

(No Model.)

G. W. WILLEY.
MANUFACTURE OF BOOTS OR SHOES.

No. 436,551.

Patented Sept. 16, 1890.

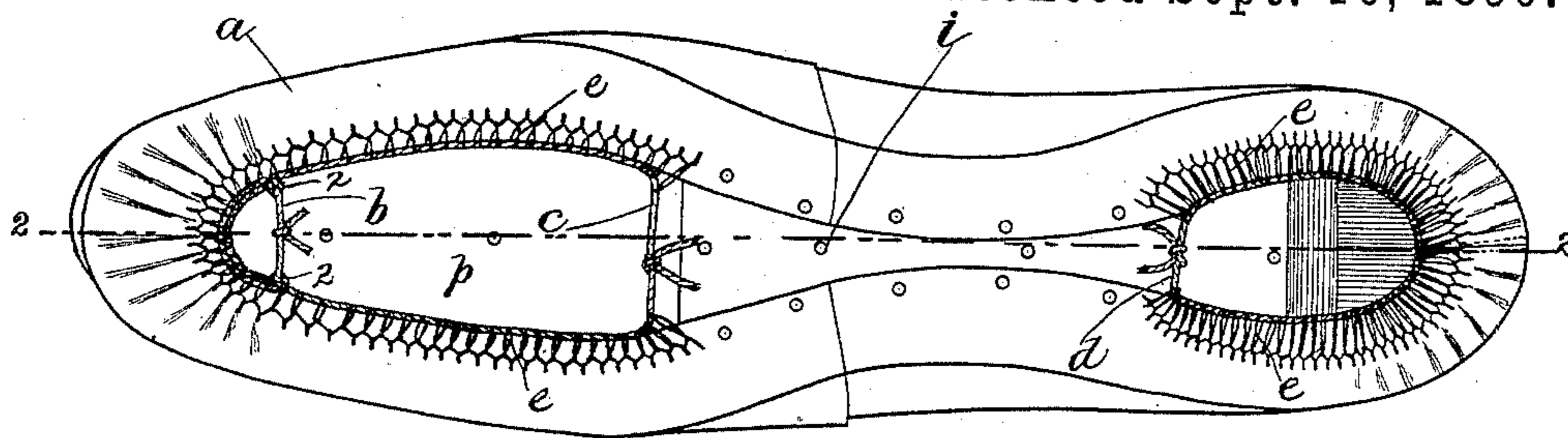


Fig. 1.

