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2,414,104

FORCE LASTED SHOE WITH TOE STIFFENER

Filed Oct. 31, 1944

3 Sheets-Sheet 1

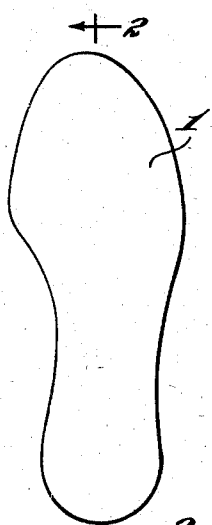


Fig. 1



Fig. 2

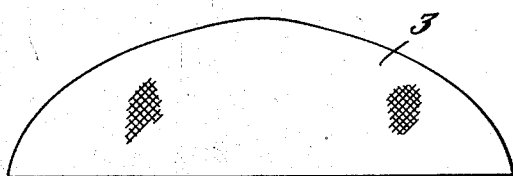
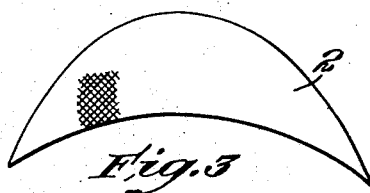


Fig. 4

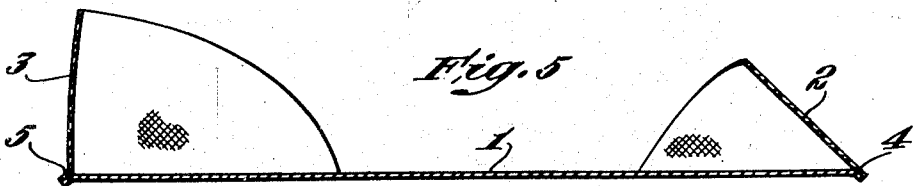


Fig. 5

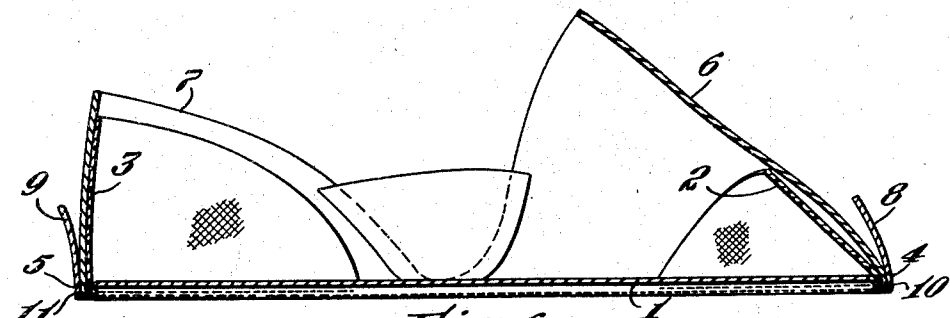


Fig. 6

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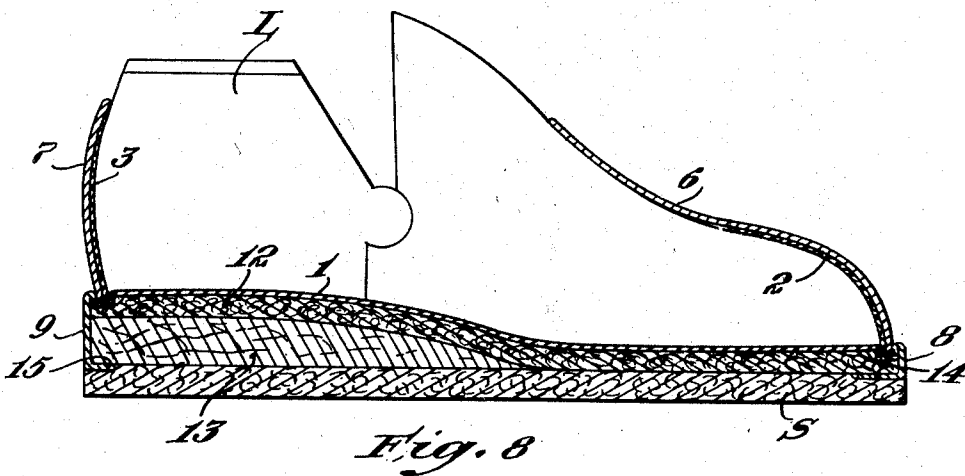
