

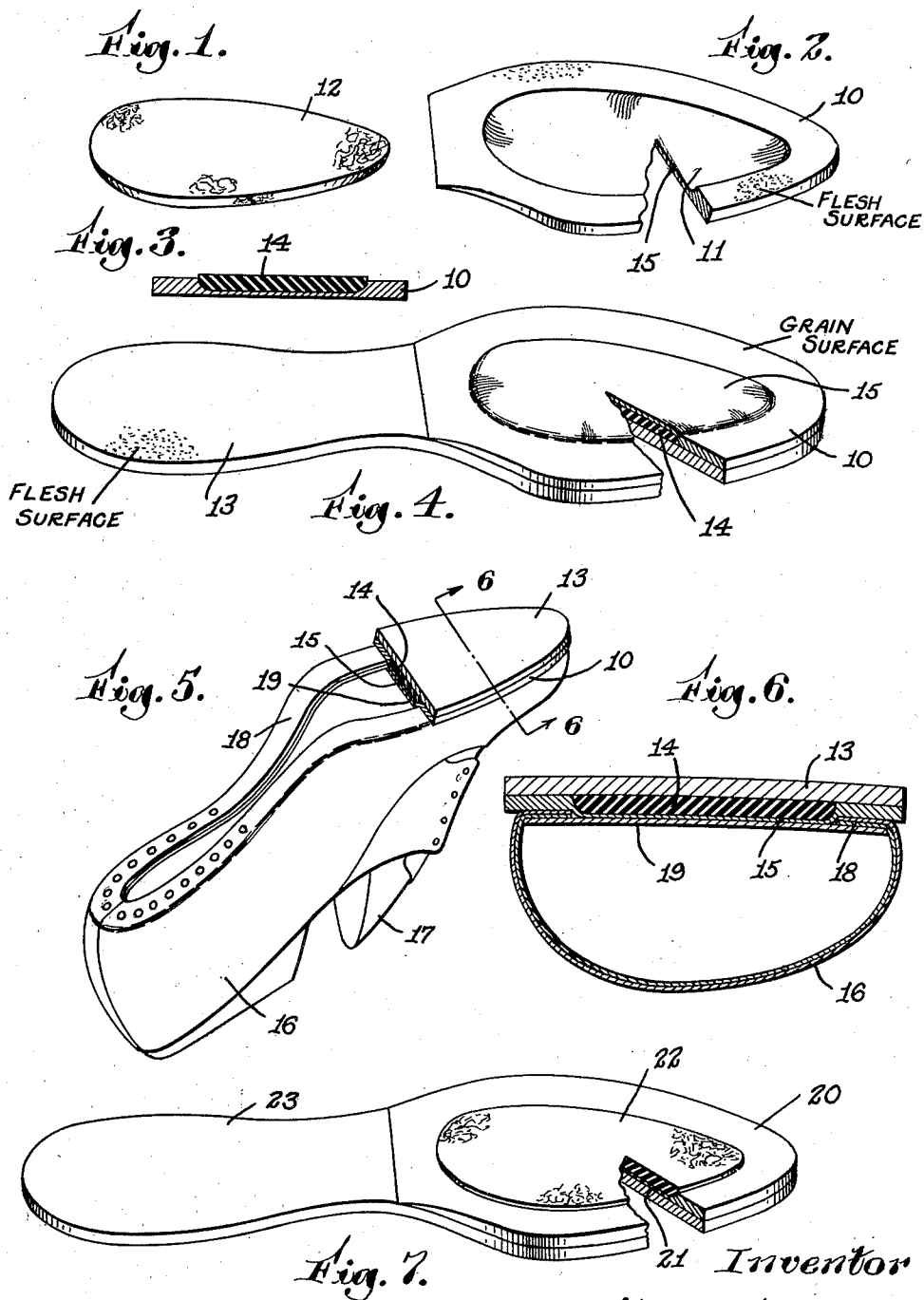
Aug. 9, 1938.

