

No. 883,299.

PATENTED MAR. 31, 1908.

O. C. DAVIS.
SOLE FOR BOOTS AND SHOES.
APPLICATION FILED DEC. 29, 1906.

Fig. 1.

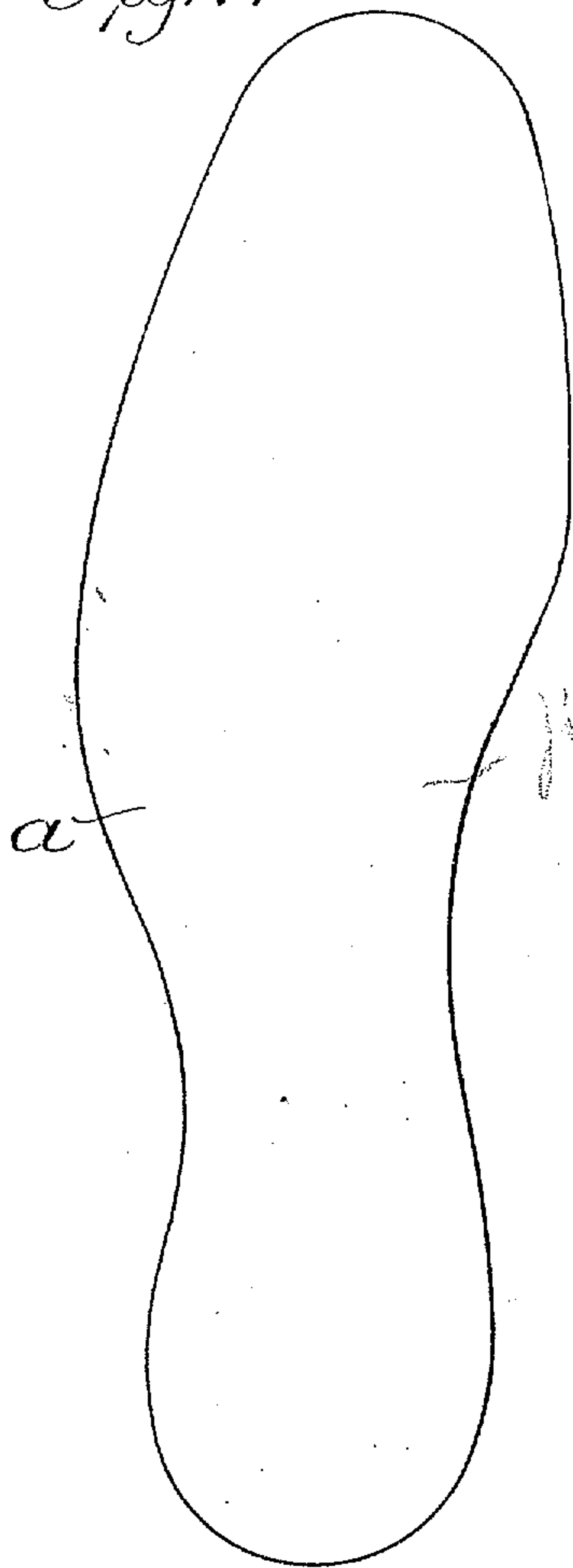


Fig. 2.

