May 7, 1940. D. E. LEVIN ET AL 2,200,068

SHOE CONSTRUCTION

Filed March 14, 1939 2 Sheets-Sheet 1

Fig. 1.

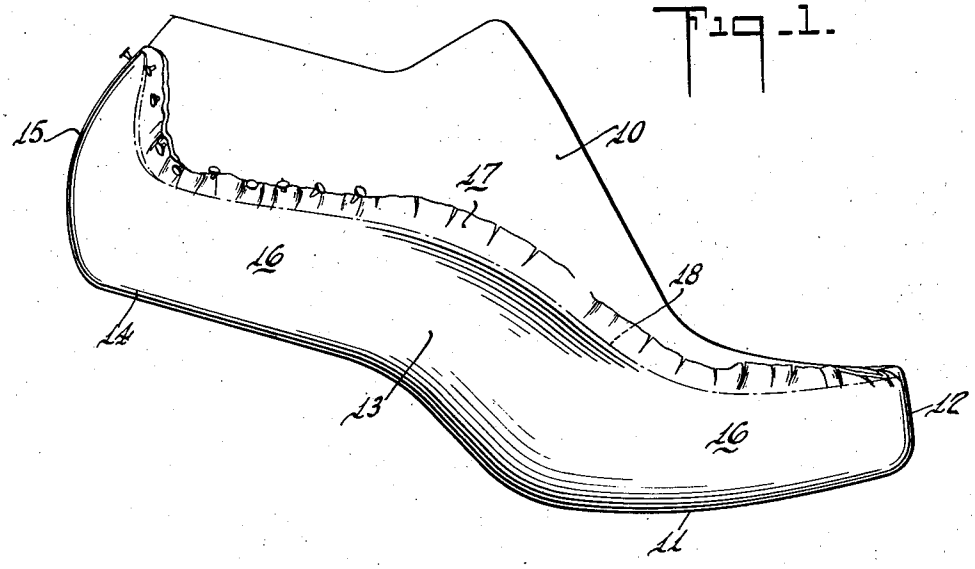
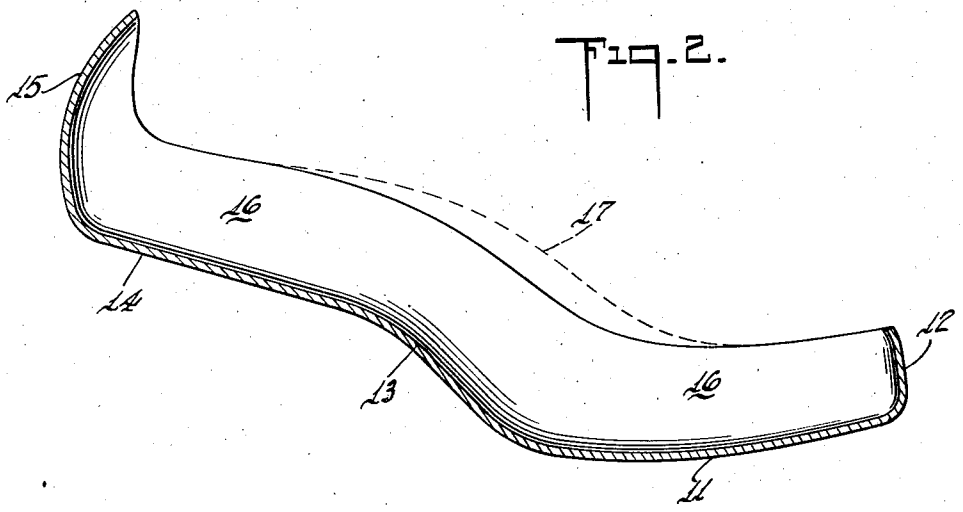


Fig. 2.



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Filed March 14, 1939 2 Sheets-Sheet 2

Fig. 3.

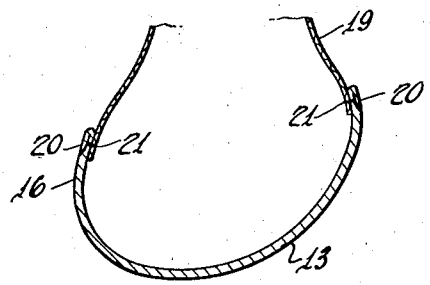


Fig. 4.

