UNITED STATES PATENT OFFICE.

M. JACOB LIEBERMAN, OF NEW YORK, N. Y., ASSIGNOR TO GEO. S. HANFORD & CO.

IMPROVEMENT IN WATERPROOFING CLOTHS, &c.

Specification forming part of Letters Patent No. **12,085**, dated December 12, 1854.

To all whom it may concern:

Be it known that I, M. JACOB LIEBERMAN, at present residing in the city, county, and State of New York, have made certain new useful Improvements in the Method of Waterproofing Cloth, or, as it is sometimes termed, "Making Oil-Skin," of which the following is a specification.

Articles of this character, when made by the old and well-known process, are always sticky and unpleasant to the touch, and are, moreover, dangerous when packed in boxes for storage or transportation, as they are liable to spontaneous combustion. This process is a long one, requiring from three to four months in summer, and it is not possible to effect it all in winter—at least to any good purpose. It is, moreover, expensive, as good linseed-oil and varnish must be employed. The length of time consumed in effecting the waterproofing further leads to the incidental difficulties of the employment of large capital and of the preparation of articles which when finished may be out of fashion, or, at any rate, unsuited to the precise locality from which an order may arrive. My process has for its object to remedy all these evils, and, moreover, produce a better looking and more salable article.

The nature of my invention therefore consists in a process for preparing oiled muslin or similar fabrics by oils, sugar of lead, and a drying-oven, substantially in the manner and for the purposes hereinafter set forth.

In order to water-proof after my process I take any suitable fabric—usually twilled cotton, either in the piece or made up into garments—and apply thereto a composition made of linseed-oil, either raw or boiled, and whale or other animal oil in equal proportions, to each gallon of which mixture is added about one-fourth of a pound of sugar of lead. This mixture should be kept at a heat of about 60° Fahrenheit for some two hours, when the sugar of lead becomes completely incorporated with the oil. The mixture is applied either by passing the cloth through it, and then squeezing out the surplus by means of wooden, metallic, or other hard rollers, or else by means of rollers covered with brushes, or in some instances by a hand-brush. The fabric, made up or in the piece, is then hung up in a stove-room heated by flues or steam-pipes, or in other convenient manner, to a temperature of from 90° to 120° Fahrenheit, and, if desired, hotter; but I deem the operation best performed within these limits, as a greater degree of heat—say about or beyond 150°—has a tendency to evaporate too much of the more volatile parts of the oil, and renders the clothing stiff and liable to crack. I find further that a blast of air at the heat first named has a tendency to complete the rapid drying, and is sometimes beneficial. At the end of about twelve hours the coat on the fabric will have become dry and lost all stickiness, and the articles are then ready for another coat, which is applied in the same manner, when the articles are again "stoved" for the same length of time, or nearly so.

In practice by my process two coats only are necessary, one applied twelve hours after the other, and a fine gloss is thereby obtained; whereas by the old plan four coats, each at an interval of one month, are usually required to produce a proper finish. By my process, moreover, the coating is colorless, or nearly so; whereas a dingy yellow is always resultant from the old method. I am therefore enabled to color my mixture by any of the usual pigments and produce articles of a clear color when finished.

I would state further that I have used, with a tolerably good effect, whale-oil only mixed with sugar of lead, which cheapens the article still further than when linseed-oil and whale-oil admixed are employed, this cheapness being in contrast to the old process, where linseed-oil is the only oil employed, and where varnish is used mixed therewith.

I therefore do not wish to limit myself to the precise kinds or admixtures of oils, so long as they are mixed with sugar of lead, and the saturated articles are afterward subjected to heat by drying in a stove-room or its equivalent. Articles prepared in the old way, and also in mine are, if packed in boxes, liable to spontaneous combustion, and owners of vessels therefore raise serious objections to their shipment. They are, moreover, dangerous when stored in drawers, and are usually kept hung up. When prepared in my way the danger is not so great, as more of the volatile portions of the oil are driven off and no varnish is employed; but in order to remedy this difficulty effectually it is only necessary to apply

to the articles after they are finished a solution of sal-ammoniac, in the proportion of about twelve ounces thereof to forty ounces of water. This latter solution sometimes, mixed with a little oil, is applied with a piece of raw cotton or in some similar manner all over the glazed surface, and effectually prevents spontaneous combustion, as has been proved by sending close boxes of clothing thus prepared on a long voyage. It will therefore be perceived that my process is, in the first place, cheaper; second, it produces a better and more salable article; third, it takes much less time; fourth, it can be carried on with a much smaller capital; fifth, its quickness enables the producer to suit his goods to the market; sixth, it can be carried on throughout the year, instead of, as by the old process, in summer only; seventh, my composition, being free from varnish, usually occupies the body of the cloth, instead of being a mere coat on its surface. It is therefore less liable to peel off, and the article will stand harder service.

Having thus fully described my process and some of its advantages, I claim as of my own invention—

The process of preparing oiled muslin or other similar fabrics by means of oils, sugar of lead, and a stove-room or drying-oven, substantially in the manner and for the purposes set forth in this specification.

M. JACOB LIEBERMAN.

In presence of—
WILLIAM MACKENZIE,
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