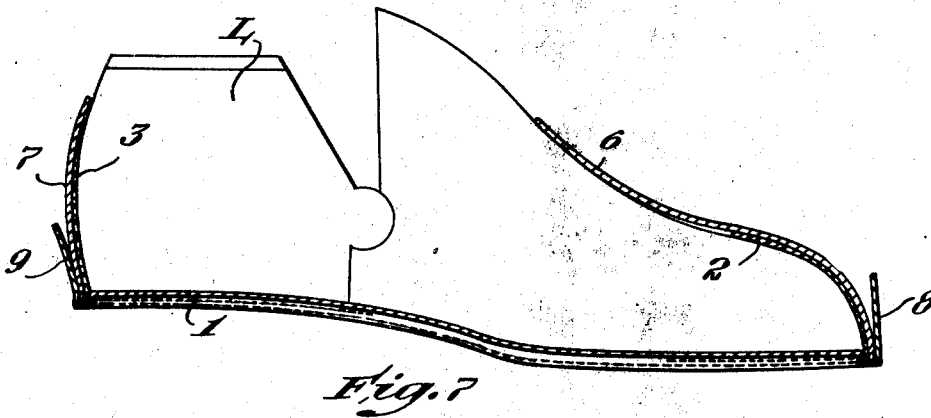
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FORCE LASTED SHOE WITH TOE STIFFENER

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3 Sheets-Sheet 2



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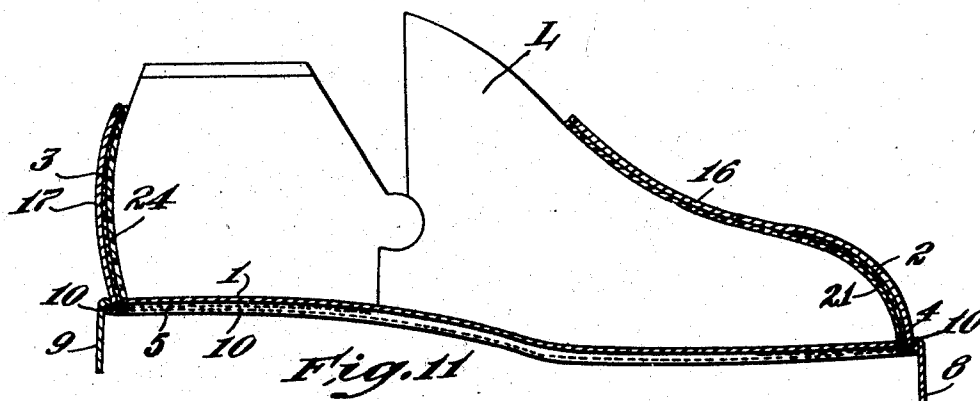
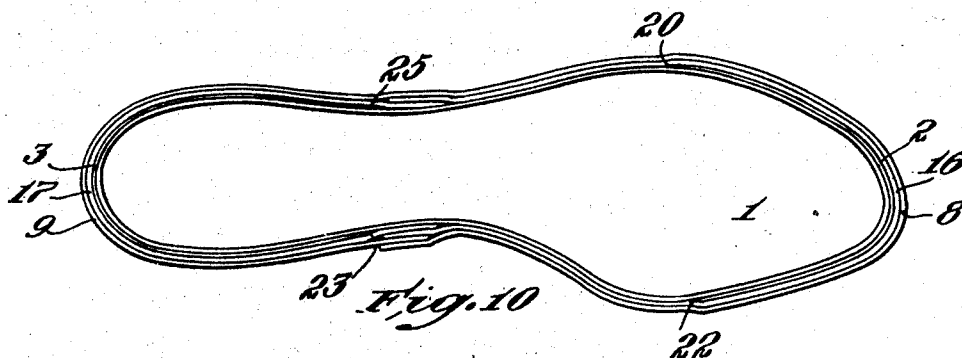
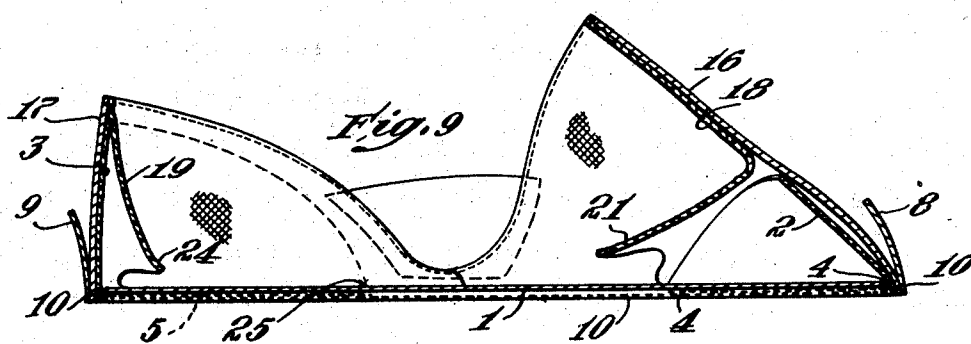
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FORCE LASTED SHOE WITH TOE STIFFENER

