Feb. 25, 1936. R. SCHNEIDER ET AL 2,031,674

PROTECTING SHOES DURING THEIR MANUFACTURE

Filed Nov. 27, 1931

Fig. 1

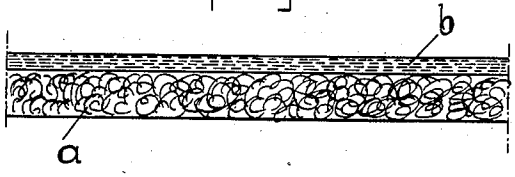


Fig. 2

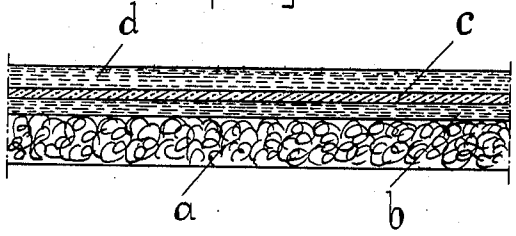


Fig. 3

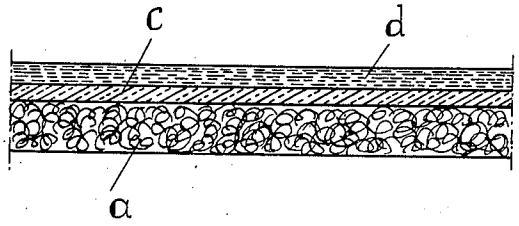
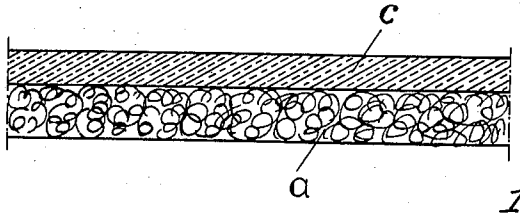


Fig. 4



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PROTECTING SHOES DURING THEIR MANUFACTURE

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In France December 3, 1930

10 Claims. (Cl. 12—142)

Our invention relates to methods for protecting shoes during their manufacture. It has already been proposed to this effect to make use of rubber covers prepared in advance for each shape and each size of shoes. These covers are inconvenient and expensive. Another method consists in forming the protecting coating on the very upper of the shoe.

Our invention concerns a method of the last mentioned kind.

In this respect, it has already been proposed to utilize matters such as gelatine or nitrocellulose, which are directly applied onto the shoe in the form of solutions and which are subsequently eliminated by only one possible method, viz. dissolution. In the case of smooth leathers, that process already has a serious disadvantage, due to the fact that it is impossible to wholly remove the coating at the place of the seams. But in the case of shoes made of spongy leathers and fabric, the process cannot be utilized, because the coating would pass, when dissolved, into the porous support and would deteriorate it completely.

Another known method consists in utilizing a relatively friable coating, which is subsequently removed by brushing. Said coating is liable to crack while in use. Furthermore, its total elimination is difficult, so that the pigments entering into the composition of said coating must be of the same colour as the shoe to be protected.

It has also been proposed to apply onto the shoe a layer of pulverulent matter, on which a film of cellulosic material is produced. This method then presents the same disadvantage as the above mentioned method.

The object of the present invention is to produce on the shoe (made of smooth leather, porous leather or fabric) a protective coating or film which may be removed, when it is no longer necessary, without having to redissolve it or to brush it, but in a simple manner, as an onion skin is peeled off.

To this effect, in order to form the filmy coating, we make use of rubber latex which is applied over a coating of a solution adapted to coagulate the latex, which solution has been previously applied onto the shoe.

A film of gum is formed over the surface of contact between the latex and its coagulant, which film separates the surface of the shoe from the latex which is not yet coagulated. It follows that, when the coagulating solution has finally permeated the matter to be protected, the penetration of the latex is prevented by the thin film which has begun to form at the beginning of the application of the latex. The latter, by coagulating completely in the course of time, therefore forms a film the adhesion of which to the shoe has been reduced to just what is necessary.

Our invention will be hereinafter described with reference to the accompanying drawing, given merely by way of example in order to illustrate the method according to our invention and in which:

Fig. 1 is a diagrammatic sectional view showing a portion of leather at the beginning of the protecting process;

Figs. 2 to 4 are corresponding diagrammatic views illustrating the various steps of the process.

In these figures, *a* is the leather, skin, or fabric to be protected; *b* is the coating of the coagulating solution; *c* is the coating of coagulated latex; and *d* is the layer of latex not yet coagulated.

Fig. 1 shows the leather or fabric coated with the coagulating solution. Fig. 2 shows what takes place immediately following the application of the latex. The layer of coagulating material *b* is still present. Between said layer and the latex *d*, a very thin film of coagulated rubber has formed, but the greatest part of the latex still remains liquid. However, when, as shown in Fig. 3, the coagulant has been absorbed or has evaporated, the latex that is still liquid cannot penetrate into the leather or fabric, from which it is separated by rubber film *c*, which has been formed from the start and which increases gradually. The coagulation of the latex can therefore be completed without said latex (Fig. 4) permeating the leather or fabric, which would result in the film of rubber adhering strongly to said leather or fabric. On the contrary, the film of rubber which is formed according to our invention adheres to the leather or fabric only to the degree that is just necessary.

We may use for coagulating the rubber latex any of its numerous coagulants, for instance a diluted solution of acetic acid, of formic acid, of citric acid, of hydrofluoric acid, of boric acid or of phosphoric acid. We may also utilize a solution of a chloride of a bivalent metal, such for instance as calcium chloride, of salts of tribasic acids such for instance as sodium phosphate, or of organic products such as aldehydes of which group formaldehyde is satisfactory for the present purpose.

