Nov. 1, 1938. J. CAVANAGH 2,135,170

SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 19, 1936 4 Sheets-Sheet 1

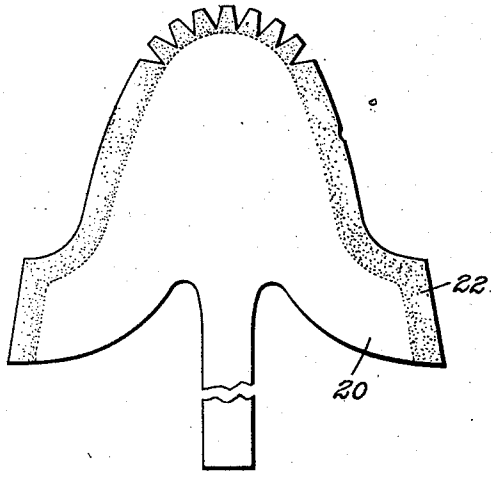


Fig. 1.

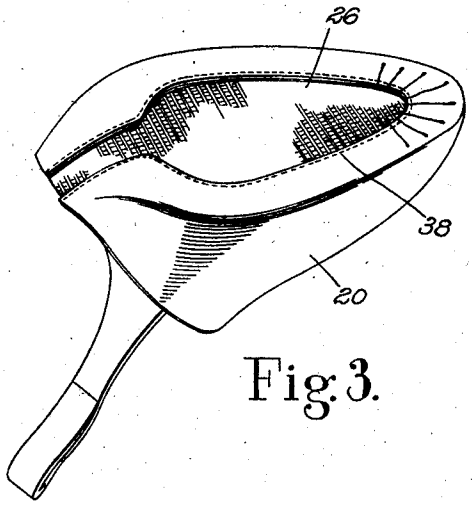


Fig. 3.

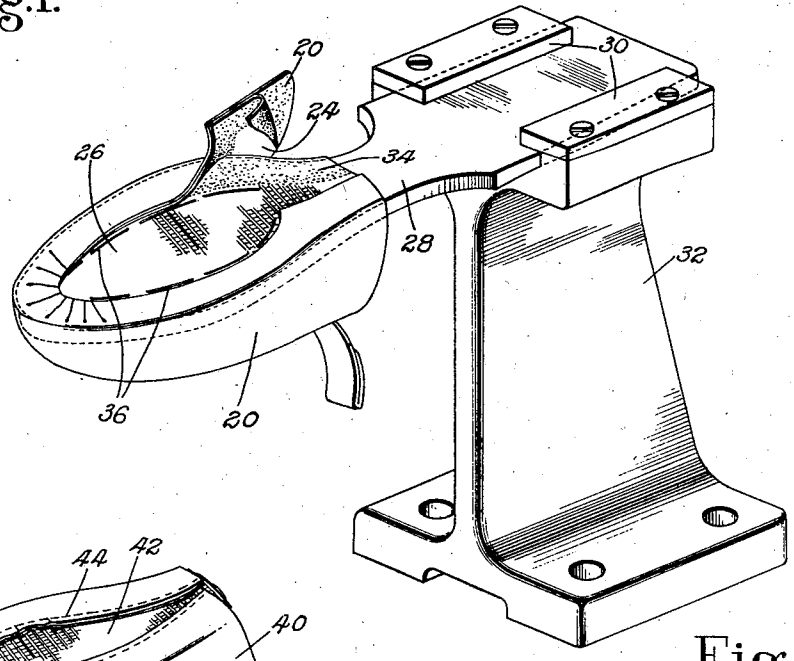


Fig. 2.

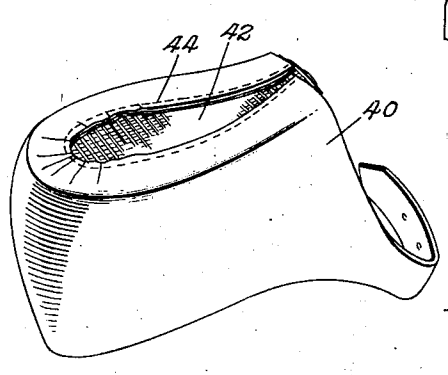


Fig. 4.