Filed Oct. 31, 1944

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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FORCE LASTED SHOE WITH TOE STIFFENER

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Application October 31, 1944, Serial No. 561,282

12 Claims. (Cl. 36—19.5)

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This invention pertains to force-lasted or California type shoes, and relates more particularly to a novel shoe and to a novel method of making such shoes.

Heretofore the introduction of end stiffeners (toe boxes and counters) into such shoes has been attended with difficulty, and by far the greater proportion of shoes of this type are made without end stiffeners, although the provision of such stiffeners would in many cases enhance the appearance and wearing qualities of the shoe.

The principal object of the present invention is to provide a novel mode of procedure whereby a toe box or counter, or both, may readily be introduced during the course of manufacture and without necessitating any radical departure from prior practice in making shoes of this type. A further object is to provide a novel and useful method whereby an end stiffener may be interposed between the lining and outer element of the shoe upper. Other and further objects and advantages of the invention will be pointed out in the following more detailed description and by reference to the accompanying drawings, wherein

Fig. 1 is a plan view of a sock lining such as employed in shoes of the type to which the invention relates;

Fig. 2 is a diagrammatic section on the line 2—2 of Fig. 1;

Fig. 3 is a diagrammatic plan view of a toe stiffener or box useful in the practice of the present invention;

Fig. 4 is a diagrammatic plan view of a heel stiffener or counter useful in the practice of the present invention;

Fig. 5 is a diagrammatic, longitudinal section through the sock lining showing both end stiffeners secured thereto.

Fig. 6 is a view similar to Fig. 5 but showing the shoe upper assembled with and attached to the sock lining;

Fig. 7 is a view similar to Fig. 6, but showing the parts after introduction of the last into the upper;

Fig. 8 is a longitudinal section showing the completed shoe with the last still in the upper;

Fig. 9 is a view similar to Fig. 6 but illustrating a modified procedure;

Fig. 10 is a diagrammatic bottom plan view of the parts shown in Fig. 9; and

Fig. 11 is a view similar to Fig. 9 but showing the shoe parts after the introduction of the last.

Referring to the drawings, the numeral 1 designates a sock lining of the general type customarily employed in force-lasted shoes and which is usually of thin, flexible sheet material, for example thin leather, textile fabric or a combination of textile fabric with other material, for example paper, integrated or impregnated with suitable binding or stiffening material.

