UNITED STATES PATENT OFFICE.

JAMES THOMAS, OF NEW YORK, N. Y.

IMPROVEMENT IN PREPARING INDIA-RUBBER.

Specification forming part of Letters Patent No. **5,271**, dated September 4, 1847.

To all whom it may concern:

Be it known that I, JAMES THOMAS, of the city, county, and State of New York, have invented or discovered new Ingredients to Combine with Caoutchouc or India-Rubber for the Manufacture of Various Water-Proof and Elastic Fabrics; and I do hereby declare that the following is a full and exact description.

The nature of my discovery consists in combining caoutchouc or india-rubber with a mixture composed of sulphite or hyposulphite of lead or barytes with about an equal portion of artificial sulphuret of lead, and submitting the compound to the action of a high degree of heat, by which I produce a fabric not only possessing all the most desirable properties of india-rubber, but one of great tenacity and elasticity, while it resists the solvents of native gum without becoming rigid in cold weather or soft and sticky in warm, and at the same time is free from exudation and the unpleasant smell attending other india-rubber fabrics.

To enable others skilled in the art to make and use my invention, I proceed to describe the properties and manner in which I make said compound and the process of manufacture to produce said fabrics.

After the caoutchouc or india-rubber has been cut and cleansed I put one or more pounds' weight, as can be conveniently ground or mixed at a time, between two or more revolving iron cylinders or rollers, denominated "mixing-rollers," heated internally by steam, when the cautchouc or india-rubber, by the action of the rollers, soon presents the appearance of a rough, uniform sheet. I then mix in the sulphite or hyposulphite of lead or barytes and artificial sulphuret of lead in about equal proportions. To one pound of caoutchouc or india-rubber I put from two ounces to half a pound of the before-mentioned articles, and the caoutchouc or india-rubber having been passed repeatedly between the mixing-rollers, so that the whole compound may be well combined, which its appearance will readily determine, it is then removed to another set of rollers heated in like manner, denominated the "grinding-rollers," which are placed nearer to each other than the mixing-rollers, in order that by these rollers a more perfect mixture of the compound may be effected and the whole mass perfectly ground. After this second process the compound is again removed to the third set of rollers, also heated in like manner, denominated the "softening-rollers," and again ground and mixed therein, when it soon becomes fit for its final removal to the spreading-machine. The spreading-machine comprises two or more iron cylinders, which are heated internally also by steam, (the machine which I prefer consists of three rollers, one above the other,) of larger dimensions than those before mentioned and of smoother and finer surface. The compound is placed between the upper and middle rollers, passing to the lower one, upon which the cloth for its reception passes round, and thus receives on its surface the different coatings of the compound required, or if sheet-rubber is desired the compound is placed in like manner, dispensing with the use of the cloth, and the sheet taken from the roller, or the compound may be spread upon glazed cambric. Both the coated cloth and sheet-rubber, in passing off the lower roller, are rolled up in dry cloth to keep the surfaces apart, and is then fit for making up into such goods as may be required; or a fabric may be manufactured from this compound by first softening the rubber with spirits of turpentine or other suitable solvents of rubber, then mix in the other ingredients by passing them, with the softened rubber, between two cold revolving rollers placed nearly in contact with each other, and when well mixed spread the compound upon cloth, all of which is a process well known to all india-rubber manufacturers; but I prefer the first-mentioned mode of manufacture, because it is less expensive and goods are free from the smell of solvents.

When coated cloth, sheet-rubber, or either of them made up into different articles are to be cured they are then to be dusted over with purified pipe or other clay of similar quality finely powdered to prevent their surfaces from adhering together; but they are as yet still liable to the action of all the solvents and other influences which act upon caoutchouc or india-rubber, and would accordingly become rigid in cold and softened and sticky in warm weather. To free the composition, therefore, from these characteristics, the goods are subjected to heat (either steam or dry heat, the former I prefer) of from 250° to 300°, according to the thickness of the compound in the goods to

be heated and the quantity laid in a mass. The time required for heating goods will likewise vary according to quality and quantity, as last mentioned. Some goods may require three hours and some five hours, or thereabout. When the goods come from the heater they are to be washed off and dried. Then they are ready for market. After the goods have been treated as last mentioned they become elastic, impermeable, and tenacious, as set forth in the title above recited.

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

1. The use of the acids of sulphur of a lower degree of oxygenation than the sulphuric acid in combination with suitable bases, but prefer a hyposulphite which can be used alone or in combination with the other salts of the acids of sulphur, as above mentioned, or with the sulphurets.

2. The use of artificial sulphuret of lead, used either alone with the india-rubber or mixed with a salt of lower degree of oxygenation than a sulphate, but prefer using a mixture of about equal parts of a hyposulphite and artificial sulphuret of lead, as before stated.

JAMES THOMAS.

Witnesses:

CHAS. G. PAGE,

L. D. GALE.