April 29, 1947. G. S. COLELLA 2,419,629

MID SOLE CONSTRUCTION FOR SHOES

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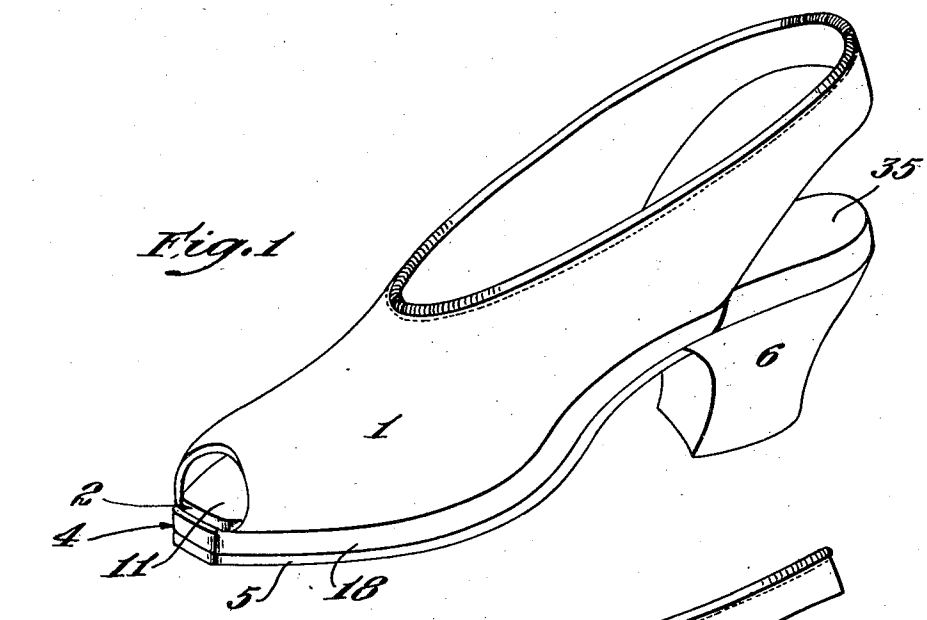