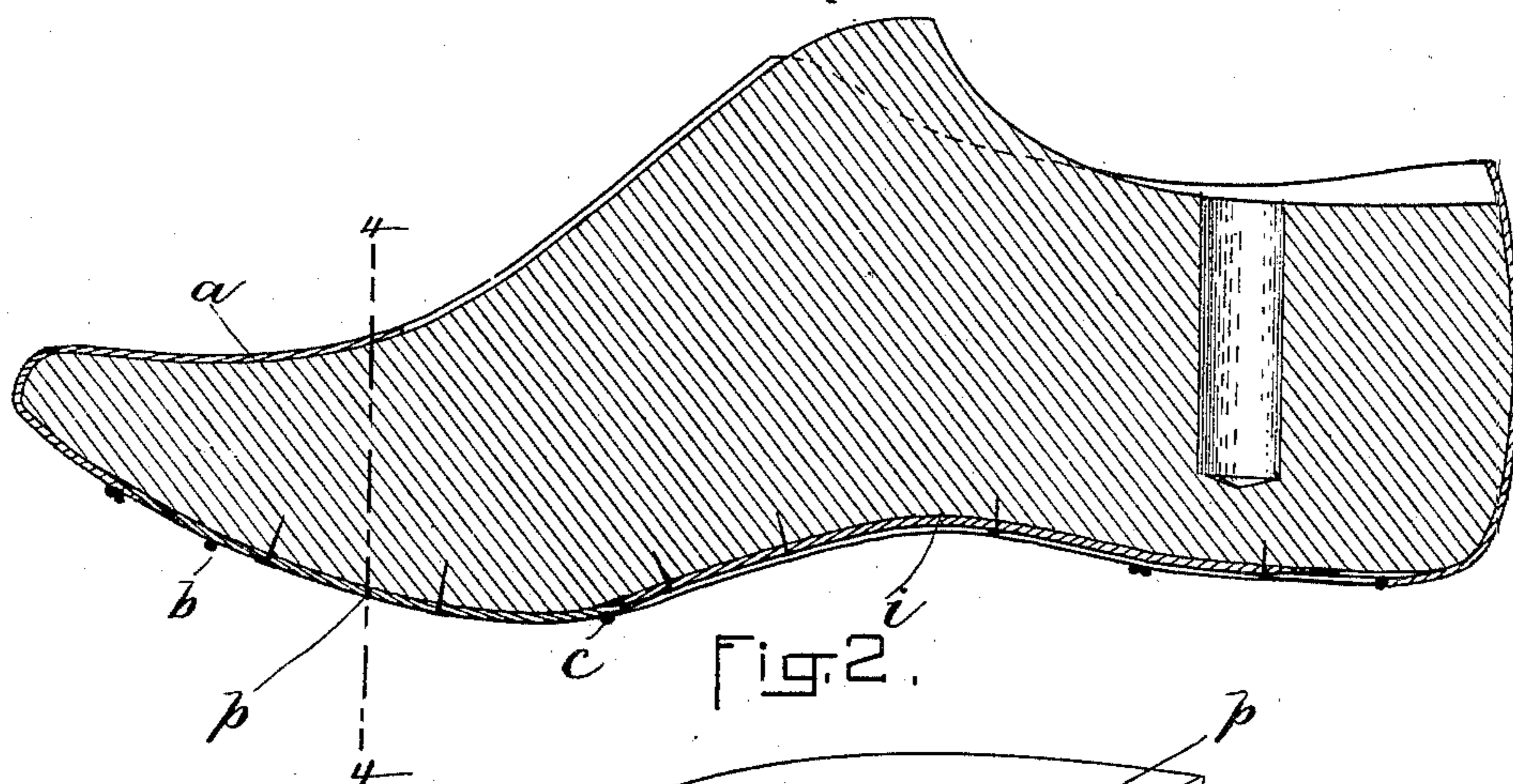


Fig. 2.