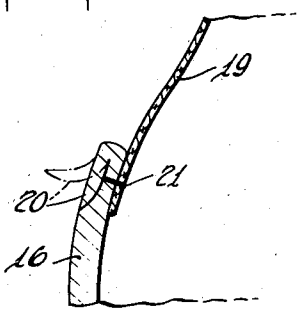
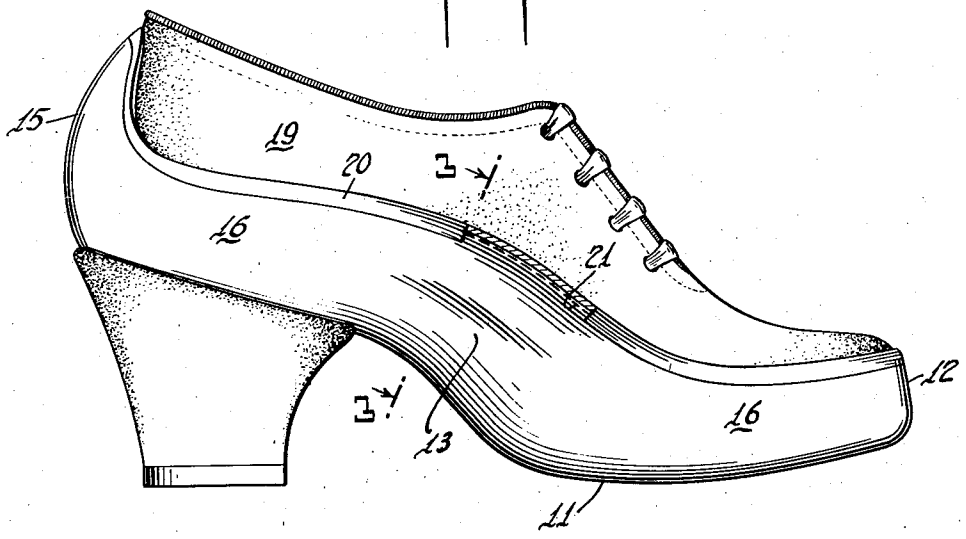


Fig. 5.



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SHOE CONSTRUCTION

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Application March 14, 1939, Serial No. 261,708

5 Claims. (Cl. 36—11)

This invention is for a shoe construction and has for its main object to provide a shoe in which the sole, the toe box, the counter, an arch support, a heel seat, and part of the upper are all formed in one piece. This one piece is molded from sole leather which is properly prepared for molding, and may be molded in any suitable manner either by hand or machine.

Another object of this invention is to provide a one piece sole and part of the upper of a shoe in which a complete substantially rigid arch support is formed as part of the one piece sole without the addition of any other piece to complete the brace for the arch support. The arch support firmly grips the whole arch and does not allow lateral spreading of the foot at the arch.

A further object of this invention is to provide a simple two piece shoe construction, namely an upper and a lower portion, the lower portion being so formed that it completely eliminates the necessity for an inner sole, a toe stiffener, a counter stiffener, welting and bottom filling material, yet all of these supports are embodied in the one-piece molded lower portion of this invention.

Another object of this invention is to provide an absolutely seamless bottom part for the shoe construction of this invention. This is accomplished by the fact that the whole sole and part of the upper including the toe box, the arch support, the heel seat, and the counter are molded in one piece. The upper is joined to this one piece lower portion in any suitable manner as by sewing, cementing, nailing, stapling or lacing.

This invention further provides a strong toe portion because the sole is extended upwardly to form the toe box which, being formed of sole leather, is hard and wear resistant.

Because of the one piece molded lower portion, this invention provides a shoe that is completely damp proof. If the leather is properly oil treated it becomes thoroughly water proof.

Another object of this invention is to provide a formed and set sole that is flexible across the ball of the foot in all directions and yet it does not lose its set shape when worn.

The finished shoe of this invention fits snugly on the foot and appears small to the eye because of the absence of the usual sole extension. The joint between the lower and upper does not interfere with the motion of the foot because the lower is joined to the upper high up on the shoe. It is therefore very comfortable to the wearer. Because there are fewer parts and fewer operations in its construction, the shoe of this invention is less costly to construct. A tough wear resisting shoe is formed because the sole and part of the upper is formed of strong sole leather and in one piece.

By the term "sole leather" as used throughout the specification and claims, it is meant any thick leather of the type usually used for soles.

The above and further objects and advantages of this invention will become apparent as the description thereof proceeds, reference being had to the accompanying drawings wherein:

Figure 1 is a side elevation showing the molded shoe portion of my invention on the last before trimming of the crinkled edges;

Fig. 2 is a longitudinal section through Figure 1 showing the molded lower of my invention trimmed and removed from the last;

Fig. 3 is a sectional view of the finished shoe taken on the line 3—3 of Fig. 5 to illustrate clearly the full and snug arch support provided by the molded lower of this invention;

Fig. 4 is an enlarged sectional view of the joint between the upper and the lower illustrating a lip channel form of stitching; and

Fig. 5 is a side elevation of the finished shoe of this invention.

The drawings illustrate by way of example one method of making the shoe according to this invention, namely, by hand. It is to be distinctly understood that we do not wish to be limited to this method for molding the lower of the shoe. The molding may be accomplished by suitably designed machinery.

The last 10 is formed with straight sides at the front end of the foot including the toe portion to a sufficient height so that when the upper is attached to the molded lower at the dot-dash line, it will not interfere with the movement of the foot when worn. These sides need not be straight. They may be diverging or even slightly converging. In the latter case, a slight crinkling may be taken up by the leather in the molding process as in the case of the formation of the stay or counter portion shown.

The last is also properly shaped to provide a suitably curved arch support, a toe box of sufficient height, and a counter.