Fig. 1

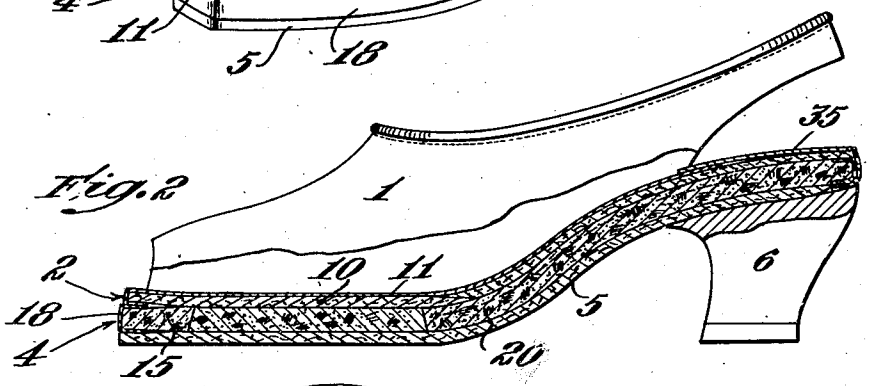


Fig. 2

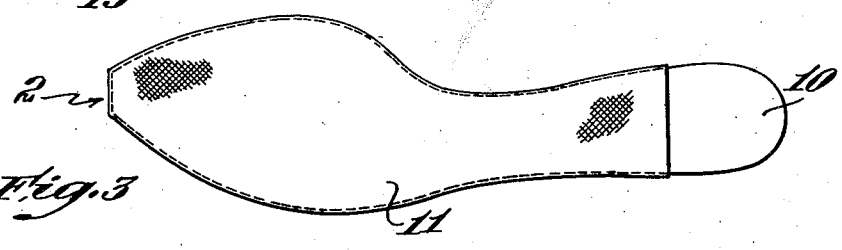


Fig. 3

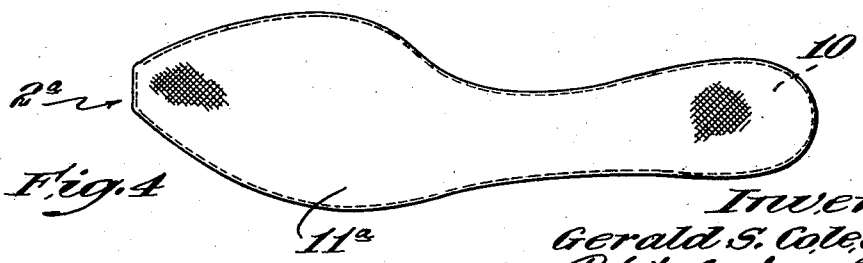


Fig. 4

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Fig. 5

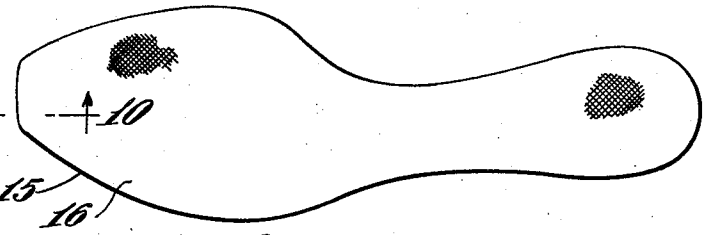


Fig. 6

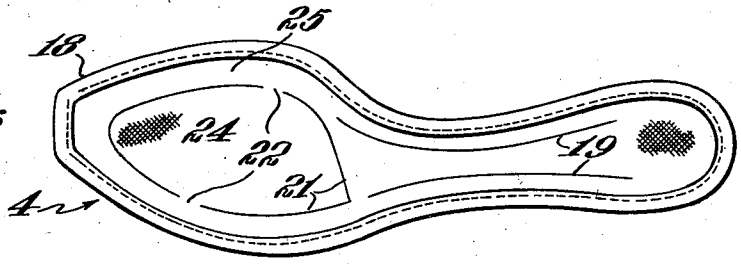


Fig. 7

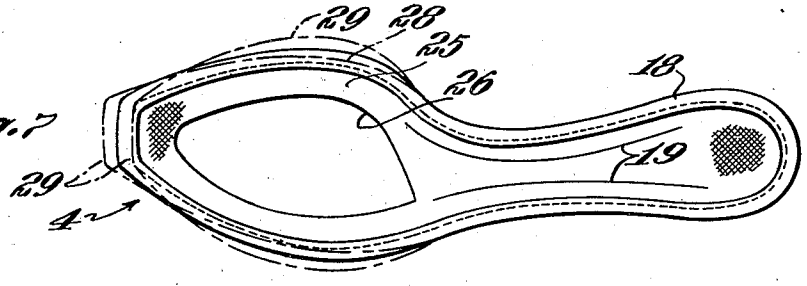


Fig. 8

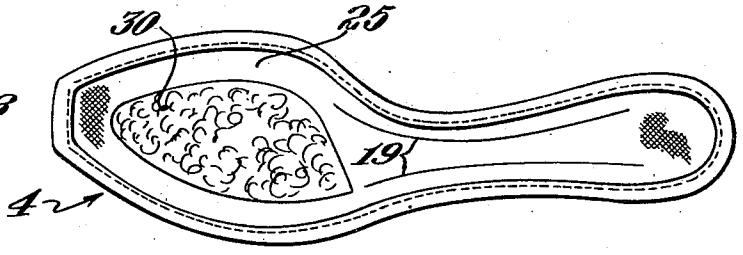


Fig. 9

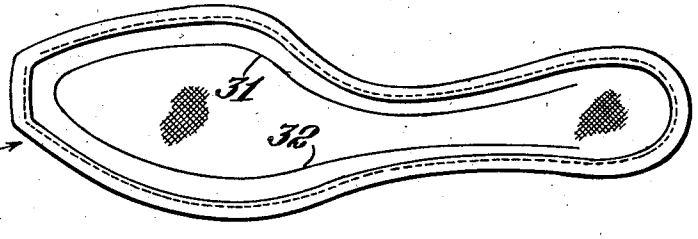




Fig. 10

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MIDSOLE CONSTRUCTION FOR SHOES

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Application October 4, 1944, Serial No. 557,089

5 Claims. (Cl. 36—30)

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This invention relates to the manufacture of shoes and more particularly to a shoe embodying an improved insole and midsole or platform construction.

In the manufacture of certain types of shoes it is customary to provide both an insole and a midsole or platform, the insole usually consisting of a full-length relatively light piece of leather or fiber, whereas the midsole or platform is usually of considerably heavier and stiffer material which has a tendency to straighten out and separate from the lasted insole, particularly in high heel women's shoes which have a transverse curvature and also an abrupt longitudinal curvature at the shank portion. A further objectionable feature of prior constructions is a loss of flexibility and an increase of weight due to the presence of both an insole and midsole. A further disadvantage in the manufacture of shoes in accordance with conventional practices, particularly women's shoes of the open toe or open back type, is that an edge binding for the insole and a full length sock lining is usually required and the latter must be cemented to the insole so as to conceal the stitching, attaching elements, etc. The edge binding and sock lining not only add appreciably to the cost of manufacture, but the latter must be accurately superposed on the insole with its margins firmly held in place, particularly with women's shoes of the aforementioned type, and in many cases after a relatively short period of wear the margins of the sock lining are apt to separate and curl, thus presenting an unsightly appearance.

