C. H. BRASELTON.

SHOE.

APPLICATION FILED APR. 10, 1915.

1,320,670. Patented Nov. 4, 1919.

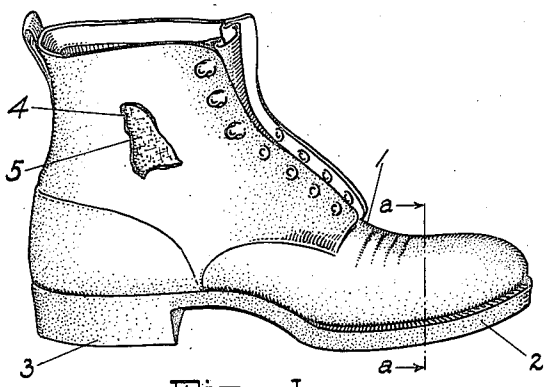


Fig. I.

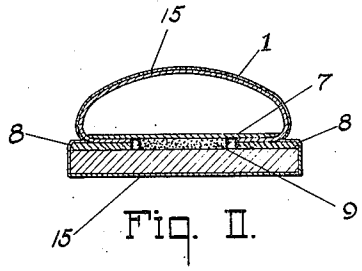


Fig. II.

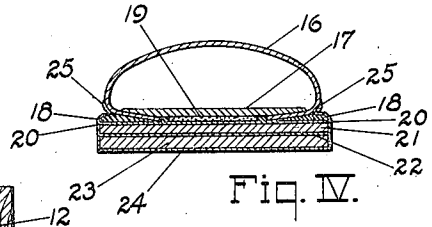


Fig. IV.

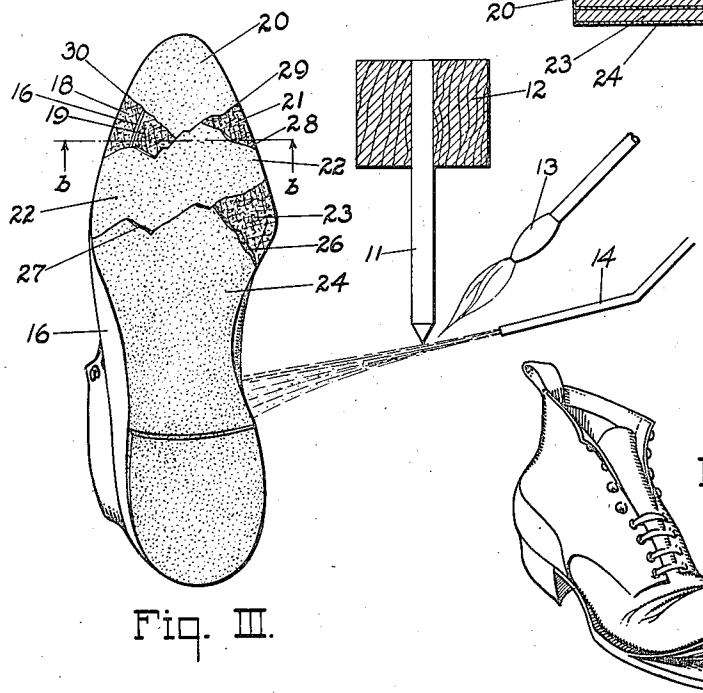


Fig. III.

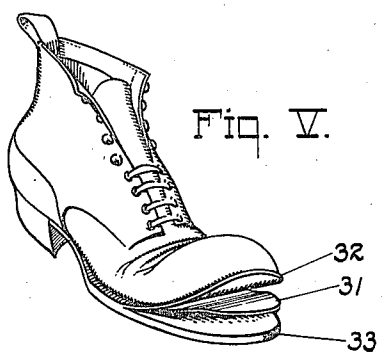


Fig. V.

INVENTOR.

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UNITED STATES PATENT OFFICE.

CHESTER H. BRASELTON, OF DAYTON, OHIO.

SHOE.

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Application filed April 10, 1915. Serial No. 20,474.

To all whom it may concern:

Be it known that I, CHESTER H. BRASELTON, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Shoes, of which I declare the following to be a full, clear, and exact description.

This invention relates to shoes or similar wearing apparel for the feet.

