June 23, 1964 G. H. BINGHAM, JR 3,137,875

HOLLOW DISPLAY FORM

Filed March 14, 1961

2 Sheets-Sheet 1

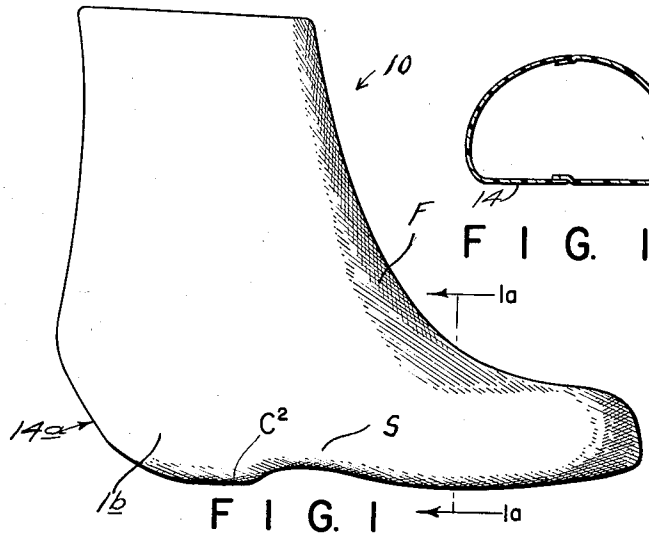

FIG. 1

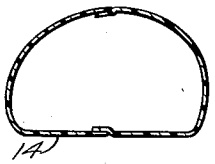

FIG. 1a

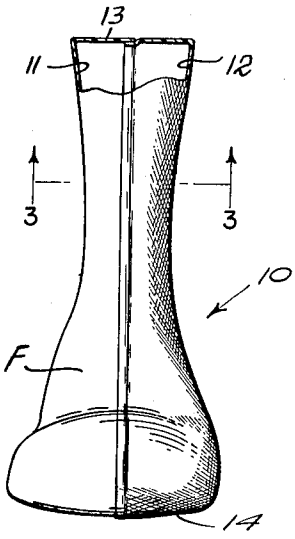

FIG. 2

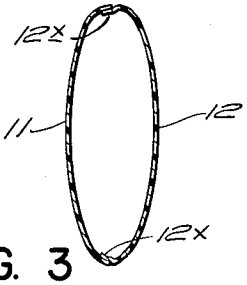

FIG. 3

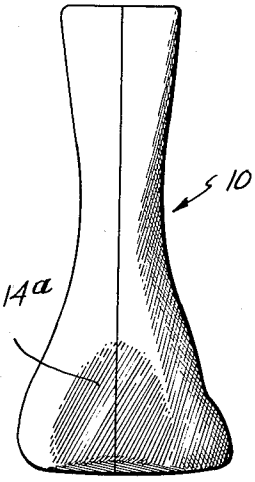

FIG. 4

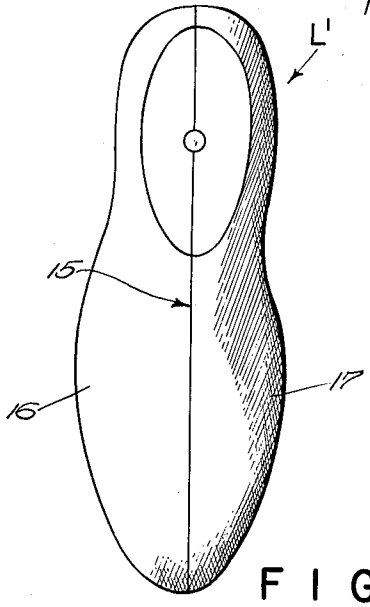

FIG. 5

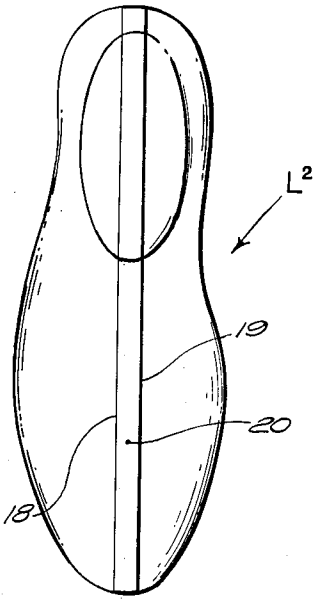

FIG. 6

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2 Sheets-Sheet 2