INVENTOR
James Cavanagh
By his attorney
Victor Gold

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SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 19, 1936 4 Sheets-Sheet 2

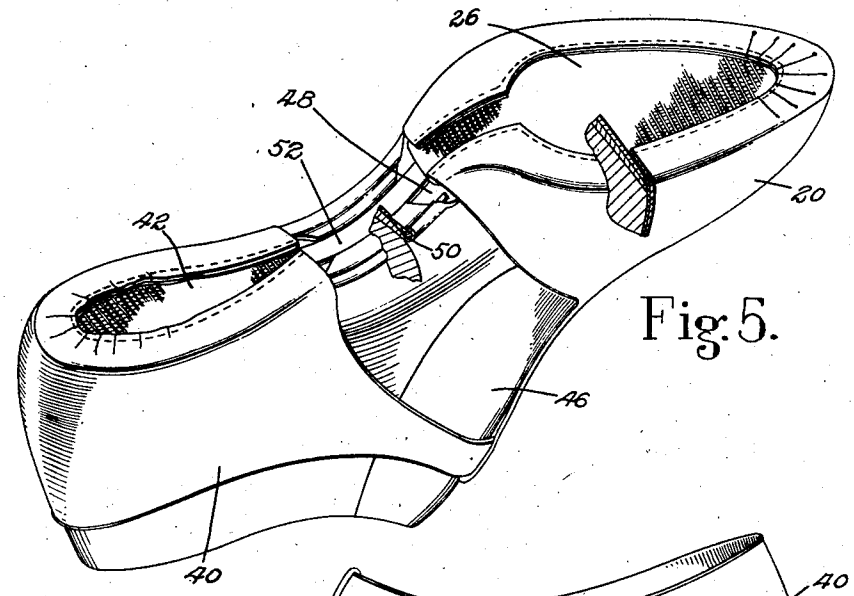


Fig. 5.

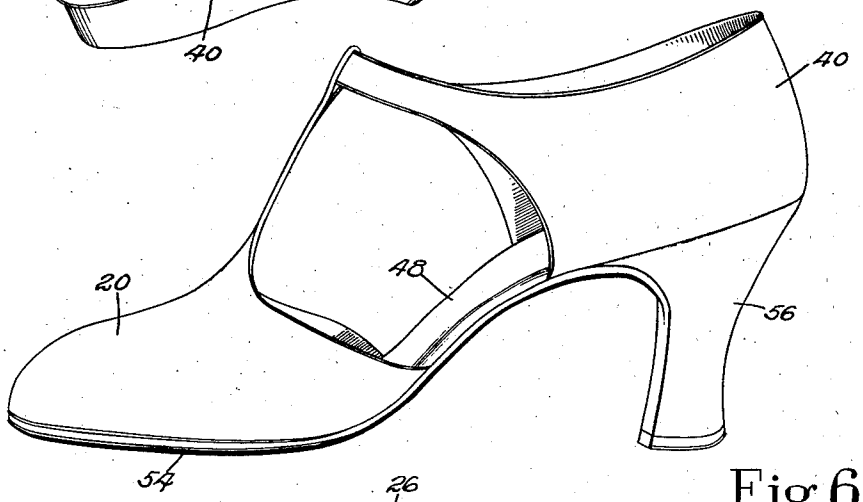


Fig. 6.

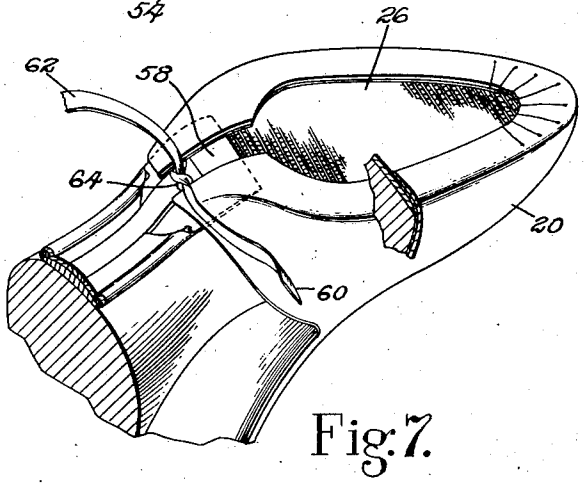


Fig. 7.

