

Dec. 6, 1938.

M. CUOZZO

2,139,260

MANUFACTURE OF SHOES AND INSOLES THEREFOR

Filed Oct. 16, 1936

2 Sheets-Sheet 1

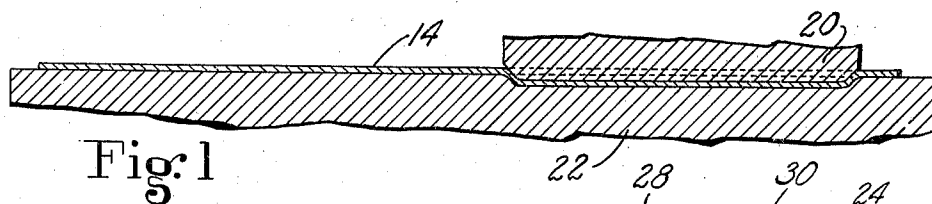


Fig. 1

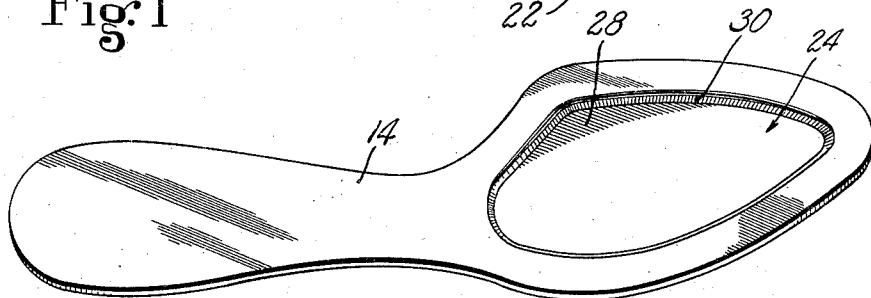


Fig. 2

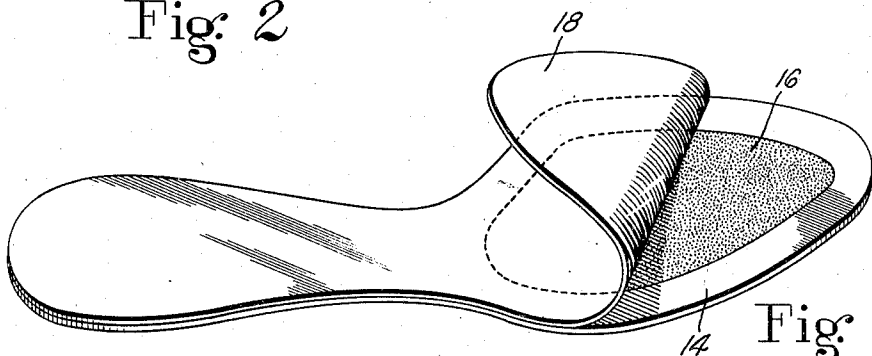


Fig. 3

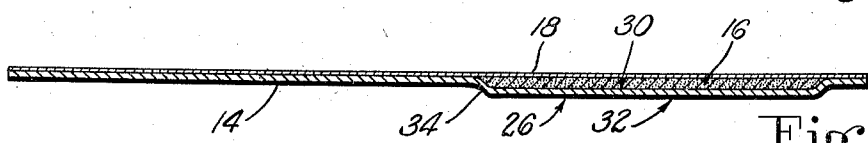


Fig. 4

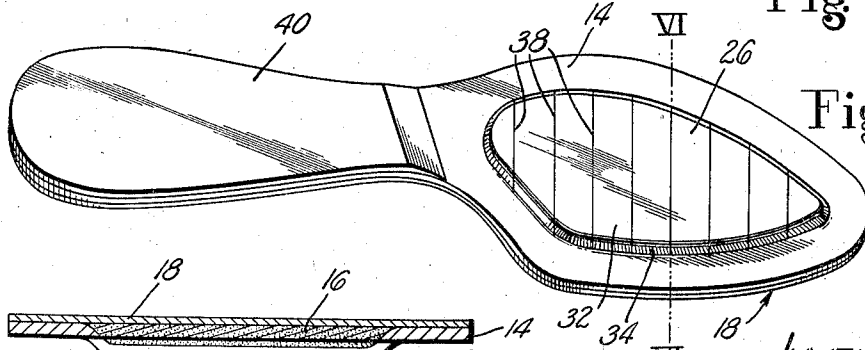


Fig. 5

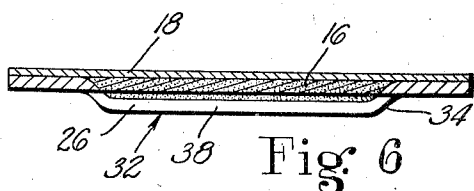


Fig. 6

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2 Sheets-Sheet 2

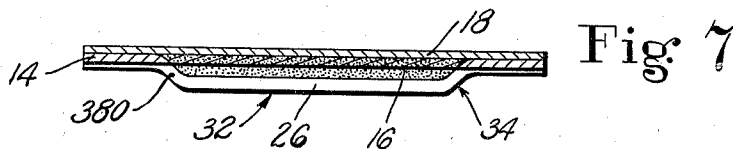


Fig. 7

