April 19, 1949. L. S. CURTIN 2,467,466

MANUFACTURE OF STITCHDOWN SHOES

Filed Sept. 14, 1946 2 Sheets-Sheet 1

Fig. 1.

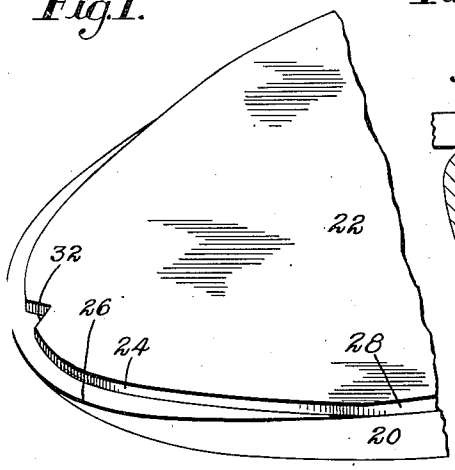



Fig. 3.

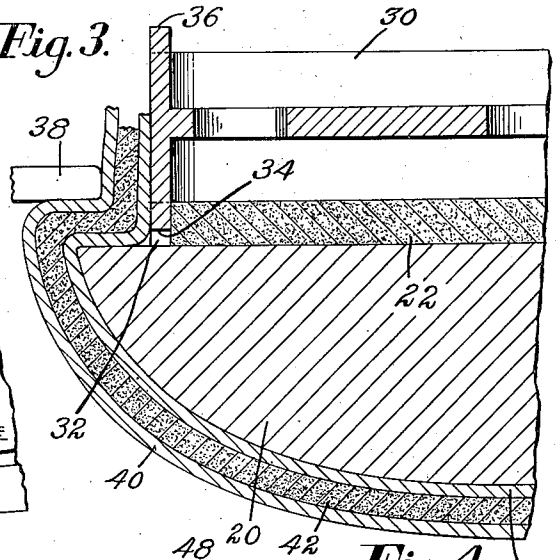



Fig. 2.

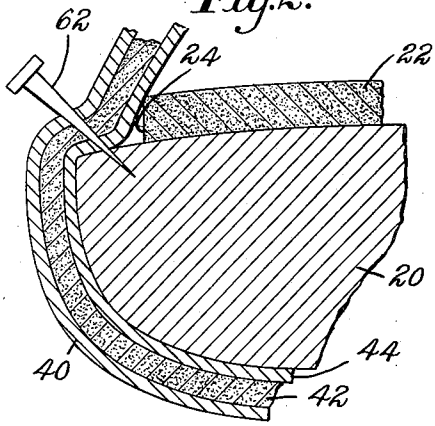



Fig. 4.

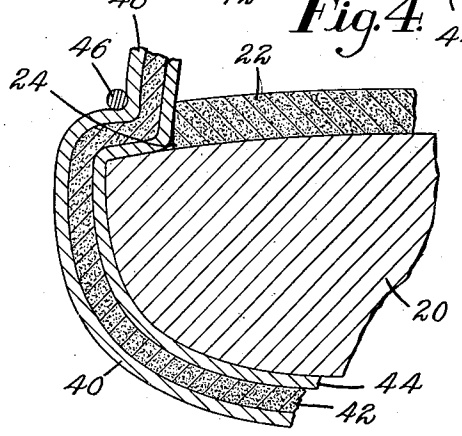



Fig. 5.