In accordance with the present invention, the upper of the shoe may be provided with a stiffener at either end—for example it may have a box at the toe, or a counter at the heel, or both as may be desired. As illustrated, the toe stiffener 2 is cut to the proper shape and dimensions in accordance with usual practice, providing sufficient marginal material for its attachment to the sock lining as hereinafter described, and the counter 3 is likewise in general of conventional form and dimensions, but also has sufficient marginal allowance for its attachment to the sock lining. The toe stiffener 2 and the heel stiffener 3 are made of suitable material which is preferably initially quite soft and flexible, for example textile fabric, either plain or impregnated with appropriate substances to impart the required stiffness to the finished shoe and which, if not initially pliable, is made to become so, temporarily, just before or during lasting. Instead of textile fabric, paper stock or other suitable fibrous material may be used, impregnated, for example, with some waterproofing substance such as an asphalt or resin compound. One desirable material for the stiffener is a textile fabric consisting of or comprising yarns which may be made to become adhesive or cementitious by suitable treatment, for instance recurrent yarns (of either the warp yarns, weft yarns or both) of the textile fabric may be made from cellulose acetate or other thermoplastic resin which, when subjected to proper treatment, for example, by moistening with a proper solvent and/or by treatment with heat and pressure become temporarily adhesive. On the other hand the end stiffeners, instead of having the adhesive or cementitious material incorporated in them, may be provided with a coating of such material on one or both sides. In any event the cementitious material should be such that when the stiffener is first incorporated in the shoe the adhesive material is inert, that is to say not tacky, although having the inherent capability of becoming adhesive when heated or otherwise properly treated as above suggested.

Having prepared the sock lining and one or both of the end stiffeners, the lower edge of each end stiffener to be used, is secured to the corresponding end of the sock lining by a sewed seam 4 or 5, respectively (Fig. 5) or by other appropriate fastening elements, for example staples. Preferably, the initial dimensions of each stiffener element 2 or 3 is such that its upper edge is of less length, when initially attached to the sock lining than it is in the completed shoe, the material being capable of stretching to some extent when subjected to sufficient force.

The shoe upper, as illustrated in Fig. 6, comprises a vamp portion 6 and a quarter portion 7. The vamp and quarter may be of customary form appropriate to the particular style of shoe being

made, for example, they may be integral or they may be separate pieces of material united by seams or they may be entirely separate, leaving a gap at the shank or waist portion of the shoe. Preferably, in order to insure nice shaping at the toe, and particularly when a toe stiffener is employed, the margin of the toe portion of the vamp is crimped or otherwise contracted so as to provide an inwardly concave toe end.

There is also provided wrapper means, here shown as comprising two independent wrapper strips 8 and 9 designed to be secured to the vamp portion and to the quarter portion, respectively, of the shoe upper, the wrapper elements being so arranged that their ends at the shank portion of the shoe overlap. However it is contemplated, in accordance with other common practice, that the wrapper may be continuous, consisting of a single piece of material extending all the way around the shoe. The wrapper may be attached to the lower edge of the upper before the upper is assembled with the other parts, or it may be attached simultaneously with the attachment of the upper to another part, for instance the sock lining, or in fact the wrapper may be an integral extension of the upper itself. Whatever the type of wrapper employed, the lower edge of the upper is secured to the margin of the sock lining by a seam or seams 10 and 11, such seams usually also extending through the edge of the wrapper. While sewed seams are desirable, it is contemplated that staples may be substituted. After the upper has been assembled with and attached to the sock lining, the end stiffener or stiffeners are subjected to appropriate treatment to cause them to become temporarily adhesive, and the last L is forced into the shoe upper (Fig. 7), the last being of such size and dimensions (as respects the size of the shoe upper) that when it is forced into the upper it expands the upper and holds the latter in fully distended condition so that it firmly and closely hugs the wood of the last. In thus introducing the last into the upper, the stiffener element or elements is or are caused to conform to the corresponding end portion of the last and to be pressed very firmly against the inner surface of the upper so as to cause adhesion of the stiffener and upper. The last L remains in the upper long enough to permit the adhesive element of the upper to set so as permanently to unite the stiffener and upper and thus to impart a permanent lasted shape to the end of the shoe. The wrapper is now turned downwardly as shown in Fig. 8; the cushion sole 12 with its heel wedge 13 (Fig. 8) is disposed in adhesive contact with the under surface of the sock lining; the lower margins 14 and 15 of the wrapper members are turned inwardly, beneath the cushion sole and adhesively united to the latter, and the outer sole 8 is secured in place, for example by adhesive. The last may now be withdrawn and the shoe finished in accordance with usual practice.

