

May 30, 1939.

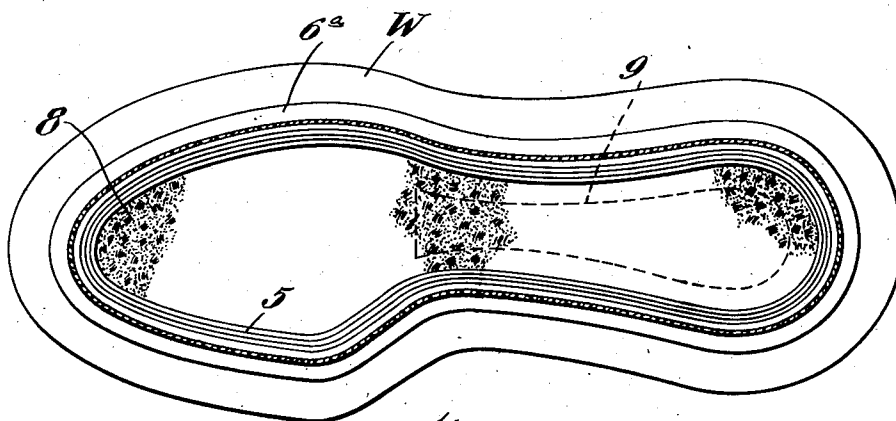
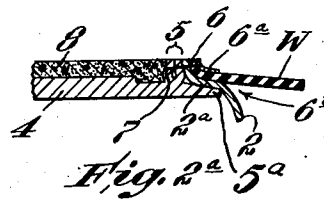
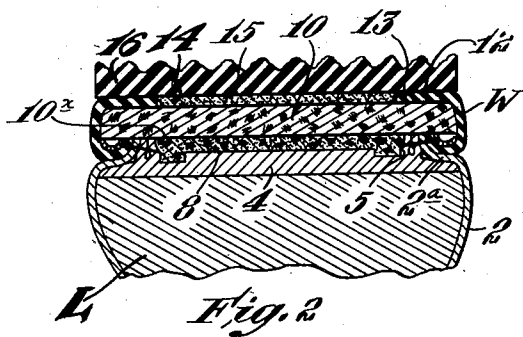
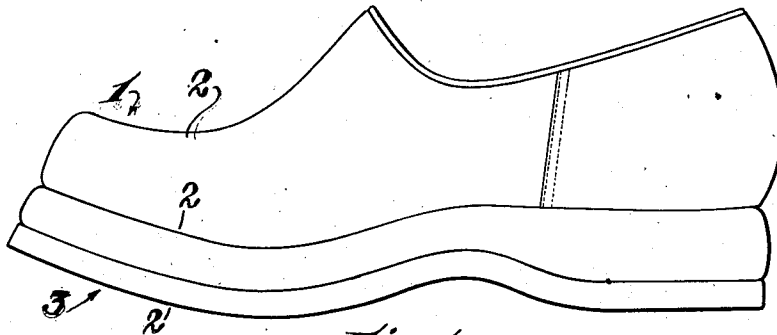
H. AUERBACH

