

UNITED STATES PATENT OFFICE.

SAMUEL WHITMARSH, OF NORTHAMPTON, MASSACHUSETTS.

IMPROVEMENT IN COMPOSITIONS FOR ARTIFICIAL LEATHER.

Specification forming part of Letters Patent No. 20,383, dated May 25, 1858.

To all whom it may concern:

Be it known that I, SAMUEL WHITMARSH, of Northampton, in the county of Hampshire and State of Massachusetts, have invented a new and useful fabric intended as a substitute for leather and for other useful purposes; and I do hereby declare that the following is a full, clear, and exact description of the same.

The fabric which constitutes my invention is composed of cotton or other fibrous substance, either woven into cloth or in an unwoven state, saturated and coated with a compound of linseed-oil and burnt umber, prepared by boiling in every gallon of oil about three pounds of umber in a powdered state for such a length of time that the composition, when cool, will roll in the hands without sticking. This fabric may be made in forms suitable for the soles of boots and shoes, coverings for trunks, traveling-bags, caps, cap-fronts, or as a substitute for carriage and harness leather, or for hose-pipe or machine-beltting. The mode of producing the fabric differs to some extent, according to its form or the purpose for which it is intended; but the elements thereof are in all cases the same.

To prepare the compound for saturating and coating the fibrous substances, I put the oil into a suitable vessel having a fire under it, or heated by other suitable means, and as soon as it boils add the burnt umber, stirring it while the latter is introduced, and also stirring it constantly or frequently during the subsequent boiling, to cause a perfect mixture of the umber and oil and prevent the burning of the oil. The boiling of the mixture should be continued as gently as possible for from twelve (12) to twenty-four (24) hours, the time varying according to the state of the weather or quality of the oil. The boiling will have been sufficient when a few drops taken out and cooled will roll between the hands or the finger and thumb without feeling in the least degree sticky. When it has arrived at this state, it may be applied at once to the fibrous substances; but it may be allowed to cool and be remelted by heat, as required for use.

To make the fabric in a suitable form for coverings of trunks, traveling-bags, caps, cap-fronts, or as a substitute for carriage or harness leather, I take a single sheet or piece of cotton or other cloth and spread the same upon a hollow iron table or slab heated by steam,

and having the compound of oil and umber, prepared as before described, at hand, I with a trowel or other suitable implement spread it all over the sheet or piece, first on one side and then on the other, and by the heat of the table or slab the cloth will be caused to absorb a great portion of the compound. I leave enough of the compound on the two surfaces of the cloth to cover it well and fill up as much as possible all the small cavities between the threads, and afterward, while it is still on the table, I pass over it a heavy metal roller, or else remove it from the table and pass it between a pair of metal pressure-rollers to press it as smooth as possible. The fabric thus produced only requires to be exposed in a drying-room to a heat of from 100° to 130° Fahrenheit for about twenty-four hours, for the purpose of curing it, to render it fit for use. It may then be enameled in the same way as leather, if desired.

Instead of using woven cloth, as before described, the fabric may be made for some of the above purposes where great tenacity is not so much an object as a close texture and smooth surface—as, for instance, for covering trunks or other articles—by saturating a sheet of cotton-batting. To apply the compound to a sheet of cotton-batting, a sufficient quantity of it should be spread on one side of a piece of cotton or other cloth. The batting should be then laid on the steam table or slab before mentioned and the piece of cloth placed on the top of it, with the compound next the batting, and a heavy metal roller passed over it, whose pressure and the heat of the table or slab will cause the batting to absorb the compound, after which the cloth may be easily stripped off. The same operation may be and sometimes will require to be repeated on the opposite side of the sheet of batting. The saturated sheet is then pressed between a pair of metal pressure-rollers to compress it and give it a close texture. The fabric thus produced requires to be dried or cured in the same way as that made in the manner first described, and it may be afterward enameled.

To make a substitute for sole-leather or other stout leather, two or more sheets of batting may be laid together and treated as above described, or may have the compound applied to them separately, in the manner above described, and be afterward combined by press-

ing them together by the roller on the steam-table or between pressure-rollers.

To make hose-pipe, I take a woven tube or a pipe made by folding a piece of cotton or other cloth and sewing the edges together, and fill the said tube with the melted or still fluid compound, and while one end of the tube or pipe is closed I apply a pressure to the compound within by means of a force-pump or other apparatus to force the compound into and among the threads and fibers, to saturate the same as far as possible, and afterward coat the outside of the tube with the melted compound, either by passing it through the compound in a suitable vessel or by applying the compound with a brush or other suitable implement to the exterior. I afterward lay the pipe upon the steam-table and pass the roller over it, to cause the superfluous compound to be expressed from the interior, and after opening the pipe by forcing water through it as soon as the outside is dry enough to handle—viz., about two days—I hang it to cure in a dry apartment about three or four days, after which it is fit for use.

To make machine-belting, I employ several thicknesses or plies of strong cotton cloth or canvas, which I saturate, coat, and cement together with the compound. I sometimes form the required number of plies by taking a woven tube, or a tube formed by folding a piece of canvas or cloth and sewing the edges together, and flatten it out and lay within it a piece of cloth folded so that with the tube itself the required number of plies will be produced; and sometimes I take a piece of cloth of the required width and fold it the required number of times to make the number of plies,

and run a seam along the outer edge of the piece through the whole of the plies by a sewing-machine. I afterward fill every one of the spaces between the several plies with the melted or still fluid compound of umber and oil in the same manner as above directed for preparing the hose-pipe, and then lay the belt upon the steam-table, and after coating the exterior with the compound I pass the pressure-roller over it to force out all the superfluous compound and cause the cementing together of the several plies, after which it is to be cured by being hung for a few days in a dry apartment. When the exterior coating of the belt is hard, it is sufficiently cured. The compound in the interior, being unexposed to the atmosphere, will remain soft, and thus cause the belt to have the requisite flexibility, while the exterior surface is very hard and tough and capable of wearing for a very long time.

The fabric prepared in any of the ways hereinbefore described may be used for steam or other packing.

I do not claim, broadly, the saturation of cloth and other fabrics in linseed-oil containing umber or other substances; but

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

The fabric within specified, composed of cotton or other fibrous substance in a woven or unwoven condition, saturated or coated with a compound of linseed-oil and burnt umber that has been prepared as herein described.

SAMUEL WHITMARSH.

Witnesses:

W. F. PRATT,
A. W. THAYER.