Feb. 13, 1923. 1,444,826

C. H. BRASELTON

PROCESS FOR MANUFACTURING SHOES OR SIMILAR ARTICLES OF FOOT APPAREL

Original Filed Apr. 10, 1915

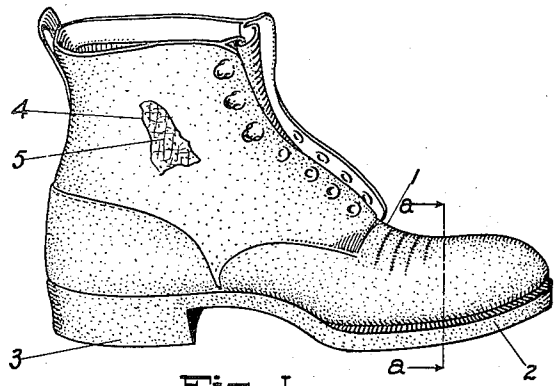


Fig. I.

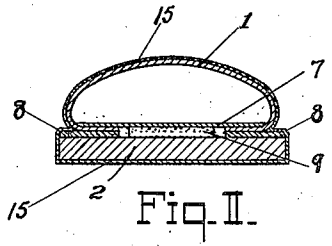


Fig. II.

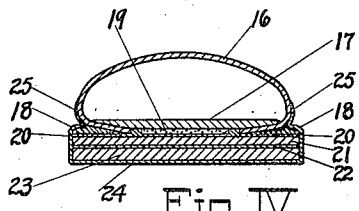


Fig. IV.

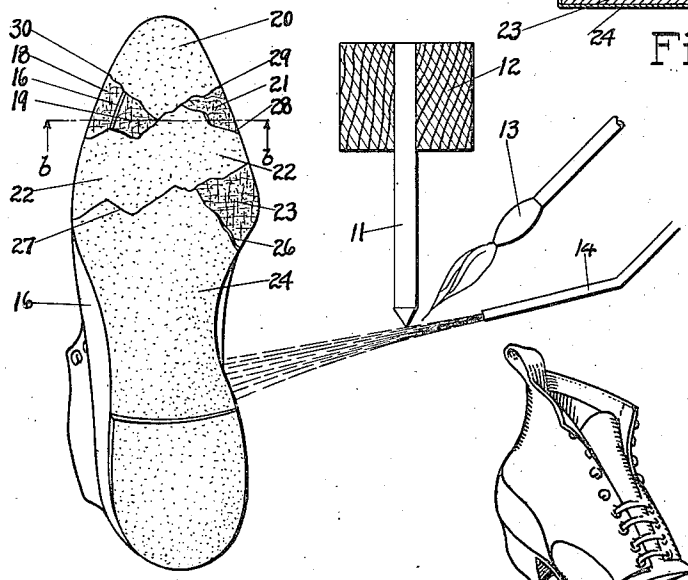


Fig. III.

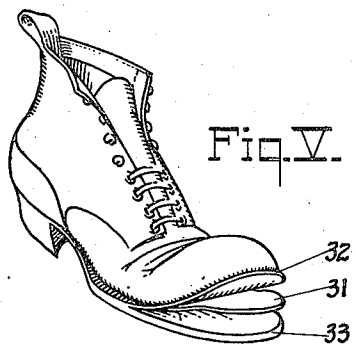


Fig. V.

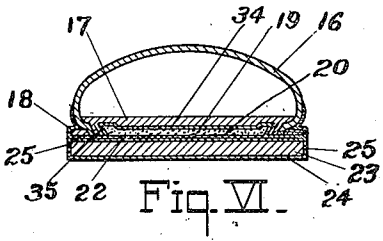


Fig. VI.

INVENTOR.

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UNITED STATES PATENT OFFICE.

CHESTER H. BRASELTON, OF TOLEDO, OHIO, ASSIGNOR TO KIRKE B. MATHES, OF BATAVIA, NEW YORK.

PROCESS FOR MANUFACTURING SHOES OR SIMILAR ARTICLES OF FOOT APPAREL.

Original application filed April 10, 1915, Serial No. 20,474. Patent No. 1,320,670, dated November 4, 1919. Divided and this application filed April 12, 1919. Serial No. 289,525.

To all whom it may concern:

Be it known that I, CHESTER H. BRASELTON, a citizen of the United States, residing at Toledo, Ohio, have invented certain new and useful Improvements in Processes for Manufacturing Shoes or Similar Articles of Foot Apparel, of which I declare the following to be a full, clear, and exact description.