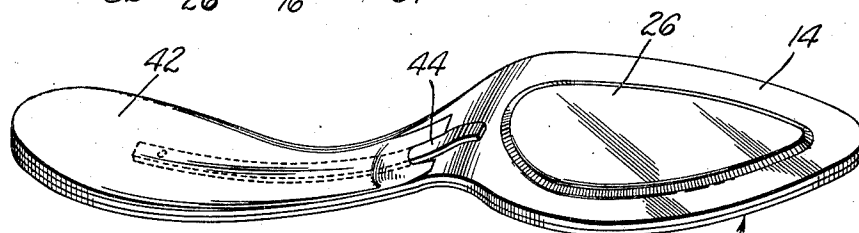


Fig. 8

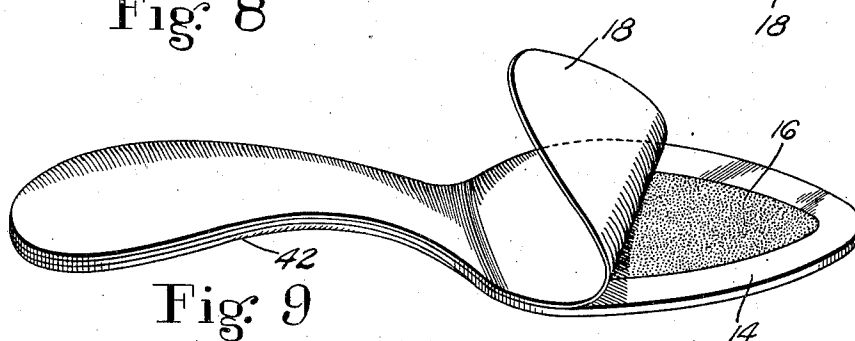


Fig. 9

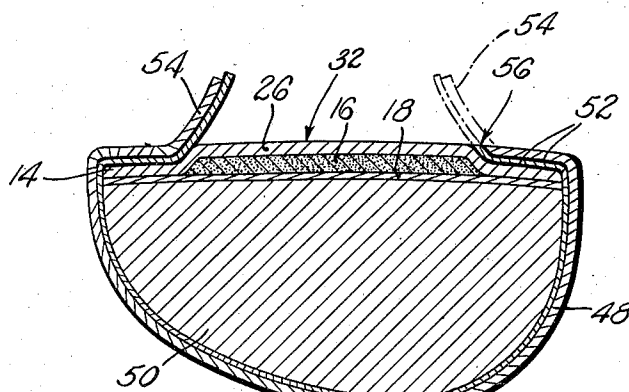


Fig. 10

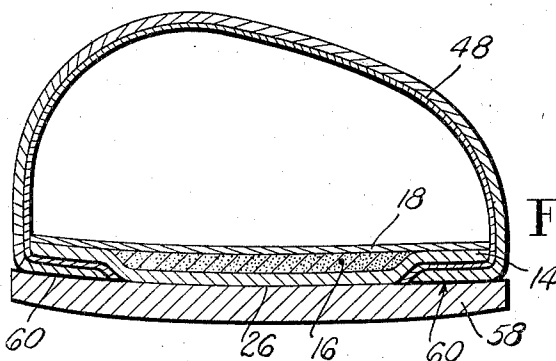


Fig. 11

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UNITED STATES PATENT OFFICE

2,139,260

MANUFACTURE OF SHOES AND INSOLES
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Application October 16, 1936, Serial No. 105,990

13 Claims. (Cl. 12-146)

This invention relates to improvements in flexible cushioned insoles and methods of making the same.