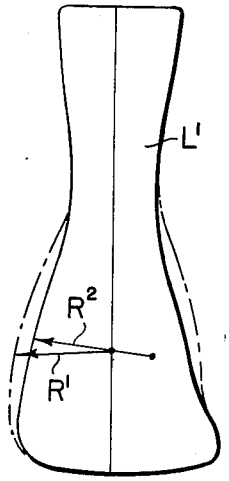

FIG. 6a

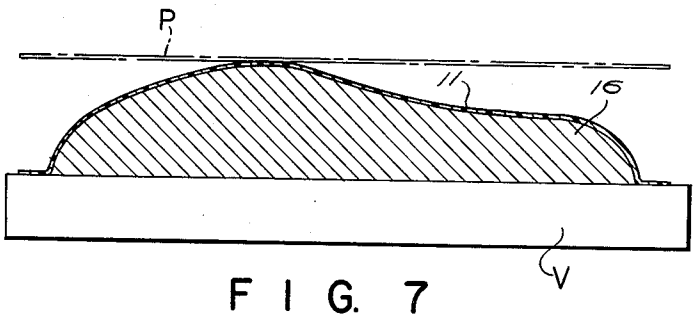

FIG. 7

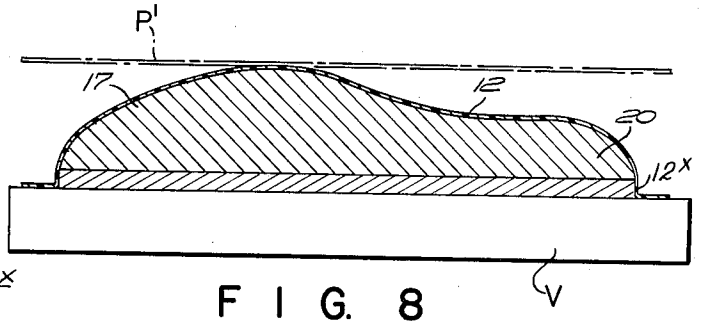

FIG. 8

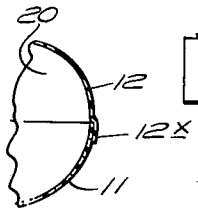

FIG. 8a

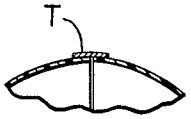

FIG. 9

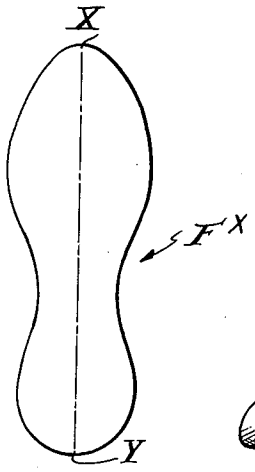

FIG. 10

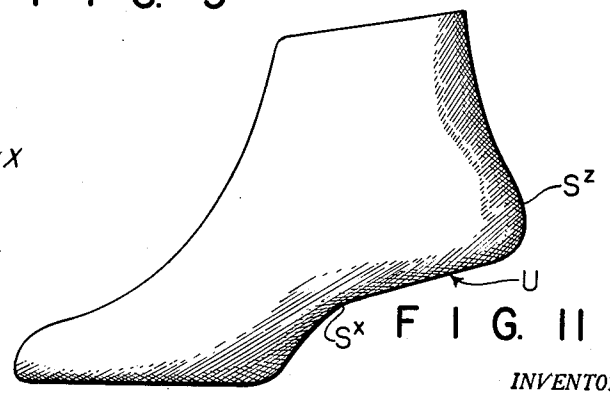

FIG. 11

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3,137,875

HOLLOW DISPLAY FORM

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Filed Mar. 14, 1961, Ser. No. 95,656
2 Claims. (Cl. 12—128)

