Dec. 13, 1960 N. STIX 2,963,722

METHOD OF SHOE CONSTRUCTION

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Fig. 1.

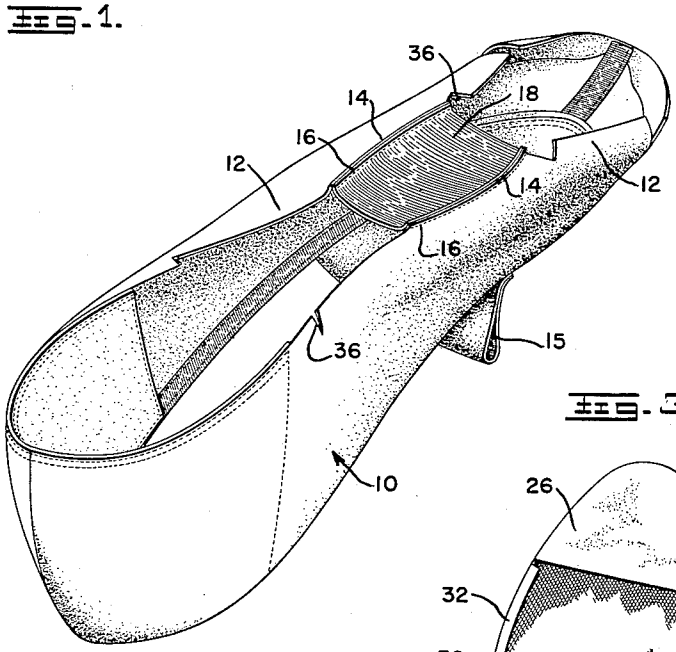


Fig. 3.

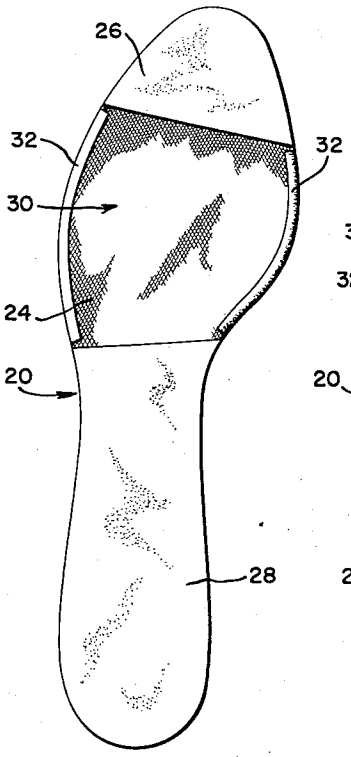
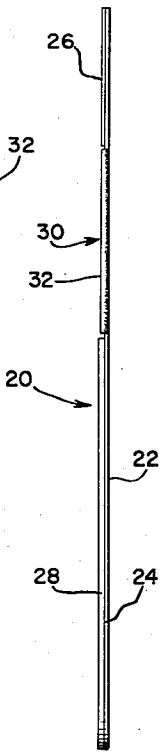


Fig. 4.



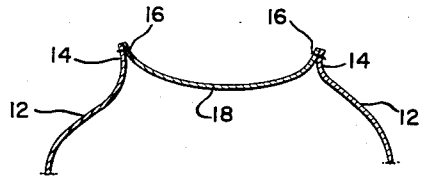


Fig. 2.

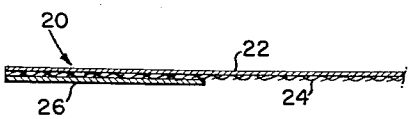


Fig. 5.