The sole leather after being prepared for molding in any well known manner is molded or stretched on the last and shaped to conform to its contour. When fully molded, the sole leather forms all in one piece the sole 11, the toe box 12, the arch support 13, the heel seat 14, the counter 15 and a considerable portion of the upper body 16 of the shoe. At the arch support portion on the inside of the foot the molded leather extends

higher as indicated at 17 by the dotted line in Fig. 2.

As is clearly seen from Fig. 3, the molded lower extends upwards at the arch to the point of inward curvature. By this is meant the point at which the upward extension of the tangent to the curve at said point is inwardly directed.

When the last periphery begins to narrow down the leather is compacted or crinkled or pieces may be cut out at suitable places. The upper portion of the counter narrows considerably over the last, but crinkling at that point is practically avoided because of the relatively long sweeping curve downward toward the sides of the body 16 and also because most of the slack there created may be taken up at these long sides.

After the leather becomes set the crinkled portion may be cut away at 18 as shown by the dot-dash line and the molded lower may then be removed from the last.

The rest of the upper 19 to complete the shoe may be of any suitable material and may be joined to the lower in any suitable manner.

When finished, the molded lower of the shoe of this invention is permanently set and will not lose its shape. It is however sufficiently flexible to be comfortable to the wearer and yet provide full and proper support to all parts of the foot.

This invention lends itself to a lip channel stitching between the lower and the upper on the face of the shoe because the heavy sole leather joining the upper is sufficiently thick at the joint to be so stitched. This method of stitching the upper to the lower is illustrated on Figs. 3 and 4. As in the usual lip channel stitching a lip 20 is cut by a knife preceding the stitch 21 which joins the lower to the upper. The lip then covers the stitching and may be sealed down so that the stitching is completely invisible. This has heretofore not been done in the art to applicants' knowledge.

It is also feasible to shave away part of the thickness of the sole leather at the portion forming the upper part in order to make a lighter and more pliable shoe. Whenever strength is essential, as on the sole, toe box, arch support and counter, the leather will be left at its full thickness.

Women's, men's and children's shoes may be made according to this invention. For added thickness, as in the case of a sport shoe, or, if the sole becomes worn when in use, an additional sole may be attached to the shoe in any well known manner.

It will be noted that a shoe constructed according to this invention as clearly described above will accomplish all of the objects and have all of the advantages as enumerated above.

We do not wish to be limited to the exact disclosure as herein shown, but all equivalents as may fall within the scope of the appended claims are meant to be included.

We claim:

1. A shoe construction comprising an upper portion and an outer lower portion, the outer lower portion being molded of one piece of thick leather, said molded outer lower conforming to the contour of the foot and arch in the directions longitudinally and crosswise of the foot, said molded outer lower extending upwards from the bottom of the shoe, such upward extension being arranged entirely around the shoe thereby forming a side wall which provides part of the upper, a stiff toe box and an arch support, said side wall extending upwards at the rear substantially beyond the height of the side wall to the usual height of a counter thereby providing a stiff counter for the shoe.

2. A shoe construction comprising an upper portion and an outer lower portion, the outer lower portion being molded of one piece of thick leather, said molded outer lower conforming to the contour of the foot and arch in the directions longitudinally and crosswise of the foot, said molded outer lower extending upwards from the bottom of the shoe, such upward extension being arranged entirely around the shoe thereby forming a side wall which provides part of the upper, a stiff toe box and an arch support, said side wall extending upwards at the inner side of the instep to but not beyond the point of inward curvature of the instep thereby providing a full arch support.

3. A shoe construction comprising an upper portion and an outer lower portion, the outer lower portion being molded of one piece of thick leather, said molded outer lower conforming to the contour of the foot and arch in the directions longitudinally and crosswise of the foot, said molded outer lower extending upwards from the bottom of the shoe, such upward extension being arranged entirely around the shoe thereby forming a side wall which provides part of the upper, a stiff toe box and an arch support, said side wall extending upwards at the rear substantially beyond the height of the side wall to the usual height of a counter thereby providing a stiff counter for the shoe, said upper portion being of relatively soft flexible material secured to said side wall.

4. A shoe construction comprising an upper portion and an outer lower portion, the outer lower portion being molded of one piece of thick leather, said molded outer lower conforming to the contour of the foot and arch in the directions longitudinally and crosswise of the foot, said molded outer lower extending upwards from the bottom of the shoe, such upward extension being arranged entirely around the shoe thereby forming a side wall which provides part of the upper, a stiff toe box and an arch support, said side wall extending upwards and entirely around the shoe to but not beyond the points of inward curvature of the upper around said shoe except at the rear thereof where said side wall extends above said point of inward curvature to form a stiff counter.

5. A shoe construction comprising an upper portion and an outer lower portion, the outer lower portion being molded of one piece of thick leather, said molded outer lower portion conforming to the contour of the foot and arch in directions longitudinally and crosswise of the foot and conforming exactly to the curvature of the arch in all three dimensions, the molded outer lower portion extending upwards from the bottom of the shoe to provide a side wall extending upwardly to but not beyond the point of inward curvature of the foot, said side wall extending upwards at the rear substantially beyond the height of the side wall to the usual height of a counter thereby providing a stiff counter for the shoe.

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