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2,126,601

CUSHION SOLE

Filed Sept. 18, 1936



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UNITED STATES PATENT OFFICE

2,126,601

CUSHION SOLE

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Application September 18, 1936, Serial No. 101,476

12 Claims. (Cl. 12-142)

This invention relates to cushion soles and to shoes in which cushion soles are incorporated. In one aspect it consists in a novel cushion sole unit as a complete article of manufacture ready for the shoemaker's use. In another aspect it consists in a smooth bottom shoe in which the thickness of the overlaid upper and lining material is compensated for by a shouldered cushion portion in the sole.

An object of the invention is to provide a cushion sole unit which may be completely made up by stock fitting operations and which comes to the making room ready to be incorporated into the shoe as an integral unit with its cushion member permanently and securely embodied therein. This is advantageous in that the shoemaker is thus required to handle a single sole unit only instead of a number of loose pieces, including the cushion member itself, and also because by this procedure the cushion may be more accurately located and securely attached than if handled as a separate piece in the bottoming operation. In fact, the cushion sole unit of my invention may be treated in the shoemaking process exactly as a solid single or double sole.

Another object of my invention is to make available a process of preparing cushion soles which may be carried out easily and economically under commercial conditions of shoemaking and with the assistance of machines now in ordinary use. In this aspect the process of my invention is characterized by the steps of gouging a cavity in one face of a middle or slip sole, filling the cavity with a cushion pad thicker than the depth of the cavity and assembling the parts thus prepared by attaching them to the forepart of an outersole. In gouging the cavity in the middle or slip sole there is formed a thin flexible web or cover portion which is substantially coextensive with the cushion pad and this may be preferably formed so as to include the grain portion of the middle sole. The gouged middle sole may now be attached to the outersole at its flesh surface with the cushion pad confined in the cavity thus provided for it, and under these circumstances the web or cover portion of the sole will be bulged or displaced upwardly forming a raised portion in the center of the sole which is defined by a pronounced shoulder about its outline. By properly locating the cavity and properly selecting the thickness of the cushion pad this raised area upon the face of the sole may be utilized to compensate for the thickness of the overlaid margin of the upper and lining material in the com-

pleted shoe and thus a smooth bottom shoe produced.

It is believed that never before has a sole piece been reduced in thickness from one or both sides in a selected area to an extent adapting the remaining web to be displaced or molded in forming a raised area in the manner above explained.

The sole of my invention is well adapted for use in the manufacture of McKay, Littleway, Compo or Turn shoes, or shoes having selected features of these types of shoes. Wherever used, it has the great advantage of presenting the cushion pad in closer contact to the foot of the wearer than heretofore and its cushioning action is therefore fully appreciated and effective.

These and other features of the invention will be best understood and appreciated from the following description of preferred embodiments thereof selected for purposes of illustration and shown in the accompanying drawing, in which—

Fig. 1 is a view in perspective of the gouged portion removed from the slip or middle sole,

Fig. 2 is a view in perspective of the gouged slip or middle sole,

Fig. 3 is a sectional view of the gouged slip or middle sole with the cushion pad assembled therewith,

Fig. 4 is a view in perspective of the complete sole unit, a section being broken out to show the construction thereof,

Fig. 5 is a view in perspective of a lasted shoe manufactured with the sole of Fig. 4, a portion of the sole being broken away,

Fig. 6 is an enlarged sectional view on line 6-6 of Fig. 5, and

Fig. 7 is a view in perspective of a modified sole unit.

In preparing the sole unit of my invention a slip or middle sole or a sole piece 10 is first dyed out to coincide in outline with the forepart of the sole in which it is to be used and the rear straight edge is bevelled on a line corresponding substantially to the forward end of the shank portion of the sole. The slip or middle sole 10 is then gouged so that it is preformed with a centrally disposed elongated cavity 11 surrounded by a wide margin of the full thickness of the sole piece. Preferably and as shown in Fig. 2 this sole piece is gouged from the flesh side leaving a thin web or cover portion 15 which includes the grain surface of the piece.

