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METHOD OF MANUFACTURING A LEATHER
SUBSTITUTE

Seiichi Yamamoto, Asakusa Ku, Tokyo, Japan

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6 Claims. (Cl. 154—2)

This invention relates to the method of manufacturing a leather substitute, which consists in removing a coarse skin from the bark of *Artocarpus kunstleri* (resembling the bread tree) known by the name of "Kayutarap" tree, opening the said bark in a wet condition to make a network and then pasting such a network with rubber or balata to form a thin board. The object thereof is to utilize very cheap material in order to obtain a tough and waterproof leather substitute which is difficult to stretch.

This invention utilizes the bark of *Artocarpus kunstleri* popularly known as "Kayutarap" found in the tropical region which has very strong fibre and contains a great amount of tannin usually reaching 8 to 12%. The coarse skin is first removed from the bark. After collecting tannin by extraction or fermenting, the residue is opened in a wet condition with a roller or by beating to make a coarse network. Then, two or more sheets of such networks are pasted together with rubber or balata. Thus they may be used as foundation with a coating of material such as rubber or balata when they show superior qualities of appearance, touch and cost of manufacture.

The following are examples of carrying out this invention:—

Example I

Remove skin from the bark used as the raw material and extract tannin therefrom. Open the residue by rolling in a wet condition laterally, that is to say, at right angles to the pith, so that it will extend easily from six to ten times or more of its original length, forming a coarse network sheet with fibres crossing and recrossing obliquely. Inclose said sheet in a pasty film made by mixing rubber dissolved in a volatile solvent with sulphur and put two or more such sheets on the above mentioned sheet in such a manner that the fibres are positioned at right angles as in veneer. Press and steam the resultant thin board for vulcanization. Then, polish the surface of said board with polishing powder or the like, and it will be given such lustre that it presents animal epidermoid appearance. Then, it is coated with suitable finishing varnish and is colored, if necessary.

The product thus obtained is flexible, elastic and water-proof. Upon examining the tensile strength of a piece of the product about 5 centimeters wide and 1.45 millimeters thick, it is found to be 60 to 40 kilograms, whereas the elongation is only 19%. Thus, it can not only

compete with the leather of excellent quality, but also has a surface, compact enough, to stand friction and there is especially no danger of being mildewed. Therefore, it is rather superior to leather as material for machine belting, trunks, bags, containers, shoes, etc., so it can be utilized extensively not only as material for goods using leather or skin, but also for floor covering and other flexible and tough goods.

Example II

Immerse the raw material bark in water and ferment it for nearly a week so as to dissolve and remove a part of non-fibrous material. After washing with water, sprinkle thereon mineral oil converted into emulsion by sodium carbonate or soap so that it may absorb the latter. Then, crush it into a coarse network sheet crossed and recrossed by fibres. Arrange several such sheets longitudinally or some of them longitudinally and others transversely and paste them together with rubber dissolved in a solvent and mixed with such a vulcanizing agent as sulphur, keeping fibres as sinews or foundation in the rubber belt construction. Form parallel thin lines thereon laterally by a roller having a number of channels cut in parallel to its axis thereby embossing the belt and then vulcanize it by heating. In this case, balata may be utilized instead of rubber.

The machine belting thus obtained has the tensile strength more than twice that of a rubber belt and there is no danger of elongation or slipping when loaded. Further, as the side edges are not damaged, it is durable and makes an ideal belt.

Example III

Elongate the bark of "Kayutarap" into a sheet of network by beating and immerse said sheet in a solution of virgin rubber mixed with a vulcanizing agent filler, etc., so as to be impregnated with the latter. After piling on top of each other several such sheets and pasting them together to form a block, the block is cut thin in oblique direction and several slices then pasted together at the exposed section into the desired thickness. Then, heat and vulcanize it in an autoclave and make it into the desired form.

The product thus obtained has an enormous loading power and resists friction very much, so it is very suitable as the material for making soles of shoes.

I claim:—

1. Method of manufacturing a leather sub-

stitute, comprising opening the bark of *Artocarpus kunstleri* popularly known as "Kayutarap" and pasting together the resultant coarse network with rubber material, thus forming a sheet with said network as foundation and the rubber material as coating.

2. Method of manufacturing a leather substitute, which consists in inclosing coarse network obtained from the bark of "Kayutarap" in a film consisting of pasty rubber mixed with a vulcanizing agent to form a sheet in such a manner that the fibers of said network cross at right angles and finally pressing and vulcanizing the sheet.

3. Method of manufacturing a leather substitute, which consists in extracting tannin from "Kayutarap", stretching the residue to form a coarse network, pasting several such networks together with rubber material to form a sheet, then vulcanizing and polishing the sheet in order to give it a surface having great luster and anti-friction qualities.

4. Method of manufacturing a leather substitute, which consists in fermenting the bark of

"Kayutarap" in water, removing non-fibrous material therefrom, opening the bark by rolling, arranging the resultant coarse networks with their fibers in a longitudinal direction, and then pasting the networks together with rubber material.

5. Method of manufacturing a rubber belt, which consists in fermenting the bark of "Kayutarap" in water, impregnating it with oil, opening the bark by rolling, pasting together the resultant coarse networks with rubber material and then embossing with numerous parallel thin lines laterally thereon.

6. Method of manufacturing a leather substitute, which consists in elongating the bark of "Kayutarap" into a sheet of network, then forming a block of several such sheets by piling the sheets and pasting them together with solutions of virgin rubber mixed with a vulcanizing agent, then cutting the thus formed block obliquely into thin slices, pasting together the resultant slices along the exposed surfaces to form a board and then heating and vulcanizing said board.

SEIICHI YAMAMOTO.

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