

Dec. 25, 1951

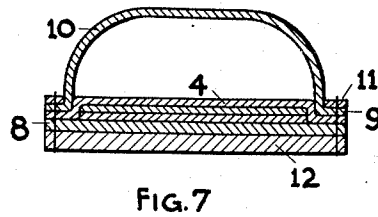
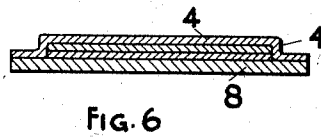
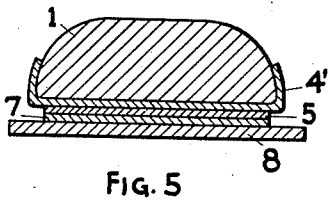
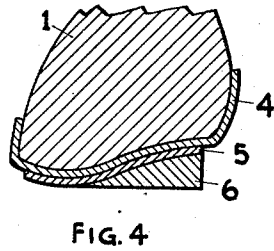
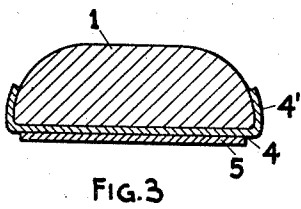
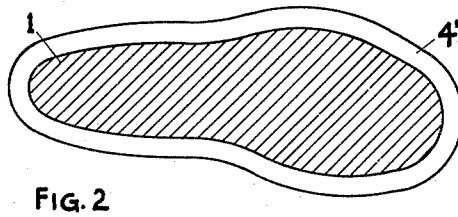
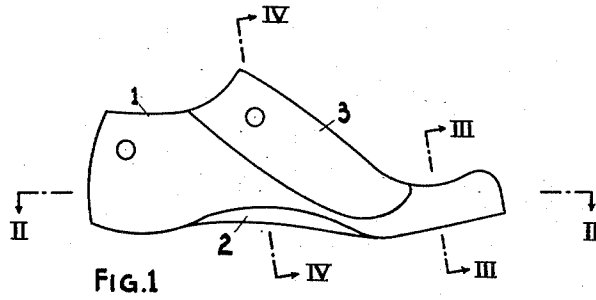
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2,579,592

LAMINATED INSOLE WITH ARCH SUPPORT

Filed March 8, 1947

2 SHEETS—SHEET 1



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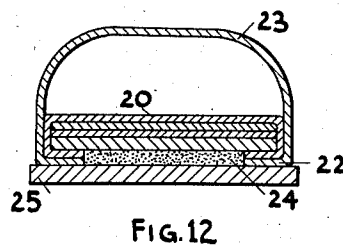
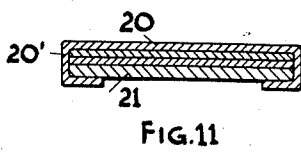
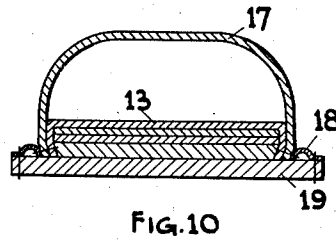
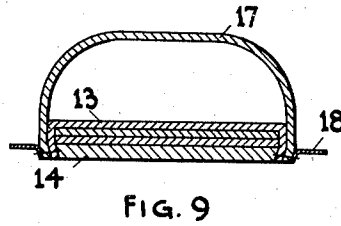
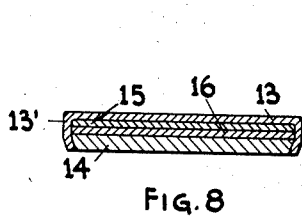
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2,579,592

LAMINATED INSOLE WITH ARCH SUPPORT

Filed March 8, 1947

2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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LAMINATED INSOLE WITH ARCH SUPPORT

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3 Claims. (Cl. 36—71)

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This invention relates to the manufacture of boots and shoes and has as its object to provide a new kind of insole providing an orthopedic arch support.

The invention consists in an insole for boots and shoes which is built up from several layers, namely an inner and outer sheet of leather or the like united along their edges, and a filling enclosed between them.