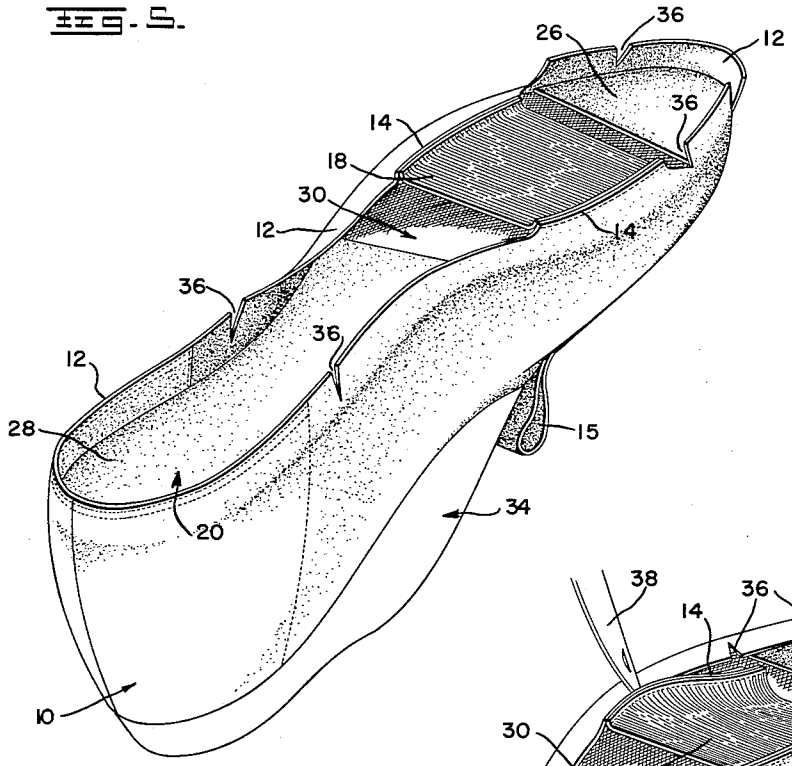
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METHOD OF SHOE CONSTRUCTION

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FIG. 5.



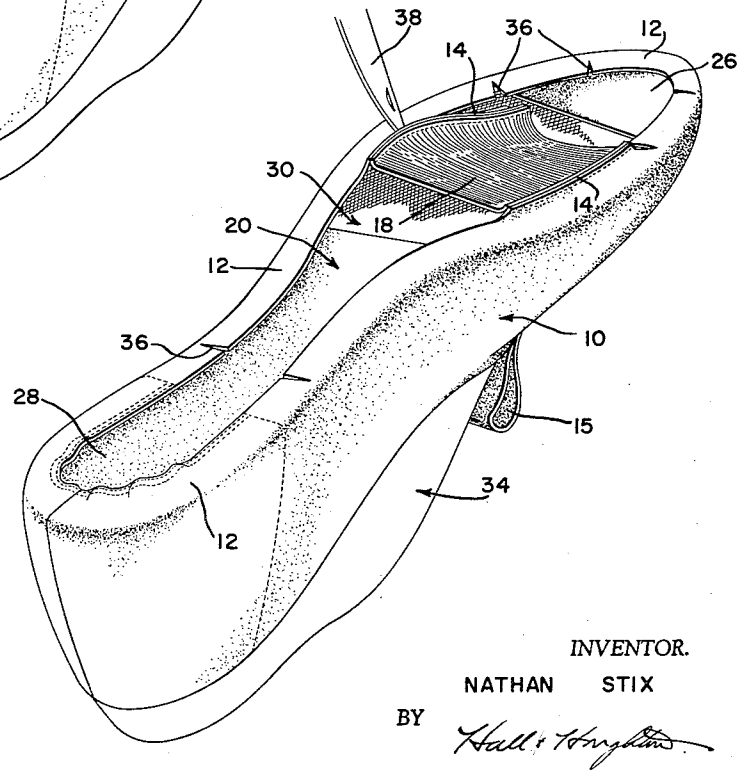


FIG. 6.