INVENTOR
James Cavanagh
By his attorney
Victor Colb.

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SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 19, 1936 4 Sheets-Sheet 3

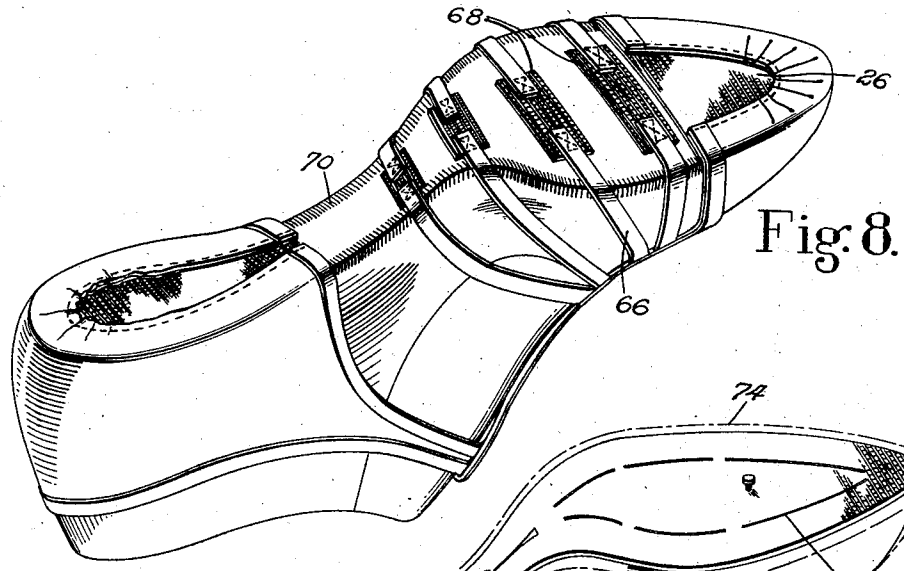


Fig. 8.

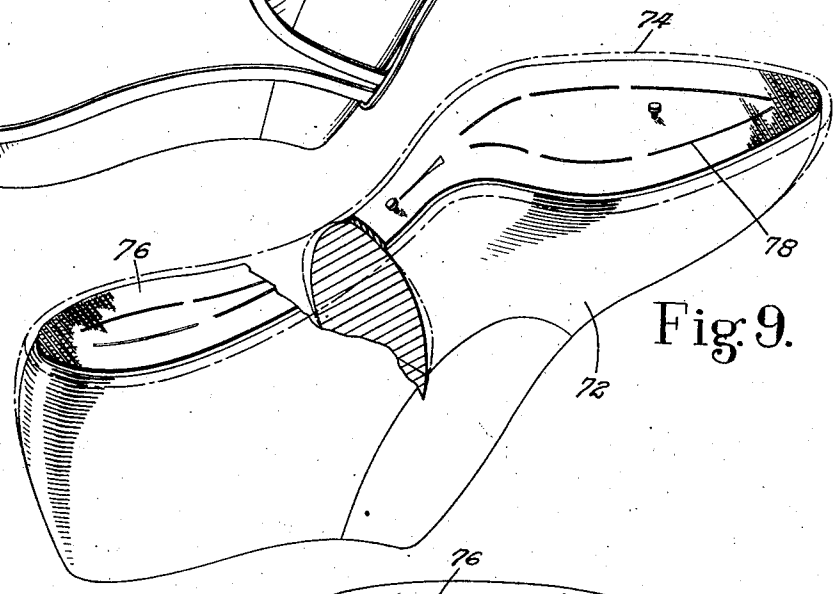


Fig. 9.