The gouging step may be easily and accurately effected by passing the sole piece through a matrix splitting machine designed to cause the center portion of the piece to bulge into the path

of the splitting knife, thus removing the portion 12, shown in Fig. 1, to form the cavity 11. This cavity may be shaped and located as desired and a margin of full thickness may be maintained about the outline of the sole piece. The purpose of the splitting operation is twofold. First to form a cavity 11 of suitable size and depth for the reception of a cushion member, and second, to form a thin flexible web or cover portion 15 coextensive with the cavity and of proper thickness to serve either as a molded cover for the cushion beneath the foot of the wearer, or to provide an attaching surface in assembling the sole unit.

The cushion member 14 may comprise a bed of sponge rubber or other soft resilient material and, as shown in Fig. 3, may be of such shape as to fill the cavity 11 snugly and project above the plane of the margin of the sole piece in a pronounced shoulder.

In assembling the sole unit shown in Fig. 4 the slip or middle sole with the pad 14 cemented therein is inverted and cemented to the flesh surface of the outer sole 13 which has previously been dyed out in the desired shape. In this operation the outline of the slip or middle sole 10 coincides with the outline of the outer sole 13, and a permanent cemented union is formed directly between the margin of the sole piece 10 and the flush surface of the outer sole. The lower surface of the pad may or may not be cemented to the surface of the outer sole 13. The straight bevelled edge of the sole piece 10 is drawn down into contact with the shank of the outer sole so that the sole piece presents a smooth surface sloping upwardly from a feather edge. When the two sole parts are assembled in this manner the effect of the rubber pad 14 is to bulge upwardly the thin web or cover portion 15 of the slip or middle sole, thus forming a raised cushion area corresponding in contour to the cavity 11 and projecting above the plane of the margin of the sole piece 10. By properly selecting the thickness of the pad 11 the height of the shoulder formed in the slip or middle sole 10 may be made to equal approximately the thickness of the overlapped margin of the upper and lining material of the shoe in which the sole is to be subsequently incorporated.

It will be noted that, by reference to Fig. 4, the sole unit presents a continuous unbroken grain surface for the shoe bottom and that the marginal edge of the sole which is subjected to maximum strain in shoemaking is of double thickness of leather. The forepart of the sole unit moreover, presents a smooth grain surface to be located beneath the foot of the wearer and in contact therewith and the cushion pad 14 is securely confined in close proximity to the foot of the wearer, where its cushioning effect will be most effective.

The sole unit of Fig. 4 is shown in Figs. 5 and 6 as incorporated in a shoe of the Compo type. The upper 16 of the shoe is lasted upon a last 17 with its overlapped margin 18 secured in place upon a thin insole 19. As clearly shown in Fig. 6 the raised area formed by the rubber pad 14 in the sole unit is of a proper size and shape exactly to fill the opening in the shoe bottom formed by the overlapped margin 18 and it is of the proper height to compensate for the thickness of the overlapped margin. The result is that a perfectly smooth bottom is presented inside the shoe with all the advantages of a cushion

member directly beneath the forepart of the wearer's foot.

In Fig. 7 I have shown a modification of the sole unit in which the gouged sole piece 20 having a cavity filled by a rubber pad 22, and the web portion 21 are secured to the forepart of an outsole 23 with the rubber pad 22 uppermost. In this case the pad 22 may be enclosed beneath a light cover or web of any appropriate sheet material or it may be uncovered in the shoe bottom except for a sock lining or the like, but it will provide the desired raised area for the purpose of compensating for the overlapped margin of the upper and forming therewith a smooth bottom in the shoe.

