

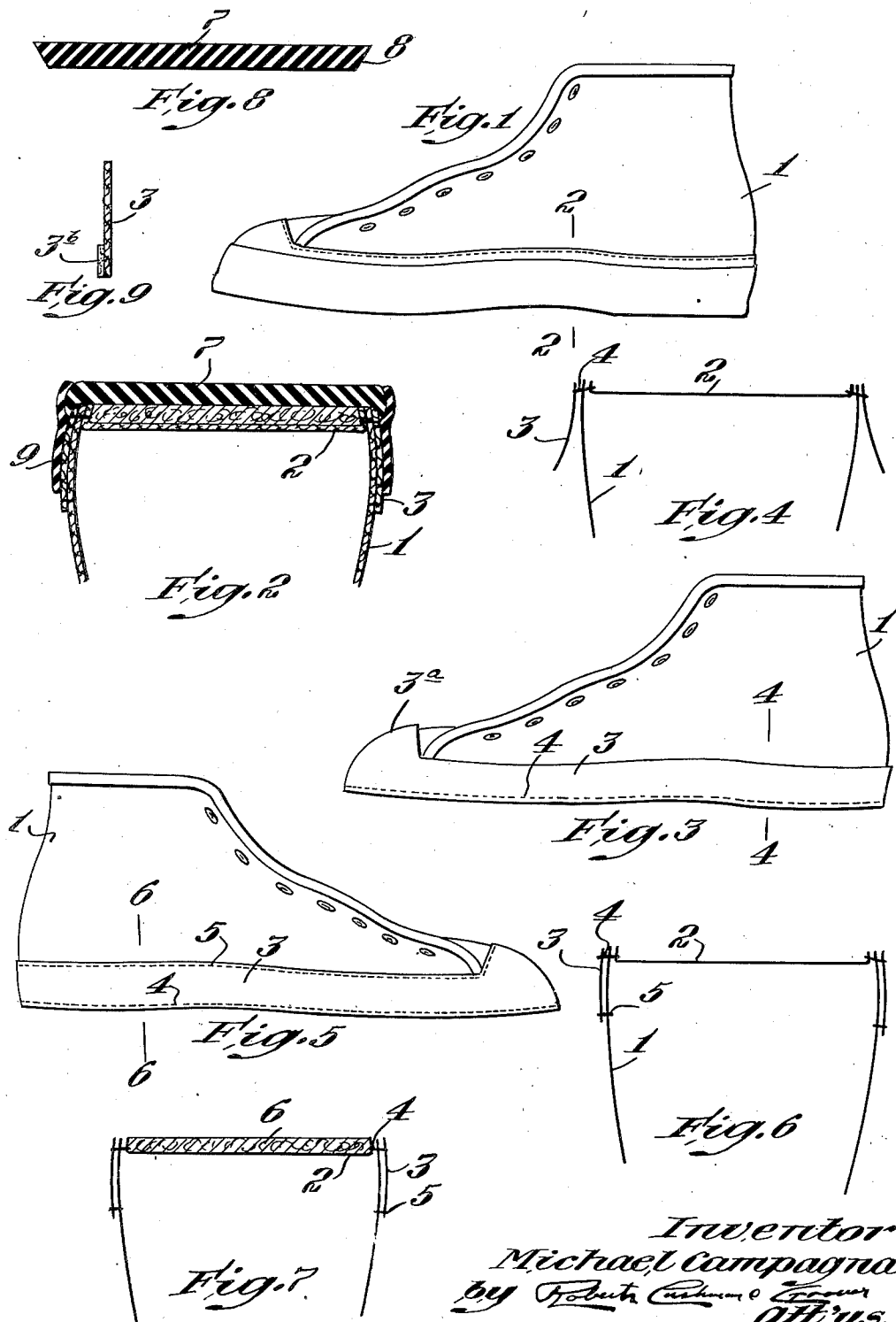
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RUBBER SOLED SHOE WITH TWO-LAYER FOXING

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RUBBER-SOLED SHOE WITH TWO-LAYER
FOXING

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1 Claim. (Cl. 36—14)

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This invention pertains to the manufacture of footwear, particularly athletic shoes having vulcanized rubber soles.

In accordance with prior conventional methods, the upper of the shoe is first prepared, the upper having a suitable lasting allowance at its lower margin. Prior to assembly, a ribbon of rubber cement is applied to the inner side of the upper, adjacent to its lower edge, this cement constituting the means for attaching the margin of the upper to the insole during the lasting operation. The insole is usually lamellar, comprising an upper ply (the sock lining) of woven textile material, and a lower ply of low-grade rubber or "rag." The bottom of the insole is coated with cement.