2,160,692

FOOTWEAR

Filed Jan. 30, 1939

2 Sheets-Sheet 1



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Hyman Auerbach
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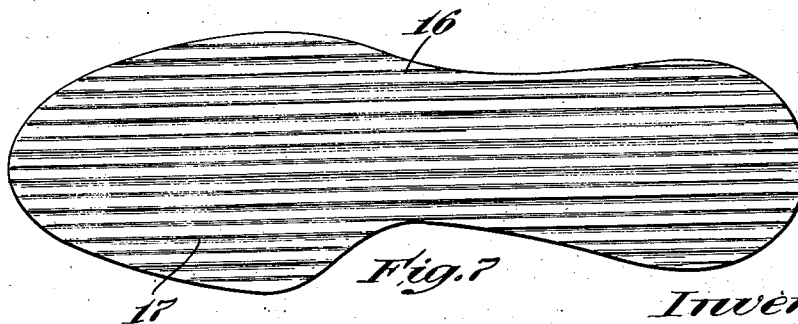
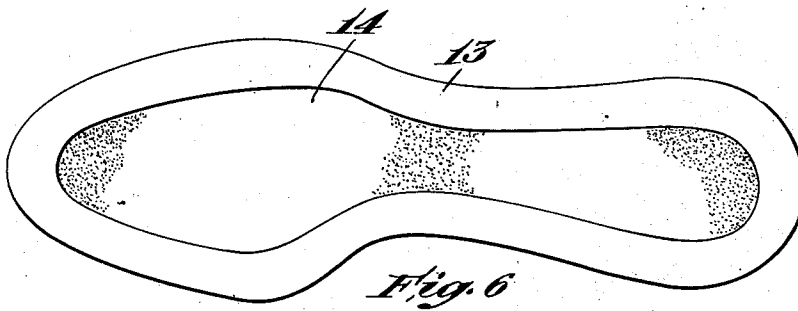
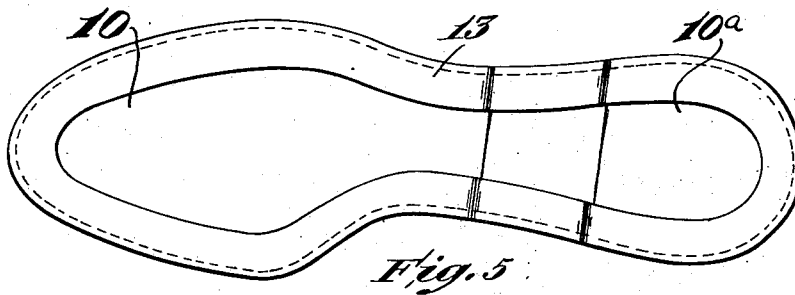
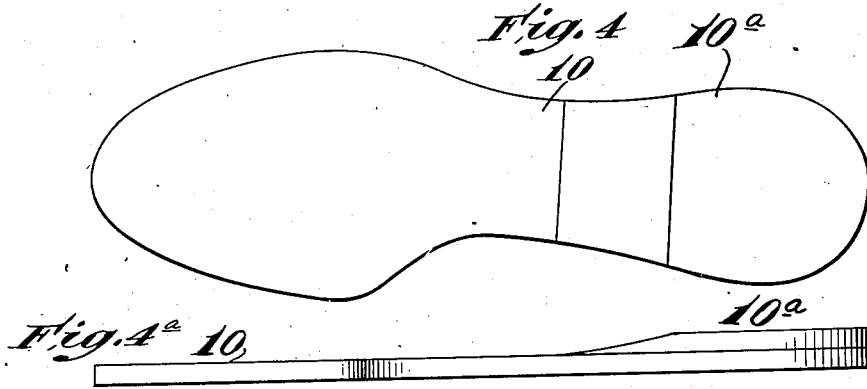
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2,160,692

FOOTWEAR

Filed Jan. 30, 1939

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,160,692

FOOTWEAR

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Application January 30, 1939, Serial No. 253,556

1 Claim. (Cl. 36—14)

This invention pertains to footwear and relates more especially to an improved bottom structure for shoes and to a method of making shoes.

To satisfy the demands of the purchasing public certain types of shoes, notably those designed for sport wear, must combine extreme comfort, and ability to withstand hard usage, with attractive appearance and fine finish. Furthermore, since sport shoes are commonly worn for walking over damp, cold or uneven ground, they must be as nearly waterproof as possible and should have a substantial thickness of cushioning and/or insulating material between the wearer's foot and the ground. On the other hand, the bottom structure, though quite thick, should be flexible, present a smooth inner surface for contact with the wearer's foot, and should be durable but capable of manufacture by factory methods at reasonable cost.

Although efforts have been made heretofore to combine the several above-named desirable characteristics, such efforts have never been fully successful, so far as is known to me. For instance, satisfactory cushioning, insulation and/or waterproofing have usually resulted in undue stiffness of the bottom structure.

In accordance with the present invention the several desirable qualities above mentioned, together with others, are combined in a shoe of practical construction and capable of commercial manufacture in accordance with factory methods. In accomplishing this desirable result, the first step is to provide a lasted shoe (prepared substantially in accordance with the usual Goodyear welt method) in readiness for the application of the outer sole member or members, thus securing the flexibility, comfort and other desirable qualities inherent in a welt shoe. However, the improved method of the present invention differs from the usual Goodyear welt process, first in attaching the welt to the insole about the entire periphery of the latter, including the shank and heel portions, and second, in the use of an abnormally wide welt. The welt may be of any desired flexible material appropriate for the purpose, but is preferably of waterproof or water-resistant material, for instance crepe rubber, reinforced with textile fabric, if desired. After the usual shank stiffener and bottom filler have been applied, and in accordance with the preferred procedure, a cushion or middle sole of any desired thickness and of any suitable material, for instance of sheet cork, felt or the like, is disposed upon the filled