An object of the invention is to improve the construction and service of shoes as by increasing their wearing or moisture-proof qualities.

Another object of the invention is to cheapen the cost of such wearing apparel by allowing less expensive or inferior material to be used.

I accomplish the above objects in one instance by incorporating in a shoe a metallic coating, film or layer which adheres strongly to or impregnates the surfaces to which it is applied. I have found that such a closely adhering coating, film or layer may be incorporated by fusing the metal and blowing the same by a blast of gas in the form of a spray against the surface to which the coating, film or layer is to be applied. Where the prime consideration is to improve the wearing qualities of the shoe, this metallic coating, film or layer may be applied to exposed surfaces of the shoe, such as the bottom and edges of the sole and, if desired, upon the upper. Where the prime consideration is to render the shoe moisture-proof, I accomplish this by interposing this metallic coating, film or layer at any place in the path which moisture may take to gain access to the interior of the shoe. The coating, film or layer may be as thick as desired but I prefer not to make it so thick as to interfere with or decrease the natural flexibility of the shoe.

My invention further consists in some details of construction and combination of parts as will hereinafter more fully appear from the detailed description taken in connection with the drawings which accompany and form part of this specification and in which:—

Figure 1. is an elevation of a shoe of the heavier work shoe type with a metallic coating, film or layer applied throughout its outer surface.

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

Fig. 3. is another view of a shoe in the process of applying a metallic coating or film, parts being broken away to better bring out the construction.

Fig. 4. is a section on the line *b*—*b* of Fig. 3.

Fig. 5. is an elevation of a shoe with the sole partly torn away, showing a layer of flexible material carrying a metallic coating or film and inserted between the sole and the welt of the shoe.

In Fig. 1. 1 indicates the upper of a shoe provided with a sole 2 and a heel 3. This shoe is shown coated with a thin layer of metal, preferably metal such as copper or aluminum to make the shoe moisture proof and to protect it. At 4 a portion of this very thin coating of metal is broken away showing the leather 5 beneath. All or any part of the shoe, as desired, may be coated with a firmly adhering coating of metal such as copper or aluminum or any other metal without affecting the flexibility of the shoe detrimentally. In Fig. 2 the shoe of Fig. 1 is shown in section, 1 being the usual upper over the foot, 7 the insole within the shoe and 8 the usual welt. A filler 9 is preferably between the insole 7 and the heavy main sole 2 of the shoe. After these parts of a shoe are assembled as shown in the cross section and the shoe thoroughly clean from any oil or grease a metallic coating, film or layer is applied to the shoe as by placing it in the path of a spray formed of liquid metal blown by a blast of gas under pressure. Thus Fig. 3 shows a rod of metal 11 carried by a block 12, the lower end of which rod is heated by torch 13 so that it will form in liquid drops at the lower end. A nozzle 14 conducts the gas under pressure past the lower end of the rod 11 so that the blast of gas will break up the drops of melted metal, as they form, into a spray and blow the minute particles against the surface of anything interposed in the path. In Fig. 2. 15 is a thin film of metal shown continuous around the exterior of the shoe and it will be seen that, since this film so strongly adheres and becomes a permanent part of the leather or other material of the shoe, this film will have to be broken or worn away somewhere before there is any possibility of water getting into the leather sole of the shoe and up to the wearer's foot or getting through the upper of a shoe or any other part, to subject the foot to dampness. Of

course, only the sole of the shoe may be coated or possibly, also, it will be desirable to extend the coating up above the place where the welt 8 engages the upper 6 as this is a place through which water more readily gains admission into the inside of the shoe to dampen the foot. If the spraying of the upper, except near the welt, is eliminated, the appearance of the shoe will not be materially changed from the usual. Of course if the shoe is sprayed throughout any desired color can be given the shoe depending upon the metal sprayed on top of the leather or this metallic coating can be finished in any manner. It may be blued or painted as desired.

It will be observed that the shoe of Figs. 1 and 2 will be in a sense fire proof so far as its exterior is concerned being wholly coated with metal and the shoe if desired may be likewise coated on the inside.

