

UNITED STATES PATENT OFFICE

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ARTIFICIAL LEATHER MANUFACTURE

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filed December 12, 1929. Serial No. 413,682.

This invention relates to the manufacture of artificial leather using fiber such as cotton or wood pulp and dispersed rubber such as latex as raw materials.

5 In the manufacture of artificial leather, it is sometimes the practice to prepare a porous web from cellulose fiber as by felting on a paper machine, and to impregnate the web with rubber as by passing it through a bath of latex. The product, when dried, has many of the desirable characteristics of leather, particularly when the web is in a loosely-felted, more or less fluffy condition, and has absorbed a comparatively large amount of rubber.

15 I have discovered that in making artificial leather of the type described, it is advantageous to impregnate the web not only with dispersed rubber such as latex but also with tanning agents, preferably of vegetable origin. The tanning agents not only impart color and odor characteristic of vegetable-tanned hides and skins to the product, substantially removing the characteristic rubber odor, but also modify the characteristics of the latex so that an improvement in quantity of product is realized. Thus, if such agents are added to the latex before impregnating the web, it is found that the dried product is less tacky and more uniformly impregnated with rubber than when the tanning agent is omitted. The tanning agent serves to hasten coagulation or setting of the rubber in situ in the web, and thus to avoid migration of the rubber globules by capillarity to the surface of the web while evaporation of water is taking place. The tanning agent apparently also combines with the protein films on the rubber globules, as it combines with the protein substance of hides and skins, rendering them insoluble and lessening the tackiness of the rubber coagulated in the web. Or the web may be impregnated with latex alone and then with a solution of tanning extract, in which case it is preferable to dry the latex-impregnated web before impregnation with extract solution, as well as after impregnation, as drying coagulates the rubber so that loss of rubber by washing out in the extract solution is avoided. The dry latex-impregnated

web, when treated with extract solution, loses tackiness, and is sufficiently porous to be colored and to derive other beneficial qualities imparted by the solution. This application is a division of my application Serial No. 333,026, filed January 16, 1929, and is directed to such last-mentioned procedure, wherein impregnation of the web is effected initially with only a water-dispersed rubber, such as latex, whereupon the rubber-impregnated web is then impregnated with a tanning agent.

In carrying out the process of the present invention, I may employ a porous web, paper, or felt of preferably cellulose fiber of any suitable origin. Preferably, the web is in a loosely-felted, more or less fluffy condition, so that when dipped into a bath of latex it is rapidly and uniformly penetrated and absorbs, say, 100% or more rubber, based on the dry weight of fiber. A latex of about 30% solids content and containing about 3% by weight of NH_3 as a stabilizer may be prepared for use by diluting to a solids content of, say, about 15%, at which content rapid and uniform penetration of the web may be effected by dipping to produce a final product having the desired rubber content. The latex-impregnated web is then dried as on steam-heated rolls, during which operation the ammonia and water are volatilized so that coagulation of the rubber is effected. The dried, rubber-impregnated web is then impregnated with a tanning agent, as by dipping into an aqueous solution of the agent, and the web is again dried. The tanning agents employed are preferably of vegetable origin, as agents of such origin possess coloring properties and act to remove the characteristic rubber odor and to destroy tackiness even when only about 1% is used in the tanning liquor. The tanning liquor is preferably maintained hot, in order to promote the desired reaction. Oak extract, chestnut extract, quebracho extract, or the like, which fall into the class of tanning agents preferably employed, may have an active tanning content of about 65%, as available on the market. Any one or a mixture of such ex-

tracts may be used, according to the color desired in the final product.

Evaporated waste sulphite liquor may be used in lieu of a portion of the vegetable extract in cases where it is desired to produce light-colored products, as such liquor contains active tanning substance and fillers.

One of the major advantages of a process such as described is that it permits the economical production of artificial leathers having colors resembling vegetable-tanned natural leathers or skins, as vegetable tanning agents are inexpensive as compared with dyes such as diamine fast brown, and but little agent is necessary to effect the desired coloration.

It should be evident to those skilled in the art that the foregoing example is illustrative only, and that various changes and modifications might be made therein without departing from the spirit or scope of invention as defined in the appended claims.

I claim:

1. A process which comprises impregnating a web of fibers with water-dispersed rubber; drying, impregnating the dried web throughout with water containing a tanning agent, and again drying.

2. A process which comprises impregnating a web of fibers with latex, drying, impregnating the dried web throughout with water containing a vegetable tanning agent of the type of oak extract, chestnut extract, and quebracho extract, and again drying.

3. A process which comprises treating a web of fibers with latex, drying, impregnating with hot water containing a vegetable tanning agent, and again drying.

4. A process which comprises impregnating a web of fibers with latex, drying, impregnating with water containing a vegetable tanning agent and concentrated waste sulphite liquor, and again drying.

5. A process which comprises impregnating a web of fibers with water-dispersed rubber, drying, impregnating with water containing about 1% of a vegetable tanning agent of the type of oak extract, chestnut extract, quebracho extract, or the like, and again drying.

6. A process which comprises impregnating a porous foundation with water-dispersed rubber, drying the foundation to coagulate the rubber and to restore partially the porosity of the foundation, impregnating the dried foundation throughout with water containing a tanning agent, and again drying the foundation.

In testimony whereof I have affixed my signature.

ROGER B. HILL.