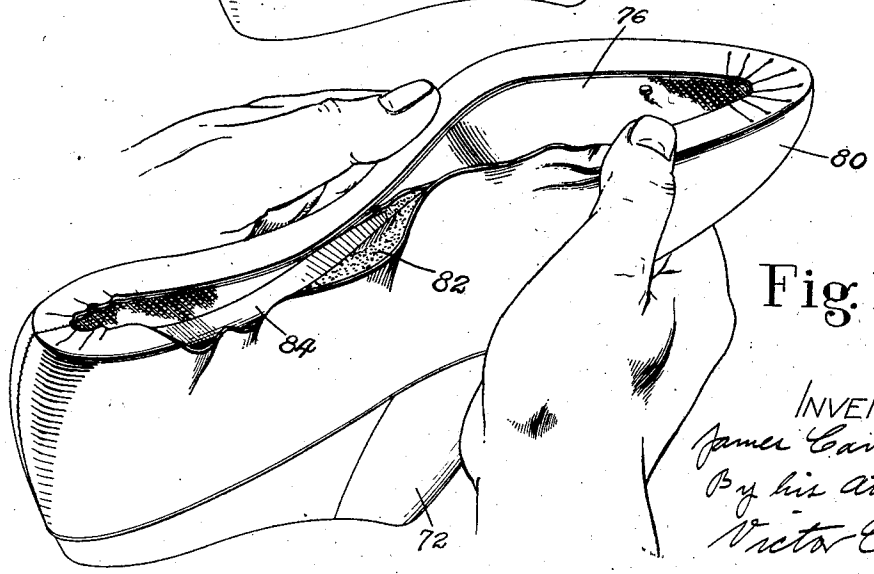


Fig. 10.

INVENTOR
James Cavanagh
By his attorney
Victor Cobb.

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SHOE AND METHOD OF MAKING THE SAME

Filed Oct. 19, 1936 4 Sheets-Sheet 4

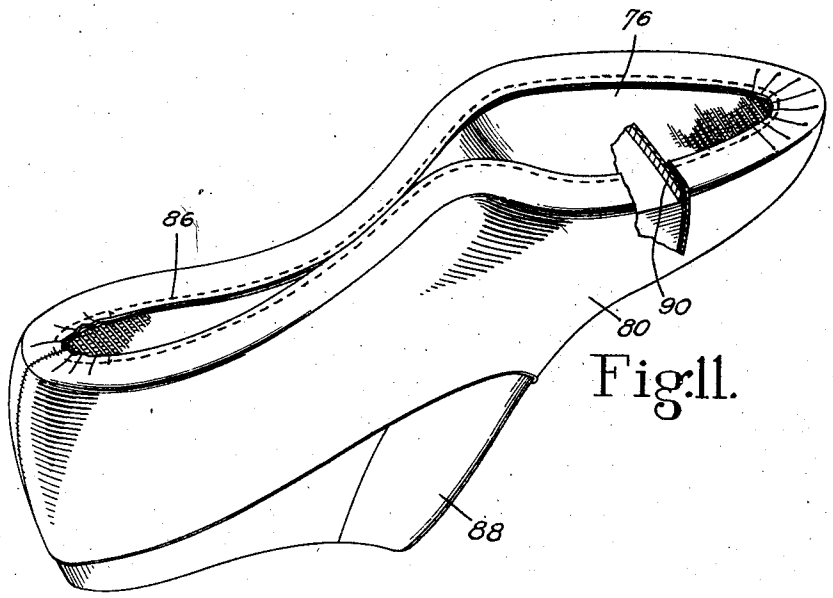


Fig. 11.