In Figs. 3 and 4 I show a shoe with its upper 16 having its lower edges come beneath an insole 17 and upon top and within the edges of the welt 18. A filler 19 is located beneath the insole 17 and within the welt 18. After the upper is sewed to the welt 18 and the filler interposed I may apply to the lower surfaces of the welts 18 and the edges of upper 16 and filling 19 a continuous film of metal 20 to completely exclude moisture from getting through the filler 19 and insole 17. After this film of metal 20 has been applied across the lower surface of the welts 18 and the filler 19 the main sole 21 may be sewed in place in the usual manner the needle working through the thin film of metal 20 as readily as through the material of the shoe. This main sole 21 may be the only sole of the shoe or it may be covered on its bottom with a thin film of metal 22 and then another sole 23 sewed in place. The number of soles and thickness depends, of course, upon the service that the shoe is supposed to give and in fact the number of coatings of metal at the bottom of a shoe depends upon the conditions desired to be obtained. Probably in most cases one coating will be sufficient as it can be made as thick as desired consistent with flexibility. In Figs. 3 and 4 I have shown a coating 24 forming a film of metal completely surrounding the edges and bottom of the shoe sole and extending up at 25 over the welting seam to form a water tight connection between the welt and upper at their point of connection. Of course all the places shown coated with metal do not need to be, as they are shown merely as illustrative, as various different locations of the coating of metal to give the desired service may be held.

In Fig. 3 the bottom of the two soles with the metal coatings are shown broken away at places. In this figure 23 corresponds to the bottom sole of Fig. 4, this being covered with a thin layer of sprayed metal 24 broken away at the line 26 to show the sole 23 beneath. This sole 23 and its coating 24 is broken away on the line 27 to show metallic coating 22 on the surface of the upper sole of leather 21 the coating 22 being broken away at the line 28 to show beneath it the leather of the sole 21. The upper sole 21 and the metal coating 22 are both broken away on the line 29 to show the coating of metal 20 extending across the lower surface of the welt 18 and filling material 19, the coating 20 being broken away on the line 30 to show the welt 18 and filler 19 beneath. The coatings, where desired, can of course extend back under the heel being applied before the heel is put on though it is very seldom that moisture gains access to the foot at this point, and this may be inadvisable in most cases. However, wherever the metal coating is applied to form a seal between the upper and the welt or between the upper and sole I consider it advisable to extend this sealing film completely around the shoe above the heel wherever the upper is connected to the base of the shoe. Then too as regards coating the wearing portions of a shoe, such as the bottom of the sole and heel, I find that this is a good thing to do as it improves the wearing qualities of the leather or other material of a shoe to form a film of metal of such thickness desired on the wearing surface, this being applied by my process which embeds the metal and causes its tiny particles to penetrate into the pores of the leather and adhere strongly thereto. This application toughens the material of a shoe at the surface, wherever applied, thus improving its wearing qualities.

In Fig. 5 I illustrate a shoe having the sole torn away from the upper and the welt. In this view I have shown the idea of placing the sheet of metal coated material 31 between the welt 32 of the shoe and the sole 33. This material may be a piece of leather coated on one or both sides with metal, the sole being sewed to the welt with the metal coated piece 31 between them.

I wish it to be understood that my invention contemplates placing upon any portion of a shoe a strongly adhering coating of metal and that this will completely protect such surface from moisture passing into the leather or material coated. I can just as well coat a cloth top shoe so long as it is not wool which is not perfectly clean to which the metal applied by my process does not well adhere. It is advisable however, that the material, when being coated, be very clean and if leather, free from oil or grease. Besides using this metallic coating merely as a moisture protecting coating or as protection against wear I can also use it to fasten two or more parts of the shoe to-