bottom, said middle or cushion sole preferably being of substantially the same size and contour as the insole. In a preferred construction, a heel wedge or lift is disposed upon the rear end portion of the middle sole (or may form an integral part of the latter) such heel lift being designed to impart a "spring-heel" effect to the completed shoe. The outer portion of the welt is then turned down around the edge of the cushion or middle sole and its margins are turned inwardly over the bottom of the middle or cushion sole and secured thereto, for instance by the use of a waterproof cement. The space defined by the inner edges of the inturned welt is now filled level with a suitable filler, for instance the usual plastic filler employed for leveling the bottom of a welt sole after the welting operation, or preferably a rubber compound, for instance rubber cement thickened with scraps or small particles of waste rubber. Lastly an outer sole, preferably of a water-resistant nature, for instance crepe rubber or leather waterproofed with a suitable impregnant, is laid over the inturned margins of the welt and the last-named layer of filling material, and is permanently secured in place by appropriate fastening means, for example waterproof adhesive. The outer surface of the outer sole is preferably ribbed, or otherwise roughened to prevent slipping.

As thus constructed the upper surface of the resilient rubber welt is held close, and under more or less compression, against the outer surface of the upper, so as substantially to prevent entry of moisture between them. On the other hand, the wrapping of the welt around the edge of the middle or cushion sole and the interposition of its edge between the middle and outer sole and the use of waterproof adhesive for uniting the parts, provides a connection between the upper and the outer sole which is substantially waterproof about the entire periphery of the shoe.

The inner surface of the shoe is smooth and comfortable to the foot; the foot is supported upon a thick resilient insulating cushion; the middle and outer soles collectively form a very thick sole structure well adapted for walking over rough, uneven surfaces and capable of withstanding hard usage; and although the shoe is substantially waterproof, it is flexible, light in weight, furnishes unusual insulation between the foot and the ground, and may be made by usual factory methods and at a reasonable cost.

In the accompanying drawings, wherein one desirable embodiment of the invention is illustrated by way of example,

Fig. 1 is a side elevation of a sport type shoe embodying the invention;

Fig. 2 is a diagrammatic transverse section substantially on the line 2—2 of Fig. 1, showing the shoe mounted upon a last;

Fig. 2^a is a fragmentary section similar to Fig. 2, but to somewhat larger scale, showing the upper and insole and the welt as having been lasted and united by the inseam stitches;

Fig. 3 is a bottom plan view of the shoe with the parts in the condition indicated in Fig. 2^a;

Fig. 4 is a bottom plan view of an inner or middle sole;

Fig. 4^a is an edge view of the middle sole showing the wedge-like heel lift in place;

Fig. 5 is a bottom plan view of the shoe showing the middle or cushion sole in place, and with the welt turned inwardly so that its margins overlie the middle or cushion sole;

Fig. 6 is a view similar to Fig. 5 but showing the secondary bottom filler in place; and

Fig. 7 is a bottom plan view of the outer sole.

Referring to the drawings the numeral 1 designates generally a shoe of sport type embodying the present invention, the shoe chosen for illustration being of the spring heel type. This shoe comprises the upper 2 and the bottom structure indicated generally at 3. Referring more particularly to Figs. 2 and 2^a, the upper 2 is shown as having been assembled with the insole 4 upon the last L. The insole 4 is substantially of the Goodyear welt type channeled to provide the sewing rib 5 and marginal feather 5^a, but differs from usual welt insoles in having the sewing rib extending all of the way around it. The margin of the upper 2 is turned inwardly as indicated at 2^a over the feather of the insole, and its edge, together with the inner edge 6 of the welt W, is secured to the sewing rib 5 by the inseam or welt stitches 7. As illustrated, the welt W is abnormally wide, as compared with the usual Goodyear welt. The welt W is of suitable flexible material, preferably waterproof or water-resistant, for instance crepe rubber, and if of the latter or similar material, is preferably furnished with a reinforce, for example a piece of textile tape 6^a, adhesively united to that edge which is to receive the inseam stitches 7. If desired the welt may be thus reinforced throughout its entire width. On the other hand, this reinforce is not entirely necessary, in particular if the welt be of a material which is inherently capable of receiving sewing stitches without undue tendency to cut or tear out. Preferably this welt is of a more or less resilient material, and somewhat thicker than the usual Goodyear welt, so that when it is sewed in place its edge portion 6 is placed under some resilient compression and thus very firmly presses against the adjacent outer surface of the shoe upper 2 so that it is difficult for moisture to enter the crevices 6^b between the meeting surfaces of the welt and upper.

After the welt has been secured in place so as to extend all of the way around the insole, and preferably with a small overlap at its proximate ends, the space defined by the inner margin of the sewing rib 5 is filled with a suitable bottom filler 8, for example, ground cork mingled with a suitable adhesive binder, such as is commonly used in the manufacture of welt shoes, although it is to be understood that any other suitable filler material may be used for leveling the surface of the shoe bottom. Either before or after the filler is put in place, as may be

preferred, the usual shank piece 9 is disposed at the rear part of the shoe bottom.