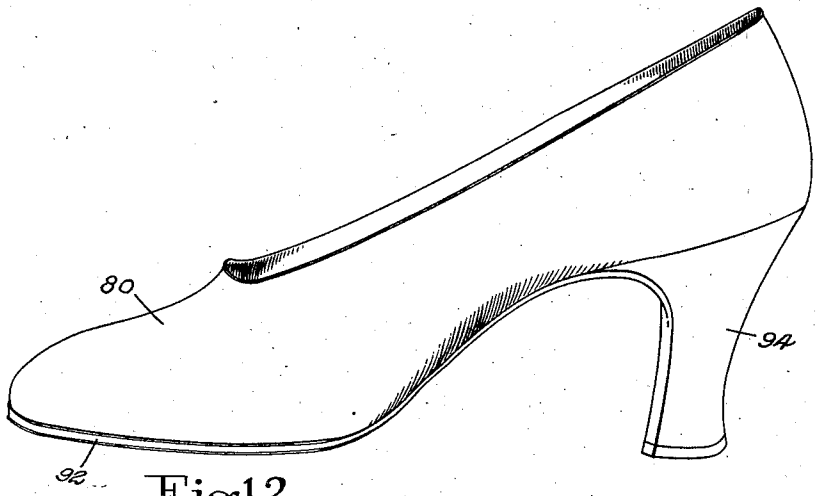


Fig. 12.

INVENTOR
James Cavanagh
By his Attorney
Victor Cobb

Patented Nov. 1, 1938 2,135,170

UNITED STATES PATENT OFFICE

2,135,170

SHOE AND METHOD OF MAKING THE SAME

James Cavanagh, Cohasset, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application October 19, 1936, Serial No. 106,304

8 Claims. (Cl. 12—142)

This invention relates to shoes and to methods of making the same.

Objects of the invention are to enable well lasted shoes to be made, even by unskilled operators, without the use of special and expensive machinery.

In one aspect the novel method consists in preliminarily attaching the lasting allowance of an upper to the margin of an extensible insole member or lasting member with the inner edge of the lasting allowance in predetermined relation to said member, such preliminary attachment being preferably effected by the use of cement, then permanently attaching the upper to the insole member, for example by a seam uniting the inner edge of the overlasted margin of the upper to the insole member, and placing the upper and insole member upon a last of a size such that in drawing the upper over it the insole member will be stretched and extended. The insole member or lasting member is preferably resilient, especially in a crosswise direction, and when thus placed under tension tends to hold the upper in intimate conformity to the last. Not only may the forepart or vamp portion of a shoe upper be lasted in the above described manner, but also the heel or quarter portion of the shoe may be lasted in a similar manner, the difference being that in that case the inturned margin of the counter as well as the upper and lining will be secured to the extensible insole member. This method is particularly adapted for making sandals or shoes of the type known as "open shank shoes" in which the vamp and quarter portions of the upper are separated by a space in which there is no upper material.

In the manufacture of sandals in which a substantial portion of the upper is composed of straps the ends of which extend over the margin of the last bottom, the strap ends which are opposite each other may be connected by a strip or tape of elastic material prior to the placing of the upper upon a last. The straps may then be forced over a last with an insole thereon, the elastic material connecting the strap ends being thus stretched and the straps placed under tension and held in lasted position by the tendency of the elastic members connecting them to contract.

In another aspect the invention utilizes a first or preliminary last the bottom of which is smaller by a predetermined and substantially uniform amount all the way around its periphery, the sides of the last adjacent to the bottom being cut away to produce this result. An elastic insole member fitting the first last is provided and a shoe upper, for example the upper of a pump, is placed upon the last, lasted over into contact with the elastic insole member and secured temporarily thereto, for example, by cement. The last is then withdrawn and the inner edge of the overlasted margin of the upper is connected to the elastic insole member by a seam. A shank-and-heel piece or a full-length insole is cemented on its outer face and placed in the shoe and a second last, which is the same size as the first last before it was reduced is forced into the upper, thereby causing the elastic insole member to stretch and hold all portions of the upper tightly under tension and in conformity to the last. An outsole is then attached to the shoe, for example by usual cement sole attaching methods. The shoe is then finished in the usual manner and the last withdrawn.

These and other features of the invention will now be described in connection with the accompanying drawings and pointed out in the claims.