gether by coating over sufficient surface of both of them a continuous film, the metal serving as a means of holding the parts together. For example in the shoes shown the outside of the upper will be held to the welt by the film of metal applied to their joining surfaces. Also by referring to Figs. 2 and 4 it will be seen that by shortening the welt 18 so that the inner edge of the upper extends farther in than the welt as shown in Fig. 4, and then by coating the adjacent surfaces of both the welt and the edge of the upper, the upper will be securely fastened to the welt as well as to the fillings 9 and 19 by a continuous film of metal as thick as desired for strength and in a thoroughly moisture proof manner. At the same time the surrounding film of metal 25 will also hold more firmly the upper to the welt. Furthermore the film of metal 25 at the edges of the sole of the shoe may be made sufficiently strong to securely hold the sole or soles to the welt. In fact by leaving a space between the filler 19 and the inside edges of the welt so that the insole 17 will be exposed from the bottom of the shoe when the soles are both removed, the insole will also be fastened securely in place by a continuous film of metal extending over the various exposed surfaces including the bottom of the welt 18, edges of the upper 16, bottom of the filler 19 and the exposed insole 17 all by a continuous film of metal adhering to, at respective points these various parts. In fact I can fasten any of the two parts of a shoe together without sewing merely by providing sufficient surface on each part to be joined so that a continuous metal film joining the two will have a sufficient hold of both surfaces of the parts to be joined. In this way it is possible to eliminate practically all sewing or nailing of the parts of the shoe together and yet they will be fastened together in not only a firm but completely moisture proof manner. If it is desired to fasten the various parts of the shoe together by sewing or nailing this operation can be done right through the film of metal.

I wish it to be understood that I may coat the leather or material of the shoe before being applied to the shoe if desired, the shoe then being made in the usual manner. However, I prefer to coat the parts of a shoe when assembled in order to better secure against leakage of water.

In making a shoe as per my invention it must be understood that the coating is not a loose coating but is forced into the pores of the material so as to become embedded firmly therein and form a basis for the building up of a thicker coating. I find, in practice, that, in effect, the metal coating becomes in fact a part of the material coated upon, so intimately connected therewith as to be inseparable therefrom when properly applied, there being no space between the coating and the material coated for moisture to creep through. Upon this fact largely depend the high qualities of the shoe so made as regards moisture excluding. It is apparent that deterioration of soles of shoes and other leather parts is greatly increased by the leather becoming soaked with moisture at various times in use. A shoe made in accordance with this invention will have greatly reduced moisture resulting troubles and likewise its service greatly increased. With this advantage it is of course obvious that a much cheaper grade of leather or other shoe material can be used for the shoe yet retaining as great a wearing quality in the shoe.

I wish it to be distinctly understood that where I referred to shoes in this specification I mean this term in a generic sense so as to cover as well boots or rubbers which are likewise of course susceptible for construction in accordance with this invention.

By the term "upper" or "upper portion", I mean that part of a shoe which normally extends over and along the side of the foot of the wearer. By the term "bottom" or "lower portion", I mean that part of the shoe which is normally disposed beneath the foot of the wearer. In my use of the term "sole", I mean to include not only the main bottom sole but also the insole and similar parts between the main sole and the insole. By the term "metal", I mean any substance or material having metallic characteristics. The process of making shoes disclosed herein is reserved and will be claimed in a divisional application.

While I have described various forms of construction and detailed applications of my process I want it to be understood that they are merely illustrative as I do not wish to be limited to the details thereof except as required by the scope of the appended claims. Various modifications will no doubt readily occur to those skilled in the art all coming within the scope of my invention.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In an article of foot apparel, the combination with the apparel of a flexible film of metal impregnating and intimately associated with the material of said apparel.

2. In an article of foot apparel, a sole having applied thereto a flexible film of metal impregnating and intimately associated with the material of the sole.

3. In an article of foot apparel, an upper for surrounding the foot and a bottom attached to the bottom of the upper and having extending across it a flexible film of metal impregnating and intimately associated with the material of the bottom.

4. In an article of foot apparel, an up-

per, an insole within the upper, filling material below the insole, and a flexible film of metal impregnating and intimately associated with the lower surfaces of the upper, insole and filling material.

5. In an article of foot apparel, the combination of an upper, welt, and filling material within the welt and a flexible film of metal impregnating and intimately associated with the lower surfaces of the welt, upper and filling material to unite the same together.

6. In an article of foot apparel, a sole covered on its exposed surface by a flexible film of metal impregnating and intimately associated with the material of said sole.

7. In an article of foot apparel, an upper and lower portion, said portions being fastened together by a flexible film of metal impregnating and intimately associated with adjacent surfaces of the upper and lower portions.

8. In an article of foot apparel, a flexible film of metal extending across the lower portion of said apparel and impregnating and intimately associated with the material thereof.

