Jan. 16, 1968 R. L. BOURASSA ET AL 3,363,343

SHOE HAVING HEEL CORE MOLDED THEREIN

Filed March 1, 1965 2 Sheets-Sheet 1

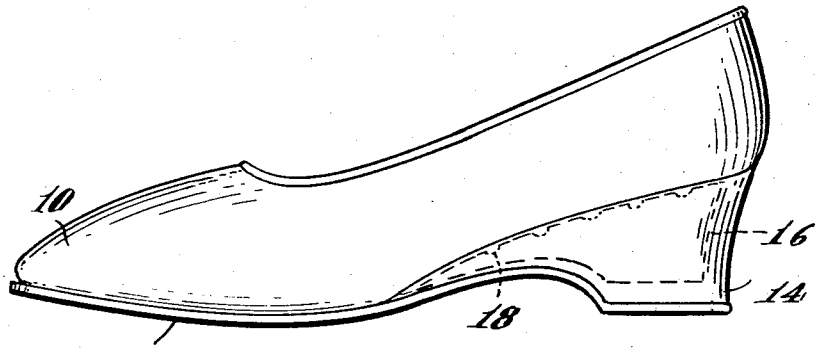


Fig. 1

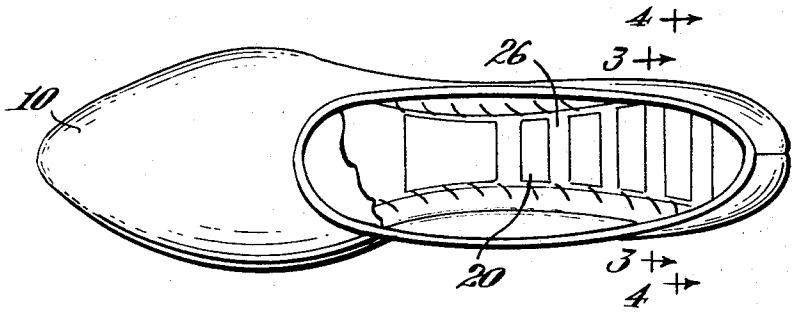


Fig. 2

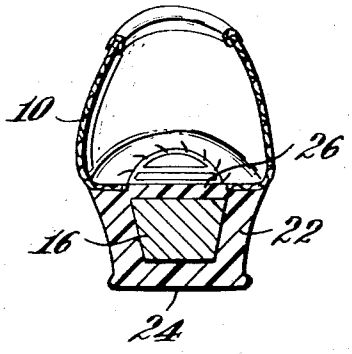


Fig. 3

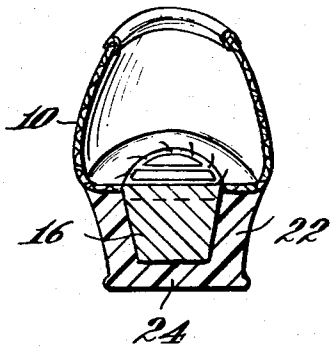


Fig. 4

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ATT'YS

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SHOE HAVING HEEL CORE MOLDED THEREIN

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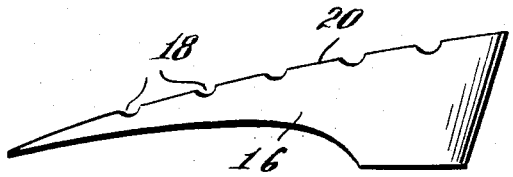