In the drawings,

Fig. 1 is a plan view of the vamp portion of an upper;

Fig. 2 is a perspective view of an insole support for facilitating the preliminary attachment of an upper to an insole member in the practice of my invention;

Fig. 3 is a perspective view of the vamp portion of an upper after its permanent attachment to an insole member;

Fig. 4 is a perspective view of the quarter portion of an upper and insole after treatment in accordance with the method illustrated in Figs. 1, 2 and 3;

Fig. 5 is a perspective view of a last and insole after the vamp and quarter portions of the upper have been drawn over it;

Fig. 6 is a perspective view of a completed shoe;

Fig. 7 is a perspective view illustrating a modified construction in which tapes attached to opposite sides of the upper are utilized to effect a supplemental lasting operation at the forepart of the shank;

Fig. 8 is a perspective view illustrating the application of the method of the present invention to the manufacture of strap shoes;

Fig. 9 is a perspective view of a first or preliminary last to the bottom of which an elastic insole has been fitted;

Fig. 10 is a perspective view illustrating the operation of lasting an upper over the last shown in Fig. 9;

Fig. 11 is a perspective view showing the upper

of Fig. 10 stitched to the elastic insole and distended by inserting an insole and a normal last therein; and

Fig. 12 is a perspective view of a completed pump shoe.

In carrying out the improved method of making shoes without the use of elaborate machinery in accordance with the present invention, a pattern, for example of the vamp portion of an upper, is made from the last which is to be used, the said pattern having a lasting allowance of predetermined width representing the portion which is to be disposed over the bottom of the last. A vamp portion **20** cut from such a pattern is illustrated in Fig. 1, the lasting allowance being represented by the stippled marginal portion **22** to which cement such as latex may be applied. If desired, of course, a corresponding lining **24** may be cut from the same pattern. The vamp **20** may next be temporarily secured to an insole member or lasting member **26** which is shown in Fig. 2 as supported by a plate **28** one end portion of which is shaped to correspond to the shape of the insole member **26** and the other end of which is wedge shaped and adapted to be received by suitable guides **30** formed at the upper end of a standard **32** which may be secured in any suitable manner to a bench. The insole member **26** is made of extensible material such as fabric, preferably material which is resilient at least in one direction such as the usual elastic goring used in the sides of Congress shoes. The insole member is preferably cut so that its greatest extensibility will be in a direction crosswise of the shoe bottom. There is now available a fabric material which is elastic in both directions and which is known to the trade under the name of "Lastex" and under most conditions an insole member made of such material is preferred. These materials comprise rubber and are therefore expansible and highly resilient. However, where the word "rubber" is employed in the appended claims, it is intended to include as equivalents such other materials as are well adapted to perform the function of the insole member when employed for lasting shoes in accordance with my improved method. The insole member **26** is cut smaller than the bottom of the last which is later to be used in making the shoe by the amount which it is desired to have the insole member stretched when the vamp is later placed upon a last. Of course the greater the amount of stretch thus allowed for, the greater will be the tension applied to the lasted upper.

The insole member **26** is placed upon the support **28** and cement like that on the vamp applied to the marginal portion **34** of the insole member. Preferably the insole member **26** is provided with marks **36** located a predetermined distance from its edge equal to the width of the lasting allowance **22** provided on the vamp **20**. The vamp **20** is now applied to the insole member **26** with the edge of the lasting allowance coincident with the marks **36** and is held preliminarily thereto by means of the cemented surfaces **22** and **34**. While in some instances such cement may be relied upon to hold the upper and insole permanently together, it is preferred in most instances to remove the vamp and insole member **26** from the support **28** and permanently to connect the inner edge of the vamp and the insole member **26** by a through-and-through seam **38**, the parts at this stage of the operation being represented in Fig. 3.