The most important object of the invention is to facilitate and reduce the cost of manufacturing shoes employing midsoles or platform soles.

Another object of the invention is to increase the flexibility of shoes which incorporate in their structure midsoles or platform soles.

An important feature of the invention resides in the provision of a midsole having a large recess in the center of the forepart to accommodate lateral deformation of the forepart and thus render it possible to use a relatively small number of dies to cut out midsoles which may thereafter be employed to make a relatively large range of sizes.

Further objects relate to various features of construction and will be apparent from a consideration of the following description and the accompanying drawings, wherein

Fig. 1 is a perspective view of a shoe constructed in accordance with the present invention;

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Fig. 2 is a longitudinal section through the shoe shown in Fig. 1;

Fig. 3 is a top plan view of the upper face of the insole;

Fig. 4 is a top plan view of the upper face of a modified form of insole;

Fig. 5 is a plan view of a midsole member as stamped from a stock piece of resilient sheet material;

Fig. 6 is a top plan view showing the under face of the midsole of Fig. 5, provided with an edge binding and slits along its shank and forepart;

Fig. 7 is a top plan view of the under face of the midsole of Fig. 6, but showing the central area or island of the forepart removed;

Fig. 8 is a top plan view of the midsole of Fig. 7 with the recessed area at the forepart filled with a soft padding material;

Fig. 9 is a top plan view of the under surface of a modified form of midsole; and

Fig. 10 is a section on the line 10—10 of Fig. 5.

The embodiment herein shown for the purpose of illustration is a woman's shoe of the type having an open toe and back, comprising an upper 1, having its overlasted margin secured between an insole 2 and a platform or midsole 4. An outsole 5 is cemented or otherwise suitably secured to the midsole 4, and a heel 6 is attached to the usual heel seat formed on the outsole in accordance with conventional practice.

The insole 2, as shown in Figs. 2 to 4, preferably comprises a full length sole member formed from one or more pieces of suitable sheet material such as leather, fiber, or other relatively thin flexible material 10. As shown in Fig. 3, the upper face of the insole, except at its heel portion, is covered with a suitable sheet material 11 such as a wear-resisting attractively finished fabric, e. g., a grosgrain fabric, the marginal portions of which are folded about the peripheral edge of the insole member 10 and cemented or otherwise secured to its under surface. Thus, the covering 11 not only provides an edge binding, but also a sock lining, as well as a reenforcement to the insole. If desired, the entire upper face of the insole 10, including the heel portion, may be covered with the fabric 11a, as shown in Fig. 4, this construction being preferred in closed back shoes, whereas the construction in Fig. 3 is preferred in open back shoes.

The midsole or platform, as shown in Figs. 5 to 10, preferably comprises a relatively heavy full-length sole member 15 of a resilient flexible material having a thickness of the order of 3/16 to

½ inch. Although numerous compositions are available, satisfactory results have been obtained by using either a sheet of sponge rubber having a thickness of the order of ¼ inch, or a composition comprising ground or granulated cork in an elastic resilient matrix rolled into sheet form, having a thickness of approximately ¼ inch and covered with a facing fabric 16 (Fig. 10). After the midsole has been died out, an edge binding strip 18 is stitched to its marginal portions, the binding strip 18 preferably being a fabric or other sheet material which may be the same as or a material harmonizing with the covering 11 of the insole.

The under surface of the midsole is provided with slits 19 which extend along its shank portion in spaced relation to the peripheral edges and penetrate at least half way through the thickness of the material, as indicated by the broken line 20 of Fig. 2. As herein shown these longitudinal slits 19 extend rearwardly into the heel seat of the sole and continuously throughout the entire shank portion. The central area of the forepart of the midsole is also provided with a cut or slit 21 which preferably extends all the way through the material, except for severable hinge portions 22 (Fig. 6) so as to provide a removable center or island 24 surrounded by the marginal portions 25 of the forepart. The island 24 may be removed to provide a central recessed area 26 (Fig. 7) which permits the forepart to be deformed either by pressing the marginal portions 25 inwardly to increase the length and decrease the width of the forepart, as indicated by the dot and dash line 28 of Fig. 7, or by pressing the toe portion inwardly to increase the width and decrease the length of the forepart, as indicated by the dot and dash line 29. The forepart may thus be shaped to conform more accurately to the lasted upper, particularly when the midsole blank is cut with a die which does not conform as closely as desired to the last, or when the uppers are of different weight material. The island 24 may either be replaced in the recessed area 26 at a suitable stage in the manufacturing operation, or if desired the area 26 may be filled with a suitable padding material 30, such as soft felt or the like, as shown in Fig. 8, thus appreciably reducing the weight of the midsole, as well as increasing its flexibility and cushioning action without impairing the strength of the marginal portions of the midsole.