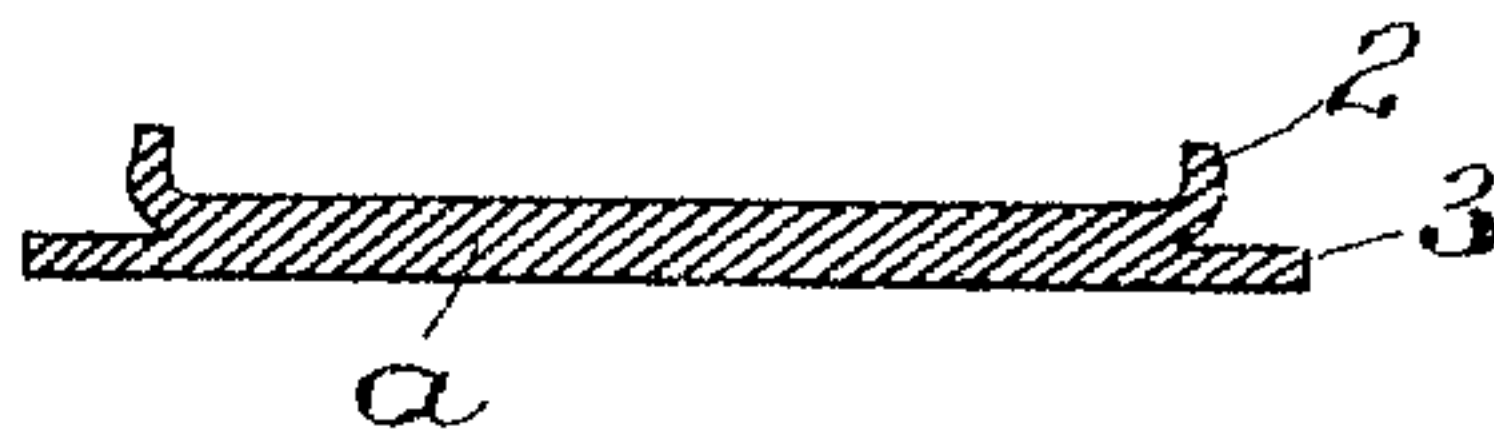


Fig. 3.

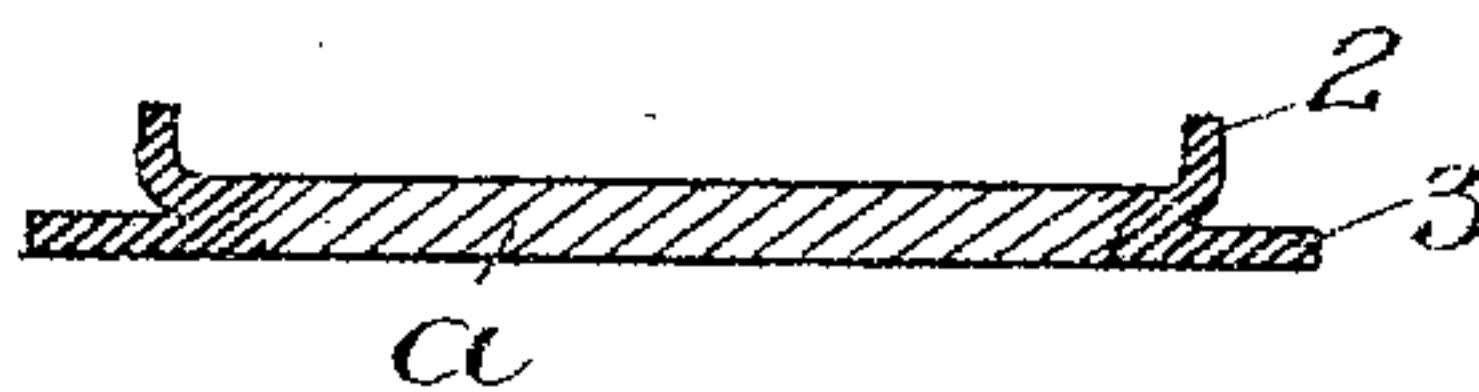


Fig. 4.

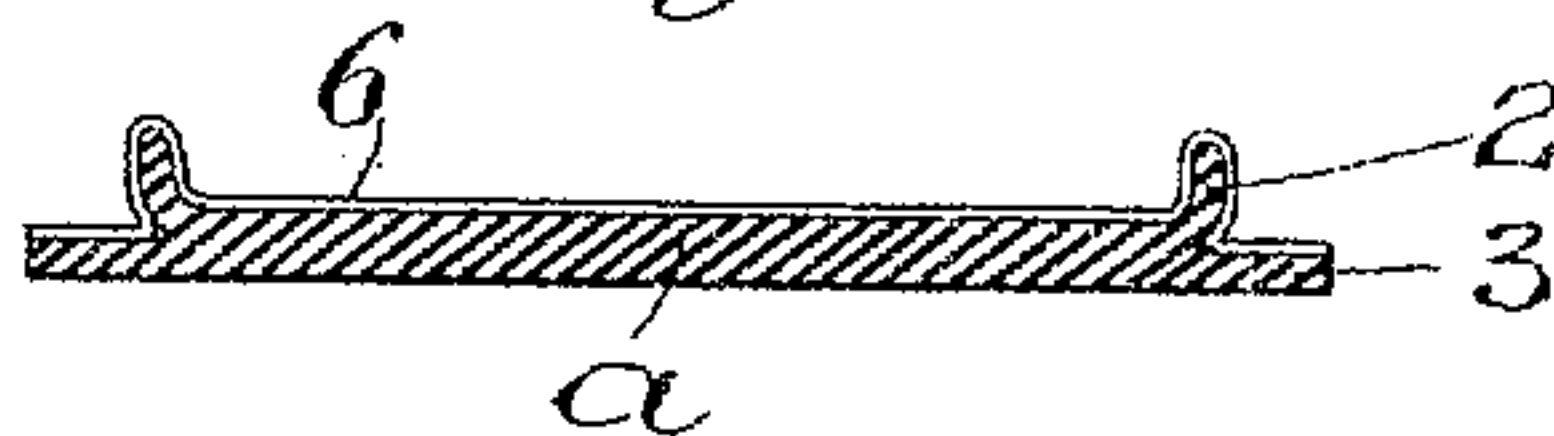


Fig. 5.