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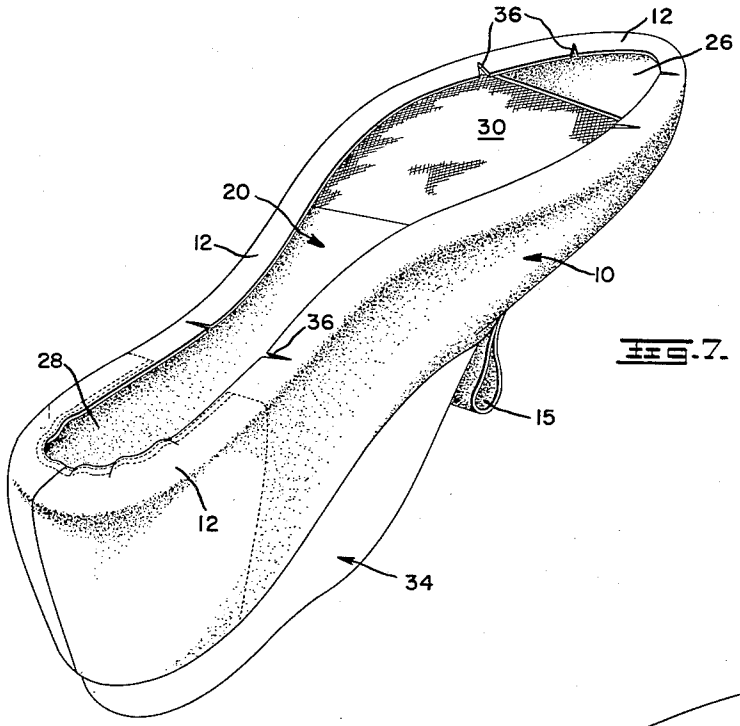


Fig. 7.

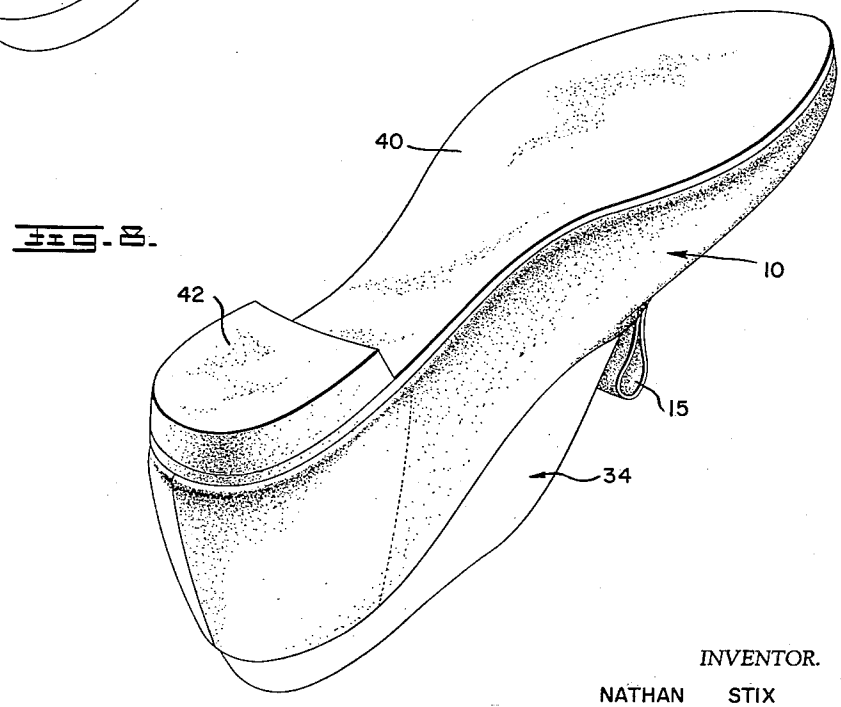


Fig. 8.

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2,963,722

METHOD OF SHOE CONSTRUCTION

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Filed Aug. 26, 1958, Ser. No. 757,318

4 Claims. (Cl. 12—145)

This invention relates to a shoe construction and more particularly to an improved method of making flexible, lightweight shoes.

Many of the recent improvements in shoe constructions, particularly women's shoes, have been directed toward the achievement of lightness and flexibility. Such a purpose can obviously be furthered by employing lightweight and flexible raw materials for the components of the shoe, but there is a limit to the lightness and flexibility which may be obtained in this manner commensurate with desirable strength. One prior art attempt to achieve such desirable characteristics is concerned with the elimination of the in-sole which conventionally is tacked or otherwise secured to a last and permits the assembly of a sock lining with the upper of the shoe. In accordance with the foregoing method, the in-sole is eliminated, and the sock lining is sewn directly to the upper before lasting. This method has inherent difficulties, however, which make it impractical for large scale operations.

It is accordingly a primary object of the invention to provide a unique method of shoe construction.

A further principal object of the invention is to provide a unique method of making lightweight flexible shoes.

An additional object of the invention is to provide such a method which permits the assembly of a sock lining and an upper in a manner which eliminates the need for an in-sole but yet which is simple and practical.

