

F. SCHWARTZ.
METHOD OF STIFFENING PARTS OF BOOTS AND SHOES.
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1,215,875.

Patented Feb. 13, 1917.

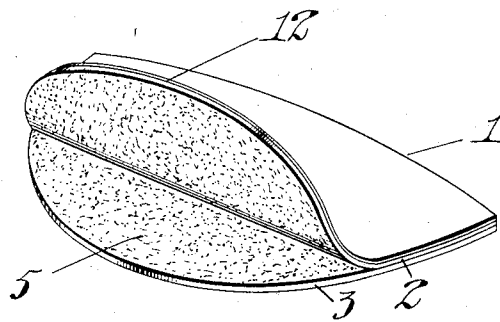


Fig. 1.

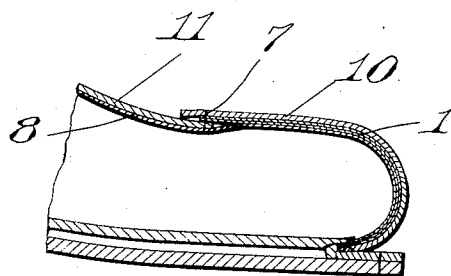


Fig. 2.

WITNESSES.

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METHOD OF STIFFENING PARTS OF BOOTS AND SHOES.

1,215,875.

Specification of Letters Patent.

Patented Feb. 13, 1917.

Application filed January 26, 1915. Serial No. 4,466.

To all whom it may concern:

Be it known that I, FRANK SCHWARTZ, a citizen of the United States, residing at Winthrop, in the county of Essex and State of Massachusetts, have invented certain Improvements in Methods of Stiffening Parts of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to improvements in the manufacture of boots and shoes and is illustrated in connection with a box-toe stiffener and a method of manipulating the same to form a box-toe.

It has been common hitherto in the manufacture of boots and shoes either to apply a stiffening substance such as box-toe gum in a liquid or plastic state to the box-toe blank when the upper is assembled or to assemble with the upper a normally stiff box-toe blank which is capable of being softened by heat. In the first case the upper is immediately pulled over and lasted while in the second case the stiff blank is steamed before each operation so as to soften it temporarily. In either case, after the lapse of a certain amount of time the box-toe becomes hard.

The use of box-toe gum is objectionable for many reasons and has been supplanted to a considerable extent by the normally stiff blank which is adapted to be softened by heat. There are, however, serious objections to the use of this normally stiff blank. It is desirable to fasten this blank to the upper by stitches, but because of the stiffness of the blank the needles of the sewing machine, by which the stitching is done, are frequently bent or broken. Again this prepared blank, as has been stated, requires two steamings one before the pulling-over operation and one before the lasting operation, since it becomes stiff very rapidly when removed from the steaming apparatus. Moreover a blank of this kind is bulky and this, together with its quality of stiffening quickly, has an injurious effect on the lasting operation so that it is difficult to produce a smooth toe on the finish shoe. Indeed it is customary when this normally stiff blank is used, to rub out the bunches at the toe by pressing the toe against a highly heated iron so as to soften the stiffening material and smooth out the bunches.

One feature of the present invention comprises that improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a blank which is normally flexible and free from liquid or viscous material, lasting the upper and subsequently stiffening the blank. In the illustrative method a piece of sheet material coated with powdered or granulated shellac is incorporated in the upper, the shellac being fused by heat after the lasting operation and then allowed to cool.

These and other features of the invention will be described in connection with an illustrative method and article and pointed out in the appended claims.

Referring now to the accompanying drawing,—

Figure 1 is a perspective of a stiffener in which the present invention is embodied, one of the plies of fabric having been bent back to show the powdered or granulated stiffening material.

Fig. 2 is a section of the forepart of a shoe in which the stiffener has been embodied by the method of the invention.

In the illustrative embodiment of the invention the box-toe blank indicated as a whole at 1 is made of two pieces or plies of fabric 2, 3, and between the plies is a layer or coating 5 of a powdered or granulated material, such for example as shellac, the melting point of which is comparatively low so that the stiffening material may be melted or softened by a heat which will have no injurious effect upon the leather.

In order to hold the powdered or granulated shellac securely, an adhesive of some sort may be used; and in the illustrative embodiment of the invention the fabric of the box-toe blank is the well-known "backing cloth" which is commonly used to strengthen the uppers of boots and shoes, this backing cloth consisting of a piece of fabric having on one face a coating of adhesive containing gutta-percha. To prepare a box-toe blank a suitable amount of powdered or granulated shellac is dusted or sprinkled on the coated side of a sheet of the backing cloth and then a second sheet is pressed upon the first sheet with the coated sides together after which the blank is dried out.