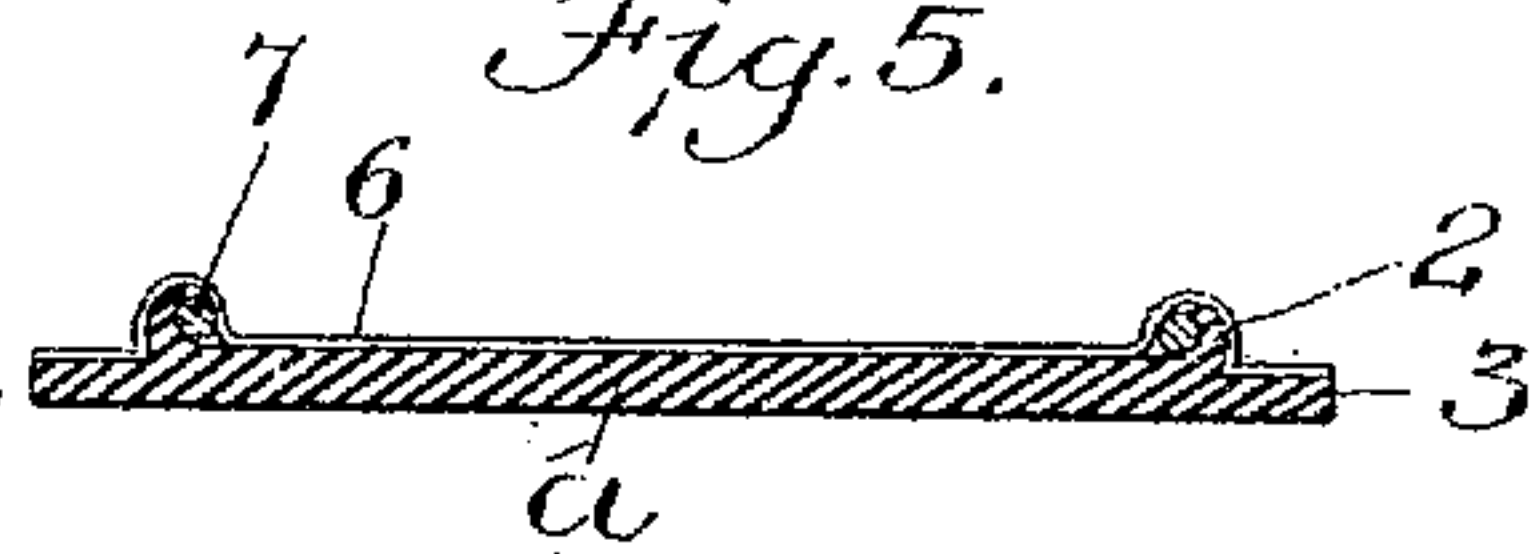


Fig. 6.