In preparing the rear or quarter portion of the shoe, a similar method may be followed, the result being shown in Fig. 4 where **40** represents the quarter portion of the upper and **42** the elastic insole member. The quarter **30** may, of course, be provided with the usual counter and lining, and the quarter, the counter and the quarter lining may be secured to the insole member **42** by a seam **44**. A last **46** for which the vamp **20** and the quarter **40** were designed may now be provided with an insole **48** (Fig. 5) and the prepared vamp **20** and quarter **40** drawn respectively over the toe portion and the heel portion of the last **46**. In pulling the vamp portion **20** over the forepart of the last the stretching of the insole member **26** will apply suitable lasting tension to the vamp **20**, and in drawing the quarter over the rear end of the last the stretching of the insole member **42** will cause the upper tightly to hug the rear portion of the last. If desired cement may be applied to the bottom of the insole prior to the assembling of the vamp **20** and quarter **40** thereover so that the insole members **26** and **42** will be caused to adhere permanently to the insole. The shoe illustrated in Fig. 5 has an open shank and hence it is desirable to provide finished edges on the insole where it is exposed at the shank. As illustrated, the shank portion of the insole is cut wider at the shank portion than is necessary to cover the bottom of the last and these extensions are skived to a thin edge and folded back upon themselves and preferably over a cord **50** to provide a finished edge on the insole. The folded-in portions of the shank of the insole are held in place by cement and the insole is provided with the usual steel shank stiffener **52**. The shoe, as illustrated in Fig. 5, is now ready to have the upper roughened and the sole **54** attached by the usual cement sole attaching methods, as shown in Fig. 6, where also a heel **56** has been applied in the usual manner. As shown in Fig. 7, it is not necessary that the insole **48** extend beyond the ball line of the shoe; the insole member **26** then serves as the insole at the forepart of the shoe, the insole covering only the heel and shank portion of the last and having its forward portion **58** skived to a thin edge at its forward end. A sock lining may, of course, be used if desired.

In order to facilitate the tight lasting of the rear portions of the vamp where they come so near together that there is less opportunity for the extensible material connecting them to stretch, tapes **60** and **62** may be attached to the edges of the upper adjacent to the end portion **58** of the short insole and these tapes may be tensioned and knotted at **64** to hold the upper in lasted position, the excess tape material beyond the knot being removed.

In Fig. 8 is illustrated the manner of procedure when the portion of the vamp is composed of a series of straps **66** the ends of which extend over the bottom of the insole. In this case the strap ends are connected by elastic tapes or strips **68** forming lasting members, cut from elastic material which, when the strap portion of the vamp is drawn over the last, are placed under tension and serve to hold the straps tightly in lasted position until they are permanently secured by the attachment of the sole to the shoe. In this instance, since the insole is exposed between the straps it is provided with a finished edge or binding **70**.

In adapting the present method to the manufacture of pumps it has been found desirable to

modify the procedure in the following manner: In Fig. 9 a last **72** is illustrated the bottom of which has been reduced in size by removing material from the sides of the last all the way around, the original dimensions of the last being indicated in dot-and-dash lines **74**. The amount of this reduction is shown as uniform entirely around the last but of course the amount of reduction may be varied as a whole or at different portions of the last to meet varying conditions. An insole member **76** of elastic material is cut to fit the bottom of the last **72**. A pump upper **80** which has been cut from patterns designed for a last similar to the last **72** before it was reduced is provided with the usual lining **82** and counter **84** and applied to the last **72** and insole member **76**, as shown in Fig. 10. The upper is then worked over the last bottom by hand or otherwise, cement having been applied to the parts as before explained to cause the upper to adhere temporarily to the insole member. Marks **78** to indicate where the edge of the lasting allowance should come on the insole member may be used but with a first last properly reduced are unnecessary.