Fig. 5

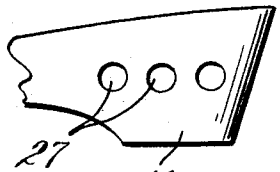


Fig. 8

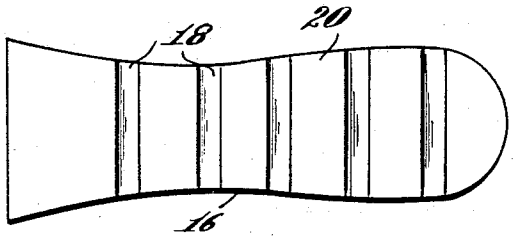


Fig. 6

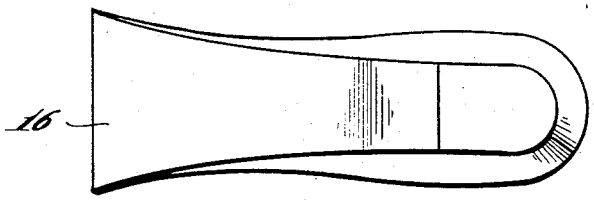


Fig. 7

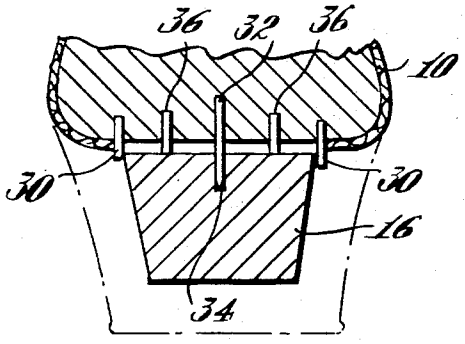


Fig. 11

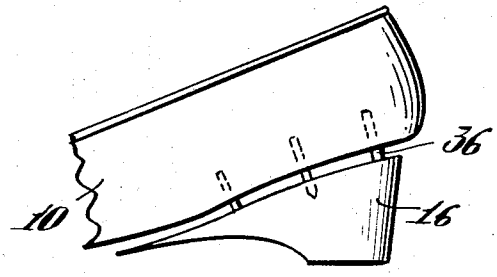


Fig. 10

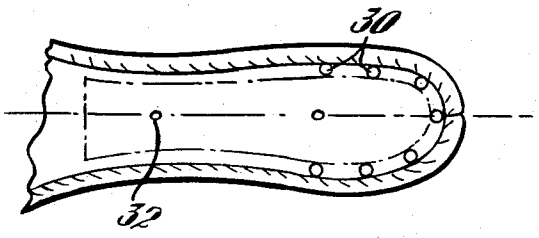


Fig. 9

United States Patent Office 3,363,343
Patented Jan. 16, 1968

3,363,343

SHOE HAVING HEEL CORE MOLDED THEREIN

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Filed Mar. 1, 1965, Ser. No. 436,242
1 Claim. (Cl. 36—32)

ABSTRACT OF THE DISCLOSURE

A shoe having a continuous bottom comprised of a bottom-forming composition molded to the lasting margin and including at the heel end a heel core of wood or the like.

The principal objects of the invention are to provide a shoe of the foregoing kind with a heel comprised of a core and a cover so constructed that the cover will not separate from the heel; to provide a heel cover so constructed that it cannot separate from the heel core even though the core is incompatible with the cover and does not adhere thereto; to provide a heel in which the core constitutes the major portion of the volume of the heel and is comprised of a material lighter than the cover so as to lessen the weight of the heel; and to provide a heel in which the core is rigid, inexpensive and comprised of readily available material.

As herein illustrated, the shoe has a heel comprising a core and a cover wherein there is means extending transversely of the heel core from one side to the other, connected at its ends to the wall of the cover at opposite sides of the core which prevent the core from working out of the pocket formed by the cover and/or separation of the wall of the cover from the core. The aforesaid means in the preferred form of the invention comprise a plurality of longitudinally spaced, parallel ties extending transversely of the heel core with their ends integral with the wall of the cover at opposite sides of the core. The ties may be situated in grooves in the top of the heel core or holes through the heel core. Optionally, the heel may comprise a core spaced from the bottom of the upper and a cover comprising a side wall peripherally thereof, a bottom wall constituting a heel lift, and a top wall extending across the top of the core between it and the bottom of the upper which is integral at its edge with the upper edge of the side wall and hence prevents separation of the core from the pocket formed by the cover and/or separation of the side wall of the cover from the core.

In accordance with the preferred method, a core in the form of a heel wedge is provided containing a plurality of transversely extending passages, either in the surface which is to have contact with the bottom of the lasted upper or through the wedge from one side to the other; the wedge is held engaged with the bottom of the lasted upper and the bottom-forming composition is applied by injection molding to form an outsole at the forepart, a cover about the heel wedge and to fill the passages. Alternatively, the top of the wedge is held spaced from the bottom of the upper and the bottom-forming composition is injected to form a cover about the heel wedge and to fill the space between the top of the heel wedge and the bottom of the lasted upper. Positioning pins, spacing pins and supporting pins are provided for properly locating and holding the heel wedge in position at the bottom side of the lasted upper during injection.

A novel heel wedge is employed in making shoes embodying the above advantages, characterized in that it contains longitudinally spaced, parallel, transversely extending passages in its upper surface which provide, when the top of the heel wedge is held against the bottom of the lasted upper, grooves transversely of the wedge through which the bottom-forming composition is adapted to flow during the formation of the bottom.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a side elevation of a shoe having a bottom and heel formed by injection molding;

FIG. 2 is a plan view looking into the top opening of the shoe shown in FIG. 1;

FIG. 3 is a transverse section taken on the line 3—3 of FIG. 2;

FIG. 4 is a transverse section taken on the line 4—4 of FIG. 2;

FIG. 5 is an elevation of the wedge;

FIG. 6 is a plan view of the top of the wedge;

FIG. 7 is a bottom view of the wedge;

FIG. 8 is a fragmentary elevation of an alternate form of the invention wherein holes are formed through the wedge from one side to the other;

FIG. 9 is a fragmentary bottom view of a last showing an upper string-lasted thereto about a plurality of gauge pins at the heel end and with a wedge positioned within the gauge pins, the latter being shown in dot and dash lines;

FIG. 10 is a fragmentary elevation at the heel end of the shoe showing spacing and attaching means for locating the heel wedge and holding it in place during injection; and

FIG. 11 is a transverse section showing the core located, spaced and attached to the bottom side of the last preparatory to injection.