The filling is preferably so cut that it fits snugly into the space between the inner and outer leather sheets so that it can not budge and always retains its proper position. It may be made from any suitable sheet material, e. g. cork, cork fragments cemented by rubber or other suitable binders, felt, luffa or the like. Where it is desired to adapt the insole to the shape of the foot, a corresponding reinforcement may be provided in the filling. This may be a wedge glued to the filling sheet. In a preferred embodiment of the invention, the filling is again composed of two sheets between which the wedge is inserted.

The insole according to this invention is fixed to the upper and/or to the outsole in any suitable manner. For example, the edges of the inner and outer sheets of the insole may be made to project laterally from the filling so as to form a thin lip round a thicker central part. The lip serves for fixing the insole to the outsole and the outwards turned edges of the upper by stitching down. Or else, the outer sheet of the insole may be made substantially equal in width to the filling and the edge of the wider inner sheet thereof is folded down over the sides of the filling and outer sheet, and the insole which is thus obtained without a lip is surrounded by a welt to which the upper and outsole are fixed in the usual way.

The invention can be applied to all usual kinds of boots and shoes, and with particular advantage to sandals.

The invention is illustrated, by way of example only, in the accompanying drawings in which:

Fig. 1 is a side elevation of a last serving for the manufacture of insoles according to the invention, seen from the side of the shank;

Fig. 2 is a horizontal section of the last on line II—II of Fig. 1, showing also the inner sheet of the insole;

Figs. 3 to 5 show different stages of the manufacture of the insole, Figs. 3 and 5 being cross-sections on line III—III of Fig. 1, and Fig. 4 a fragmentary cross-section on line IV—IV of Fig. 1;

Fig. 6 is a cross-section of the finished insole, while Fig. 7 is a cross-section of a shoe made with such insole;

Figs. 8 to 10 illustrate similarly the manu-

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facture of a shoe with an insole according to a second embodiment of the invention;

Figs. 11 and 12 show similarly the manufacture of a shoe with an insole according to a third embodiment of the invention.

Turning first to Figs. 1 to 7, the last consists in the usual manner of a main portion 1 having the general shape of the foot, with a hollow shank portion 2, and an insert 3 in the instep portion. For the manufacture of normal footwear the last has the shape of a normal foot. For orthopaedic purposes the last may be given any special shape required by the deformities which the footwear is intended to remedy. In the sectional views of Figs. 2 to 5, the last has been shown, for the sake of simplicity, as if it were made all in one piece.

In the manufacture of an insole according to this invention, a sheet 4 is put on the bottom of the last, with a margin 4' projecting on all sides from the last. The sheet may consist of leather or any other suitable pliable material, for example, artificial leather, waterproofed canvas, plastic sheets or the like. The marginal portion 4' is now folded up and tacked to the sides of the last and the sheet is thereby stretched so tightly that it follows the curvature of the underside of the last. Then a filling sheet 5 is glued to the underside of sheet 4, again exactly following the shape of the underside of the last (Fig. 3). Sheet 5 may be made, for example, from cork, felt or the like material. It has substantially the outline of the foot, but is slightly narrower and shorter than the last. In the hollow 2 of the shank, a wedge 6 of cork or the like is then glued to the underside of sheet 5, its underside being substantially flush with the underside of sheet 5 outside the shank (Fig. 4). Therebeneath a further filling sheet 7 of cork or the like material is glued, coextensive with sheet 5, so that the wedge 6 is now enclosed between sheets 5 and 7. Finally the outer sheet 8 of the insole, which is made from a similar material as the inner sheet 4 and has substantially the same dimensions as the latter, is glued to the underside of sheet 7 (Fig. 5). The last step in the manufacture of the insole now consists therein that the marginal portion 4' of the sheet 4 is detached from the last and folded down onto the edge of sheet 8 to which it is secured by gluing. The insole is now ready as self-contained unit (Fig. 6).

Fig. 7 shows the manufacture of a shoe with such insole. The outturned edge portion 9 of the upper 10 is laid on the upper side of the marginal portion of the insole and covered by a welt 11, and an outsole 12 is applied to the underside of sheet 8 of the insole. All these parts are then joined by stitching down.