This invention relates to processes for manufacturing shoes or similar articles of foot apparel. One object of the invention is to provide an improved process for making shoes by the use of which the construction and service of the shoes will be improved due to their increased wearing or moisture-proof quality. By the use of this improved process, I am also enabled to cheapen the cost of shoes because an inferior grade of material may be used.

I accomplish the above objects by incorporating a metallic coating, layer of film in the shoe at any desired place as by spraying with a metal to form a moisture proof metallic layer strongly adhering to the material of the shoe underneath the sprayed coating. This metallic coating may be applied to the shoe by melting a metal and blowing the same by a blast of gas in the form of a spray against a surface or surfaces in a shoe being made. In this case, the infinitesimal particles of the melted material are forced by the gas into the pores in the surface of the material of the shoe where they become firmly imbedded and by their overlapping, after impinging and solidifying, form a continuous air and moisture proof coating, film or layer over the surface of the leather or other materials used. To render the shoe moisture froof, I interpose 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. I prefer not to apply the metal so thickly as to affect detrimentally the flexibility of the shoe, the thickness depending upon the portion of the shoe to which the coating is to be applied, the character of shoe being made and the service to which the same is to be put.

This application is a division of my copending application Serial Number 20474 filed April 10, 1915, for shoes which matured into Patent 1,320,370 granted Nov. 4, 1919.

My invention further consists in details of my improved process for making shoes 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:

Fig. I, is an elevation of a shoe coated throughout its outer surface with a thin layer of metal.

Fig. II. is a section on the line *a*—*a* of Fig. I.

Fig. III. illustrates another type of a shoe in the process of manufacture, parts being broken away to better bring out the construction.

Fig. IV. is a section on the line *b*—*b* of Fig. III.

Fig. V. is an elevation of a shoe made in accordance with my process with the sole partly torn away, showing a layer of flexible material coated with a metallic film or layer and inserted in the bottom portion, as between the sole and the welt of the shoe.

Fig. VI is a sectional view corresponding to Figs. II and IV.

In Fig. I, 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, such as lead, zinc, tin, copper or aluminum, or a suitable alloy, so as to make the shoe moisture proof, increase its wearing qualities, improve the construction, and protect it. At 4 a portion of this 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 such metal without affecting detrimentally the flexibility of the shoe. In Fig. II the shoe of Fig. I is shown in section, 1 being the usual upper extending over the foot, 7 the insole within the shoe and 8 the usual welt. A filler 9 is preferably inserted 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 sectional view, and the shoe thoroughly cleaned from any oil or grease, it is subjected to a metal coating operation as by placing it in the path of a spray formed of melted metal blown by a blast of gas under pressure: In Fig. III, 11 is a rod of metal carried by block 12, the lower end of which rod is heated by a torch 13 so that the metal will form in liquid drops at the lower end of the rod. A nozzle 14 conducts the gas under

pressure past the lower end of the rod 11 so that it will break up the drops of melted metal, as they form, into the form of a spray, which is blown against the surface of anything interposed in the path. In Fig. II, 15 is a thin film of metal which is shown as extending around the exterior of the shoe, and it will be seen that this film adheres so strongly and becomes so much a permanent part of the leather or other material of the shoe, that it 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 the shoe or any other part, to subject the foot to dampness. Of course, only the sole of the shoe may be coated or, it may possibly be desirable to extend the coating up above the place, in the case of a welt shoe, where the welt 8 engages the upper 1 as this is a place through which water more readily gains admission into the inside of the shoe. If the spraying is eliminated from the upper, except in the portion near the welt, the appearance of the shoe will not be 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 suitable manner. It will be observed that the shoe shown in Figs. I and II will be fireproof, so far as its exterior is concerned, being wholly coated with non-inflammable metallic material. The shoe, if desired, may be likewise coated on the inside.