Referring to the drawings, the shoe comprises a conventional upper **10** made of leather, fabric or man-made material and a bottom formed of a plastic composition, such as polyvinyl chloride, consisting of a forepart **12** and heel **14** applied to the upper by injection molding. The heel **14**, as illustrated, is of the wedge-type and contains a heel core **16** shown dotted in FIG. 1.

As herein illustrated, the core **16** is a wedge, as shown in FIGS. 5, 6 and 7, comprised of a natural material or a composition which is inexpensive, readily available, rigid, light in weight, durable and not adversely affected by the moisture of the foot. It is the purpose of this invention to enable use of any such material for a core whether or not it is compatible with or will become permanently adhered to the substance of the bottom-forming composition without special treatment of its surface and without the core working out of the cover or the cover separating from the core.

In the preferred form of the invention this is accomplished by providing the wedge with a plurality of transversely spaced, parallel grooves **18** in its upper surface **20**, as shown in FIGS. 5 and 6, holding the wedge against the bottom of the lasted upper within a mold cavity (comprised of a mold ring against the top of which the lasted upper is held and a sole plate supported at the lower side of the ring for movement relative to the ring to control the depth of the mold cavity) and injecting the bottom-forming composition to fill the cavity so as to form an outsole at the forepart and a heel cover about the wedge. The cover comprises a peripheral side wall **22** and a heel lift **24**, within which the core, that is, the wedge is contained as shown in FIGS. 3 and 4. During injection the bottom-forming composition flows through the grooves **18** between the upper surface **20** of the wedge and the bottom of the lasted upper, forming ties **26**, one of which is shown in FIG. 3, which are integral at their opposite ends with the opposite sides of the peripheral side wall **22** and thus prevent the heel wedge from working out of the pocket formed by the cover or separation

of the cover from the sides of the heel wedge. As herein illustrated, there are five grooves **18** which extend across the upper surface **20** of the wedge from one side of the other. The grooves are semicircular in cross-section and have a diameter of approximately ¼ of an inch. The bottom-forming composition which flows into these grooves fills them and forms with the portions of the surface **20** between them a smooth surface corresponding in contour to the wedge surface prior to grooving.

FIG. 4 shows the junction of the bottom-forming composition with the lasting margin which is string-lasted and embodies no insole so that the upper surface of the wedge and ties are exposed inside the shoe as shown in FIG. 2.

Alternatively, instead of employing grooves **18** in the upper surface of the wedge, a plurality of transverse holes **27**, such as shown in FIG. 8, may be used. The holes are formed through the wedge from one side of the other so that continuous ties will be formed by flow of the bottom-forming composition through the holes from one side to the other.

In order to hold the heel core or wedge in place, in proper relation to the bottom side of the lasted upper during injection, use is made of gauge pins **30** fixed to the bottom of the last as shown in FIG. 9. These pins are employed to control the position of the inner edge of the lasting margin when the latter is pulled onto the last by the draw string and provide convenient means for locating the heel core both transversely and longitudinally of the bottom. Additional pins **32** may be fixed to the bottom of the last at the median line upon which the wedge may be impaled to hold the wedge in place against the bottom during injection. The wedge may contain in its upper surface drilled holes **34** for receiving the pins **32** or the pins **32** may be provided with pointed ends and the wedge pressed onto these ends.

If desired, the heel core, as shown in FIGS. 10 and 11, may be held spaced from the bottom of the lasted upper by spacing pins **36** fixed in the bottom of the last at opposite sides of the median line, so that when the heel core is impaled on the holding pins **32** within the locating pins **30** there is a continuous space between the upper surface of the core and the bottom of the lasted upper which will be completely filled with bottom-forming composition thus forming a top wall coextensive with the heel core and integral with the upper edge of the side wall. In this alternative form of the invention, the heel core is completely enclosed within the cover and hence there is no possibility of separation of the cover from the core.

However, this construction does not provide quite the rigidity afforded by the structure shown in FIGS. 3 and 4, is not as economical of material, is not as light in weight and does not afford the foot comfort of a core exposed at the inside of the shoe.

The pins **32** and **36** are all of very small diameter so that when the shoe is stripped from the last the holes left are barely discernable and hence are not objectionable.

The heel core wedge as described herein is made of wood, however, any other suitable material embodying the desired characteristics of rigidity, light-weight, low cost and resistance to foot moisture may be substituted for the wood heel since the material does not have to be compatible with or adherent to the bottom-forming composition which forms the cover.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claim.

We claim:

1. In a shoe comprising an upper having a turned in lasting margin and a heel core at the heel end; a bottom comprising a continuous layer of bottom-forming composition covering the forepart and heel core, and an integral membrane extending transversely of the heel core between the breast and the back line joining the side wall portions of the heel core covering to each other, said heel core including a plurality of transverse grooves extending entirely across the top of the core confronting the bottom of the shoe at the heel end thereof and a plurality of membranes extending through said grooves, the top of the heel core, the inner surface of the lasting margin and the upper surface of the membranes situated in the grooves at the top of the heel being flush.

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