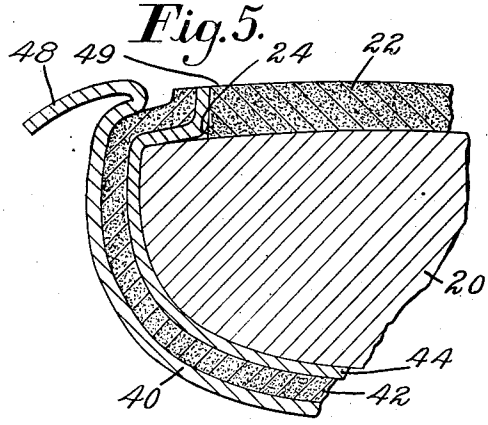
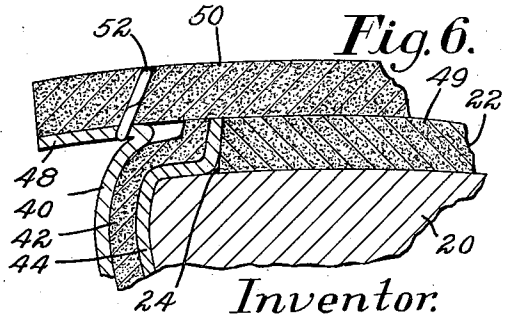



Fig. 6.




Inventor.
Leonard S. Curtin
By his Attorney.

April 19, 1949. L. S. CURTIN 2,467,466

MANUFACTURE OF STITCHDOWN SHOES

Filed Sept. 14, 1946 2 Sheets-Sheet 2

Fig. 7.

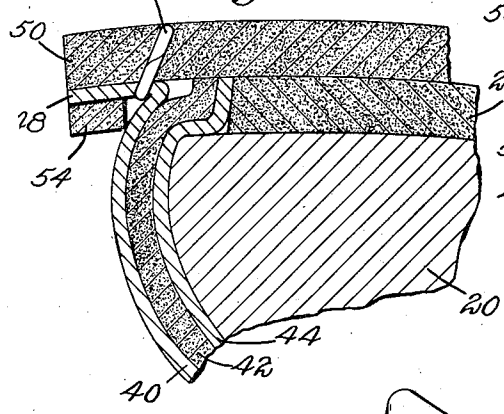



Fig. 8.

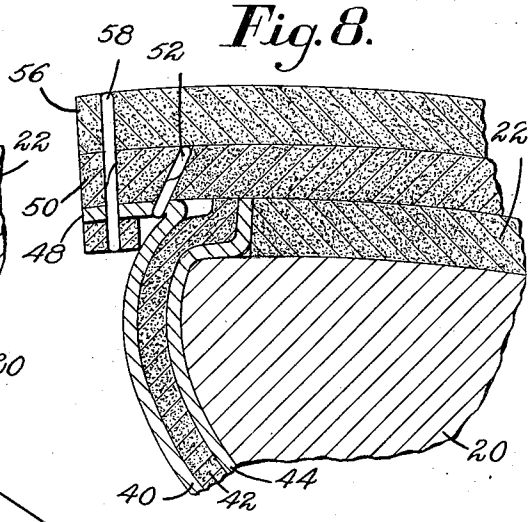



Fig. 9.