A slight modification is illustrated in Figs. 9 to 11, inclusive, the only substantial difference being that in these views the vamp portion of the upper is shown as comprising an outer ply 16 and a lining ply 18 while the quarter portion has the outer ply 17 and a lining ply 19, the lining being united at its top edge to the outer portions of the upper in conventional manner. As described with reference to Figs. 1 to 8, the end stiffeners 2 and 3 are first secured by the seams 4 and 5 to the sock lining. During the attachment of the margin of the upper to the

sock lining, the seam 10, here referred to as an example of means for attaching the upper to the sock lining, may be started at a convenient point, for instance at the shank portion of the shoe, the stitches passing through both elements of the upper. However when the seam reaches a point 20 (Fig. 10) corresponding to the rear end of the toe stiffener at that side of the shoe, the lining is pulled rearwardly to form a loose flap as shown at 21 (Fig. 9) and so as to escape the stitches of seam 10, the latter then penetrating the outer ply 16 only of the upper and continuing along around the toe of the shoe to unite the toe element 18 to the sock lining until the point 22 is reached, whereupon the stitches again are caused to pass through both the outer element 16 and the lining ply 18 of the vamp. The seam continues on until it reaches the point 23 at the forward corner of the counter, at which point the lining is pulled inwardly to form a loose flap 24 (Fig. 9), the seam continuing around the heel end of the shoe but securing only the outer element 16 to the sock lining until the point 25 is reached at the opposite corner of the counter, beyond which the seam continues, uniting both inner and outer plies of the upper to the sock lining.

The operator may now push the flaps 21 and 24 inwardly toward the ends of the shoe, it being noted that the toe and heel ends of the lining are cut without lasting allowance, and after submitting the stiffener elements to the treatment necessary to make them adhesive, the last L is inserted, thus forcing the flaps of the lining firmly into engagement with the respective end stiffeners and adhesively integrating the lining, stiffener, and outer element of the upper at each end of the shoe. The other steps in completing the shoe follow those above described with reference to the construction shown in Fig. 8.

It is thus possible to provide a force-lasted shoe with a toe or heel stiffener element but without substantially departing from the usual steps in making a force-lasted shoe and without unduly adding to the cost of production. In accordance with the present process the preliminary attachment of the end stiffeners to the sock lining as above described is an operation which is very easy to perform and one which in fact may be performed by unskilled operators, but nevertheless, in the completed shoe, the end stiffener is properly positioned and imparts a true lasted shape and desirable stiffness to the shoe upper.

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

I claim:

1. That method of making a force-lasted shoe which comprises as steps providing a soft, flexible sock lining, providing an end stiffener, securing the lower edge of the stiffener to the edge of the corresponding portion of the sock lining, providing an upper and a wrapper, securing the lower edge of the upper and the edge of the wrapper to the edge of the sock lining, causing the end stiffener to become adhesive, introducing a last into the upper and retaining the last in the upper until the adhesive of the stiffener has set.

2. That method of making a force-lasted shoe which comprises as steps, providing a soft, flexible sock lining, providing an end stiffener, the end stiffener being initially non-cementitious but

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being inherently capable of becoming cementitious, the upper end of the stiffener being initially less in length than in the completed shoe, securing the lower edge of the stiffener to the lower end of the corresponding end of the sock lining, providing an upper and a wrapper, securing the lower edge of the upper and the wrapper to the edge of the sock lining, introducing a last into the upper and causing the stiffener to become adhesive, the last being forced into the upper with sufficient pressure to expand the stiffener and press it into intimate adhering contact with the upper, and maintaining such pressure until such stiffener and upper are permanently adhesively united.

3. That method of making a shoe of the force-lasted type which comprises as steps providing a soft, flexible sock lining, providing an end stiffener, securing the lower edge of the stiffener to the edge of the corresponding end portion of the sock lining, providing an upper and a wrapper, securing the lower edges of the upper and wrapper respectively to the edge of the sock lining, causing said stiffener to become adhesive, and causing the adhesive stiffener to adhere to the upper.

4. That method of making a shoe of the force-lasted type which comprises as steps providing a soft, flexible sock lining, providing an end stiffener, securing the lower edge of the stiffener to the edge of the corresponding end portion of the sock lining, providing an upper and a wrapper, securing the lower edges of the upper and wrapper respectively to the edge of the sock lining, causing said stiffener to become adhesive, applying internal pressure to the end stiffener thereby to expand it and force it into close and intimate contact with the upper, and maintaining such pressure until the adhesive has set.