One object of the present invention is to improve and simplify the manufacture of such insoles, more particularly with the idea of materially reducing the expense of manufacture thereof.

With this object in view the invention, in one of its method aspects, provides an improved method of making flexible cushioned insoles which consists in forming a cavity or recess in the forepart of an insole, securing a cushion piece within the cavity, and thereafter slashing the forepart of the insole and said cushion piece to render the insole more flexible. As herein exemplified the cavity or recess is formed in one side of the forepart of the insole by a single molding operation which results also in forming a corresponding central projection on the opposite side of the insole, a cushion or filler piece of rubber or other yielding and preferably resilient material is fitted within the cavity in the insole, the thickness of the cushion piece being substantially equal to the depth of the cavity so that the upper surface of the cushion piece will be substantially flush with the upper surface of the adjacent marginal portion of the forepart of the insole, and finally a sock lining considerably thinner than the insole is secured by means of adhesive to the insole so as to cover the forepart cushion piece. As also illustrated herein, the permanent projection on the insole is formed with an upstanding marginal shoulder adapted to constitute a rigid lasting shoulder and in order to increase the flexibility of the forepart of the insole a series of transverse incisions are formed in the insole projection, the incisions cutting through the shouldered marginal portion of the projection to reduce the stiffening effect of the lasting shoulder. In making a shoe embodying my improved insole unit the lasting allowance of the upper is secured to the marginal portion of the insole and worked inwardly against the lasting shoulder which is of sufficient rigidity to deflect the surplus lasting allowance upwardly in a manner which facilitates the trimming of the latter. In the trimming operation the surplus lasting allowance is trimmed substantially flush with the upper surface of the insole projection and the outsole is secured by means of cement to the overlapped marginal portions of the upper including the trimmed edges thereof.

The invention further consists in other improvements in the art of making insole units and

in other features of shoe and insole unit construction hereinafter described and claimed.

The invention will now be explained with reference to the accompanying drawings, in which

Fig. 1 is a view, in longitudinal section, of two cooperative mold members, illustrating the operation of molding the cushion piece receiving cavity in the insole member of my improved insole unit;

Fig. 2 is a perspective view of the insole member of the unit;

Fig. 3 is a perspective view of the insole unit showing the upper side thereof;

Fig. 4 is a longitudinal sectional view of the unit;

Fig. 5 is a perspective view of the unit showing the lower side thereof;

Fig. 6 is a cross-sectional view taken along the line VI-VI of Fig. 5;

Fig. 7 is a cross-sectional view of the unit illustrating a modified construction;

Figs. 8 and 9 are perspective views of modified forms of the unit showing, respectively, the lower and upper sides thereof;

Fig. 10 is a cross-sectional view of a shoe in course of construction illustrating the manner in which the margins of the upper materials are overlapped and trimmed; and

Fig. 11 is a cross-sectional view of a completed shoe having my improved insole unit incorporated therein.

Referring to the drawings, the improved insole unit shown therein comprises a full length insole 14 of usual thickness which may be made of any suitable flexible insole material such as leather of sufficient rigidity, however, to be permanently molded into a predetermined shape, a flat forepart cushion piece or filler member 16 which corresponds in marginal contour to that of the forepart of the insole but which is smaller than the latter, and an all-over flexible sock lining 18 considerably thinner than the insole.

The insole 14 is preferably prepared to receive the cushion piece 16 by a molding operation, as illustrated in Fig. 1, wherein upper and lower mold members 20 and 22 cooperate to form a permanent self-sustaining central cavity or depression 24 (Fig. 2) in the upper side of the forepart of the insole for receiving the cushion piece and a corresponding self-sustaining raised portion or projection 26 (Fig. 5) in the lower side of the forepart of the insole. The illustrated cavity 24 is defined by a substantially flat bottom surface 28 which is parallel to the upper and lower surfaces of the insole and a sloping side wall 30.