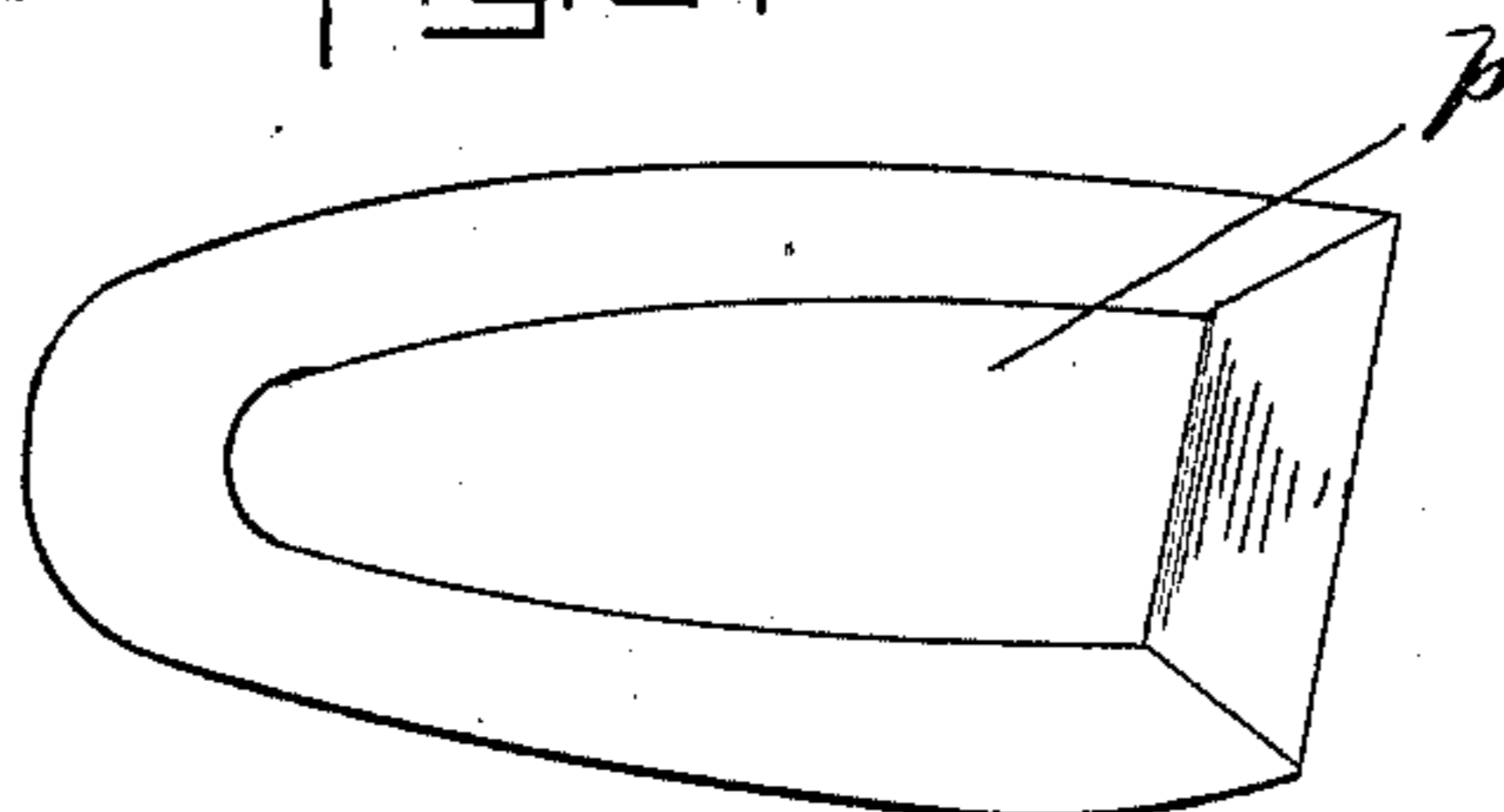


Fig. 3.

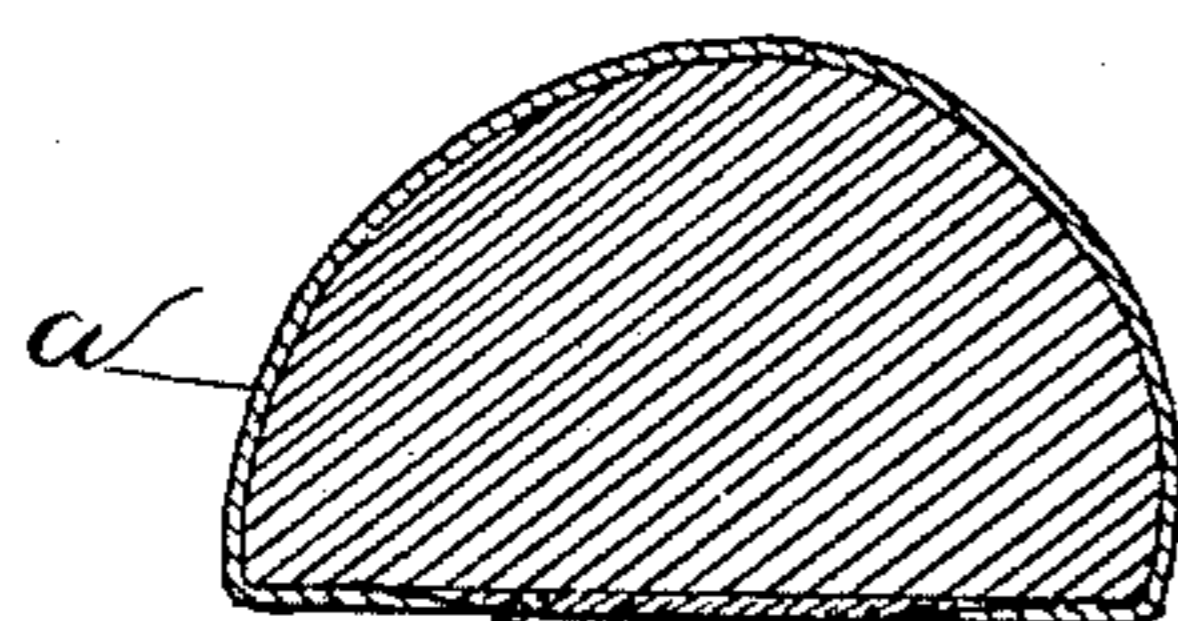


Fig. 4.