The upper and insole are assembled on a last and the upper is lasted, its lower margin being wiped-in over the insole and secured to the latter by the ribbon of cement at the inner side of the margin. The bottom of the shoe is now smoothed off by skiving or grinding, to remove the wrinkles resulting from lasting. The lasted shoe is now dipped into a tank of cement so that the lower portion of the upper is externally coated with cement up to a desired level, the upper edge of this coating constituting a guide for use in applying a foxing, as hereafter referred to. The shoe is now placed in a dry box and kept there until the cement has set.

Since the cement thus used in coating the exterior of the upper contains naphtha, it acts as a solvent for the cement which was used in lasting, with the result that the lasted margin of the upper is often loosened from the insole. This necessitates relasting, which adds to the expense of shoe manufacture. Furthermore, the relasting operation never restores the shoe to quite so good a condition as when it was initially lasted.

A previously prepared toe cap is now placed on the cement-coated exterior surface of the upper at the toe, and a foxing strip is then applied. This foxing strip is a ribbon-like band of gum rubber, or rubber-coated fabric and should be so applied that while its upper edge is just within the bounds of the cement coating on the outer surface of the upper, its lower edge is so positioned that it may engage the edge of the outer sole. If in relasting the upper edge of the cement coating on the outside of the upper is displaced, for example by pulling the upper too much on one side of the shoe, the location of the foxing, by reference to the upper edge of the cemented area, may be so interfered with that the foxing will not lap the edge of the outer sole, or will leave an area of the cement coating uncovered. These possibilities add substantially to the difficulty of shoe manu-

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facture, and failure to locate the foxing accurately results in imperfect shoes.

The outer sole, having a beveled edge, is now placed in registry with the insole and the beveled edge of the outsole is wiped up onto the foxing. An outer or secondary foxing is then put in place so as to cover and substantially conceal the first foxing and the joint between the first foxing and the outer sole, and the second foxing is rolled and the shoe is vulcanized.

In the above prior procedure there is always danger of releasing the upper from its initial lasting stress during the application of the outer coating of rubber cement, thus requiring relasting, with the secondary result that the foxing may not be properly applied, so that the completed shoe is below standard and must be sold as a second.

One object of the present invention is to provide an improved method of making shoes of the above type whereby certain of the prior and customary steps are eliminated, thus reducing the cost of manufacture. A further object is to provide a method of making shoes of this type which avoids any necessity for relasting, and the consequent difficulties of applying the foxing properly. A further object is to provide a shoe of novel and improved construction, in particular a shoe which is more durable than shoes made in accordance with prior methods. 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 diagrammatic side elevation of a shoe embodying the present invention;

Fig. 2 is a fragmentary vertical section, to larger scale, on the line 2—2 of Fig. 1;

Fig. 3 is a diagrammatic side elevation of the shoe upper, showing a foxing strip attached to the lower edge of the upper;

Fig. 4 is a diagrammatic fragmentary section on the line 4—4 of Fig. 3;

Fig. 5 is a diagrammatic side elevation showing the upper of the shoe with the foxing secured both at its upper and lower edges to the upper;

Fig. 6 is a diagrammatic fragmentary section on the line 6—6 of Fig. 5;

Fig. 7 is a section similar to Fig. 6, but showing a filler or cushion element assembled with the sock lining of the shoe;

Fig. 8 is a transverse section of an outer sole before assembly with the other parts of the shoe; and

Fig. 9 is a transverse section, to large scale, through the foxing strip, before application to the

upper, showing the strip provided with an adhesive coating at the lower part of its outer surface.

Referring to the drawings, the numeral 1 designates the upper of the shoe. As illustrated, this upper consists of a single piece of material, for example canvas, but it is to be understood that any appropriate material may be employed and that the upper may comprise several plies of material, for example an outer element, a lining, and a doubler. The upper is cut and put together in the usual manner, but differs from uppers made in accordance with conventional prior practice in that it is cut close, that is to say, with substantially no lasting allowance. This procedure results in a substantial saving of material, as compared with usual prior practice which requires a lasting allowance at the lower margin of the upper of as much as $\frac{1}{2}$ inch in some cases.

The sock lining 2 consists of a piece of flexible textile fabric appropriate to form the surface upon which the foot of the wearer rests, and is cut approximately to the shape of the bottom of the shoe. In accordance with the present invention, there is provided a foxing strip 3 which may, for example, be of gum rubber or of textile fabric frictioned or coated with rubber. In accordance with a preferred procedure, this foxing strip 3 is provided with an integral toe cap portion 3^a. While it is preferable to make this toe cap portion integral with the foxing, it may be made as a separate part and secured to the foxing proper by sewing or adhesive, or if preferred the toe cap may be made as an entirely separate element and applied independently of the foxing proper. The outer surface of the foxing, except for the upper part of the toe cap portion, is provided with a coat of adhesive, for example gum rubber. This coating need not cover the entire width of the foxing 3, but may, as illustrated at 3^b in Fig. 9, be confined to the lower marginal portion of the foxing strip 3.

