(Model.)

C. L. HIGGINS.

DEVICE FOR EXPANDING THE UPPERS OF BOOTS AND SHOES.

No. 291,188. Patented Jan. 1, 1884.

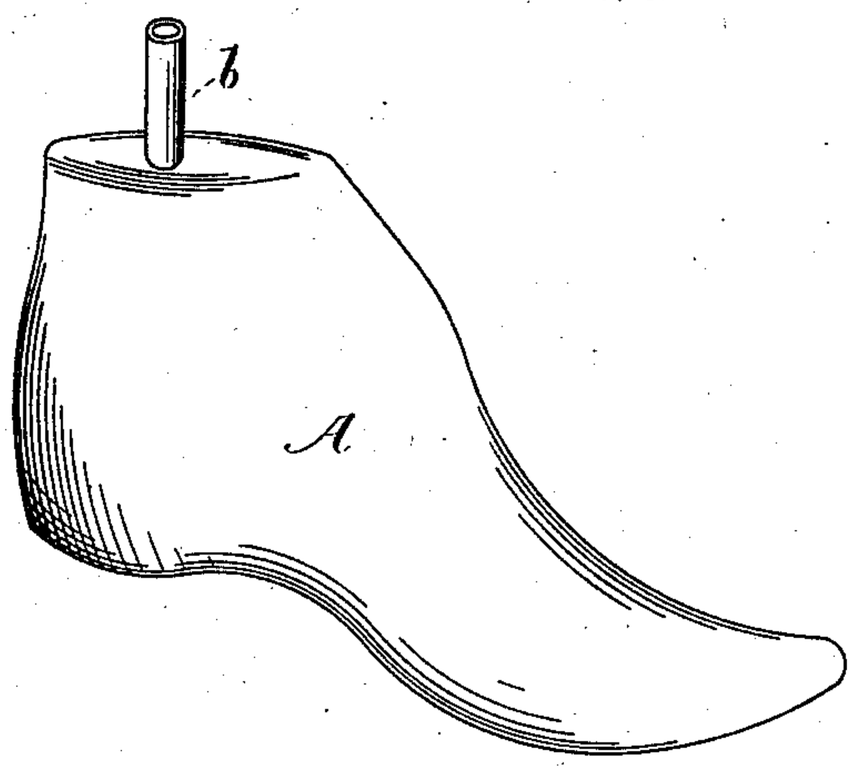

Fig. 1.

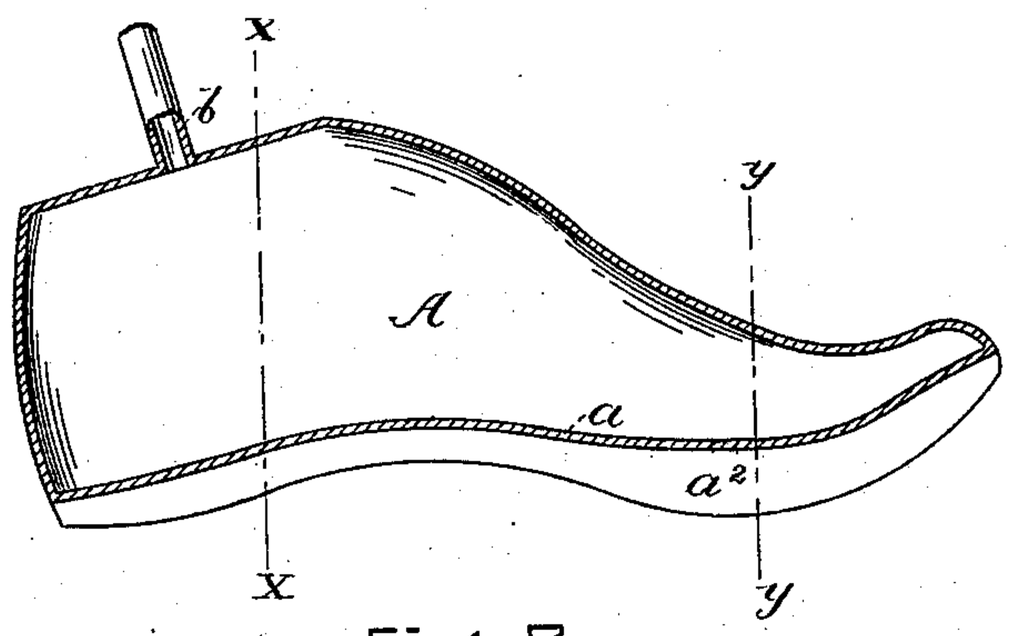

Fig. 2.

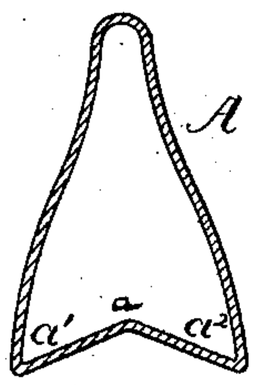

Fig. 3.