This method in which the outturned edges of the upper are connected in one single operation with the lip of the insole and with the outsole, is itself a novel feature of this invention, rendered possible by the novel configuration of the insole as described hereinbefore. The manufacture of the shoe is substantially simplified and facilitated thereby. This method does not correspond to the known manufacture of either stitchdown or welt shoes. In the former, no insole at all is provided but the outturned edges of the upper are directly stitched on the outsole which is the only sole. A normal, i. e. not composite, insole, could not be arranged on stitchdown shoes other than by gluing it afterwards on the inner surface of the outsole inside the upper, for if it were made as large as the outsole and its marginal portion were inserted between the outturned edge of the upper and the outsole, it would in effect be nothing but a second layer of the outsole itself. Welt shoes, on the other hand, are made thereby that the upper, with inturned edges, and the insole are first sewn together with the welt and the latter is afterwards fixed to the outsole which is not directly connected with either the upper or insole.

Figs. 8 to 10 show another embodiment of the invention. The insole is composed of an inner sheet 13, an outer sheet 14 and a filling which in turn consists of two sheets 15, 16 between which a wedge (not shown) is inserted in the same way as in the case of the first embodiment described hereinbefore. The outer sheet 14 of the insole is in this case substantially coextensive with the filling and its sides are chamfered, and the marginal portions 13' of the inner sheet 13 are folded down over the sides of the filling and of sheet 14 and glued thereto. The insole is thus made without a lip. Fig. 8 shows the insole made ready as a unit. To this insole, the upper 17 and a welt 18 are joined by stitching (Fig. 9). The shoe is completed thereby that the outer sole 19 is stitched in a known manner to the welt 18 (Fig. 10). The loose cork filling necessary for shoes of the Goodyear welt type can be dispensed with in view of the thickness of the insole.

Figs. 11 and 12 show the invention in its application to shoes manufactured by gluing alone without stitching. The manufacture of the insole itself is analogous to that shown in Fig. 8, with that difference that the marginal portion 20' of the inner sheet 20 of the insole is folded round the filling and laid flat upon the underside of the outer sheet 21. The edge portion 22 of the upper 23 is similarly folded round the whole insole and laid flat on the underside of said marginal portion 20' thereof. The space formed at the underside of the insole between the edges of portions 20' and 22 is filled out in the known manner with cork or a like mass 24. Finally, the outsole 25 is glued to the underside of said portion 22 and the filling mass 24.

In all embodiments of the invention, the filling sheets of the insole may be so selected that the insole is made waterproof and/or heat insulating. Cork, for example, fulfils the latter purpose, and sheets made from rubber-bonded cork fragment serve both purposes. The invention has the further advantage that no lining is required for the insole since the upper sheet takes the place thereof.

The insole may, of course, be modified in any suitable manner not particularly described and illustrated here.

I claim:

1. As a self-contained article of manufacture, a laminated insole for use as a permanently built-in part in footwear, comprising in combination, a top ply and a bottom ply of flexible leather; a filling arranged between said top and bottom plies, said filling consisting of two filling plies basically composed of cork; and an arch supporting wedge disposed between said two filling plies, said top and bottom plies being united along their edges so as to enclose said filling and said wedge.

2. As a self-contained article of manufacture, a laminated insole for use as a permanently built-in part in footwear, comprising in combination, a top ply of flexible leather, said top ply having an outer margin being arranged at a lower level than the main portion of said top ply; a plane bottom ply of flexible leather; a filling arranged between the main portion of said top ply and said plane bottom ply, said filling consisting of two filling plies basically composed of cork; and an arch supporting wedge disposed between said two filling plies, said top and bottom plies being united along their edges so as to enclose said filling and said wedge and to provide a lip surrounding the raised remaining part of the insole for attachment to the upper and outer sole of said footwear.

3. As a self-contained article of manufacture, a laminated insole for use as a permanently built-in part in footwear, comprising in combination, a top ply and a bottom ply of flexible leather; a filling arranged between said top and bottom plies, said filling consisting of two filling plies basically composed of cork; and an arch supporting wedge disposed between said two filling plies, said bottom ply being chamfered along the edge thereof and said top ply projecting on all sides over the chamfered edge of said bottom ply and the filling plies and being secured to the chamfered edge of the bottom ply, so as to enclose said filling and said wedge and to provide a marginal portion for attachment to the upper and outer sole of said footwear.

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