While the illustrated examples of my invention both include an attached half sole piece, it is contemplated that full length sole pieces may be employed within the scope of the invention. Moreover, the attached sole may be gouged from either face according to the conditions to be met in the shoe wherein the sole is to be used.

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

1. A sole unit comprising an outsole, a sole piece attached to the forepart thereof and having a thick margin defining a cavity covered by a thin web portion presenting a continuous smooth surface, and a cushion member confined in the cavity and bulging the web portion throughout an area coextensive with the contour of the cavity to form a well-defined shoulder.

2. A sole unit comprising an outsole, a leather sole piece attached at its flesh surface to the forepart thereof and having an elongated cavity gouged in its flesh surface covered by a thin grain portion presenting a continuous smooth surface, and a cushion member confined within the cavity beneath said grain portion and causing the latter to project above the plane of the margin of the sole piece and form a well-defined shoulder.

3. A sole unit comprising an outsole having a sole piece attached to its forepart which is reduced substantially throughout its inner area so that it has a relatively thick margin connected by a thin web, and a rubber pad filling said reduced portion beneath said web and projecting said web above the plane of the margin of the sole piece in a pronounced shoulder.

4. A shoe having a sole which comprises an outsole and a middle sole attached to the forepart thereof in face-to-face contact, said middle sole having a centrally disposed cavity gouged in its concealed lower face and a thin flexible web covering the cavity, and a cushion member located within said cavity and causing the web covering to bulge definitely upward to an extent substantially compensating for the thickness of the overlapped upper and lining material of the shoe.

5. A shoe having a sole which comprises an outsole and a sole piece attached to the forepart thereof and having a centrally disposed cavity covered by a thin web portion, and a cushion member filling said cavity and projecting therefrom to form a peripheral shoulder, the overlapped margin of the upper fitting against said shoulder and forming a smooth bottom with the cushion member.

6. The process of making cushion soles, which consists in gouging a cavity in the flesh surface of a sole piece, filling the cavity with a cushion member thicker than the depth of the cavity, and

then attaching the sole piece to the forepart of an outersole with said cushion member confined in said cavity.

7. The process of making cushion soles, which consists in gouging a cavity in the flesh side of a middle sole to form a thin flexible grain covering portion located within the margin of the middle sole, and then attaching the middle sole to an outersole with a filler confined between the two which is of such thickness as to cause said grain covering portion to bulge outwardly in the middle sole.

8. The process of making cushion soles, which consists in rendering flexible the center area of a sole piece by reducing its thickness in said area, leaving its marginal portion relatively thick, and then bulging upwardly said flexible area by attaching the sole piece to the forepart of an outersole with a rubber pad interposed between the two parts and located within the confines of the thick margin of the sole piece.

9. The process of making cushion sole shoes, which consists in reducing the central area of a sole piece to provide a flexible web in the grain face thereof, uniting the sole piece to the forepart of an outersole with a rubber pad interposed between the two parts and located so as to bulge upwardly the flexible web in a shouldered raised area, and then attaching the sole unit thus formed

to a shoe bottom with the bulged area filling the opening formed by the overlapped margin of the upper and lining material.

10. A sole unit comprising an outersole, a leather sole piece gouged in a predetermined area of its flesh side, cemented with its flesh face in contact with the outersole and presenting an exposed continuous grain covering web, and a sponge rubber pad confined in the gouged area and bulging the grain web outwardly in a shouldered area.

11. A shoe having a sole which comprises an outersole, a one-piece middle sole placed over the forepart of said outersole, said middle sole having a relatively thick margin and a thin, flexible central portion, and a cushion member disposed on said outersole and displacing the central portion of said middle sole above the plane of said margin to define a shoulder.

12. A sole unit comprising an outersole, a cushion member disposed on the center of the forepart of said outersole, and a one-piece cover member having a relatively thick margin and a thin flexible central portion, said cover member being placed on said outersole with the margin abutting said cushion member and the central portion displaced upwardly by said cushion member.

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