In order to prevent the melted or softened shellac from penetrating the lining of the shoe during the subsequent heating opera-

tion a sheet of paper 12 or other impervious substance may be applied to the box-toe blank on one or both sides.

In the manufacture of a shoe the blank may be incorporated in the upper between the lining 8 and the toe tip 10 in any suitable manner, as, for example, by the row of stitches, one of which is shown at 7, which unites the tip 10 to the vamp. The upper is then assembled on the last and the pulling-over and lasting operations carried out while the blank is in its normal condition and the stiffening material still in its powdered or granulated or broken state. The blank at this time is still flexible. In order to complete the formation of the box-toe and set the blank the forward portion of the lasted shoe is placed in a suitable heating apparatus such, for example, as that shown in British Patent No. 13155 of 1910 and subjected to a heat sufficient to soften or melt the shellac whereby the particles of shellac are caused to run together and to permeate the fabric of the box toe blank so that when the shellac hardens a finished box-toe is produced.

When the upper is lasted the toe of the upper, together with the box-toe blank, is drawn tightly about the toe of the last, the leather being put under considerable tension. Consequently if there are any bunches due to the presence of too much powdered or granulated shellac at any points the strain of the leather smooths out such bunches when the shellac softens or melts, so that the resulting box-toe is smooth and conforms to the form of the toe of the last.

I have found that by subjecting the toe of the shoe for approximately an hour to a temperature of between 210° and 250° F. a box-toe for the making of which two pieces of backing cloth and a layer of powdered shellac are used, is hard when taken out of the heating apparatus so that if desired the last may be pulled at once. I have also found that this hardness is permanent to the extent that further heat for the same time at the same temperature will not appreciably affect it. In any event, however, softened shellac when removed from a temperature of from 210° to 250° to the ordinary temperature of a shoe factory will harden in a few minutes. The important effect of this heating operation is to soften and amalgamate the shellac and cause it to permeate the fabric so that whereas before the heating it is in the form of separated masses or particles after the heating it forms a more or less continuous film which serves to give permanent form to the toe of the shoe.

Throughout the specification the stiffening material referred to has been powdered or granulated shellac. This has been done, however, to promote brevity. Any suitable substance may be used which will permit

the blank to be flexible normally so as not to interfere with the lasting operation and at the same time may be subsequently melted or softened so as to complete the formation of the box. And whether the stiffening material is strictly in powdered or granulated form is obviously immaterial so long as the normal flexibility of the blank and its capability of being subsequently softened and set are present. For example the shellac may be applied to the fabric in solution and allowed to stiffen after which the prepared fabric may be run through a mangle to break up the shellac and render the product flexible. The manner in which the blank is incorporated in the upper is also immaterial. For example, instead of being stitched to the upper it may be cemented or merely laid in. And although the article has been described as a box-toe blank and the method as one which results in the production of a box-toe it should be understood that the invention is applicable to any sort of stiffener such for example as a counter.

The claims of the present application are directed to the method; claims to the article having been presented in a divisional application Serial No. 22,116, filed April 17, 1915.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a stiffener blank comprising stiffening material in a solid, broken state so that said blank is normally flexible, said stiffening material being capable of being softened by heat, lasting the upper and then subjecting the lasted upper to a heat sufficient to soften the broken particles of stiffening material.

2. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a limp stiffener blank comprising a piece of fabric coated with a powdered or granulated stiffening material adapted to be melted by heat, lasting the upper, and then subjecting the lasted upper to a heat sufficient to melt the stiffening material and cause it to permeate the fabric.

3. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a limp stiffener blank comprising a piece of fabric coated with powdered or granulated shellac, lasting the upper, and then subjecting the lasted upper to a heat sufficient to soften and amalgamate the shellac whereby when said amalgamated shellac hardens a box-toe results.

4. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a limp stiffener blank comprising a piece of fabric

to which a powdered or granulated stiffening material capable of being softened by heat is attached by an adhesive substance, lasting the upper and then subjecting the
5 lasted upper to heat sufficient to soften the stiffening material.

10 5. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a stiffener blank which is normally soft and pliable but may be rendered hard by prolonged heat, lasting the upper and then subjecting the lasted upper to heat for a time sufficient first to soften and then to harden the stiff-
15 ener.

6. That improvement in the art of manufacturing boots and shoes which consists in incorporating in the unlasted upper a stiff-

ener blank which is limp and free from liquid or viscous material when cold but
20 may be rendered stiff by successive heating and cooling, lasting the upper, and then stiffening the blank.

7. That improvement in the art of manufacturing boots and shoes which consists in
25 incorporating in the unlasted upper a blank which is normally flexible and free from liquid or viscous material, lasting the upper and subsequently stiffening the blank.

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

FRANK SCHWARTZ.

Witnesses:

FRED W. GINBORD,
WILLIAM B. KING.