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SOLE AND HEEL FOR BOOTS AND SHOES

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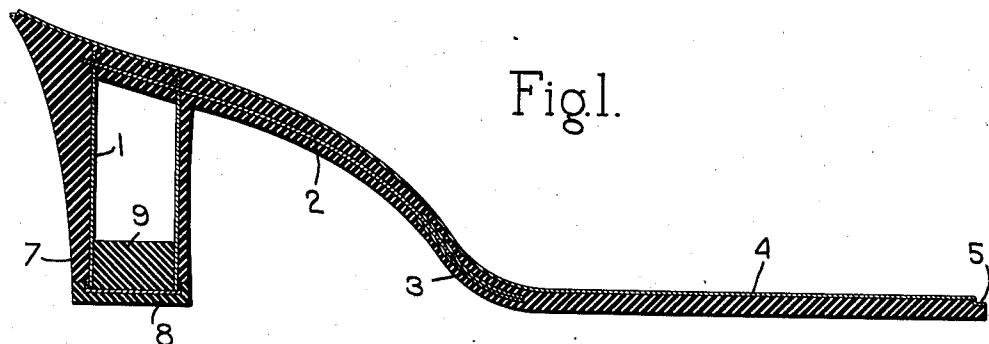


Fig. 1.

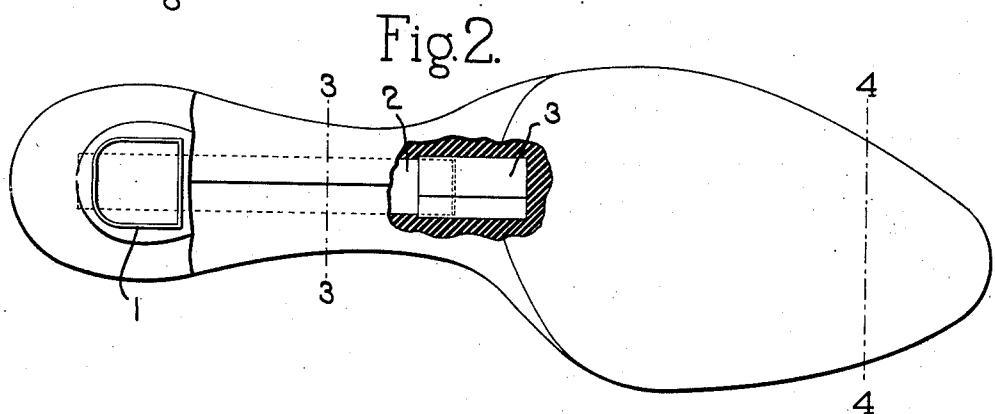


Fig. 2.

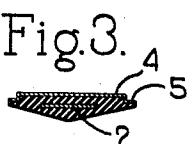


Fig. 3.

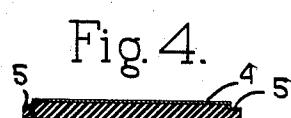


Fig. 4.

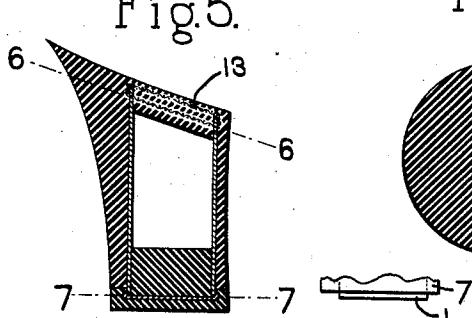


Fig. 5.

Fig. 6.

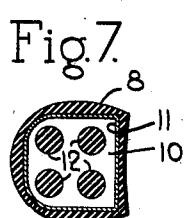


Fig. 7.

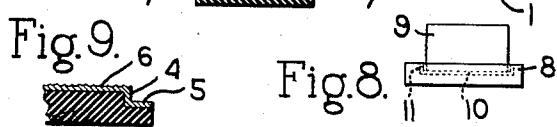


Fig. 9.

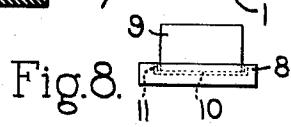


Fig. 8.

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UNITED STATES PATENT OFFICE

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SOLE AND HEEL FOR BOOTS AND SHOES

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8 Claims. (Cl. 36—32)

This invention has for its object to provide a novel construction of sole and heel particularly for application by a cementing process to the upper of a boot or shoe.

5 The object of the invention is further to provide a construction in which the entire sole and heel is molded from a composition such as a rubber compound and in which the heel section is strengthened and lightened by having embedded therein a vertical, hollow, rigid, tubular shell.