Alternatively the midsole may be provided with slits 31 and 32 which extend along in spaced relation to the peripheral edge of the midsole and join at the toe portion, as shown in Fig. 9, the slits 31 and 32 penetrating from the under surface at least half way through the thickness of the material, but terminating short of the upper face of the midsole. In either case the slits and recessed areas not only provide a self-moulding structure, but also insure a high degree of flexibility otherwise not attainable and a close conformability to the contour of the lasted upper, and since the marginal portion of the midsole remains intact, the strength of the midsole is not appreciably impaired.

In accordance with what is now considered the preferred procedure, the steps employed in the manufacture of the open toe and back shoe shown in Fig. 1 are as follows:

The upper 1 is lasted to the insole 2 shown in Fig. 3 in conventional manner, after which the edge-bound midsole, with the island 24 removed as shown in Fig. 7, is applied, the forepart of the

midsole being deformed as above described if necessary to insure an accurate fit on the lasted shoe, it being understood that the upper face of the midsole and under face of the insole have received a layer of tacky cement by which the parts are secured together. With the midsole properly laid, the resilient soft fibrous packing 30 may be applied within the recess 26, or the island 24 may be replaced as previously indicated. The exposed area at the heel of the insole may then be covered with a suitable layer of sheet material 35, such as leather, fabric or the like, preferably harmonizing with the edge binding 18, and the marginal portions of the heel covering 35 are folded over the edges of the rear portion of the insole and midsole and cemented in place to the under surface of the midsole, as shown in Figs. 1 and 2. The outsole 5 and heel 6 may then be applied and the shoe finished in accordance with conventional practice.

It will be observed that in the manufacture of shoes in accordance with the present invention the usual steps of providing a separate edge binding to and a sock lining for the insole are eliminated, together with the associated expense and difficulties, and since the covered insole is applied as a single piece or unit there is a substantial saving in time and expense. Moreover, the covering tends to reinforce the insole and hence permits the use of softer and less expensive material for the insole.

It will also be noted that the construction of the midsole is such as to insure the maximum degree of flexibility without sacrificing strength and since the center or island of the forepart may be replaced with felt or the like soft pliable material, the weight of the shoe may be appreciably lessened and its resiliency increased.

It is to be understood that this disclosure is for the purpose of illustration and that various changes and modifications may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A shoe construction comprising a midsole, an insole superposed on the midsole, and an upper having its marginal portions secured between the insole and midsole, the midsole comprising a full length of relatively thick resilient material provided with slits which are spaced inwardly from its edges and extend about the marginal portion of the forepart and shank and penetrate at least half way through the thickness of the midsole.

2. A shoe construction comprising a midsole, an insole superposed on the midsole and an upper having its marginal portions secured between the insole and midsole, the midsole comprising a full length of relatively thick resilient material provided with slits which are spaced inwardly from its edges and extend about the marginal portion of the forepart and shank and penetrate at least half way through the thickness of the midsole at the shank portion and all the way through the thickness of the material at the forepart.

3. A midsole comprising a relatively thick full length sole member of resilient material having longitudinally extending slits spaced inwardly from its edges of the shank portion and penetrating at least half way through the thickness of the material, the central area of the forepart of the midsole being recessed and a soft, light, pliable material disposed in the recessed area.

4. A shoe comprising an insole, an upper having its overlasted margin secured to the lower surface of the insole, and a full length midsole

provided in the shank portion with a plurality of longitudinal slashes and having a relatively large recess formed in its central forepart area, the margin of said midsole being secured to the overlasted margin of the upper in the shoe bottom.

5. A full length platform sole of cork composition in sheet form at least one-quarter of an inch in thickness, having a pair of longitudinal slits extending rearwardly into its heel seat portion and forwardly throughout the entire shank and penetrating at least half way through the thickness of the material from its lower face, thereby permitting the sole to be conformed into the transverse curvature of the shank of a shoe without substantial resistance.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,516,305	Price et al.	Nov. 18, 1924
2,289,180	Davis	July 7, 1942
2,348,336	Everston	May 19, 1944
2,367,808	Starner	Jan. 23, 1945
305,120	Van Wagenen	Sept. 16, 1884
2,204,159	Sewall	June 11, 1940
2,345,831	Pierson	Apr. 4, 1944