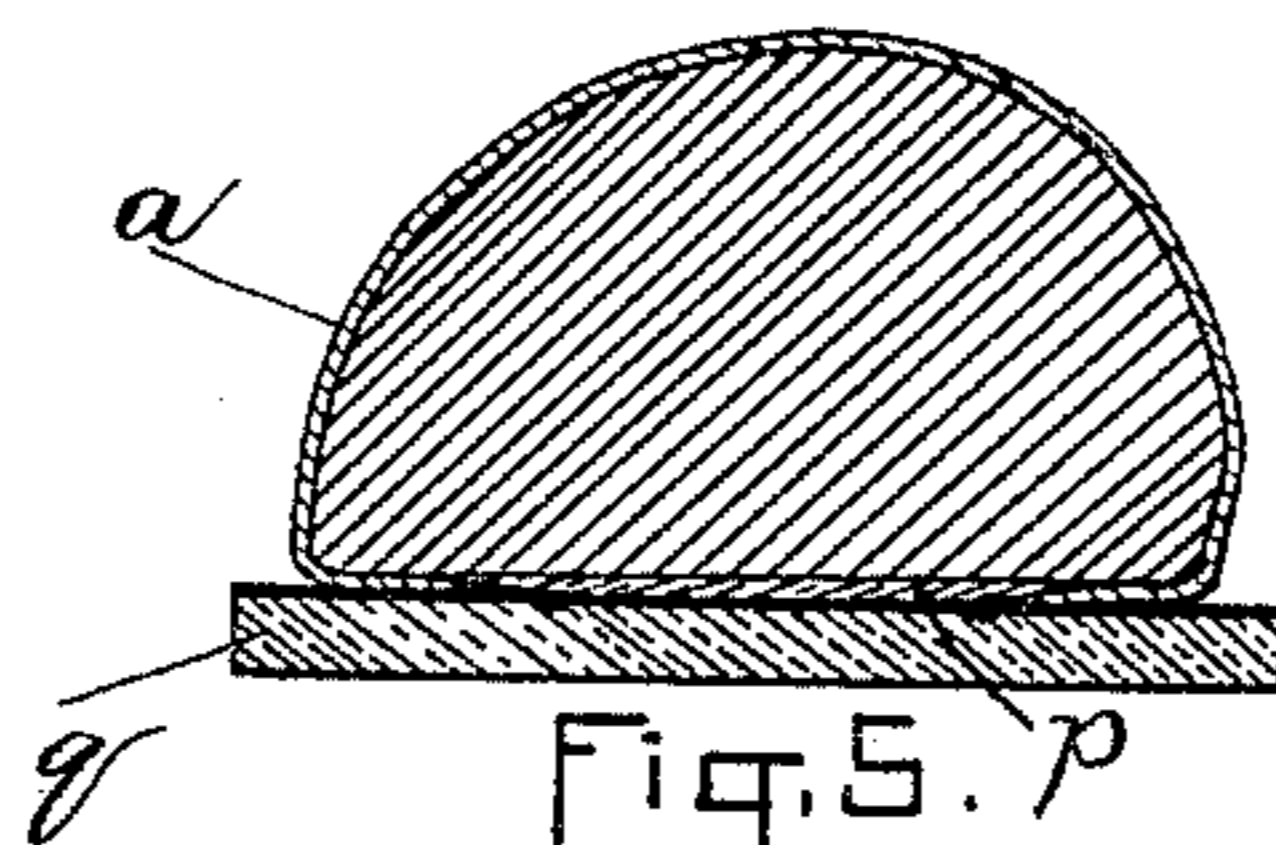


Fig. 5.