The first last **72** is removed from the upper and insole member and preferably a seam **86** (Fig. 11) sewed to connect the edge of the upper **80** to the insole member **76** all the way round the shoe bottom. A second last **88** is provided which is like that for which the upper **80** was designed and is not reduced as is the first last **72**. An insole **90**, or shank-and-heel piece only if desired, has cement applied to its outer face and is placed in the shoe. The second last **88** is then inserted in the shoe, the upper being drawn tightly to the last by the stretching of the insole member **76** necessitated by the insertion of the second last which, of course, has sufficiently greater dimensions in the region adjacent to the insole to cause such stretching of the insole member **76** to occur. When the cement between the insole and the insole member sets, the insole member is held in its stretched condition. An outsole **92** and a heel **94** may be applied to the shoe in any preferred manner; for example, the sole may be cement-attached or may be attached by through-and-through stitches. Cement-attachment of the outsole may be done while the shoe is on the last and the cement-attachment of the upper to the outsole of course holds the insole member in stretched condition whether or not a full insole or a heel-and-shank piece has been put into the shoe prior to the insertion of a last.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. That improvement in methods of making shoes which consists in providing a first and a second last, the lasts being substantially identical except that the first last has the area of its bottom reduced by removing a predetermined portion from its periphery, assembling on the first last an upper cut for the second last and an insole member cut to fit the bottom of the first last, working the upper over upon the bottom of the insole member and securing it thereto, removing the first last, inserting the second last thereby placing the upper under tension, and attaching an outsole to the overlasted upper.

2. That improvement in methods of making shoes which consists in providing a first last and a second last, the first last differing from the second last by having the area of its bottom reduced by removing a predetermined portion from its periphery, assembling on the first last an upper cut to fit the second last and an insole member of resilient material cut to fit the bottom of the first last, working the upper over the bottom of the insole member and securing it thereto, removing the first last, inserting the second last thereby stretching the insole member, and placing the upper under tension and attaching the outsole to the overlasted upper while the upper and insole member are still in tensioned and stretched condition on the last.

3. That improvement in methods of making shoes which consists in providing an upper to fit a given last and having a suitable lasting allowance, connecting opposite side portions of said lasting allowance by means of a highly resilient lasting member comprising rubber, said member being smaller than the last bottom so that the girth of the combined upper and lasting member is less than the corresponding girth of said last, inserting the last into the upper to stretch said member, whereby the resilience of the member will tension the connected upper portions tightly on the last, and then, while the upper is thus tensioned on the last, permanently attaching an outsole.

4. That improvement in methods of making shoes which consists in providing an upper to fit a given last and having a suitable lasting allowance, connecting opposite side portions of said lasting allowance by means of a highly resilient lasting member comprising rubber, said member being smaller than the last bottom so that the girth of the combined upper and lasting member is less than the corresponding girth of the last, inserting into the upper a full-sized insole having the shape of the bottom of the last, inserting the last into the shoe to stretch said member, whereby the resilience of the member will tension the connected upper portions tightly against the last, and then, while the upper is thus tensioned on the last, permanently attaching an outsole.

5. That improvement in methods of making shoes which consists in providing an upper to fit a given last and having a suitable lasting allowance, connecting opposite portions of said lasting allowance by means of a highly resilient lasting member comprising rubber, said member being smaller than the last bottom so that the girth of the combined upper and lasting member is less than the corresponding girth of the last, inserting into the shoe a full-sized insole having active cement on its outer face, inserting the last into the shoe to stretch said member, whereby the resilience of the member will tension the connected upper portions tightly against the last, and then, while the upper is thus tensioned on the last, permanently attaching an outsole so that contraction of said resilient member will be prevented when the last is removed.

6. That improvement in methods of making strap sandals which consists in providing a vamp having a suitable lasting allowance and comprising straps, connecting the opposed ends of the straps together by means of a highly resilient material comprising rubber before the vamp is lasted, the combined girth of said material and straps being less than the corresponding girth of the finished sandal desired, inserting a full-sized insole and a last into the vamp to stretch said resilient material, whereby the resilience of the material will tension the connected straps tightly against the last, and attaching an outsole to the lasting allowance of the vamp while the vamp is

under tension on the last so that contraction of said resilient material will be prevented when the last is removed.

7. In a shoe, a highly resilient insole member comprising rubber in stretched condition, an upper having its margin secured to the margin of said member, and an outsole attached to the margin of the upper and holding said member in stretched condition.

8. In a shoe, a highly resilient insole member comprising rubber in stretched condition, an upper having its margin secured to the margin of said member, an outsole cement-attached to the margin of the upper and holding said member in stretched condition, and an insole cemented to the inner surface of said insole member.

JAMES CAVANAGH.