

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PROCESSES OF RENDERING PAPER WATER-REPELLENT.

Specification forming part of Letters Patent No. **149,319**, dated April 7, 1874; application filed
October 6, 1873.

D.

To all whom it may concern:

Be it known that I, XAVIER KARCHESKI, of Belleville, New Jersey, have invented certain Improvements in Rendering Paper and other materials Water-Repellent, of which the following is a specification:

My invention, in its application to the manufacture of paper, consists in submitting paper in the web, before it is dried, first to a bath of vegetable size strongly impregnated with a fatty acid, and then to a bath of animal size containing an excess of alum, and in removing the superfluous size by scraping, and in drying the product upon the heated cylinders of the paper-machine, so that the complete operation of manufacturing paper which is both sized and rendered water-repellent is conducted with only one drying process.

The mode of sizing referred to is the subject of my application for a patent filed July 28, 1873, for improved process of hard-sizing paper and other materials, to which I refer for further details.

In my process of manufacturing water-proof, or, more accurately, water-repellent material, for wrapping and wall-covering or roofing purposes, I first administer to the fabric operated upon a bath of vegetable size, composed essentially of bleached rosin dissolved by heat in the least possible quantity of alkalis and water, and a quantity of colorless earth and soap, the latter in the proportion of one pound of soap to the gallon of size. I remove the excess of size by scraping, and then subject the material operated upon to a bath of animal size composed of a weak solution of glue, to which is added a colorless earth, a trace of chloride of sodium, and an

excess of alum, or, preferably, sulphate of alumina, and again remove the superfluous size by scraping. The paper or other material, in passing through the first size, absorbs the rosin and soap, while the colorless earth fills its pores. In passing through the second size the excess of alum or sulphate of alumina kills the alkalis present, and, by double decomposition, precipitates itself, the rosin, and fatty acid of the decomposed soap upon the fiber, forming a mass which, filling the pores and completely covering the surface, renders the fabric impervious to water, or water-repellent. In this process, as in the case of my process of hard-sizing, the fabric may be immediately dried on hot cylinders, the presence of the fatty acids preventing the loss of size by evaporation, and the presence of the chloride of sodium preventing adhesion. By this process the fabric is both sized and water-proofed simultaneously, and with but one drying operation, and the process, while especially valuable in connection with the manufacture of paper, may be usefully applied to leather, felt, or cloth.

I claim as my invention—

The described process of treating paper or other material with vegetable and animal sizes successively, the vegetable size being combined with an excess of fatty acids, and the animal size with an excess of alum or sulphate of alumina, for the purpose of rendering the fabric operated upon water-repellent, substantially as set forth.

XAVIER KARCHESKI.

Witnesses:

ASA FARR,
EDW. E. QUIMBY.