In Figs. III and IV, I show a shoe in which the lower edge of the upper 16 comes beneath the insole 17 and on 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 put in place, I may coat the lower surfaces of the welt 18 and filler 19 and the edges of the upper 16 adjacent thereto with a continuous film of metal which adheres to and is intimately associated with such surfaces so as to completely prevent moisture from gaining access to the inside of the shoe through the filler 19 and the insole 17 or the joints between them or between the insole and upper. It will be seen that the application of this film of metal at this stage in the manufacture of the she acts to seal the joint between the welt and the upper and between the upper and the insole and may also act to fasten together the welt, upper, insole and filler or any two or more of these parts. After this film of metal 20 has been applied, 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, in the case of heavier shoes, an additional sole may be applied. In this case I prefer to apply a thin film of metal 22 to the sole 21 after which the other sole 23 is sewed in place. The number of soles and thickness depends of course upon the service for which the shoe is designed and in fact the thickness of the coating or film of metal which I apply in carrying out this process is determined by a like consideration. In Figs. III and IV, I have shown a coating or film of metal, 24 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 this point. Of course it is not essential that this film of metal be applied at all the points where I have indicated it as applied, such showing being merely illustrative, and the particular points to which this film or coating is to be applied will largely be determined by the style of the shoe and the conditions which it is supposed to meet in service.

In Fig. III, the bottoms of the two soles with the metal coatings are shown broken away at places. In this Figure, 23 is the bottom sole, this being covered with a thin layer of metal 24, broken away at the line 26 to show the sole 23 beneath. This sole 23 and its coating 24 are broken away on the line 27 to show the metallic coating 22 on the surface of the sole 21, the coating 22 being broken away at the line 28 to show beneath it the sole 21. The sole 21 and the film of metal 22 covering it 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 filler 19. The coating 20 is broken away on the line 30 to show the welt 18 and filler 19 beneath. Where desired, the coatings can extend back under the heel, being applied before the heel is attached. However, in view of the fact that moisture seldom gains access at this point, this may be unnecessary in most cases. However, wherever the metal coating is sprayed or 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 with the base of the shoe.

As regards coating the wearing portions of a shoe, such as the bottom of the sole and heel, I find that this metallic coating, film or layer improves the wearing qualities of the leather or other material of the shoe. This coating, film or layer may be of such thickness desired on the wearing surface, consistent with flexibility, being applied so as to imbed the metal and cause 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, and thus improves its wearing qualities.

In Fig. V, I illustrate a process of making a shoe, the sole being shown as torn away from the upper and the welt. In this view, I have shown the sheet of metal coated material 31, placed 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. This strip 31 may pass throughout the length of the shoe, and, in fact, such a metallic layer may be used inside the lining for the upper of the shoe, if desired, for protection against moisture. I prefer to spray the metal fast onto the surface of the material as indicated in the above description.

I wish it to be understood that my process comprehends the applying to any portion of a shoe of a coating or film of metal strongly adhering to or impregnating the material so that it will completely protect such surface and prevent moisture passing through it into the leather or material coated. I can just as well coat a cloth-top shoe, provided it is not of wool which has not been perfectly cleaned, in which case the metal applied does not adhere well. It is advisable however, that the material, when being treated, be very clean and, if leather, free from oil and grease.

Besides using my process 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 together by applying 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. II and III, it will be seen that, by shortening the welt 18 so that the inner edge of the upper extends further in than the welt, as shown in Fig. IV, and then by applying a metallic film to 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 Fig. VI I have shown a construction largely similar to that shown in Fig. IV, in that a strongly adhering film of metal 20 extends over the exposed surfaces of the welt 18, upper 16, insole 17, and filler 19, sealing the joints between these parts and securely fastening them in place. In building a shoe of this construction, in accordance with my process, I may apply a strongly adhering film of metal to the lower surface of the insole between the flanges 35, which depend therefrom and to which the lower edges of the upper 16 and the welt 18 are fastened. The filler 19 is then put in place and the continuous film of metal 20 is applied so that it extends over the lower exposed surfaces and edges of the welt, upper, filler and insole, fastening these parts together and sealing the joints between them. The sole 23 is coated with a film of metal on both its upper and lower surfaces and is attached to the bottom of the shoe and a film of metal 25 may be applied to the edges of the shoe extending up over the welting seam.

In fact I can fasten any two or more parts of a shoe together without sewing merely by providing sufficient surface on each part to be joined so that a continuous metal film applied to and 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. However, I prefer to coat the parts of a shoe when assembled or during assembly as indicated.

In making a shoe in accordance with my invention, it must be understood that the coating applied to the material is not a loose coating. When sprayed upon the surface of the material, the metal is forced into the pores of the material so as to become imbedded 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 a part of the material coated upon, so intimately connected therewith as to be inseparable therefrom when properly ap-

plied, there being no space between the coating and the material sprayed upon for moisture to creep through. 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 will be 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 wherever in this specification I have referred to shoes or to the manufacture of shoes, I mean this term in a generic sense so as to cover boots or rubbers or other articles of foot apparel which are likewise of course susceptible of manufacture in accordance with my improved process.