This invention pertains to thin walled hollow forms especially designed for insertion into overshoes or other waterproof articles of footwear although also useful for displaying hosiery, etc.; and which, are intended to maintain the shape of the finished overshoe or other article while on exhibition, during transportation, or in intervals of use, and relates to a novel form of the above type.

In order that the overshoe shall be kept smoothly plumped out by the form, it has been found desirable to employ a form of fixed dimensions, that is to say, one which is non-collapsible and preferably closed at its bottom so as to maintain its transverse dimensions and, for good appearance, closed at its top. However, in using such a form of unchangeable dimensions and of a size closely approximating the shape of the interior of the overshoe with which it is to be used, difficulty is experienced in inserting it into the overshoe or withdrawing it therefrom, particularly if the overshoe is of a type which does not open widely.

Since overshoes are of many styles, particularly those made of the new plastics, including those having flat heels, Cuban heels and French heels, it has been thought necessary heretofore, to provide a large number of forms of correspondingly different shapes, thus making it necessary for the merchant, who displays overshoes of various types in his windows, to have forms of many kinds in order to display the various kind of overshoe to the best advantage. The differences in heels presents an especially troublesome problem, for were it not for these different styles of heels, the same form might be useful with several styles of overshoes, since the shank and forepart portions of the overshoes do not differ to nearly so marked a degree as to the heels.

One object of the present invention is to provide a closed form of the above shoe which is so shaped as to be capable of being introduced into and withdrawn from an overshoe without difficulty. A further object is to provide a composite form which may be used in either a right or left shoe, and which still has good fitting qualities. A further object is to provide a form which satisfactorily functions with overshoes of a range of sizes. A further object is to provide a novel form which may be made from a sheet of plastic or similar material, for example, by a vacuum molding process, whereby it may be produced at a very low cost as compared with shoe forms made by previous methods. A further object is to provide a form, which because of its shape, has adequate strength and durability. Other and further objects and advantages will be pointed out in the following more detailed description and in reference to the accompanying drawings wherein:

FIG. 1 is a side elevation of a form embodying the present invention;

FIG. 1*a* is a section on the line 1*a*—1*a* of FIG. 1;

FIG. 2 is a front elevation of the form of FIG. 1 with its upper portion in vertical transverse section;

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

FIG. 4 is a rear view of the form of FIG. 1;

FIG. 5 is a plan view of a conventional shoe last such as may be employed in accordance with the present invention, illustrating one step in the procedure.

FIG. 6 is a plan view of a last like that of FIG. 1, but illustrating another step in the preferred procedure;

FIG. 6*a* is a rear elevation of a last like that of FIG. 5 or 6, but illustrating the result of a further step in the procedure;

FIG. 7 is a diagrammatic elevation illustrating the molding of one of the two constituent shells of which the form of FIG. 1 is composed;

FIG. 8 is a view similar to FIG. 7 but illustrating the molding of the other of said constituent shells;

FIG. 8*a* is a fragmentary transverse section illustrating the step of uniting the two shells resultant from the molding operations of FIGS. 7 and 8;

FIG. 9 is a section similar to that of FIG. 8*a*, but illustrating another way of making and uniting the shells;

FIG. 10 is a diagrammatic plan view showing a form similar to that of FIG. 1, but so shaped that it may be used with either a right or left shoe; and

FIG. 11 is a side elevation of a heelless form, in accordance with the present invention, specifically intended for use in overshoes or boots having high heels.