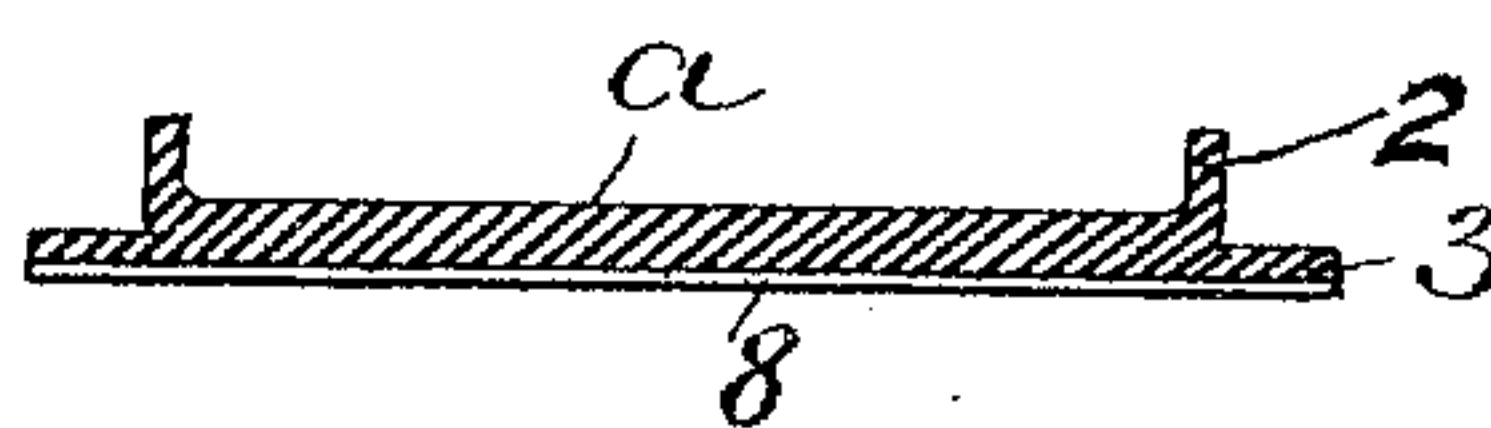


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SOLE FOR BOOTS AND SHOES.

No. 883,299.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed December 29, 1906. Serial No. 349,971.

To all whom it may concern:

Be it known that I, OSCAR C. DAVIS, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Soles for Boots and Shoes, of which the following is a specification.

This invention relates chiefly to inner soles for boots and shoes, and may be embodied in an inner sole for either a welted or a McKay sewed shoe.

The invention is intended chiefly to provide an inner sole which, while reasonably strong, durable and efficient as such, is capable of being manufactured at less expense than a sole composed wholly or in part of leather.

Inner soles for welted shoes are now often made of a body portion or layer of leather, and a reinforcing member or members of canvas or other material applied to the body portion in such manner as to engage the in-seam stitches that attach the inner sole to the upper and welt.

My invention when embodied in a reinforced inner sole, relates to the said body portion, and consists in a sole or sole-shaped body composed of sheet fibrous material, the fibers of which are not interwoven, and are preferably wool or other so-called felting fibers artificially bonded after the usual manner of forming the material known as felt, the said body being adapted to receive attaching stitches. In inner soles for welt shoes this adaptation is effected by forming a channel, or dividing the margin of the sole into a lip and a feather, the lip being turned from one side of the sole to receive the in-seam stitches. The fibers composing the stitch-engaging portion of the body, are additionally bonded and stiffened by means of any suitable bonding and stiffening material, preferably a solution of shellac or other suitable gum, although any other suitable material may be employed for this purpose, the object being to increase the tensile strength of the fibers by permanently increasing the bond of union between them, and to stiffen the material so that, like leather, it is adapted to be readily acted on by channeling and other tools used in the manufacture of soles, the stiffening also enabling the above-mentioned lip to retain the form imparted to it, and also enabling the sole to withstand, with-

out yielding or buckling, the pressure exerted on it by a sole leveling machine.

The invention may be embodied in an inner sole for a welt shoe which is composed wholly of felt without reinforcement, and it may also be embodied in a felt inner sole for McKay work with or without reinforcement.

The invention may also be embodied in an inner sole or an inner sole body composed of non-felting paper-making fibers united to form a relatively thick sheet, and additionally united by a bonding and stiffening material.

Of the accompanying drawings forming a part of this specification,—Figure 1 represents a plan view of a sole body which may be a blank for a welt inner sole, or a complete McKay inner sole, composed of non-interwoven fibers artificially bonded by the process of assembling the fibers, and additionally bonded and stiffened by a suitable composition. Fig. 2 represents a transverse section showing the sole channeled to form a marginal feather and lip, the latter being bent from one side of the sole, the entire body of the inner sole being impregnated with a bonding and stiffening material or composition. Fig. 3 represents a view similar to Fig. 2, showing only the marginal portion of the sole treated with a bonding and stiffening material or composition. Figs. 4, 5 and 6 represent sectional views showing means for reinforcing the felt body. Fig. 7 represents a sectional view of a McKay inner sole.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention when felt is used as the material, I form from a sheet of ordinary felt, a sole-shaped body *a*. When the body *a* is used for the inner sole of a welt shoe, its margin is channeled to form a lip 2 and a feather 3, the lip being adapted to receive the usual in-seam stitches that connect the inner sole with the upper and welt. When the body *a* is intended for use as the inner sole of a McKay sewed shoe, it is not necessarily channeled, the stitches lying on one side of the sole.

The felted fibers forming the stitch-engaging portions of the body *a* are, in accordance with my invention, treated with a bonding and stiffening material which impregnates the said portions, and is of such nature that

when dried it will stiffen the portions to which it is applied. A suitable material for

5 this purpose is a solution of shellac or other suitable gum, although any other suitable bonding and stiffening material may be employed. The additional bond of union thus afforded between the fibers of the portion of the sole which engage the stitches, strengthens the said portion, and enables it to more effectively support the stitches, and prevent them from pulling through the material of the body *a*. Another advantage resulting from the described treatment, is the stiffening of the material so that the lip 2 when bent from the side of the sole will retain the shape imparted to it, the lip being bent while the bonding material is in a soft condition or before it is hardened by drying.