A still further object of the invention is to provide a method of the foregoing type which does not require the tacking of the sock lining to a last or the stitching of the sock lining to an upper prior to lasting.

Another object of the invention is to provide an improved method of lasting a shoe.

Yet another object of the invention is to provide a method of the foregoing type in which the sock lining and upper may be properly held in position on a last without requiring the use of tacks or with minimum use of tacks.

An additional object of the invention is to provide a method as aforesaid which does not require any highly technical or special manufacturing process steps which might greatly increase the cost or complexity of shoe manufacturing operations.

The foregoing and other objects, features, and advantages of the invention and the manner in which the same are accomplished will become more readily apparent upon consideration of the following detailed description of the invention when taken in conjunction with the accompanying drawings which illustrate a preferred and exemplary form of the invention and wherein:

Figure 1 is a perspective view of an upper formed in accordance with the teachings of the invention;

Figure 2 is a transverse cross-sectional view of a detail of the invention;

Figure 3 is a plan view of a sock lining employed in the invention;

Figure 4 is a side elevation view of the sock lining of Figure 3;

Figure 5 is a perspective view illustrating the step of assembling the upper and sock lining on a last;

Figure 6 is a perspective view illustrating another step in the process of the invention;

Figure 7 is a perspective view illustrating still another step in the process of the invention;

Figure 8 is a perspective view illustrating the completion of a shoe constructed in accordance with the teachings of the invention; and

Figure 9 is an enlarged fragmentary longitudinal sectional view of the sock lining of Figure 3.

Briefly stated, the invention is concerned with the provision of an upper which has a lasting allowance, to opposed portions of which is attached an elasticized stay or gusset, which serves to hold the upper and an associated sock lining in position on a last. The sock lining of the invention has a flexible ball-of-the-foot portion and is readily assembled with the upper on the last and secured to the lasting allowance. In accordance with the process of the invention, the elasticized stay or gusset is disassociated from the upper when the sock lining has been permanently positioned with respect to the upper, and the formation of the shoe is then completed, including the assembly of the upper with a conventional outer sole and heel.

Referring to the drawings, and initially to Figures 1 through 4 thereof, in accordance with the principles of the invention an upper generally designated by reference numeral **10** is cut and sewn from suitable material, such as flexible leather, and is formed in accordance with conventional techniques to the shape illustrated in Figure 1. The upper is provided with a lasting allowance **12** and in the form shown has an ornamental tongue **15**. Opposed intermediate side portions of the lasting allowance, which ultimately will lie adjacent the ball of the foot, are provided with small marginal projections **14**, and as shown more fully in Figure 2, the projections **14** are secured as by lines of stitching **16** to the corresponding edges of a stay or gusset **18**. The stay is a section of elasticized material and bridges the space between the opposed projections **14**. In the form shown the edges of the stay that are attached to the projections are slightly curved.

Further in accordance with the principles of the invention, the upper formed as above is to be assembled with a sock lining generally designated by reference numeral **20**, Figures 3, 4, and 9. The sock lining may be constituted by a suitably shaped thin sheet of leather **22** laminated with a layer of porous fabric **24**. In the form shown the sock lining is stiffened at its toe and its heel-shank portions by sections of stiffening material **26** and **28**. These sections may be formed of a suitable thin fiberboard. The edges of the unstiffened ball-of-the-foot portion **30** may be reinforced by rolling over the upper layer of leather material **22** as shown at **32**. Thus constituted the sock lining is relatively stiff at its toe and shank-heel portions but is flexible at its ball-of-the-foot portion.

In the making of a shoe in accordance with the invention, the upper and sock lining are first provided in the aforesaid manner. The upper is then placed on a conventional last **34** as shown in Figure 5, the upper being conformed to the shape of the last in accordance with well-known shoe manufacturing techniques. When properly placed on the last, the upper will have its stay or gusset **18** adjacent the ball-of-the-foot portion of the last. The sock lining **20** is then slipped under the stay **18** so that it lies flat against the sole portion of the last in the position it will properly assume when the shoe is completed. The sock lining will be held in place by the stay **18** and the adjacent lasting allowance, but if desired, one or two positioning tacks may be em-

ployed to assist holding the sock lining in place on the last. With the sock lining and upper properly placed on the last as shown in Figure 5, the un-reinforced ball-of-the-foot portion of the sock lining will lie under the stay **18**.