Instead of latex, we may use an aqueous dispersion of rubber (artificial latex).

We will hereinafter give an example of the method according to our invention:

The upper, made of cloth, of a shoe, which has just been sewn, is placed on a support. We then project thereupon, by means of a sprayer, a very much diluted solution of acetic acid (0.2 N) until the liquid is uniformly spread on the fabric. Immediately after, we project, on the upper, a certain quantity of latex of a concentration of 40%, at the rate of from 30 to 40 grammes of latex per minute. The latex is also applied by means of a sprayer, with a pressure of air approximating from 2 to 3 kilogrammes per square centimeter.

From the very beginning of the application of the latex, there is formed a very thin film of rubber over which further quantities of latex are applied so as to subsequently obtain a sufficiently resistant filmy coating. A quantity of latex ranging between 20 and 40 grammes is generally necessary for one shoe upper. The upper is subsequently allowed to dry in the atmosphere or placed in an oven until it is quite dry.

In some cases, the protection of the shoe may be effected during another step of the manufacture. For instance, in the so called Blake method of manufacturing shoes, the upper being placed on a form and trimmed, the protective coating is applied just before fixing the sole.

By varying, on the one hand the concentration, the quantity and the nature of the coagulant and, on the other hand, the concentration of the latex solution, its quantity and the pressure of the air used for atomizing it, we obtain a film which may be detached more or less easily. We may also vary the pH of the latex so as to diminish its stability and to reduce the quantity of coagulant which is necessary to a very low value.

The latex may receive filling materials intended to lower its cost price, or to increase its tenacity and to give it an improved resistance to friction. Care will be taken, when introducing such materials, to add a colloid for avoiding flocculation.

Hereinafter we give examples of combinations of the latex solution:

Example 1

	Parts in weight
Latex of a concentration of 60%	100
Casein	6
Colloidal clay	50

Instead of using colloidal clay, we may also employ other materials such as, carbonate of magnesia, zinc oxide, kaolin, lithopone, chalk, carbon black, etc., acting as filling materials as above explained.

In order that the film may resist satisfactorily heat and ultra violet rays, we may use latex which has been previously vulcanized, or introduce, into the latex, bodies allowing of subsequent vulcanization;

Example 2

	Parts in weight
Latex of a concentration of 60%	100
Colloidal sulphur	2.5
Zinc oxide	5
Vulka P (piperidine piperidyldithio-carbamate)	0.5

We may also introduce products facilitating the ageing (anti-oxygens), such as aldolalphanaphthylamine, phenylbetanaphthylamine.

We may also vulcanize completely a film, when it is formed on the shoe, through classical means, for instance, by means of sulphur chloride.

We may eventually varnish the film so as to increase its resistance to scratching. For this purpose we may use the following varnish:

	Parts in weight
The plastic material resulting from polymerization of vinyl chlor acetate, which itself is obtained through condensation of chlor acetic acid with acetylene	5
Triacetine	1
Phenylbetanaphthylamine	5
Benzene	100

The varnish may also be so formed as to stop ultra violet rays, such as, for instance, the following varnish:

	Parts in weight
Accroid resin	5
Triacetine	1
Alcohol	100

While we have described what we deem to be preferred embodiments of our invention, it should be well understood that we do not wish to be limited thereto as there might be changes made in the composition, concentration and amounts of materials used in our method without departing from the principle of our invention as comprehended within the scope of the appended claims.

What we claim is:

1. A method for protecting shoes and similar articles during their manufacture which comprises spreading a latex coagulant on the surface of said shoe and subsequently applying rubber latex on said shoe over said coagulant.

2. A method for protecting shoes and similar articles during their manufacture which comprises spraying a latex coagulant on the surface of said shoe, and subsequently spraying rubber latex on said shoe over said coagulant.

3. A method for protecting shoes and similar articles during their manufacture which comprises, spraying a diluted solution of acetic acid on said shoe, and subsequently spraying rubber latex of a concentration of 40% on said shoe over said acetic acid.

4. A process for protecting shoes and similar articles during their manufacture which comprises, spreading a latex coagulant on the surface of said shoe and subsequently applying rubber latex mixed with a filling material for increasing its tenacity on said shoe over said coagulant.

5. A method for protecting shoes and similar articles during their manufacture, which comprises, spreading a latex coagulant on the surface of said shoe, subsequently applying rubber latex on said shoe over said coagulant, and applying a varnish over the coagulated film of rubber for increasing the resistance of said film.

6. A method of protecting shoes and similar articles during their manufacture, which comprises, taking rubber latex, adding thereto a reagent of an acid character so as to bring it close to its isoelectric point and thus make it capable of being coagulated by a small quantity of a latex coagulant, spreading a latex coagulant on the surface of said shoe, and subsequently applying the rubber latex treated as first mentioned on said shoe over said coagulant.

7. A method of protecting shoes and similar articles during their manufacture, which comprises, spreading a latex coagulant on the surface of said shoe, and subsequently applying an aqueous suspension of rubber forming an artificial latex on said shoe over said coagulant.

8. A method of protecting shoes and similar articles during their manufacture, which comprises, spreading a coagulant over the surface of said shoe, applying rubber latex on said shoe over said coagulant, and subsequently vulcanizing the thin sheet of rubber thus obtained.

9. A method of protecting shoes and similar articles during their manufacture, which comprises, spreading a latex coagulant over the surface of said shoe, applying rubber latex on said shoe over said coagulant, and applying over the coagulated film of rubber a varnish adapted to stop ultra violet rays.

10. A method of protecting shoes and similar articles during their manufacture, which comprises, spreading a latex coagulant over the surface of said shoe, and subsequently applying on said shoe over said coagulant a mixture of rubber latex with an anti-oxygen body for facilitating the ageing.

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