Sept. 22, 1953 A. L. MURRAY 2,653,111

METHOD OF MAKING SHOE SOLES

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Fig. 1

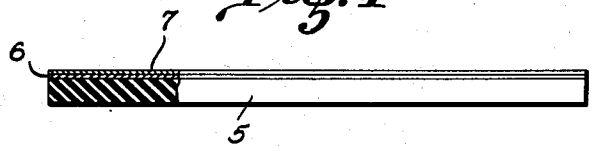


Fig. 2

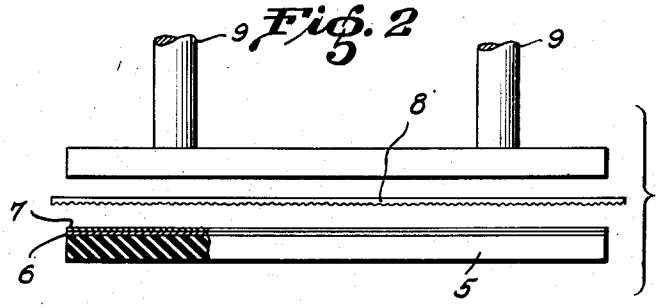


Fig. 3

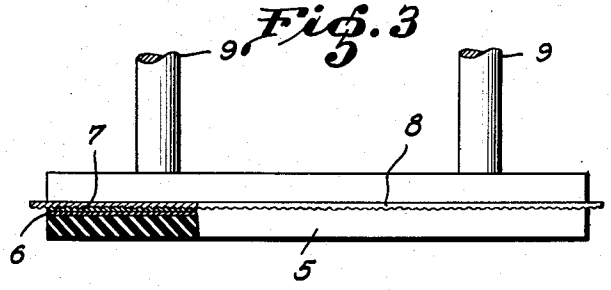
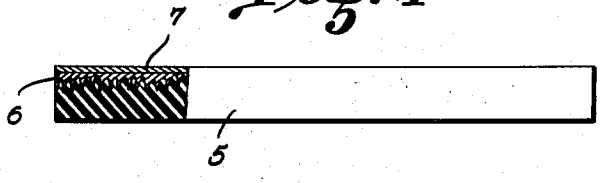


Fig. 4



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METHOD OF MAKING SHOE SOLES

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3 Claims. (Cl. 117—65)

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This invention relates to improvements in covering material such as for the sole of a shoe and a method of making same.

It has become customary to provide soles for shoes made of synthetic rubber, such as so-called government rubber substitutes (GRS). The soles thus provided are subsequently attached individually to the fixed inner soles of shoes by use of a cementitious substance which ordinarily is effective only to an extent and frequently not sufficient adhesion is established to insure permanency of cohesion between the outsoles with the fixed inner soles, uppers or welts of the shoe.

An object of the instant invention is to provide a moistureproof sole for a shoe with a surface treated in such manner as to enhance adhesion between the outsole and the fixed inner sole, upper or welt when cemented in place thereon, thus to insure durability of the assemblage of parts.

Another object of the invention is to prime that face of a shoe sole which is secured to the opposing face of the fixed inner sole, upper or welt of a shoe by use of a suitable cement, thus to effect a tight joint between the parts thus united.

Other objects and advantages of the invention appear in the following description.

The accompanying drawings are schematic and are illustrative of the various steps used in the formation of shoe soles in which the invention is incorporated, the hydraulic press ordinarily used in the formation of the covering constituting the shoe soles is not included, as such presses are in common use.

In the drawings:

Fig. 1 is a side elevational view of a shoe sole as it appears in a preliminary stage of preparation, a portion being in section;

Fig. 2 is a fragmentary side elevational view including a plate against which the shoe sole is to be pressed thus to impregnate the sole with its overlying coats of cementitious matter, a portion being in section;

Fig. 3 is another similar side elevational view of the shoe sole together with the plate against which the sole is impressed; and

Fig. 4 is a side elevational view of a shoe sole impregnated by the cementitious material, a portion thereof being in section.