10 The object of the invention is further to provide in such a construction a stiffening shank embedded in the composition and interlocked with 15 the tubular shell of the heel.

The object of the invention is further to provide a novel construction of heel lift cooperating with the tubular shell in the heel section.

15 The object of the invention is further to provide a construction of separate heel embodying the main features of the invention.

The object of the invention is further to provide a construction of the integral sole and heel which shall present a neat, pleasing and finished 20 appearance throughout its edge and which shall be of a character to facilitate cementitious adherence to the boot or shoe upper.

25 These and other objects and features of the invention will appear more fully from the accompanying description and drawing and will be particularly pointed out in the claims.

The complete sole and heel construction of this invention is particularly designed for application to a boot or shoe upper in that type of boot and shoe construction in which the entire sole is applied to the upper by being cemented there-to under pressure. A heel construction embodying the invention if used alone may also be applied in any desirable manner.

30 The drawing represents preferred forms of the invention in which the composition from which the article is molded is a rubber composition of any suitable character molded into shape by any usual process and suitably vulcanized, although 35 it is to be understood that other moldable compositions suitable for the purpose may be employed.

35 In the drawing:

Fig. 1 is a view in longitudinal vertical section 40 of a complete sole and heel construction embodying the invention.

Fig. 2 is a bottom plan view of the construction 45 shown in Fig. 1 with the heel lift removed and with the central portion of the sole at the bottom 50 partially broken away.

Fig. 3 is a view in cross section on the line 3—3 of Fig. 2.

Fig. 4 is a view in cross section on the line 4—4 of Fig. 2.

Fig. 5 is a view of a separate heel in vertical 5 cross section.

Fig. 6 is a view in cross section on the line 6—6 of Fig. 5.

Fig. 7 is a view in cross section on the line 7—7 of Fig. 5.

Fig. 8 is a side elevation of the heel lift and 10 lower portion of the heel section separated.

Fig. 9 is an enlarged detail view similar to a portion of Fig. 4.

The general shape and proportions of the complete shoe and heel construction depend as usual upon the character of shoe to which it is to be applied and for purposes of illustration are here shown as of a type suitable for a fairly high-heeled lady's shoe. The entire article, that is, 20 the sole section and the heel section, but without the heel lift, is molded as an integral unit from a suitable composition such as a rubber compound. A hollow, rigid, tubular shell 1, preferably made of metal such as aluminum or light 25 steel or which may be made of other stiff and rigid material such, for example, as a vulcanized fibre board, is provided of a size and shape depending upon the size and shape of the heel. This shell in cross section should be of sufficient 30 size to be slightly less than the minimum cross section of the completed heel section so as to leave entirely surrounding it a solid wall of the composition and it should be of sufficient length so as to extend slightly below the bottom of the 35 heel section before the lift is applied so as to extend nearly to the top surface of the heel section. Preferably also a shank stiffener 2 is provided and arranged to have a locking engagement with the upper end of the shell. For this purpose the shank stiffener is illustrated as a flat strip of steel bent to conform with a desired shape of the shank of the sole. At its rear end this steel strip, which is of less width than the interior of the shell, extends through slots in the 40 front and rear walls of the shell adjacent its upper end and slightly rearward thereof and at its forward end is preferably enwrapped by a strip of fabric 3 extending slightly into the tread of the sole.

45 A layer of rubberized fabric such as rubberized sheeting 4 extends over the entire top surface of the sole and heel.

The shell, shank, composition, and layer of rubberized fabric are assembled in the mold and 50 55

molded together under pressure by usual methods employed in molding to bring the article to the required form such as illustrated. The result is that the shell and shank are embedded in the composition with the composition protruding slightly into the upper end of the shell down between the stiffening shank and the walls of the shell, and the layer of rubberized fabric 4 is adherently and inseparably secured to the top 10 surface throughout. In the molding operation the entire periphery is depressed at the top surface to form a depressed flange 5 and the depressed section is formed with a smooth surface throughout while the entire remaining unde- 15 pressed portion of the top surface is roughened as indicated at 6 in the enlarged detail in Fig. 9.