Having provided the upper, the sock lining, and the foxing 3, the lower edges of the foxing and upper are placed in registry and are secured by a sewed seam (comprising stitches 4) or by equivalent fastening means to the edge portion of the sock lining 2. While it is permissible to secure the foxing to the upper in one operation, and then to attach the united foxing and upper to the sock lining in a second operation, two separate operations are not necessary, since all three parts may, as above suggested, be united at the same time by a single seam. In thus attaching the foxing to the upper, the lower edge of the upper provides a convenient guide so that by registering the lower edge of the foxing with this edge of the upper as the parts are being united, a proper location of the foxing is insured.

After the lower edges of the foxing and upper have thus been secured to the sock lining, the upper edge of the foxing, including the upper rear edge of the toe cap, is attached to the upper by a second sewed seam 5 or equivalent fastening means.

The union of the lower edges of the foxing and upper with the margin of the sock lining produces a ridge (consisting of the united edges of these three parts) which somewhat resembles the in-seam of a welt shoe, and for convenience this ridge may hereinafter be referred to as an in-seam.

If desired, at this point in the operation, a last may be forced into the upper to facilitate subsequent operations upon the bottom of the shoe, although these subsequent operations may be

carried out without the use of a last, if desired. Preferably, in order to insulate the foot, and to provide a soft surface upon which the foot may rest, and also to furnish a smooth and level bottom for the reception of the outer sole, it is preferred to lay an intermediate or cushion sole 6, for instance of felt, against the under surface of the sock lining 2 and to cement it in place, this cushion sole filling the space defined by the in-seam and providing a level surface across the entire shoe bottom.

The outer sole 7 is of rubber or other suitable material of the proper thickness and is preferably provided with a beveled edge 8 (Fig. 8). The outer sole is placed in registry with the shoe bottom and is cemented to the intermediate or cushion sole 6 and the edges of the outer sole are then wiped up over the cement-coated outer surface of the lower margin of the foxing 3.

Preferably a second or outer foxing 9 is provided, consisting of gum rubber or fabric frictioned or coated with rubber, and this foxing 9 is now wrapped about the lower part of the shoe so as substantially to cover the foxing 3 and to conceal the joint between the outer sole and the foxing 3, and to overlap the exposed edge of the outer sole. This outer foxing 9 is rolled in the usual way to unite it firmly to the other parts, and then the shoe is vulcanized and subjected to such other finishing operations as are customary.

In following the above procedure the foxing 3 is permanently united to the shoe upper without incurring any danger of disturbing the union between the upper and the sock lining, or inner sole 2. The usual operations of lasting the upper are dispensed with, and since no relasting operation is required, and since the lower margin of the foxing is accurately located with reference to the plane of the shoe bottom, and since there is no danger of displacement of the upper edge of the foxing, the finished shoes are substantially uniform and identical in appearance.

By eliminating the usual lasting operation and the operation of relasting, the number of steps in shoe making is very materially reduced, and the cost of production is likewise reduced. On the other hand, the completed shoe is substantially proof against separation of its constituent parts, such as often occurs if the shoe is not relasted as it should have been, for instance when the weakening of the union between the upper and insole has gone unnoticed.

For convenience in description reference has herein been made to "rubber" as the material of the outer sole and as the adhesive employed for uniting the parts and for providing a water-proof bottom structure. However, it is to be understood that rubber is thus referred to merely by way of illustration, and that the invention is not thereby to be limited to the employment of rubber for these purposes, but that any other equivalent material may be employed and is to be understood as comprehended in the term rubber as here used.

While one desirable procedure has herein been described by way of example, it is to be understood that the invention is broadly inclusive of any and all modifications falling within the scope of the appended claim.

I claim:

An athletic shoe having a rubber outsole, the shoe comprising an upper substantially devoid of lasting allowance, a sock lining, and a foxing having an integral toe cap portion, stitches uniting the lower edges of the foxing and upper

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to the sock lining, and stitches uniting the upper edge of the foxing, including the toe cap portion thereof, to the upper, a layer of heat-insulating material interposed between the sock lining and outer sole, the edge of the outer sole extending upwardly and being joined leak-tight to the lower portion of the foxing, and an outer foxing substantially covering the first foxing except the upper part of the toe cap portion thereof, and concealing the joint between the first foxing and the outer sole.

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