

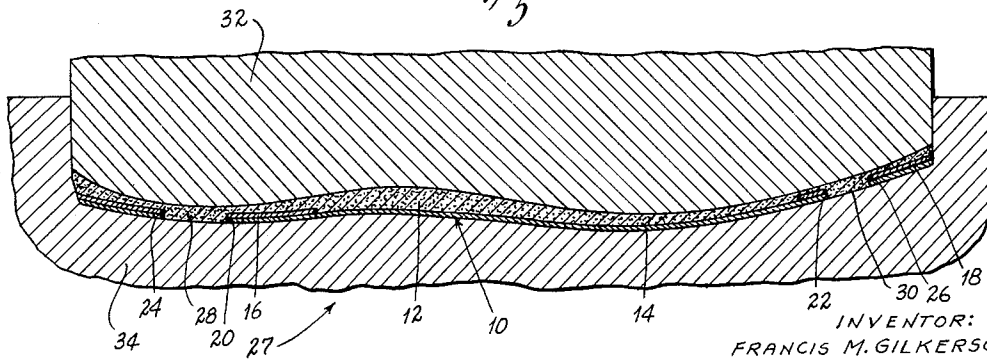
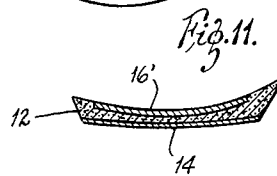
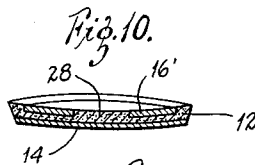
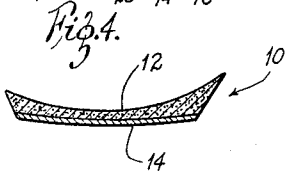
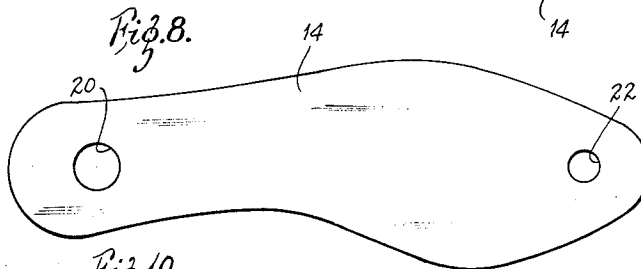
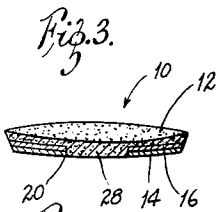
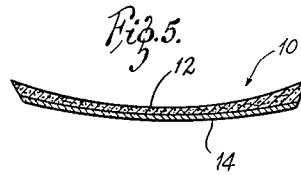
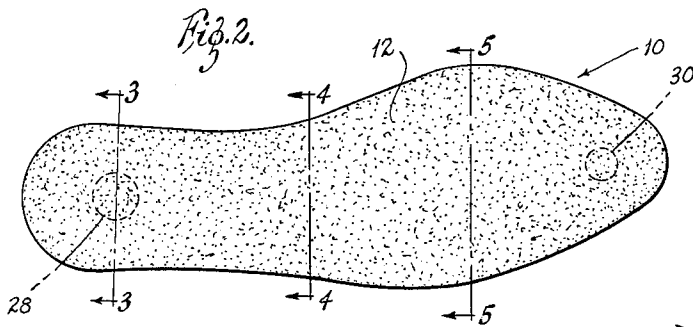
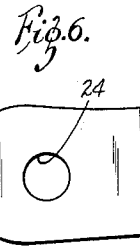
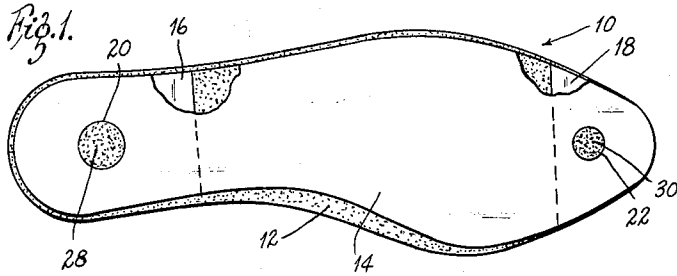
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F. M. GILKERSON

3,233,348

LAMINATED INSOLE

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INVENTOR:
FRANCIS M. GILKERSON,
BY Kingsland, Rogers, Egell & Robbins
ATTORNEYS

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3,233,348

LAMINATED INSOLE

Francis M. Gilkerson, 5029 N. Lake Drive,
Milwaukee 17, Wis.