Referring to the drawings, numeral **10** designates a hollow form made in accordance with the present invention, this form having the side walls **11** and **12** (FIG. 2), the top wall **13** and the bottom or sole **14**—the form being entirely closed and of substantially fixed dimensions. As shown in FIG. 1, the forepart and shank portions F and S of the form are of a contour generally similar of those of an ordinary shoe, but at the heel seat portion **14***a* the rear surface of the form slopes downwardly and forwardly and merges smoothly with the bottom surface and is thus devoid of anything resembling a customary heel.

In making this form, a last L^1 (FIG. 5) is chosen of a style and contour like that of the desired form, although preferably of a half size smaller to compensate for the thickness of the material of the form. This last is divided longitudinally by a sawcut **15** (FIG. 5) thus providing the two halves **16** and **17**. A similar last L^2 (FIG. 6) is provided and this last is divided into three parts by the parallel sawcuts **18** and **19**, leaving between them a flat sided slab **20** preferably of a thickness of the order of $\frac{3}{16}$ of an inch.

In accordance with the present invention, the lasts L^1 and L^2, are initially conventional lasts such as are employed in making shoes and of standard width and outwardly convex in transverse vertical planes in the quarter portion of the last—the curvature at this point being of a relatively short radius R^1 (FIG. 6*a*). The term "conventional last," as here used, is to be understood to means a shoe last such as is customarily employed in shoe manufacture and which, in accordance with formulae recognized in the trade, embodies certain relative proportions of size (length) and width. This conventional last is then modified by removing material at the opposite sides of the quarter portion so that at that transverse plane in which the quarter is of maximum width, the resultant transverse thickness of the last is ap-

proximately 25% less than it was originally, and the radius of curvature R^2 of the outer surface is increased. At the same time, the rear surface is so modified in contour as to slope downwardly and forwardly from a point corresponding approximately with the upper rear edge of the calcaneum bone of the foot to merge with the bottom surface of the last at the point C^2 approximately at the rear end of the shank of the last.

Having prepared the half-lasts **16** and **17** and the slab member **20**, the half-last **16** is now placed flat side down as shown in FIG. 7 upon the supporting element of a vacuum-molding device V. A thin sheet of selected plastic P, which may be transparent if desired and/or colored or surface textured for ornamental effect, and which, for example, may be of the order of 0.03 inch thick (after having been treated to make it readily temporarily moldable), is placed across the half last **16** and in response to the vacuum is pulled down over the curved surface of the half mast to form one hollow shell or side element **11** of the proposed form, any surplus marginal material being trimmed away after the plastic has set. The plastic chosen should be such that when it has set, after molding, it is tough and stiffly resilient.

Having removed the half last **16** and the shell **11** from the vacuum-molding device, the other half last **17** (FIG. 8) is assembled with the slab **20** with its flat surface in registry with the slab member **20**, and the assembly is placed on the support of the vacuum-molding machine and another sheet P^1 of plastic, suitably treated to make it moldable, is arranged over the half mold **17** and is subjected to vacuum so that it is pulled down about the curved surface of the last member **17** and down around the edge of the slab **20**. When this plastic has set the slab **20** and the slab **17** are removed from the resultant half shell **12** and that margin 12^x of the shell which was molded about the edge of the slab is then again treated to make it moldable. These shells are then placed edge to edge and the softened margin 12^x of shell **12** is lapped over the margin of shell **11**, preferably with adhesive coating the opposed surfaces of the parts and they are held in this position until the adhesive has set, so permanently uniting the shells, resulting in a hollow form like that of FIGS. 1 and 2.

The hollow form shown in FIGS. 1 and 2 is devoid of any downwardly projecting heel and may be inserted in an overshoe having a low heel or a high French heel. In the latter case, the form does not fill out the heel portion of the overshoe, but that is unnecessary since the heel portion of the overshoe is usually stiff enough to maintain its shape without assistance. By reason of the fact that the sides of the quarter portion of the original last were cut away or otherwise removed so as to reduce the transverse thickness at this point, the completed form is likewise of lesser transverse dimensions at this part of the form than those of the original last. Thus, when it is introduced into a shoe whose interior is complementary to the outer surface of a last like the original, such as the last L^1, the overshoe is held fully distended and plumped out, although the form may readily be introduced into an overshoe of such dimensions because of the relatively narrow quarter portion of the form.

