

UNITED STATES PATENT OFFICE

XAVIER KARCHESKI, OF BELLEVILLE, NEW JERSEY, ASSIGNOR TO SOLOMON D. McMILLAN, TRUSTEE, OF NEW YORK.

IMPROVEMENT IN ARTIFICIAL LEATHER.

Specification forming part of Letters Patent No. 156,886, dated November 17, 1874; application filed October 26, 1874.

To all whom it may concern:

Be it known that I, XAVIER KARCHESKI, of Belleville, Essex county, New Jersey, have invented certain Improvements in Vegetable Leather, of which the following is a specification:

My invention consists of a new article of manufacture which I call vegetable leather, which is composed of a web of paper having one or both of its surfaces converted into vegetable parchment, dyed by a process which produces an even and perfect diffusion of color throughout the material, and then embossed to imitate leather. Thus prepared, my vegetable leather may be used for book-bindings, for reticules, pocket-books, valises, &c.

A sheet wholly composed of vegetable parchment cannot be advantageously used for many purposes because of its excessive expansion under the endosmose action of moisture, but when the surfaces of the fabric only are converted into vegetable parchment the paper web left inside partially prevents the endosmose action of moisture and lessens the expansion of the fabric, so that it can be pasted upon the object which it is designed to ornament, such as, for example, the board covers of a book.

The process by which I produce my vegetable leather is as follows: I take paper of any desired thickness and immerse it in a weak solution of sulphuric acid, the thickness of the paper or the sizing upon the paper determining the strength of the acid solution, as the operator will soon learn. The duration of the acid-bath is varied according to the judgment of the operator, in proportion to the thickness or stock of the paper, or of the amount of sizing it has. The operator will easily learn to determine when the proper degree of absorption has taken place, the object being to reduce only the surface of the paper to pulp without dissolving the entire fabric, so that the result will be a paper web retaining its fibrous quality, but inclosed within two films of vegetable parchment.

It will be understood that vegetable parchment is paper which has been partially dissolved and converted by pressure into a homogeneous mass. At the proper time—that is, after the surfaces of the paper have been re-

duced by the action of the acid to a pulpy state—it is withdrawn from the acid-bath and lightly scraped by being drawn over stationary scrapers for the purpose of removing the excess of acid, care being taken not to scrape hard enough to remove the pulp or tear the sheet. The sheet or web is then passed over a series of hard, smooth rollers, which compress and spread the pulp evenly over the surfaces of the web, thus producing a fabric smooth and glossy on both sides. The fabric is then submitted to a water-bath for the purpose of diluting and partially washing out the sulphuric acid in it, a small quantity of acid being allowed to remain. After removal from the water-bath the fabric is then submitted to a series of dye-baths, more or less in number, according to the depth of color required.

The dyes are either alkaline or an alkali is added, if necessary. The sulphuric acid which I leave in the fabric acts as a mordant, and the energy and avidity with which the alkaline dyes seek the acid causes a uniform and complete diffusion of color throughout the fabric. The carbonates of alkali combine with the acid, forming sulphates which are not injurious. The fabric is then washed with water to remove any sulphates or excess of coloring matter lying upon its surfaces, and again drawn over the scrapers to remove the excess of water. It is then passed through a warm bath of glycerine or some other softening material, which, by reason of the water remaining in the fabric, penetrates it throughout. It is then carried to hot drying-cylinders, over which it is kept passing until the water has been completely expelled, care being had not to subject it to a high enough heat to evaporate the softening material. The fabric is then passed through cold calender-rollers until it is thoroughly chilled, and, being then wound upon a reel, is ready for embossing. The embossing is effected in the usual manner by subjecting the fabric to hot pressure from engraved rolls.

My design is to have the fabric as much the nature of leather as possible. For this reason I treat with acid only superficially in order not to destroy the fiber in the center of the fabric. Leather is composed of an albuminous insolu-

ble surface, fiber, and epidermis, and paper treated by my process is composed, likewise, of an insoluble surface, fiber, and softening or gelatinous matter within it.

When it is desired to convert only one surface of the paper into vegetable parchment, leaving the balance fiber, the process is modified by substituting in place of the acid-bath a roller or rollers of smooth lead or rubber revolving in acid, over which the paper is carried, and upon which it is compressed by another roller or rollers. By this means only one side of the paper absorbs the acid, the re-

mainder of the process being the same as when both sides of the paper are converted into vegetable parchment, as heretofore described.

I claim as my invention—

As a new article of manufacture, vegetable leather composed of paper having one or both of its surfaces converted into vegetable parchment, and colored and embossed substantially as described.

X. KARCHESKI.

Witnesses:

MILLARD FARR,
EDWD. PAYSON.