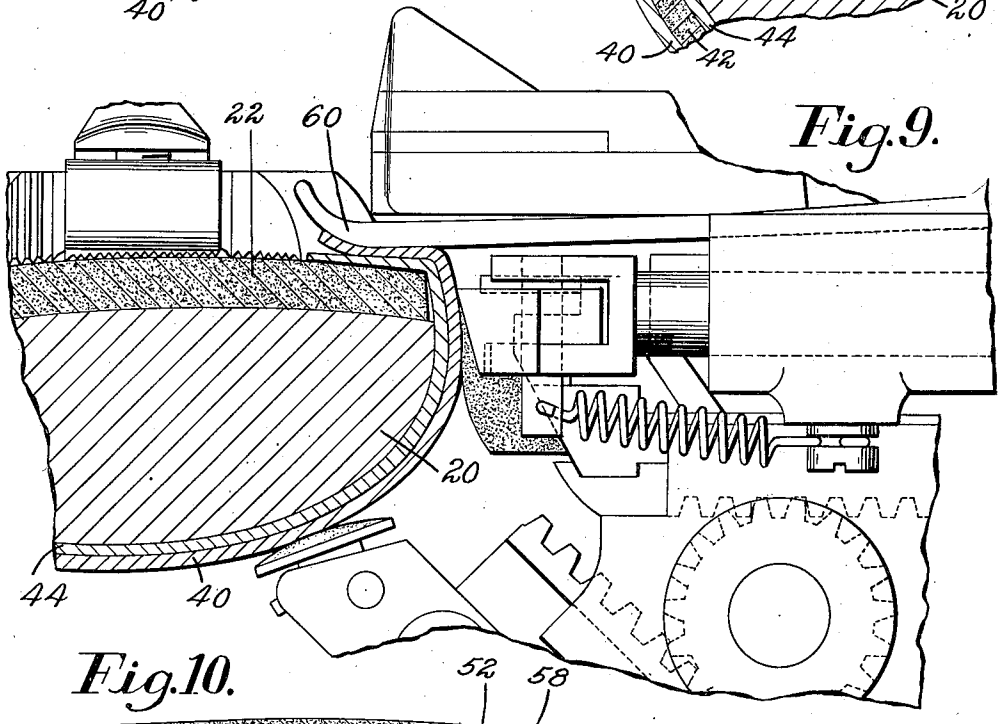
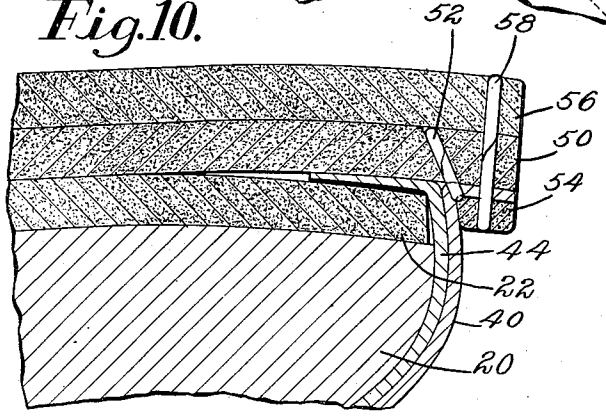



Fig. 10.




Inventor.

Leonard S. Curtin

By his Attorney.

Patented Apr. 19, 1949

2,467,466

# UNITED STATES PATENT OFFICE

2,467,466

## MANUFACTURE OF STITCHDOWN SHOES

Leonard S. Curtin, Belmont, Mass., assignor to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application September 14, 1946, Serial No. 697,017

4 Claims. (Cl. 36—16)

1

This invention relates to shoe manufacture and is herein illustrated in its application to the manufacture of stitchdown shoes. In certain aspects however the invention is not limited to the manufacture of stitchdown shoes but is applicable to the manufacture of shoes of other types.

In the manufacture of stitchdown shoes the shaping and stretching of the upper over the last, particularly the toe portion of the upper, has presented difficult problems due to the fact that the margin of the upper is secured in lasted position to the margin of a sole which extends beyond the edge of the last bottom. The presence on the last bottom of such a sole prevents the shaping of the upper by wiping its margin inwardly over the last. Consequently the toe portions of stitchdown shoes usually lack the trim and shapely appearance characteristic of other types of shoes such, for example, as Goodyear welt shoes. Numerous machines and processes have been developed for stretching and shaping the toe portions of stitchdown shoes over their lasts and desirable improvements in stitchdown shoe manufacture have been achieved thereby but in all cases the lines of the completed shoe characterize it definitely as a stitchdown and, therefore, not of the same high quality as a Goodyear welt shoe.

It is an object of the present invention to improve upon the manufacture of stitchdown shoes by providing a shoe the toe portion of which is stretched and shaped inwardly over the last to the end that the resulting shoe may have a toe portion of trim and shapely appearance suggesting the toe portion of a Goodyear welt shoe.