The depth of the cavity 24 is preferably substantially equal to the thickness of the cushion piece and the edges of the latter are beveled at an angle to correspond with that of the sloping side walls of the cavity so that after the cushion piece has been inserted in the cavity it will completely fill the latter and the upper surface of the cushion piece will be substantially flush with that of the unrecessed portion of the insole, as clearly indicated in Fig. 3. Thus, when the relatively thin sock lining 18 has been secured in place by means of a suitable adhesive, such as rubber cement, the portion of the sock lining which overlies the cushion piece will be level with the surrounding portions of the sock lining so that in the forepart of the insole unit a smooth surface will be presented free from any objectionable ridges such as might cause discomfort to the foot. The amount of projection of the raised portion 26 of the insole corresponds to the depth of the cavity 24 and the thickness of the cushion piece 16 and this amount is such as to correspond substantially to the thickness of the upper materials which are to be overlaid upon the insole in the making of the shoe so that the insole projection 26 will completely fill the space between the insole and the outsole inside of the edges of the upper materials. The insole projection 26 has a substantially flat bottom surface 32 adapted to engage the outsole and a sloping lateral wall or marginal shoulder portion 34 rigid enough to serve as a lasting shoulder to deflect upwardly the surplus lasting allowance of the upper so as to facilitate the trimming of the latter, as will be hereinafter explained.

The cushion piece or insert 16 may desirably be composed of rubber, sponge rubber, or other suitable resilient cushioning material yieldable under pressure and therefore incapable of deforming the material of the insole or of controlling or altering the shape of the insole cavity, or it may be composed of felt, cork or other soft yielding material adapted to provide a cushion for the foot. The cushion piece may be wholly or partially secured to the insole or to the sock lining or to both of those parts by means of rubber cement or some other suitable adhesive or it may be unsecured to either or both of those parts and held in place within the cavity 24 merely by the sock lining which, as already described, is secured to the unrecessed portion of the forepart of the insole. Because of its soft yielding character, the cushion piece 16 will not detract from the flexibility of the insole.

In order to counteract any stiffening effect resulting from the formation of the rigid lasting shoulder 34 upon the insole a series of incisions or slashes 38 (Figs. 5 and 6) may be made in the raised portion 26 of the insole, the slashes preferably being deep enough to extend entirely through the shouldered portion of the side wall or shoulder 34 of the projection, as clearly shown in Fig. 6. Desirably the slashes 38 may be made after the parts of the insole unit have been assembled and secured together in which case they may extend a substantial distance into the cushion piece 16 so as to increase the flexibility of the latter, as clearly shown in Fig. 6. As shown in Fig. 7, the flexibility of the insole unit may be increased by the provision of transverse slashes 380 which are cut somewhat more deeply into the substance of the insole unit than the slashes shown in Fig. 6 and which extend into the marginal portions of the insole at opposite sides of the permanent projection 26 as well as extending

through the projection and penetrating into the cushion piece.

The improved insole unit may consist merely of the several parts already described or it may comprise, in addition to those parts, a flat reinforcing piece 40 (Fig. 5) which may be cemented or otherwise secured to the flat heel and shank portion of the insole. Alternatively, as shown in Figs. 8 and 9, the heel and shank portion of the insole may be molded to conform substantially to the shape of the corresponding portions of the bottom of the last prior to the placing of the insole unit upon the last. Also, as shown in those figures, the insole unit may have secured to it, prior to its being placed upon the last, a longitudinally and transversely molded heel and shank reinforcing piece 42 and a longitudinally curved metallic shank stiffener 44, the latter being preferably interposed between the reinforcing piece 42 and the insole, as shown in Fig. 8.

In making a shoe incorporating the insole unit herein described the unit is assembled with upper materials 48 upon a last 50 (Fig. 10) and the upper materials are worked over the last and overlaid upon the marginal portion of the insole unit and secured in overlaid position by means of cement 52 or otherwise. In overlaid position the upper materials upon the insole unit the inner marginal portions of the upper materials are preferably wiped inwardly against the rigid lasting shoulder 34 by means of which they are deflected upwardly substantially as indicated at 54 in Fig. 10. The surplus lasting allowance of the upper is thus positioned so that it may be readily trimmed so that the trimmed edges will be substantially flush with those portions of the overlaid upper materials which are secured to the margin of the insole and with the bottom surface of the raised portion or projection 26 on the forepart of the insole unit, as clearly indicated at 56 in Fig. 10. With the upper materials thus trimmed a continuous smooth and substantially level surface is presented throughout the entire forepart of the shoe bottom for the reception of the outsole 58 which may be attached, for example, by means of cement 60 to a suitably roughened surface formed upon the overlaid upper materials and to the trimmed edge portions 56 of the latter.