The invention consists of a molded slab of material 5 formed generally in the shape of a shoe sole, preferably made of synthetic rubber, such as government rubber substitutes (GRS), or the like, on one face of which are spread one or two coats 6 and 7 of suitable cementitious material, consisting

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of approximately 25% of an aggregate composed of cementitious material and 75% of a suitable solvent therefor by volume and a trace of resinous matter to induce tackiness for the purpose of facilitating manipulation.

The slab thus coated is forcefully impressed against a plate 8 by means of a hydraulic mechanism (not shown) in the usual manner of vulcanizing rubber compositions or similar material. The underface of the plate 8 is roughened so as to form numerous coarse indentations or pits, preferably by use of a sand blasting operation, so that when pressure between the plate 8 and the slab 5 occurs, the cementitious coats 6 and 7 overlying the slab are divided in discrete areas and become entrapped in the pits of the roughened surface of the plate, causing enforced impregnation of the cementitious coats into the slab. In this manner there is formed in the faces of the slabs adjacent the pressure plate inseparable prime coatings of cementitious matter that has an affinity for the cement ordinarily used in uniting the outsoles to the fixed inner soles, uppers or welts of the shoes when applied thereto.

In Figs. 2 and 3 are indicated stationary stops 9 by which upward movement of the plate 8 is limited. In practice, the plate 8 having a pitted lower face and the slab 5 having a cement coated upper surface are brought forcefully together by any suitable means such as a common hydraulic press, and heated in the usual manner to effect vulcanization of the slab and impregnation into the slab of its cementitious coating.

Permeation of the slab with cementitious matter is accomplished during the molding and vulcanization operations, in which event the coatings of cement are applied to the stock of which the soles are formed, so that permeation of the cementitious matter takes place while the stock is softened by heat, applied in the usual manner during the vulcanization operation, aided by further penetrating effect of the solvent in the cementitious coating.

The salient feature of the invention is that the cementitious coating containing the solvent is substantially prevented from escape in any direction except into the adjacent face of the stock that eventually forms the shoe sole. In this manner there occurs a much deeper penetration of the cement itself into the sole stock, thus effecting increased tenacity of the connection between the outsoles and the fixed inner soles, uppers or welts of the shoes when cemented together.

This method of permeating soles for shoes of the character herein set forth with coats of ce-

mentitious material is accomplished while the unvulcanized sole is softened by heat and is under pressure.

What I claim is:

1. The method of making a shoe sole of rubber-like material comprising the steps of coating one face of the material with a cementitious composition, placing a plate having a plurality of pits over one surface against the coated face, the pitted surface of said plate being against the coating so as to confine and entrap the coating composition in the pits, and then subjecting the plate to simultaneous heat and pressure to cause penetration of the coating into the material and vulcanization of the material.

2. The method of making a shoe sole of rubber-like base which method consists in coating with a cementitious composition one face of said base, confining the material thus coated into discrete areas by means of a mold having a pitted face plate that overlies the confined material, the pits in said face plate serving to entrap said composition into such discrete areas, and then subjecting the mold to heat and pressure simultaneously in a vulcanizing press to force penetration of each discrete area of the cementitious composition deep into each contiguous discrete area of the sole material to provide a foundation for adhesively attaching the sole after completion thereof to the fixed inner sole, upper or welt of a shoe.

3. The method of making a shoe sole of rubber-like material which method consists of placing in a mole an element of said rubber-like material, coating one face of the element with a cementitious composition having approximately

an aggregate of 25% rubber cement and 75% of a solvent for same, to which is added a sufficient quantity of resin to produce tackiness, placing a plate having a plurality of pits over one face on the coating to confine the coating into discrete areas, the individual pits serving to confine such coating into such discrete areas, and then subjecting the mold and said plate to heat and pressure simultaneously in a vulcanizing press to force penetration of each discrete area of the cementitious composition deep into each contiguous discrete area of the material of the element thus to provide a firm foundation for adhesively attaching the completed sole to the fixed inner sole, upper or welt of a shoe, and to vulcanize the element.

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