechanism may be taken from a line shaft in the usual way.

Having described my invention, I claim—

1. In a machine for napping the inside of a boot, a revolving napping brush, and a revolving shield to inclose said brush at all points except along one side whereby during the revolution of said shield the brush will act upon all parts of the interior surface, as set forth.

2. In a machine for napping the interior of a boot or shoe, a revolving napping brush, bearings at one end of the same for supporting it and permitting its rotation, a frame carrying said bearings, means for actuating the brush, and a shield inclosing the brush, carried by a suitable support such as the said frame, and having a slot or opening through which the brush may operate, whereby the boot may be drawn over the brush and shield and be supported while its interior is napped, substantially as set forth.

3. In a napping machine the helical core having its supporting surfaces parallel with the axis of the core, and a strip of napping wire clothing wound and supported upon said surfaces to constitute a conical napping brush, substantially as set forth.

4. In a napping machine, a revolving napping brush, a shield to cover the brush, having along one side a longitudinal opening and a movable ring M to cover the opening in said shield at any point desired, substantially as set forth.

5. In a napping machine a conical napping brush C, a shield I open along one side, a sleeve or tube H to carry said shield and a pulley L on said tube whereby said tube may be belted and caused to revolve independently of the other moving parts, for the purpose set forth.

CHARLES H. WOODBURY.

In presence of—

R. D. O. SMITH,
AUG. HOERSTMANN.