With the above object in view the present invention in one aspect thereof comprises a stitchdown shoe having a bottom structure characterized by an insole the edge face of which at its toe portion is substantially spaced from the inner wall of the shoe and the edge face of which rearwardly of its toe portion is arranged in contiguous relation to said inner wall. In the illustrated construction the margins of the box toe and lining abut the offset edge face of the insole and are trimmed flush with that surface of the insole which faces the extension sole, said surface being referred to hereinafter as the bottom surface of the insole. The margin of the upper preferably extends inwardly over the last bottom with the box toe and lining sufficiently to give the upper the characteristic appearance of a shoe the toe portion of which has been lasted inwardly over an insole. In the illustrated construction that portion of the vamp lining extending heelwardly

2

from the tip line is lasted inwardly over the insole.

The invention will now be described with relation to the accompanying drawings illustrating its embodiment in a preferred stitchdown shoe construction.

In the drawings,

Fig. 1 is a perspective view illustrating the forepart of a last having mounted on its bottom face the forepart of an insole constructed in accordance with the present invention;

Fig. 2 is a cross sectional view, on a large scale, through one side of the toe portion of a last showing a portion of a lined upper and box toe in pulled-over position;

Fig. 3 is a sectional view on the same scale as Fig. 2 illustrating the operation of toe lasting the upper of Fig. 2 against the edge face of the insole and the periphery of a holddown plate;

Fig. 4 is a cross sectional view similar to Fig. 2 showing the upper held in lasted position;

Figs. 5 to 8 are cross sectional views similar to Figs. 2 and 4 illustrating progressive stages in the manufacture of the shoe;

Fig. 9 illustrates the forepart of a shoe in cross section and a portion of a side lasting machine operating thereon; and

Fig. 10 is a sectional view taken on the same plane as Fig. 9 illustrating the completed shoe.

Referring to Fig. 1, the numeral 20 indicates the toe portion of a last of the type commonly used in the manufacture of Goodyear welt shoes. Mounted on the bottom of the last is an insole 22 characterized by the pattern of that portion thereof extending toewardly from the tip line, said portion being of less than last bottom area and having its edge face 24 offset inwardly with relation to the edge 26 of the last bottom and with relation to the edge face 28 of that portion of the insole extending heelwardly from the tip line. The line of the edge face of the insole extending toewardly from the tip line extends inwardly gradually to its position of maximum offset from the edge of the last bottom thus obviating the occurrence in the upper in the region of the tip line of a depression which might be visible in the completed shoe. In assembling the insole on the last the edge face at the heel end of the insole is caused to coincide with the edge of the last bottom thereby determining the offset of the toe end of the insole from the toe end of the last bottom. As shown in Fig. 1 the edge face at the toe end of the insole is offset sufficiently to leave a marginal portion at the toe end of the last uncovered by the insole of sufficient width to per-

mit the toe portion of the upper to be lasted inwardly over the bare last and into abutting relation to the edge face 24 of the insole.