Now the lasting allowance forward and rearward of the stay **18** may be attached to the sock lining by folding the lasting allowance over the marginal portions of the sock lining and securing it thereto adhesively in accordance with well-known practices. Suitable slits and notches **36** are provided in the lasting allowance, as is well known, to permit the ready working of the lasting allowance for attachment to the sock lining.

When the adhesive has set sufficiently to ensure that the upper and sock lining will remain in proper position, the stay **18** is disassociated from the upper by cutting away the projections **14** and the attached stay as shown in Figure 6, the cutting operation being indicated by the knife **38**. Next the lasting allowance portions which formerly were attached to the stay **18** are secured adhesively to the mating ball-of-the-foot portion of the sock lining, the partially formed shoe then appearing as in Figure 7.

After the components of the shoe have been formed and assembled as shown in Figure 7, the remainder of the assembly process may proceed conventionally, the finished shoe with outer sole **40** and heel **42** attached to the upper being illustrated in Figure 8. The shoe formed in accordance with the invention is characterized by the desired lightness and flexibility, the increased suppleness with respect to prior shoe constructions being pronounced in the region of the ball of the foot, where the sock lining is un-reinforced. By virtue of the invention, the upper and the sock lining are assembled without requiring an in-sole and without requiring the stitching of the sock lining to the upper prior to lasting, yet the assembly is accomplished simply and reliably. Because element **20** is very thin, light-weight, and generally similar to a conventional sock lining, this element has been designated a "sock lining." However, in view of the fact that element **20** is attached to the upper in the lasting of the shoe, it may also be looked upon as constituting a thin in-sole incorporating the functions of a sock lining.

From the foregoing description of the invention it will be apparent that the invention provides a unique and improved method of making a shoe. While what is now believed to be a preferred form of the invention has been shown and described, it will be apparent to those skilled in the art that changes can be made without departing from the principles and spirit of the invention, the scope of which is defined in the appended claims. For example, the terms "outer sole" (or sole) and "heel" are used generically to embrace any type of sole construction, whether the heel is separate from or integral with the outer sole or simply an unraised area of the outer sole. Accordingly, the foregoing embodiment is to be considered illustrative, rather than restrictive of the invention, and those modifications which come within the meaning and range of equivalency of the claims are to be included therein.

The invention claimed is:

1. In the method of making a shoe, involving the use of an upper with a lasting allowance having opposed marginal portions to which is attached a section of material so as to bridge the space between such portions, and a separate sock lining; the steps which comprise placing the upper and the sock lining on a last with the section overlying the sock lining, securing the lasting allowance to the sock lining, and removing said section from the upper.

2. In the method of making a shoe, involving the use of an upper with a lasting allowance having projections along opposed marginal side portions thereof to which is stitched a section of elasticized material so that the section bridges the space between the projections, and a sock lining; the steps which comprise placing the upper on a last, inserting the sock lining between the last and said section, securing the free portions of the lasting allowance to the sock lining, severing the projections and the attached elasticized section from the lasting allowance, and securing the lasting allowance portions to which said projections were attached to the sock lining.

3. In the method of making a shoe, involving the use of an upper with a lasting allowance having opposed intermediate side portions to which is secured an elasticized section, and a sock lining; the steps which comprise placing the upper and the sock lining on a last with the sock lining between the last and the section, adhesively securing the lasting allowance at opposite ends of said section to the sock lining, disassociating said section from the upper, and adhesively securing the portions of the lasting allowance formerly attached to said section to the sock lining.

4. In the method of making a shoe, involving the use of an upper with a lasting allowance having projections at opposed intermediate side portions thereof to which is secured a section of elasticized material which bridges the space between the projections, and a sock lining having relatively rigid shank-heel and toe portions and a relatively flexible intermediate portion; the steps which comprise placing the upper and the sock lining on a last with the sock lining between the last and the section, attaching the free portions of the lasting allowance to the sock lining, removing the elasticized section from the upper, and attaching the portions of the upper formerly associated with the elasticized section to the sock lining.

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