The lower end of the heel section is closed by a heel lift preferably of the construction illustrated and preferably molded from the same composition 20 employed in the molding of the integral heel and sole sections. In the construction illustrated, the shell 1 of the heel section is left protruding slightly below the composition 7 of the heel section as shown in Fig. 8. The body of the heel lift is 25 molded to form a base 8 having a cross section similar to the lower end of the body of the heel section and a plug 9 having a cross section corresponding to the interior cross section of the lower end of the shell 1. A rigid plate 10 upwardly flanged at 11 throughout its periphery is 30 embedded in the base 8 of the heel lift and the flanged portion is shaped tightly to fit over the exterior of the lower end of the shell 1. This plate 10, as shown in Fig. 7, is provided with a 35 plurality of apertures 12 to permit the composition to pass through it. It will thus be seen that when the heel lift is forced into place, occupying the position shown in Fig. 1, it fits snugly the lower end of the heel section. Preferably cement 40 is applied to the heel lift before being forced into position with the plug 9 protruding into the lower end of the shell.

The heel section may be formed independently for use as an independent heel in shoe manufacture and such a construction is illustrated in Figs. 45 5 and 6. The only difference in this case over the construction already described is that the top surface of the heel is shaped to the desired conformation and the metal strip passing through 50 the slots in the front and rear walls of the shell adjacent its upper end is preferably a strip of wire netting or reticulated metal such as shown at 13. In the form illustrated, this strip after being 55 passed through the slots in the front and rear walls of the shell is bent over the upper ends of the shell parallel with itself, as shown in Fig. 5, so that it is twice embedded in the composition. The construction of the heel lift is the same as 60 already described.

The smooth depressed flange 5 at the periphery of the complete sole and heel construction presents a finished sole edge giving a neat and pleasing appearance to the completed boot or shoe 65 when the integral sole and heel is cemented thereto and the roughened surface 6 facilitates the cementitious adherence of the sole and heel construction to the upper. The heel section of the integral sole and heel construction or the heel 70 when used independently may further be secured by driving staples or other fastening devices from the interior of the shell through the composition and around or through the metal strip at the top into the shoe upper.

75 The invention thus presents a construction

which when applied to the shoe gives a neat and pleasing appearance causing it to resemble a welted shoe by reason of the smooth depressed flange 5. The composition as a result of the molding operation presents a neat, smooth exterior surface. The heel portion has great strength by reason of the embedded shell and at the same time the construction is light in weight owing to the large amount of empty space within the shell. With the shank construction preferably employed, 10 the stiffening shank is held rigidly in the desired position and the entire construction is strengthened by the interlocking of the rear end of the stiffening shank with the shell embedded in the heel. 15

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding slightly into the upper end of the shell, and a heel lift covering the lower end of the shell and heel section. 25

2. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding slightly into the upper end of the shell, 30 and a heel lift comprising a molded composition body covering the lower end of the heel section and protruding slightly into the lower end of the shell and a rigid upwardly flanged plate embedded in the body with the flange fitting over the lower 35 end of the shell.

3. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding 40 slightly into the upper end of the shell, and a metal strip extending through the front and rear walls of the shell adjacent its upper end and embedded in the composition surrounding and protruding into said upper end. 45

4. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding slightly into the upper end of the shell, 50 and a metal strip extending through the front and rear walls of the shell adjacent its upper end and embedded in the composition surrounding and protruding into said upper end and extending longitudinally of and embedded in the shank of 55 the sole section to stiffen the said shank.

5. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding slightly into the upper end of the shell, a metal strip extending through the front and rear walls of the shell adjacent its upper end and embedded in the composition protruding into 60 said upper end, and extending longitudinally of and embedded in the shank of the sole section to stiffen the said shank, and a heel lift comprising a molded composition body covering the lower end of the heel section and protruding slightly into the lower end of the shell and a rigid 70 upwardly flanged plate embedded in the body with the flange fitting over the lower end of the shell.

6. A molded composition heel having a vertical, hollow, rigid, tubular shell embedded therein with the composition covering and protruding 75

slightly into the upper end of the shell, a reticulated metal strip extending through the front and rear walls of the shell adjacent its upper end and embedded in the composition protruding into said end, and a heel lift covering the lower end of the heel and shell.

7. A molded composition heel having a vertical, hollow, rigid, tubular shell embedded therein with the composition covering and protruding 10 slightly into the upper end of the shell, a reticulated metal strip extending through the front and rear walls of the shell adjacent its upper end and embedded in the composition protruding into said end, and a heel lift comprising a molded 15 composition body covering the lower end of the

heel and protruding slightly into the lower end of the shell and a rigid upwardly flanged plate embedded in the body and fitting over the lower end of the shell.

8. A sole and heel comprising integral molded composition sole and heel sections, a vertical, hollow, rigid, tubular shell embedded in the heel section with the composition covering and protruding slightly into the upper end of the shell, and a metal strip connected to the shell adjacent its upper end, extending longitudinally of the shank of the sole section and embedded in the composition of the heel and sole sections and acting to stiffen the shank. 10

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