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 a 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 insole and the main sole. By the term "metal," I mean any substance or material having metallic characteristics.

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

1. The process of attaching parts of a shoe together which consists in melting a metal and blowing the same by a blast of gas into the form of a spray and against adjacent surfaces of the parts to be fastened together whereby the adjacent surfaces of the parts are impregnated with the metal.

2. The process of fastening the welt of a shoe to the upper which consists in forming a flexible film of metal adhering to and impregnating the adjacent surfaces of the upper and welt so as to secure them together.

3. The process of making a shoe which consists in fastening the sole of the shoe to the welt by forming a flexible film of metal adhering to and impregnating surfaces of welt and sole.

4. The process of fastening the upper of a shoe to the bottom which consists of forming a flexible film of metal adhering to and impregnating the adjacent surfaces of said upper and bottom.

5. The process of securing the upper of a shoe, insole and filling material together in the desired relationship which consists in binding them together by forming a flexible film of metal adhering to and impregnating the adjacent surfaces of said parts.

6. The process of making wearing apparel for the feet comprising the securing together of an upper, welt and filling material within the welt and applying a flexible film of metal to the lower surfaces thereof so that said film impregnates and is intimately associated therewith.

7. A process of making a shoe including: the formation of an upper portion, the formation of a sole portion, the formation of a welt, assembling said parts, incorporating with portions of the upper, welt and sole a flexible layer of metallic material.

8. A process of making a shoe including the following steps: forming an upper, forming a part of the bottom, forming another part of the bottom, connecting said upper and bottom parts, applying an adhering flexible metallic film across said upper and bottom parts.

9. The process of making a shoe including: the formation of an upper portion, the formation of a bottom portion, assembling said portions, applying an adhering metallic material to seal said portions at their place of contact.

10. The process of making shoes including: making an upper, making an insole, applying a metallic sealing film at the place of contact of said upper and insole, assembling said parts to form a shoe.

11. A process of making a shoe, including the following steps independent of seriatim: the formation of a bottom portion, including the formation of an insole and a sole, the application of a flexible sealing metallic film to render contacting portions waterproof.

12. A process of making shoes including: making an upper, an insole and a welt, connecting said upper, insole and welt together, applying a flexible metallic sealing film to said parts at their place of contact, assembling a sole with said parts to form a shoe.

13. A process of making shoes including the following steps: making an upper, making a welt, connecting said upper and welt, applying a metallic sealing film to said parts at their place of connection, assembling said parts with a bottom to form a shoe.

14. A process of making shoes including the following steps: making an upper, making a sole, connecting said upper and sole, applying a metallic sealing film at their place of connection.

15. A process of making shoes including the following steps: making an upper, making a welt, making a sole, connecting said parts together, applying a metallic sealing film at the contacting portions of said welt and sole.

16. The process of making shoes includ-

ing the following steps: forming an upper, forming a bottom, connecting and fastening said upper and bottom together, applying a metallic sealing and reinforcing film to said parts at their place of connection.

17. The process of making shoes including the following steps: making an upper, making a sole, connecting and fastening said upper and sole together, applying a closely adhering metallic film to said upper and sole at their place of connection to seal the same and reinforce the fastening means.

18. The process of making shoes including the following steps: making an upper, making an insole, connecting and fastening said upper and insole together with a sole, applying a metallic reinforcing film to said upper and insole at their place of connection operating to seal the joint between them and join the parts together.

19. The process of making shoes including the following steps: making an upper, making a welt, making a sole, connecting and fastening said upper, welt and sole together, applying a metallic film to said parts, operating to join said parts together and seal the joint between them.

20. The process of making shoes including the following steps: making an upper, making a bottom, applying a metallic closely adhering film to said part to fasten them together.

21. The process of making shoes including the following steps: making an upper, making a welt, making a sole, applying a metallic film to said parts to fasten them together.

22. The process of making shoes including the following steps: making an upper, making a welt, making an insole, applying a metallic film to said parts to fasten them together.

23. The process of making shoes including the following steps: making an upper, making a sole, applying a metallic film to said parts to fasten them together.

In testimony whereof I affix my signature.

CHESTER H. BRASELTON.