While the toe lasting may be performed in any known manner I prefer to employ for this operation a machine such as that illustrated in United States Letters Patent No. 2,385,414, granted on September 25, 1945, in the name of Eric A. Holmgren. The machine illustrated in said patent is provided with an insole locating member or holddown plate which is similar in construction to the plate 30 illustrated in Fig. 3. This plate facilitates the positioning of the shoe heightwise, lengthwise, and widthwise relatively to the toe wipers. For registering the insole relatively to the plate the insole has a V notch 32 formed in its toe end as shown in Fig. 1 and the plate has a downwardly extending boss 34 having a shape complemental to the shape of the notch 32. A similar boss 36 extends upwardly from the top of the holddown plate to permit the use of the plate on both right and left shoes by inversion thereof. The wipers of the toe lasting machine, one of which is indicated by the numeral 38, wipe the upper 40, box toe 42 and vamp lining 44 inwardly over the bare margin of the last bottom, pressing the stock forcibly into the angle defined by the last bottom and the edge face of the insole. Thus the vamp lining 44 is arranged to provide the foot facing surface of the shoe bottom from the edge face of the toe portion of the insole outwardly to the extremity of the shoe bottom. This arrangement of the lining is maintained by the box toe 42 without the aid of permanent fastenings. While any known type of box toe may be incorporated in the illustrated shoe I prefer to employ a box toe which is rendered substantially flaccid by treatment with solvent and remains flaccid during a period of sufficient duration to insure the performance of the toe lasting operation before the box toe has set to any considerable extent. In order to retain the overlasted materials in lasted position until evaporation of the solvent has caused the box toe to stiffen a retaining means herein illustrated as a wire 46 is drawn around the lasted toe portion of the upper and anchored by suitable tacks (not shown). After the box toe has stiffened and set in its position shown in Fig. 4 the wire 46 is removed and the margin 48 of the upper is turned outwardly. The box toe and lining are then trimmed off flush with the bottom surface 49 of the insole, as shown in Fig. 5, whereupon a first extension sole or midsole 50 is mounted on the shoe bottom and secured to the upper by stitches 52 located in the region of the apex of the angle defined by the body portion of the upper and its outturned margin. The outturned margin is then cement attached to the margin of the midsole and the upper or grain surface of the outturned margin is roughed and coated with cement and a welt 54 (Fig. 7) is cement attached thereto. An outsole 56 (Fig. 8) is then laid upon the midsole and initially attached thereto by cement. The shoe is then rough rounded and the edge is finished in the usual manner. In the rough rounding operation the shoe bottom is provided with relatively wide extensions in the forepart and narrow extensions in the shank and at the toe in accordance with a practice commonly employed in the manufacture of men's Goodyear welt shoes. If desired, the outsole may be permanently and finally attached to the midsole by cement but I prefer to attach the outsole to the midsole by



stitches 58 extending through the welt, the outturned margin of the upper, the midsole and the outsole.

In Fig. 9 there is illustrated in operation upon the shoe above described the forepart wiper mechanism of a pulling over machine, such as that disclosed in United States Letters Patent No. 1,860,742, granted on May 31, 1932, in the name of Bernhardt Jorgensen. This machine is provided with toe wipers (not shown) and with forepart wipers which operate on portions of the upper between the tip line and the ball line, one of said forepart wipers being indicated by the numeral 60 in Fig. 9. In the operation of said machine the tack feed to the wiper 60 is arrested in order that the margin of the upper may be left free to be turned outwardly into its position shown in Fig. 10. The margin of the lining is coated with cement for attachment to the margin of the insole. At the toe end of the shoe the pulling over tacks are driven as usual, two at each side and one in the region of the longitudinal median line of the shoe, one of the side tacks being indicated by the numeral 62 in Fig. 2.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A stitchdown shoe having a bottom structure characterized by an insole the edge face of which at its toe portion is substantially spaced from the inner wall of the shoe and the edge face of which rearwardly of its toe portion is arranged in contiguous relation to said inner wall.

2. A stitchdown shoe having a bottom structure characterized by an insole so constructed and arranged that its edge face at its toe portion only is substantially spaced from the inner wall of the shoe, the bottom marginal portion of the upper materials being arranged to extend inwardly from said inner wall and occupying the space between said inner wall and the edge face of the insole.

3. A stitchdown shoe having a bottom structure characterized by an insole so constructed and arranged that its edge face at its toe portion only is substantially spaced from the inner wall of the shoe, the bottom marginal portion of the upper materials being arranged to extend inwardly from said inner wall and occupying the space between said inner wall and the edge face of the insole, the outer portion only of the upper being turned outwardly for attachment to an extension sole.

4. A stitchdown shoe having a bottom structure characterized by an insole so constructed and arranged that its edge face at its toe portion only is substantially spaced from the inner wall of the upper, the space between said edge face and said inner wall diminishing progressively from the extremity of the toe heelwardly to a point where said edge face lies in contiguous relation to said inner wall.

LEONARD S. CURTIN.


## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,695,063 | Saraniti | Dec. 11, 1928 |
| 2,123,278 | Fredericksen | July 12, 1938 |
| 2,346,960 | Grossman | Apr. 18, 1944 |
| 2,373,264 | Russell | Apr. 10, 1945 |