106. COMPOSITIONS, COATING OR PLASTIC.

84

Cross Reference

52,906

Examiner.

# UNITED STATES PATENT OFFICE.

ALFRED TAYLOR, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN THE MANUFACTURE OF WATER-PROOF FABRICS.

Specification forming part of Letters Patent No. **52,906**, dated February 27, 1866.

117-169

*To all whom it may concern:*

Be it known that I, ALFRED TAYLOR, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Treatment of Fibrous and Textile Fabrics, whereby they are rendered in a high degree water-proof, and their firmness, durability, and solidity of texture are greatly increased; and I do hereby declare that the following is a full, clear, and exact description of my said invention.

The object of my invention is to communicate to fibrous and textile fabrics, such as paper, pasteboard, muslin, or linen, certain qualities which they do not possess, or possess only in a slight degree, and which will enable those articles to be applied to various purposes in the arts and manufactures to which they are otherwise not adapted. These qualities are stiffness and firmness of body, with flexibility and less brittleness—a surface susceptible in itself of polish by pressure or friction and without the addition of extraneous matter, and such a capacity for resisting the action of water as will prevent articles made thereof from being spoiled or injured by its application, and as will permit of their being cleaned by means of a wet sponge or cloth when soiled or written on with a pencil.

This result I attain by saturating, impregnating, or coating the fabric to be treated with a composition the basis of which is an aqueous solution of silicate of soda or liquid of flint. My invention, however, does not consist in the use of this article, as it has been previously employed as a mordant in dyeing and calico-printing, and as a substitute for, or equivalent of, starch for stiffening textile fabrics when they are desired to assume any particular shape under heat or pressure, and when so used have been applied in combination with dyes or coloring-matter. Articles, however, thus simply silicated, or silicated and dyed, do not possess the peculiar qualities which I attain by my invention, because they are thereby rendered hard and brittle, as well as stiff, and they will also readily yield to the action of water, so that the silicate will wash out if moistened, and the fabric become limp and misshapen. I have however succeeded, by the combination, with liquid silicate of soda, of a certain ingredient or ingredients, in making an insoluble dressing for textile fabrics which communicates to them, when it is applied as hereinafter described, the desired qualities before referred to.

The principal ingredient which I employ in making the insoluble silicated dressing is white oxide of zinc, which gives the desired degree of flexibility, body, and susceptibility to polish, with a very great, if not complete, resistance to the action of water. Other ingredients may be used as equivalents or substitutes for the white oxide of zinc, or may be used therewith, such as carbonate of magnesia or phosphate of lime; but, on the whole, I prefer the white oxide of zinc, as best satisfying the indication, and at the same time giving a beautifully-white color.

To enable others skilled in the art to use my improvement, I will proceed to describe the manner in which the same is practically used.

The composition with which the paper, linen, muslin, or other fabric is to be coated or saturated I prepare as follows: to a quantity of liquid silicate of soda or liquor of flint I add white oxide of zinc in the proportion of about one pound of the latter to a gallon of the former. These articles are intimately mixed together in any convenient way, and if the fabric, when finished, is to be white, no other coloring-matter than the white oxide of zinc is necessary.

As before stated, other substances may be added to or substituted for the oxide of zinc or mixed with the silicate—such, for instance, as carbonate of magnesia or phosphate of lime—and greater flexibility may be imparted to the fabric under treatment by adding a small quantity of flour, starch, or other similar substance.

If any color other than white is to be imparted to the finished fabric, the coloring-matter may be mixed with the composition before described.

The mode of applying this silicating mixture (which may be used either cold or hot) is either to put it on with a brush, or, preferably, to use a suitable machine, by means of which the fabric under treatment is immersed in or passed through a vat or trough containing the composition and pressed between rollers, so as

more thoroughly to apply it. The superfluous dressing may be removed by means of scrapers, acting upon the surface of the saturated fabric.

After one coating of the silicating mixture has been applied the fabric should be dried or allowed to dry, after which it may receive as many more successive coatings as may be found desirable; in most cases, however, two or three dressings will suffice.

After the fabric has received as many dressings with the silicating composition as may be advisable, according to the purpose for which it is designed to be used, and is dried, it may be calendered, by passing it between polished rollers or otherwise, and a still higher degree of polish may be given to its surface, if desired, by rubbing with sand-paper, pumice-stone, or other material or means which can be used for that purpose.

Being aware that silicate of soda has been used as a mordant with coloring-matter in dyeing and calico-printing and for the purpose of stiffening textile fabrics, I do not claim its use for these purposes, as when so used it gives more stiffness to the fabric and does not render it capable of resisting the action of water; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

Treating paper, muslin, linen, and other fibrous and textile fabrics, substantially in the manner hereinbefore described, with a composition of liquid silicate of soda intimately mixed with white oxide of zinc or other similar ingredient or ingredients, capable of forming, when applied as described and subsequently dried, an insoluble compound therewith, and with or without the addition of other coloring-matter, for the purpose of rendering textile fabrics in a high degree water-proof and susceptible of a fine polish, and also of increasing their stiffness and durability.

In testimony whereof I, the said ALFRED TAYLOR, have hereunto set my hand.

ALFRED TAYLOR.

Witnesses:

ALLAN C. BAKEWELL,

W. BAKEWELL.