10 In Figs. 4, 5 and 6 I show reinforcing members applied to the sole, Figs. 4 and 5 showing a reinforcing member composed of a layer 6 of canvas or other suitable material covering one side of the sole and feather, and covering both sides of the lip 2. In Fig. 5 I show in addition to the layer 6 a reinforcing cord or strip 7 applied to the inner side of the lip 2, and covered by the layer 6. In Fig. 6 I show a reinforcing layer 8 applied to the outer side of the body *a*. The bonding and stiffening material employed may permeate the entire body *a*. In Figs. 2, 4, 5, and 6 the heavy section lines are intended to represent the extent to which the said material penetrates the felt body. In Figs. 3 and 7 the heavy section lines at the marginal portions of the body *a* are intended to represent the extent of penetration of the bonding and stiffening material, the lighter section lines indicating the central region of the body *a* which is not stiffened, this region being left with its fibers bonded only by the original felting operation so that it possesses substantially the inherent elasticity of the felt, and constitutes a cushion for the foot. The said central region may however be partially stiffened sufficiently to enable it to withstand, without yielding or buckling, the pressure imparted by a sole leveling machine, without being deprived of all its inherent elasticity.

50 When the entire body *a* is permeated by the bonding and stiffening material, the stiffness thus imparted to it not only enables the body to withstand, without yielding or buckling, the pressure imparted by a sole-leveling machine, but also enables it to be channeled when the bonding material is dry and hard, and further enables the surfaces of the body to be scoured by a sand paper roll, and thus buffed or finished to resemble leather, the body being colored, if desired, in imitation of leather.

60 When a welt inner sole constructed in accordance with my invention is channeled while the bonding material is dry and hard, the lip may be softened by a solvent of the

bonding material before it is bent, the lip being bent while in a limp condition, and caused to retain its bent form by the subsequent hardening of the bonding material.

I find that felt treated as described is an effective substitute for leather for inner soles, and is much less expensive. I am, therefore, enabled to furnish a durable and desirable inner sole at a cost considerably less than that of an inner sole composed wholly or in part of leather.

My invention may be embodied in a sole made from a thick sheet of paper the fibers of which are assembled as in blotting and other kinds of paper, the sheet being of suitable thickness for an entire sole, or for the body portion of a reinforced sole. The bonding and stiffening material permeating the stitch-engaging portions of the sole or the entire body of the sole has the same effect as in a felt sole.

The fibrous sheet material employed by me, whether the same be felt or paper, is composed of a fibrous sheet, the fibers of which are not interwoven, and are artificially bonded or united by the ordinary felting process, when felt is employed, and by the ordinary paper-making process, when paper is employed. It is thus distinguished from leather, the fibers of which are naturally united, and from textile fabric, the fibers of which are interwoven. The said fibrous sheet material is much cheaper than leather and textile fabric, and when stiffened as described has the advantage over textile fabric of being adapted to be channeled, buffed and otherwise treated in the same way that leather is treated in the manufacture of soles. It provides a very acceptable substitute for leather in the manufacture of inner soles.

The stiffening material employed is preferably waterproof, that is to say, it is not soluble in water at a relatively low temperature, such as that of water on pavements, highways, etc. resulting from rain, or from melting snow. The effectiveness of the stiffening material as a means of supporting the stitches and preventing them from pulling through the material of the body *a* is not therefore liable to be decreased by water which is ordinarily encountered by a boot or shoe. Shellac, the stiffening material above specified, has this water proof quality, although, as hereinbefore stated, any other suitable bonding and stiffening material may be employed. When the invention is embodied in a channeled sole, the lip formed by the channel may be softened by any suitable solvent of the water proof bonding and stiffening material, such as alcohol.

By the term inner sole as used in the claims I mean to designate either an inner sole composed entirely of fibrous material, as shown in Figs. 2, 3 and 7, or a sole-shaped

body made of fibrous material, and reinforced as shown in Figs. 4, 5 and 6.

I claim:

5 A sole composed of a sheet of fibrous material treated with a water-proof bonding and stiffening material and channeled and having an upwardly bent permanently stiffened lip.

In testimony whereof I have affixed my signature, in presence of two witnesses.

OSCAR C. DAVIS.

Witnesses:

C. F. BROWN,
E. BATCHELDER.