5. That method of making a force-lasted shoe which comprises as steps providing a soft, flexible sock lining, providing a toe stiffener of sheet material, the stiffener including a substance which initially is non-adhesive but which is inherently capable of becoming adhesive, sewing the lower edge of the stiffener to the edge of the toe end of the sock lining, providing an upper having a crimped and inwardly concave toe end, sewing the lower edge of the upper to the marginal portion of the sock lining, causing the toe stiffener to become adhesive, and introducing a last into the upper thereby forcing the toe stiffener into adhering engagement with the toe portion of the upper.

6. That method of making a force-lasted shoe which comprises as steps providing a soft, flexible sock lining, providing a counter of sheet material, the counter including a substance which initially is non-adhesive but which is inherently capable of becoming adhesive, sewing the lower edge of the counter to the heel end of the sock lining, providing an upper, sewing the lower edge of the upper to the marginal portion of the sock lining, causing the counter to become adhesive and introducing a last into the upper thereby forcing the counter into adhering engagement with the heel portion of the upper.

7. That method of making a force-lasted shoe which comprises as steps providing a thin, flexible sock lining, providing an upper including an outer ply and a lining ply, providing an end stiffener, securing the lower edge of the end stiffener to the margin of the corresponding end of the sock lining, attaching the lower edge margin of the upper to the sock lining by a seam and while

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forming the seam, turning back the lining ply at that end of the shoe at which the stiffener is located so that the edge portion of the lining ply is not caught into the seam, causing the stiffener to become adhesive, and introducing a last into the upper thereby moving the turned back portion of the lining into contact with the inner surface of the stiffener, and subjecting the latter to pressure thereby adhesively to integrate the lining, stiffener and outer ply of the upper at the end of the shoe.

8. That method of making a force-lasted shoe which comprises as steps providing a thin, flexible sock lining, providing an upper including an outer ply and a lining ply, providing a counter and a toe stiffener, securing the lower edges of the counter and toe stiffener to the margins of the corresponding end portions of the sock lining, attaching the lower edge of the upper to the margin of the sock lining by fastener elements which penetrate both the lining and outer ply of the upper except at the ends of the shoe where said fastener elements penetrate the outer ply only, leaving the lining ply free, causing the counter and toe stiffener to become adhesive, and introducing a last into the shoe, the last being of such size relatively to the shoe size as to distend the upper and forcibly to press the end portions of the lining into contact with the surfaces of the counter and toe stiffener, respectively, and adhesively to integrate the end stiffeners, lining and outer ply at the end of the shoe.

9. That method of making a force-lasted shoe which comprises as steps providing a soft, flexible sock lining, providing an end stiffener, the end stiffener including a substance which initially is substantially non-adhesive but is inherently capable of becoming adhesive, securing the lower edge of the stiffener to the margin of the end of the sock lining, providing an upper, sewing the lower edge of the upper to the marginal portion of the sock lining, causing the adhesive to become sticky, and introducing a last into the upper thereby pressing the stiffener into adhering engagement with the end portion of the upper.

10. A force-lasted shoe of the kind in which a sock lining, an upper and a wrapper are united by fastening means, the upper comprising a lining and an outer ply, the lining being free from said fastening means at the end of the shoe, and an end stiffener having its lower margin united by said fastening means to the sock lining, said stiffener being interposed between the lining and outer ply of the upper.

11. A force lasted shoe of the class described comprising a sock lining, an upper, a wrapper and, at one end, a stiffener, said upper comprising an outer ply and a lining, the stiffener being interposed between the outer ply and the lining of the upper, the wrapper and the lower edges of the stiffener and of the outer ply of the upper being united by fastening means to the sock lining at that end, and the lining of the upper at that end being free from such fastening means.

12. A force lasted shoe of the class described comprising a sock lining, an upper and, at one end, a stiffener, said upper comprising an outer ply and a lining, the stiffener being interposed between the outer ply and the lining of the upper, the lower edges of the stiffener and of the outer ply of the upper being united by fastening means to the sock lining at that end, and the lining of the upper at that end being free from such fastening means.

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