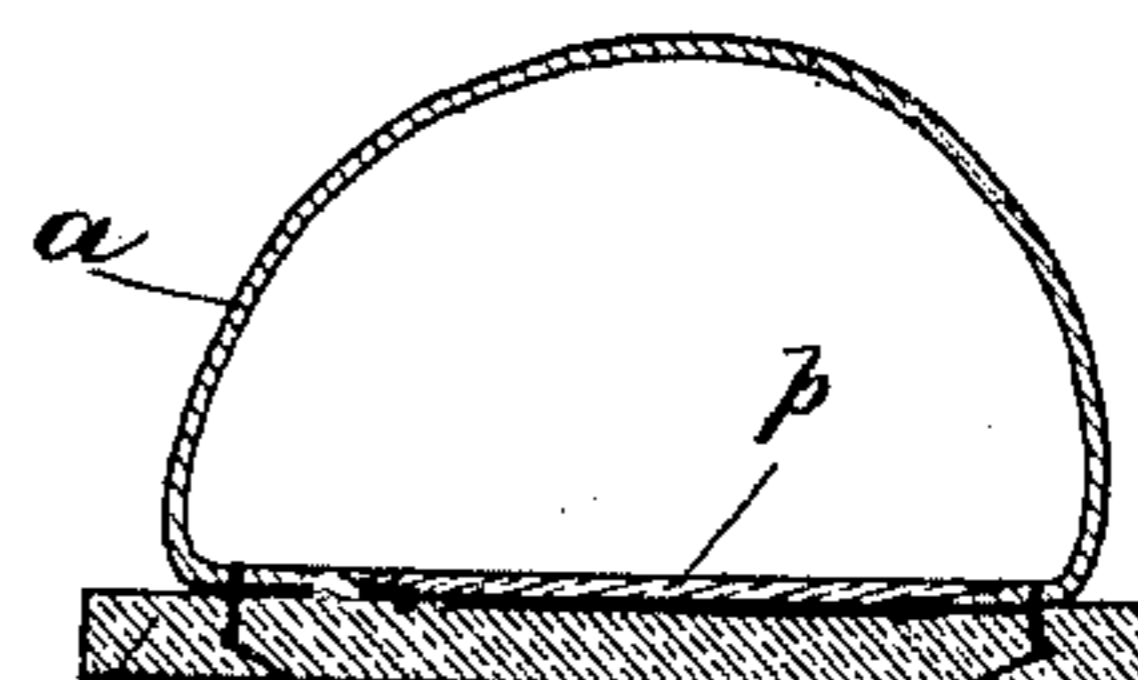


Fig. 6.

WITNESSES:

A. D. Harrison.

Ewing W. Hawley.

INVENTOR:

G. W. Willey

Wm. B. Brown & Co.
Atty.

UNITED STATES PATENT OFFICE.

GEORGE W. WILLEY, OF ATHOL, MASSACHUSETTS.

MANUFACTURE OF BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 436,551, dated September 16, 1890.

Application filed March 10, 1890. Serial No. 343,269. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WILLEY, of Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Boots or Shoes and the Method of Making the Same, of which the following is a specification.

This invention relates to boots or shoes which are lasted without an inner sole, for the sake of flexibility; and it has for its object to enable the lasted upper to be securely held in the shape imparted to it by the lasting operation after it is removed from the last, and without the aid of an inner sole; also, to provide a durable boot or shoe made without an inner sole, and therefore easy and flexible to the foot, in which the inner surface of the bottom of the shoe shall be smooth and free from depressions or protuberances, which would be likely to cause discomfort to the foot of the wearer.