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The present invention relates generally to the shoe insole art, and more particularly to a novel precast contoured insole of two or more layers, or partial layers, of materials varying in density, flexibility, rigidity, and thickness, and to a method of forming the same.

Heretofore, there have been used various forms and types of insoles for shoes. The structures run a wide range of materials and configurations. However, the shoe art has long needed a precast insole capable of use in mass production of men's, women's and children's shoes which is contoured to the average foot and which incorporates materials for the firm reception of nails, for stitching, or the like, yet includes flexibility, rigidity, resiliency and varying thickness in predetermined areas for foot comfort and fit.

Therefore, an object of the present invention is to provide a novel, preformed insole which fulfills the long existing need set forth in the preceding paragraph, and a novel method of forming the same.

In brief, an exemplification of the present novel cast insole includes a shape determining layer, which is heat and pressure sensitive, of finely ground cork and resin, rubber compound, or the like, a segmental inner layer or layers of fiber board, or the like, and a bottom layer of flexible paper and latex, cotton and latex, or the like. An upper layer of leather or other suitable material may be used. The shape determining layer is contoured for the average foot to support the arch and to provide comfortable wearing characteristics. The several parts of the insole are cast in a mold under predetermined pressure and heat, and in accordance with the present novel method of forming the same.

Hence, another object of the present invention is to provide a novel, precast contoured insole for mass production, which is stiff or firm in predetermined areas and adapted to receive nails, and which is flexible or resilient in other predetermined areas for comfort of the wearer.

Another object is to provide a novel precast contoured insole which can be employed in the mass production of men's, women's and children's shoes, thereby eliminating equipment and personnel of the stock fitting department.

Another object is to provide a novel precast contoured insole of multiple layers of materials of varying density, flexibility and thickness.

Another object is to provide a novel precast contoured insole which achieves a high degree of foot comfort for the wearer, yet is relatively inexpensive and adapted for mass production of shoes for men, women and children.

Another object is to provide a novel method of forming the present novel insole which is effective, economical and readily used.

Another object is to provide a novel precast contoured insole which, while flexible in predetermined areas for foot comfort, yet is rigid enough in predetermined areas to hold the foot of a wearer in the correct walking position.

The foregoing and other objects and advantages are apparent from the foregoing description taken with the accompanying drawing, in which:

FIGURE 1 is a bottom plan view of an insole made in accordance with the teachings of the present invention;

FIGURE 2 is a top plan view thereof;

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FIGURES 3, 4 and 5 are transverse, vertical, cross-sectional views taken on substantially the lines 3-3, 4-4, and 5-5 of FIGURE 2;

FIGURE 6 is a bottom plan view of a heel insert forming part of the insole illustrated in FIGURES 1-3;

FIGURE 7 is a bottom plan view of a toe insert forming part of the insole illustrated in FIGURES 1-3;

FIGURE 8 is a bottom plan view of a lower layer of material of the insole of FIGURES 1-3;

FIGURE 9 is a diagrammatic view in cross section of a mold and an insole being formed therein, which includes the teachings of the present invention, the section being on substantially a longitudinal center line of such an insole; and

FIGURES 10 and 11 are cross-sectional views similar to FIGURES 3 and 4, respectively, of a modified arrangement.

Referring to FIGURE 1, reference numeral 10 indicates generally an insole formed to incorporate the principles of the present invention. The contoured nature of the insole 10 is apparent from an inspection of FIGURES 3-5 and 9.

The insole 10 includes a shape determining layer 12, a bottom layer 14, an intermediate heel insert 16, and an intermediate toe insert 18. The shape determining layer 12 may be formed of cork and resin, a rubber compound, or the like. It is desirable that this material be flexible and resilient in the final form and that it be flowable under heat and pressure in a mold in its raw form. The intermediate heel and toe inserts 16 and 18 may be of fiber board, or the like. It is essential that this material be stiff or firm enough to receive nails, or other holding or securing means of this nature. The bottom layer 14 is of flexible paper and latex, cotton and latex, or the like. The bottom layer prevents stretching and is capable of adhering to a shoe upper when cement is applied, thereby ensuring dimensional stability laterally and longitudinally.