9. A shoe comprising an upper, a welt, and insole, a filler on the bottom of the insole, and a film of metal covering the bottom surface of the welt and filler, the edge of the upper and the between substance of the insole, said film of metal being intimately associated with the material of such part of the shoe and being of sufficient density and thickness to firmly unite such parts and render the bottom of the shoe waterproof.

10. In an article of foot apparel, an upper, a sole, and a flexible layer of metal between the upper and the sole and adapted to flex with the sole, said flexible layer impregnating and intimately associated with one of said parts.

11. In an article of foot apparel, two sole portions and a film of metal between the same and adapted to flex therewith, said film impregnating and intimately associated with one of said sole portions.

12. In an article of foot apparel, the combination of contacting parts and a film of metal impregnating and intimately associated with such parts at their place of contact and adjacent thereto to seal the same.

13. In an article of foot apparel, the combination of a sole, an upper, and a flexible film of metal impregnating and intimately associated with adjacent portions of said sole and upper to seal the joint between them.

14. In an article of foot apparel, the combination of a welt, an insole and a flexible film of metal impregnating and intimately associated with portions of said welt and insole.

15. In an article of foot apparel, the combination of an upper, a welt, a sole and a film of metal impregnating and intimately associated with adjacent edges of said upper, welt and sole to seal the joints between the same.

16. In an article of foot apparel, the combination of a welt, a filler within the welt and a flexible film of metal impregnating and intimately associated with the lower surfaces of said welt and filler.

17. In an article of foot apparel, the combination of an insole, a welt, a filler within the welt and a flexible film of metal impregnating and intimately associated with portions of said insole, welt and filler.

18. In an article of foot apparel, the combination of an upper, an insole, a welt, a filler and a flexible film of metal impregnating portions of said welt, filler, insole and upper.

19. In an article of foot apparel, the combination of an upper, an insole, a welt and a flexible film of metal impregnating portions of said upper, insole and welt.

20. In an article of foot apparel, the combination of an upper, a welt and a flexible film of metal impregnating portions of said welt and upper.

21. In an article of foot apparel, the combination of an upper, an insole, and a flexible film of metal impregnating portions of said upper and insole.

22. In an article of foot apparel, the combination of an insole, a filler beneath said insole and a flexible film of metal impregnating portions of said filler and insole.

23. In an article of foot apparel, the combination of an upper, a welt, a filler within the welt and a flexible film of metal impregnating portions of said upper and filler.

24. In an article of foot apparel, a sole and a layer of material having one surface thereof impregnated by a flexible metallic film extending parallel to said sole.

25. In an article of foot apparel, a sole and a layer of material carrying a flexible metallic film impregnating one surface thereof, said film extending parallel to and lying above the main sole.

26. An article of foot apparel comprising the combination of an upper, a bottom, and a flexible metallic film incorporated in said bottom and impregnating portions thereof.

27. In an article of foot apparel, a sole covered on its exposed surface by a flexible metallic film impregnating and intimately associated with said surface.

28. In an article of foot apparel the combination of an insole, a covering for a portion of said insole and a flexible metallic film impregnating and intimately associated with said covering.

29. In an apparel for the foot, a flexible film of metal intimately associated with a

portion of the apparel, the particles of said film directly adhering to said portion of the apparel.

30. An article of foot apparel having parts thereof coated with a flexible metallic film adhering directly to the surface of the apparel.

31. In an article of foot apparel, a sole and a layer of material having one surface thereof carrying a flexible metallic film adhering directly thereto and extending parallel to said sole.

32. In an article of foot apparel, the combination of an upper and a sole with a coherent flexible film of protective material intimately associated in impacted relation therewith to form a water proof joint between the sole and upper.

33. An article of foot apparel having applied thereto and intimately associated in impacted relation therewith a coherent flexible film of protective material.

34. In an apparel for the foot, a coherent relatively hard impervious film of flexible material of independent identity firmly impressed in impacted relation with a portion of the apparel, the particles of the film adhering directly to said portion of the apparel.

In testimony whereof I affix my signature in the presence of two witnesses.

CHESTER H. BRASELTON.

Witnesses:
R. B. MUNDAY,
G. T. HEINZ.