My invention consists, first, in an improved method of making boots and shoes, the same comprising the following steps, viz: first, temporarily securing a shank-piece and a front filling-piece, which I call a "lining-holder," to the bottom of a last; then lasting the upper without an inner sole upon said last, and securing the shank portions of the upper to the shank-piece, the said lining-holder constituting a continuation of the shank-piece and filling the vacancy or recess which would otherwise exist between the edges of the upper at the fore part of the boot or shoe; then temporarily securing the outer sole to the bottom of the upper and to the lining-holder by cement, the outer sole being thus caused to hold the upper in shape after it is removed from the last, and, finally, permanently attaching the outer sole to the upper and shank-piece by stitching or by metallic fastenings, or by any other suitable means, said method enabling a good and serviceable boot or shoe to be made without the use of an inner sole, the inner surface of the bottom of the boot or shoe requiring only a cemented lining or thin inner sole to adapt the boot or shoe for use.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a bottom view of a boot or shoe upper applied to a last and having the shank-piece and the

lining-holder above referred to, said figure showing the condition of the upper at the close of the lasting operation before the application of the outer sole. Fig. 2 represents a section on line 2 2, Fig. 1. Fig. 3 represents a view of the lining-holder detached. Fig. 4 represents a section on line 4 4, Fig. 2. Fig. 5 represents a similar section showing the outer sole in place. Fig. 6 represents a transverse section of the completed boot or shoe removed from the last, the outer sole being permanently attached.

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

In carrying out my invention I temporarily attach to the bottom of the last, by means of small tacks, a shank-piece *i*, which extends from the heel portion forward along the shank to the ball portion, and a front lining-holder *p*, which constitutes a continuation of the shank-piece, and is arranged to fill the space or recess that would otherwise exist between the edges of the fore part of the upper after the same has been applied to the last. Said lining-holder is beveled or skived at its edges, said edges extending outwardly, so that they are covered by the edges of the upper when the latter are drawn over upon the bottom of the last. Hence when the upper and lining-holder are removed from the last the skived edges of the lining-holder cover the edges of the upper and its lining and hold the lining so that its edges cannot be displaced by contact with the horn of the sewing-machine, which subsequently unites the outer sole to the upper, as hereinafter described.

The lining-holder *p* is used for three purposes, viz: first, to cover and hold the edges of the lining of the upper, as above stated; secondly, to fill the depression or recess surrounded by the edges of the fore part of the upper, and, thirdly, to constitute an extension of the shank-piece, and constitute with the latter a smooth surface extending continuously from the heel to the toe and conforming accurately to the contour of the bottom of the last, said accurate conformation being due to the fact that the shank-piece and lining-holder are secured to the bottom of the last and remain secured thereto during the lasting operation and the subsequent tempo-

rary attachment of the outer sole by cement, hereinafter referred to. I then last the upper *a* in any suitable manner, preferably by the following method, which is described and claimed in another application already filed by me.

The upper *a* is prepared for lasting by applying the two cords *b c* to the fore part and the single cord *d* to the heel-seat portion. Said cords are passed through a series of loops *e*, formed on the upper by means of a sewing-machine known as the "Union Special," said machine making the loop portions entirely on the outer side of the upper, leaving on the inner side only single threads having no appreciable bulk. The cords *b c* in the fore part are of different lengths, the cord *b*, which extends along the toe portion, being shorter than the cord *c*, which extends from the toe portion backwardly along the edges of the upper to the rear portion of the fore part. The cord *b* is engaged with the cord *c* at 22 by means of half-hitches or knots, which prevent the cord *c* from slipping or moving endwise when the cord is tied. The upper, having the cords *b c d*, is applied to the last as usual. The operator then draws the upper over the toe of the last with pinchers, drawing the edge of the upper backwardly from the toe, and after the desired tension is exerted drives a temporary lasting-tack through the center of the toe to hold it in place. He then draws the toe portion of the upper inwardly at points at each side of the center and secures said portions by two temporary tacks, one at each side of the central tack. I prefer then to last the shank portions of the upper by drawing the edges inwardly over the shank-piece *i* and securing said edges to the shank-piece by tacks. After this the heel-seat portion may be lasted by drawing in and tying together the ends of the lasting-cord *d* at the heel portion, thus exerting a uniform inward pull on all parts of the heel-seat edge of the upper toward the center of the heel, the operator at the same time using his hammer to mold the heel-seat. The upper is now firmly secured to the last so that the operator is enabled to manipulate the last at his pleasure in completing the lasting of the fore part, in which operation more care and skill are required than in any other portions of the upper. In said operation the workman proceeds as follows: The toe lasting cord *b* is first engaged with the longer lasting-cord *c* by taking a half-hitch of the latter around the former at two points 22, near the free ends of the toe-cord. The toe-tacks are then removed, and the toe-cord *b* is then pulled taut and is caused to exert a uniform inward pull on portions of the toe of the upper, thus conforming all parts of the toe of the upper closely to the toe of the last, and causing said portions to smoothly fit all parts of the toe of the last, including the bottom, this condition being maintained by tying together the ends of the toe-cord across the bottom of the last, as shown in Fig. 1, the