Since overshoes of the same style do not vary in shape substantially at the forepart and upper portions through a small range of sizes, and since the form is without any downwardly projecting heel, the same form is found to function satisfactorily with shoes of a size larger and a size smaller than that of the last employed in making the form.

Alternatively, instead of providing a central slab **20** (FIG. 6), such as above described, the vacuum molding of the two shells may be carried out by means of the half lasts **16** and **17** alone and the resulting like shells may be assembled with their edges abutting as shown in FIG. 9 and in registry, and then a tape T (FIG. 9) of any appropriate material, for instance a plastic ribbon or a textile fabric, is lapped over the joint and bonded to the margins of the two shells, for instance by adhesive. This procedure reduces the cost of production as compared with the procedure previously disclosed, but possibly at the sacrifice of some degree of strength.

As illustrated in FIG. 11, form S^z is of the same general construction as that of FIG. 1 except that it is designed for use with high-heeled overshoes or boots. In this form the quarter portion is abnormally narrow transversely, as above described, but the undersurface U of the form, at its quarter portion, slopes upwardly and rearwardly as a substantially plane surface from the rear end S^x of the shank to the point where it merges with the rear surface S^2 of the quarter. This form, when used with a high-heeled overshoe, is readily donned and doffed since it does not reach down to the bottom of the heel of the overshoe.

Obviously, in making forms for right and left shoes, respectively, according to the above-described procedure, it is necessary to start with right and left lasts. However, reasonably good forms may be made by employing a specially made last, symmetrical in shape with respect to a longitudinal, front-to-rear vertical plane and employing such a last in making the form. The contour of the bottom of such a form F^x is illustrated diagrammatically in FIG. 10, it is hereby noted that the form is symmetrical with reference to the center line X—Y. A form so shaped gives reasonably good satisfaction when used to display both right and left shoes.

The form thus made is light in weight and by the process of manufacture above described may be made at a very low cost as compared with prior methods such as have been used for making the customary celluloid shoe forms, and because it is of fixed dimensions it does not tend to become permanently deformed when not in use or by reason of repeated collapsing as is true of forms of the collapsible type. Moreover, by reason of the smoothly contouring shape at the heel and because of the overlap and binding of the marginal portions of the constituent shells **11** and **12**, the form is very stiff and strong, although much lighter in weight than forms made of heavier materials, for example, indurated fiber board. Furthermore, because the form is completely closed, it is not possible for dust or other material to reach its interior and detract from its appearance.

While certain embodiments of the invention have herein been disclosed by way of example, it is to be understood that the invention is broadly inclusive of any and all modifications which fall within the terms of the appended claims.

I claim:

1. A hollow, thin-walled, non-collapsible form, invariable in width, for use in maintaining an article of footwear in plumped out condition while on exhibition, said form being of thin but stiff material, of predetermined size and shape, and completely closed at both top and bottom, the shank and forepart portions of said form being of an external contour substantially like that of the corresponding portions of a conventional shoe last while its quarter portion is of a maximum transverse width which is approximately 25% less than that of a conventional shoe last of the same size, while the heel seat end of the bottom of the form slopes downwardly and forwardly so as to merge smoothly with the bottom surface and being devoid of anything resembling a heel.

2. A substantially rigid, heelless, hollow shoe form completely closed at top and bottom, invariable in width and of stiffly resilient plastic material, the forepart and shank portions of said form being of an external size and contour substantially like that of a conventional shoe last of a predetermined size and style, the quarter portion of the form being narrower, transversely, than the quarter portion of such a last, and the bottom surface of the quarter portion of the form sloping upwardly from the rear end of the shank whereby, when the form is inserted

in a shoe, the bottom of the quarter portion of the form is spaced above the upper surface of the bottom of the shoe heel.

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