The bottom layer 14 may be provided with apertures 20 and 22. Similarly, the intermediate heel insert 16 and the toe insert 18 may be provided with apertures 24 and 26, respectively.

The insole 10 is formed in any suitable mold 27 under pressure and heat. The several layers of material and inserts, including a sock lining, if desired, are disposed in the mold 27 in the relationship as shown. The amount of pressure and the degree of heat necessary depend upon the materials employed for the layer 12, being well known factors. In forming the insole 10, some of the material ultimately comprising the layer 12 flows into the apertures or openings 20, 22, 24 and 26, forming plugs 28 and 30, which fuse with the walls of the apertures and assist in maintaining the several layers of the insole 10 together.

The facing surfaces of the parts of the mold 27 designated 32 and 34 are formed to the ultimate desired contours of the top and bottom of the insole 10, the former being determined by the bottom face of a special last. The desired longitudinal and transverse cross sections may be readily determined for each shoe size for men, women and children.

The present invention also contemplates and includes disposition of fiber board inserts, or an insert, with the upper surface as a continuation of the upper surface of the shape determining layer 12, material of the shape determining layer 12 being disposed between the bottom of the inserts, or insert, and the bottom layer, as is shown in FIGURES 10 and 11 for the heel insert 16'. This improves nailing, since there is firm engagement of the nails against the hard fiber board insert 16' instead of against the composition of the shape determining layer

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12. The inserts 16 and 16' generally are of less width than the shape determining layer 12, as is clear from FIGURES 3, 10 and 11, the width being determined as required, so that material of the shape determining layer 12 will be disposed at the sides of the insert 16' in the relationship shown in FIGURES 10 and 11. If desired, the heel insert 16' may extend forwardly over the shank, as shown; the toe insert may be omitted. The over-all bonding of the bottom layer 14 is also improved, thereby eliminating bubbles, for there is a firmer, more consistent engagement between it and the shape determining layer 12 than between it and the inserts 16 and 18.

Further, a rib may be bonded to the bottom of the insole 10 in the casting operation for use with the Good-year welt. It is simply necessary to provide one mold face with a suitable channel for receiving the rib. Normally, such rib extends around the toe and along both sides to points short of the heel end, as desired.

It is apparent that there has been provided a novel cast insole and method of forming the same which fulfill the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given by way of illustration and example. It is also to be understood that changes in form of the elements, rearrangement of parts and steps, and substitution of equivalent elements and steps, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. An insole comprising multiple layers of materials of different densities and flexibilities bonded together as a unit, a shape determining layer being formed with the upper surface thereof contoured and adapted to fit a foot of a wearer, an insert layer of material firm enough to receive and retain nails being disposed in the heel area and extending a substantial distance forwardly therefrom, and a bottom layer of less thickness than the shape determining layer maintaining the dimensional integrity of the insole bonded to the bottom of said shape determining layer.

2. An insole comprising multiple layers of materials of different densities and flexibilities bonded together as a unit, a shape determining layer being formed with the upper surface thereof contoured and adapted to fit a foot of a wearer, and an insert layer of material firm enough to receive and retain nails being disposed in the heel area

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and extending a substantial distance forwardly therefrom and having the upper surface substantially coextensive with the upper surface of said shape determining layer, said shape determining layer extending along the longitudinal sides of said insert layer.

3. An insole comprising multiple layers of materials of different densities and flexibilities bonded together as a unit, a shape determining layer being formed with the upper surface thereof contoured and adapted to fit a foot of a wearer, an insert layer of material firm enough to receive and retain nails being disposed in the heel area and extending a substantial distance forwardly therefrom and having the upper surface substantially coextensive with the upper surface of said shape determining layer, said shape determining layer extending along the longitudinal sides of said insert layer, and a bottom layer of material of less thickness than the shape determining layer maintaining the dimensional integrity of the insole bonded to the bottom of said shape determining layer.

4. The combination of claim 1 in which said bottom layer and said insert layer have at least one aperture through each, and material integral with and of the same kind as the shape determining layer disposed in said apertures and bonded to the walls thereof.

5. The combination of claim 4 in which at least one aperture in said bottom layer and in said insert are disposed in superposed relation.

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JORDAN FRANKLIN, *Primary Examiner*.

EDWARD V. BENHAM, *Examiner*.