inwardly-turned edge of the upper held by the toe-cord being preferably flattened down by hammering it against the bottom of the last before the ends of the cord are tied. The lasting of the toe portion is now completed, and the operator next proceeds to draw the edges of the side portions of the upper inwardly over the bottom of the last by the use of pinchers. After said edges are suitably drawn the operator grasps the longer cord *c* and pulls rearwardly on the ends thereof away from the points where said cord is engaged with the toe-cord and laterally or crosswise of the boot or shoe, first toward one side and then toward the opposite side, thus drawing first one side edge and then the other inwardly upon the bottom of the last. The operator hammers each edge down upon the bottom of the last after drawing it to place, thus molding said edges, and, finally, after the said edges are suitably drawn, molded, and conformed, he ties the ends of the said main cord together at the rear portion of the fore part, the cord being thus caused to hold the side edges of the upper in the position to which they are drawn by the operator's pinchers. This completes the lasting operation, after which I remove the tacks that secure the shank-piece and lining-holder to the last.

I do not wish to be understood as limiting myself in all cases to the method of lasting above described, but prefer the same to any other method of which I am aware.

I next take the outer sole *g* and apply the same by means of suitable gutta-percha or other cement to the bottom surfaces of the inwardly-turned edges of the upper and to the lining-holder, and also to such portions of the shank-piece as may naturally come in contact with the outer sole. A steel shank-spring interposed between the outer sole and the shank-piece will, however, prevent extended contact of the shank-piece with the cemented surface of the outer side. After the cement has suitably set or hardened the upper may be removed from the last, and is securely held in shape by its temporary union with the outer sole. The outer sole may now be stitched or otherwise permanently secured to the upper and shank-piece by any suitable means, as shown in Fig. 6. I prefer to stitch the outer sole to the upper by stitches extending through and through the outer sole to the upper. The boot or shoe is now ready for the wearer; but to give its foot-supporting surface a finished appearance it is preferable to cover it with a light lining or false inner sole, which may be secured by cement or other suitable means.

It will be seen that by thus making the boot or shoe by lasting the upper directly upon the last without an inner sole and by stitching the outer sole through and through to the upper I obtain a boot or shoe which is light and flexible, while by the use of the shank-piece and lining-holder I provide a smooth and comfortable foot-supporting sur-

face. It will be seen that the cement that secures the outer side to the lining-holder retains the latter in place in the completed boot or shoe, so that the said lining-holder is not liable to be displaced.

I claim—

The improved method of making a boot or shoe without an inner sole, the same consisting in temporarily attaching to the bottom of the fore part of the last a lining-holder having skived or beveled edges, and to the shank and rear portion of the last a shank-piece, lasting the upper upon said shank-piece and lining-holder, and during the lasting operation permanently attaching the upper to the shank-piece by tacks or other permanent fastenings, the edge of the fore part of the upper bearing upon the skived margin of the lining-holder and being protected thereby during the subsequent operation of attaching the outer sole to the upper, cementing an

outer sole to the inwardly-turned edges of the upper and to the under surface of the lining-holder, and thus causing the outer sole to hold the upper and lining-holder in place when removed from the last, and then removing the boot or shoe from the last and permanently attaching the outer sole to the upper outside the lining-holder and through the shank-piece, the beveled edges of the lining-holder covering the edges of the fore part of the upper and its lining and preventing the displacement of the said lining when the outer sole is being attached, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 1st day of March, A. D. 1890.

GEORGE W. WILLEY.

Witnesses:

JOHN A. PAGE,

FRANCIS H. PEARL.