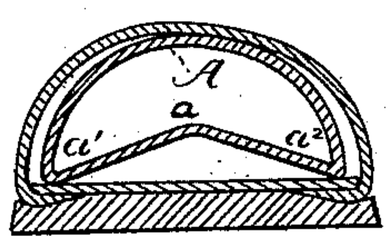

Fig. 4.

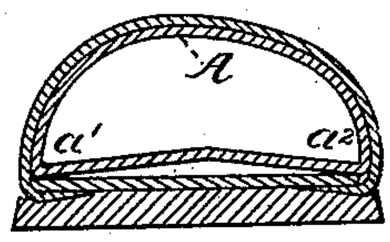

Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES L. HIGGINS, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO JOHN E. WHEELER, TRUSTEE, OF LYNN, MASSACHUSETTS.

DEVICE FOR EXPANDING THE UPPERS OF BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 291,188, dated January 1, 1884.

Application filed October 22, 1883. (Model.)

To all whom it may concern:

Be it known that I, CHARLES L. HIGGINS, of Montreal, in the Province of Quebec, Canada, a subject of Victoria, Queen of Great Britain, &c., have invented a new and useful Improvement in Devices for Expanding the Uppers of Boots and Shoes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

Figure 1 is a perspective view of my improvement. Fig. 2 is a vertical longitudinal section. Fig. 3 is a cross-section upon the line X X of Fig. 2. Fig. 4 is a cross-section of the form upon the line Y Y of Fig. 2, and also showing a shoe in cross-section and the relation of the form thereto before it is expanded. Fig. 5 shows in cross-section a shoe and the form expanded therein.

This invention consists in an inflatable form or device, of flexible and, preferably, elastic material, adapted to be inserted into a boot or shoe, and to be expanded or inflated therein, and thereby give shape and form to the upper-leather surrounding it. This form or device has its lower surface made like an inverted V—that is, instead of being straight across, it is extended upward well into the center of the form, and this upward extension of the bottom divides the form into two side portions, which, upon the inflation of the form, are moved outward from each other, because the fold in or extension of the bottom provides for the extension of the form in a lateral direction at a less amount of pressure than is required for distending the material of the form, or for even fully expanding it. This outward movement of these two side portions, as the form is expanded, continues until they come in contact with the sides of the article to which they give form, and thus provide not only means whereby one form is made adjustable to several sizes, but also a feature which is very essential for causing uppers to assume their proper shape.

In a pending application I have described an inflatable device or form for this purpose having a straight bottom, and I have found that, upon inflating it within a boot or shoe, as it expands its tendency is to lift the central portion of the upper from the toe to the instep from the sole and somewhat draw in the side portions of the upper, and that it does not accurately reproduce the shape of the last for which the upper was cut and upon which it was fitted, nor the shape of the foot. This result occurs because the device, upon expansion, takes very nearly a cylindrical form, and, bearing against the sole along the center of its width, presses upwardly therefrom against the median line of the upper from the toe to the instep, while the side portions of the upper along the edge of the sole are not acted upon or filled out.

Referring to the drawings, A represents the flexible form. It may be made of rubber, in which event it will be elastic; or it may be made of any other flexible air-tight material. I prefer, however, that the form be made of rubber, because it is not only flexible and air-tight, but also elastic, and can be cheaply made to any desired form or shape. The under surface of the form, extended upward, as represented at *a* in Figs. 2, 3, 4, and 5, forms the side portion, $a' a^2$; and the object of this construction is twofold: first, to cause the form, when inflated, to properly expand the upper of the boot or shoe by bearing against the side portions thereof with substantially the same or more force than it bears against the top, so that the upper shall be forced to take the form of the last upon which it was made; and, second, to provide means of adjustment whereby one form can be used for several sizes of shoe. It has a tube, *b*, by which the air for inflation is introduced, and this tube may have a cock or clamping device of any kind for stopping the passage therein. By making the form in this manner its sides can be folded together into small compass, and it can also be more easily inserted in place. Upon the beginning of the inflation the side parts of the form are moved outwardly against the sides of the upper, and the first pressure that is exerted upon the sides of the upper is along these lines, and from them the pressure extends upwardly as the form is gradually inflated or filled

to the top. Consequently the sides of the upper are distended uniformly with the top, and the upper takes the form of the last on which it was made.

While I have represented a construction of form adapted to be used in connection with the uppers of boots and shoes, I would state that its principle may be applied to any other inflatable form where it is desired to obtain a perfect fitting of the form to the article that surrounds it.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

A device for giving form or shape to a boot or shoe upper or other flexible hollow article, having the general shape of the interior of such article, capable of inflation, and provided with an inward-extending fold, *a*, all substantially as and for the purpose described.

CHARLES L. HIGGINS.

Witnesses:
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