(No Model.)

E. S. SMITH.

LAST.

No. 411,622. Patented Sept. 24, 1889.

Fig. 1

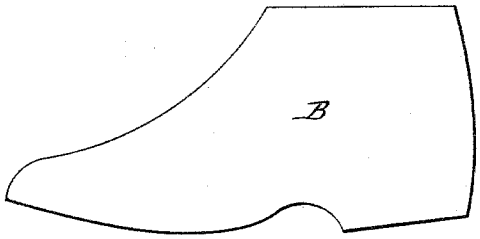


Fig. 3

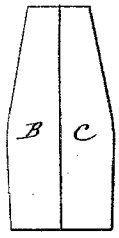


Fig. 2

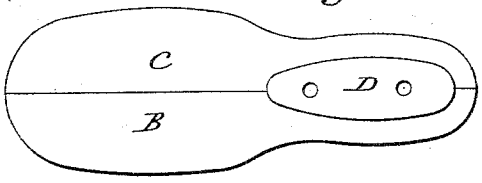


Fig. 4

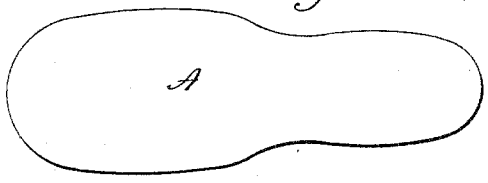


Fig. 7

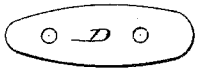


Fig. 8

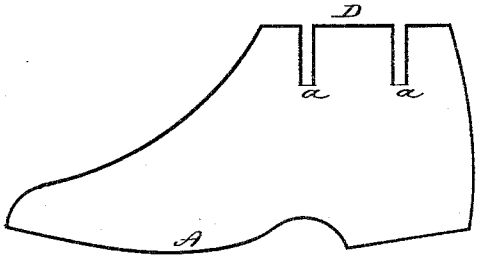


Fig. 5

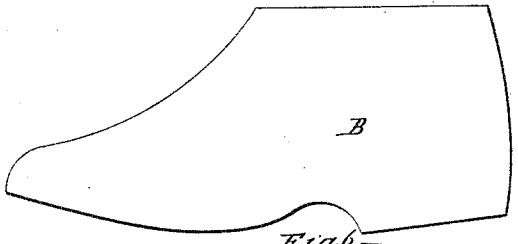
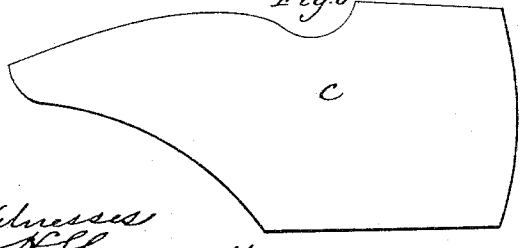


Fig. 6



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UNITED STATES PATENT OFFICE.

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LAST.

SPECIFICATION forming part of Letters Patent No. 411,622, dated September 24, 1889.

Application filed December 17, 1888. Serial No. 293,378. (No model.)

To all whom it may concern:

Be it known that I, EDWARD SPENCER SMITH, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new Improvement in Lasts; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the last complete; Fig. 2, a top view; Fig. 3, a rear view; Fig. 4, the blank for the sole; Fig. 5, the blank for one half the last above the sole; Fig. 6, the blank for the other half of the last above the sole; Fig. 7, the blank for the top; Fig. 8, a longitudinal central section of the last.

This invention relates to an improvement in lasts specially adapted for the manufacture of india-rubber overshoes.

In the usual manufacture of overshoes as now practiced the lasts are made from solid wood turned to the required shape. No matter what treatment the wood or the lasts are subjected to prior to their use in the manufacture of overshoes, the great heat necessary in vulcanizing the shoe causes the last to shrink more or less, so as to produce a varying size, and in shrinking while the shoe is on, the shoe loosens on the last, producing defects which render it unsalable as a first-class shoe, and this shrinkage will occur through several vulcanizing operations. The constant heat which is applied to the lasts destroys the life of the wood, so that it soon crumbles and the last becomes useless. The expense of these lasts is very great and adds much to the cost of manufacture of shoes. The use of cast-metal lasts, as iron, has been attempted; but they are so heavy as to be impracticable and retain the heat when removed from the oven a very considerable length of time more than the wood lasts. Again, the cost of manufacturing a cast-metal last is unavoidably very much greater than that of wood lasts.

The object of my invention is to produce a metal last which shall be strong, very light, and produced at a cost very little, if any, greater than wood lasts, and upon which the heat will have no effect, so that the last will preserve its size and shape and be practically indestructible from ordinary use; and the invention consists in making the last from sheet metal, the metal being cut in parts, shaped, and the several parts permanently secured together by brazing or welding, so that the last becomes practically a hollow sheet-metal last as if made from a single piece.

The metal which I use is preferably sheet-steel, because it may be used very thin and yet be strong, and in the best construction the sole A, Fig. 4, is cut in one piece and swaged by dies into the requisite shape. The upper part is best cut in two pieces B C, (see Figs. 5 and 6,) which correspond in outline to the surface of the last divided on the instep-line from toe to ankle, and at the rear vertically on the heel-line. These two parts are struck in oppositely-shaped dies into the shape corresponding each to one-half the last. This brings the lower edge of the two parts to correspond to the outline of the sole part A, and the edges of the parts meet on the instep-line and on the heel-line. These parts are set together, forming butt-joints, and the joints preferably welded by the well-known process of welding by electricity. They may, however, be brazed. Preferably the top is formed by a separate piece D, Fig. 7, which corresponds to the opening which would naturally occur into the last between the parts B C. This piece is introduced and, fitting closely the surrounding edges, is welded or brazed thereto, as I have described, and this piece D may be pierced, as represented, for the convenience of hanging or handling the last with or without the shoe upon it.

The surface of the last will be very smooth and may be polished or burnished to a very high degree.

The last properly made, from practical experience, may be lighter than a solid-wood last, and, because it is very thin, it does not retain the heat as a solid-wood or cast-metal last.

The shoe is formed upon the last and subsequently treated to vulcanization in the same manner as where wood lasts are employed, and always with the assurance that the last

will come from the oven in precisely the same shape and condition in which it enters.

The lasts thus constructed are much more durable than wood lasts, and under the process of welding by electricity are capable of being produced at no greater cost than wood lasts.

In the burnishing or finishing operation of the last the apparatus known as "The Blanchard Lathe System" may be employed; but as the metal is thin and brought to a positive shape there are no irregularities worthy of consideration to be removed, nothing more than occurs in the formation of the joints.

As the piece D which closes the top of the last must necessarily be pierced, as before described, and as the thin metal would present only the thin edge around the holes, which for lack of strength might be liable to break or injury, I prefer to bush the holes, as seen in Fig. 8, by the introduction of metal tubes or thimbles *a* firmly secured, and which serve to give an extended bearing for those openings. These tubes may be formed integral with the plate D or attached thereto.

While I have described what I believe to be the best division of the parts in the formation of the last, it will be evident that the cut of the parts may be varied to a very considerable extent without departing from the spirit of my invention.

I claim—

A last constructed from several pieces of sheet metal formed into the required shape and so that the edges correspond to the edges of the adjacent parts, and the said parts united by butt-joints or seams welded or brazed together to form a complete sheet-metal last, substantially as described.

EDWARD SPENCER SMITH.

Witnesses:
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