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

1. That improvement in methods of making flexible cushioned insoles which consists in forming a cavity in the forepart of an insole, securing a cushion piece within said cavity, and thereafter slashing the forepart of said insole and said cushion piece to render the insole more flexible.

2. That improvement in methods of making flexible cushioned insoles which consists in forming a cavity in the forepart of an insole, securing a filler piece of cushioning material within said cavity, and forming a series of transverse incisions in the forepart of the insole, said incisions extending into said filler piece.

3. That improvement in methods of making flexible cushioned insoles which consists in forming a central cavity in the forepart of an insole at that side which is to face the foot and a corresponding central forepart projection upon the opposite side of the insole, securing a cushion piece within said cavity, and thereafter forming a series of transverse slashes in said forepart projection to increase the flexibility of the insole.

4. That improvement in methods of making side bounded by a lasting shoulder, and an insert flexible cushioned insoles which consists in forming a central cavity in the forepart of an insole at that side which is to face the foot and a corresponding forepart projection surrounded by a lasting shoulder at the opposite side of the insole, securing a cushion piece within said cavity, and thereafter forming a series of transverse incisions in the forepart of the insole at the side having said projection, said incisions extending entirely across the insole and cutting through said lasting shoulder and into said cushion piece.
5. As an article of manufacture, an insole unit comprising an insole having a cavity in the central portion of its forepart at its upper or inner side and a corresponding projection in the central portion of its forepart at its lower or lasting side, said insole having a series of slashes extending through its projecting portion, the slashes being disposed transversely with respect to the sole, an insert of cushioning material filling said cavity in the insole, and a sock lining secured to the upper surface of the insole and covering said insert.
6. As an article of manufacture, an insole unit having a forepart recess in its upper side and a corresponding forepart projection upon its lower side, and an insert of cushioning material filling said recess and secured by means of adhesive to the insole, said insole having a series of transverse slashes extending through the projecting portion of the insole below said recess.
7. As an article of manufacture, an insole unit having a forepart recess in its upper side and a corresponding forepart projection upon its lower side, and an insert of cushioning material filling said recess and secured by means of adhesive to the insole, said insole having a series of transverse slashes extending through the projecting portion of the insole below said recess and into said insert.
8. As an article of manufacture, an insole unit having a forepart recess in its upper side and a corresponding forepart projection upon its lower side, and an insert of cushioning material filling said recess and secured by means of adhesive to the insole, said insole having a series of transverse slashes extending entirely across the forepart of the insole, said slashes cutting through the projecting portion of the insole and extending into said insert.
9. As an article of manufacture, an insole unit having a forepart recess in its upper side and a corresponding forepart projection upon its lower side, and an insert of cushioning material filling said recess and secured by means of adhesive to the insole, said insole having a series of transverse slashes cut through its projecting portion and through said lasting shoulder for rendering the insole more flexible.
10. A reinforced insole unit comprising an insole having a central cavity formed in its forepart at the side which is to face the foot and a corresponding central projection at the opposite side of the insole, a filler of cushioning material fitted within said insole cavity and secured by means of adhesive to the insole, a sock lining secured to the foot side of the insole, a heel and shank reinforcing piece secured to the side of the insole which is to face the outsole, and a shank stiffener interposed between said reinforcing piece and the insole.
11. A shoe comprising an insole having a central cavity in its forepart at that side which is to face the foot and a central forepart projection at the opposite side of the insole, said projection having a series of transverse slashes formed therein to increased the flexibility of the forepart of the insole, a filler of cushioning material within said insole cavity, an upper having its margin secured in overlapped position to said insole, and an outsole attached to the overlapped margin of the upper.
12. A shoe comprising an insole having a central cavity in its forepart at that side which is to face the foot and a central forepart projection at its opposite side, a filler of cushioning material within said insole cavity, said insole having a series of parallel slashes extending transversely across its forepart, said slashes cutting through said projection and extending into said filler, an upper having its margin secured in overlapped position upon said insole outside of said projection, and an outsole secured to the overlapped margin of the upper.
13. That improvement in methods of making cushion insole units which consists in forming a cavity in the forepart of an insole at the side which is to face the foot and a corresponding forepart projection surrounded by a lasting shoulder at the opposite side of the insole, inserting a cushion piece within said cavity, securing a sock lining to the foot side of the insole thereby covering said cushion piece and retaining it in place, and thereafter transversely slashing said lasting shoulder to increase the flexibility of the insole.

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