Having prepared the bottom of the shoe as thus far described, the next step in accordance with a preferred embodiment of the invention, is to dispose upon this prepared bottom surface a middle or cushion sole 10. This cushion sole 10 is preferably of more or less yielding but firm material, preferably of a heat-insulating nature, for example sheet cork, felt or the like, and may be of any desired thickness to provide the requisite yielding and insulating support for the foot. This middle or cushion sole 10 is preferably of substantially the same size and contour as the insole. As illustrated (Figs. 4 and 4^a) the middle sole is provided with the heel wedge or lift 10^a, preferably of the same material as the body of the middle sole and adhesively or otherwise united to the latter, the heel wedge imparting a spring heel effect to the completed shoe. This middle sole 10 is preferably secured in place by means of adhesive 10^x forming a coating which preferably covers the entire bottom surface of the shoe. After this middle or cushion sole 10 has been secured in place, the welt W is turned down so as to wrap around the outer edge of the middle or cushion sole 10,—the free marginal portion 12 of the welt being turned inwardly so as to lie over the bottom surface of the middle or cushion sole and substantially parallel to the bottom of the inner sole. Preferably the welt is of such width that the edge of its marginal portion 13 lies inwardly beyond the inseam. This inturning of the margins 13 of the welt may be accomplished by the use of any suitable machine or with the assistance of any desired tools or implements, but when the welt is of crepe rubber this operation may readily be accomplished by the hands of the operator without any tools or implements whatever. The bottom of the sole member 10 is preferably coated with adhesive before the welt is laid over upon it, and when the marginal portion of the welt has thus been laid in contact with this adhesive surface it becomes firmly united thereto. After the welt has thus been laid over onto and secured to the bottom surface of the sole member 10, its under surface is preferably roughened to afford a good anchorage for the adhesive which secures the outer sole in place. A secondary filler layer 14 is now disposed in the space defined by the inner edges of the marginal portion of the welt, and then an outer sole 16 of any suitable material, preferably waterproof or water-resistant, for example crepe rubber or leather treated to make it waterproof, is disposed to overlie the inturned marginal portions 13 of the welt and the filler layer 14. Preferably the contacting surfaces of the outer sole and the welt margins 13, as well as the filler 14, are coated with adhesive 15 before the outer sole is put in place, and then the parts are subjected to pressure, for example, in a sole laying or leveling machine, or in a press of the type commonly used in making cement-lasted shoes, thereby securely to unite the several parts. Preferably the bottom surface of the outer sole is rough or corrugated, for example, by having ribs 17, thereby to reduce the danger of slipping when the shoe is worn.

By the use of the construction thus described the bottom structure of the shoe is of very substantial thickness without undue reduction in flexibility; the inner surface of the shoe bottom is smooth and comfortable; and an unusual thickness of insulation is provided between the foot

and the ground, and in accordance with the preferred procedure, the shoe is substantially waterproof.

5 While the procedures above suggested are desirable, and while the materials and the specific arrangements of the several parts hereinabove illustrated and described are also desirable, it is to be understood that the invention is not necessarily limited to the precise steps or order
10 of steps of the process specifically described or to the materials or the specific relative arrangements of parts above referred to, but that the invention is broadly inclusive of any and all methods of procedure, materials, and arrangements
15 of parts which fall within the scope of the appended claim.

I claim:

20 A flexible substantially waterproof sport shoe of the Goodyear welt type comprising an upper, a channeled insole and a crepe rubber welt, the insole having a downwardly directed rib and a marginal feather, the rib and feather extending around the entire periphery of the insole, and

the margin of the upper and the edge portion of the welt underlapping the feather of the insole and being united to the rib, bottom filler material filling the central space defined by the rib,
5 a shank extending from the heel end of the insole to the ball portion, and a cork middle sole disposed beneath the insole and in contact with the bottom filler, said middle sole having a heel wedge secured to its under side, characterized in that the welt extends all of the way
10 around the shoe and turns down and wraps about the edge of the middle sole with its margin directed in so as to underlie the bottom of the middle sole, adhesive permanently uniting the inturned margin of the welt to the bottom of
15 the middle sole, filler material disposed in the space defined by the inner edge of the inturned margin of the welt, an outer sole of rubber underlying the middle sole and concealing the inturned lower margins of the welt, and adhesive
20 permanently uniting the outer sole to the inturned margin of the welt.

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