

# UNITED STATES PATENT OFFICE.

ANDREW THOMA, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO PLYMOUTH RUBBER COMPANY, OF STOUGHTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## METHOD OF TREATING ADHESIVE-COATED FABRIC.

983,327.

Specification of Letters Patent.

Patented Feb. 7, 1911.

No Drawing.

Application filed November 9, 1910. Serial No. 591,398.

*To all whom it may concern:*

Be it known that I, ANDREW THOMA, a citizen of the United States, and resident of Cambridge, county of Middlesex, and State of Massachusetts, have invented an Improvement in Methods of Treating Adhesive-Coated Fabrics, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a method for treating or conditioning adhesive coated fabric, and is particularly designed for use in connection with the manufacture of fabric reinforcing leather inner soles, such as the "Gem" inner sole. As is well known, in the manufacture of such articles it is now common to employ fabrics such as duck or canvas coated on one side with an adhesive coating which, in its normal or cold state, can be readily handled without inconvenience, but when properly treated by methods including the use of heat becomes very tacky or sticky so that it can be placed upon the leather of the inner sole, or other substance, and will thereupon adhere thereto with great tenacity. The present invention provides a novel method for treating or conditioning such adhesive coated fabric by means of superheated steam so that the fabric is given exactly the right condition for adhering to an irregular surface, such as that of the inner sole.

In order to secure the best results it is necessary that not only the adhesive coating shall be placed in such a tacky or sticky condition as readily and permanently to adhere to the base of the inner sole, or other article, but that the fabric itself shall be in such a condition that it can be molded readily to conform to an irregular surface, such as the lip of an inner sole. When the adhesive coated fabric is treated by the use of water there is a tendency to wash the sizing or starch out of the fabric, thus to an extent weakening the body or substance of the fabric which it is desired to have in the completed article. It is also necessary that the inner sole shall be thoroughly dried before being used or the cloth will be mildewed or rotted. Such drying requires not only time but a considerable amount of space. When the adhesive coated fabric is treated by the use of dry heat alone the fabric does not always have that degree of pliability which is desirable.

By the method of the present invention the fabric is conditioned or treated by passing superheated steam against the fabric upon the uncoated side. This may be done by any suitable form of apparatus, but there is shown in a companion application, Ser. No. 563,471, filed May 26, 1910, by me, a preferred form of apparatus for carrying out the method. The fabric is preferably passed through a closed chamber apertured to allow the entrance and exit of the fabric, and the fabric runs with its uncoated side against a perforated wall of the chamber. The superheated steam is passed through the perforations against the uncoated side of the fabric, and the result is that the adhesive coating is thoroughly softened up, or conditioned, beginning next to the fabric itself and extending to the surface of the coating. These coatings are usually formed of cheaper and, consequently, less tacky substances next to the fabric, while the substances or layers at the surface are more readily rendered tacky. By the use of this method the coating where it permeates the fibers and interstices of the fabric is thoroughly softened and the entire mass of the coating is softened by the steam so that the maximum degree of adhesiveness is secured. The starch or sizing is not removed from the fabric so that the fabric is rendered pliable by the softening up of the coating embedded therein and of the sizing, so that the fabric becomes very flexible.

The nature of the invention will appear more fully from the description and will be particularly pointed out in the claims.

It is unnecessary to describe in detail the adhesive coated fabric to be treated because that is well known, and the composition of the coating varies more or less as to its ingredients, although having the same general characteristics; viz., that when cold it is capable of being easily handled and when heated it becomes tacky or sticky. Moreover, as already noted, the coating is usually formed of successive layers, those nearer the fabric being of a cheaper and less tacky quality, while the top layer is usually largely composed of gutta percha which is rendered extremely tacky or sticky upon the application of heat.

The method of this invention may be carried out by the use of any suitable apparatus and is not, therefore, dependent upon any particular form of apparatus. A suitable



and preferred form of apparatus is shown in my application already referred to.

The fabric to be treated is usually in the form of a narrow strip four or five inches in width and rolled up, the adhesive coating in its cold or normal condition allowing the fabric to be rolled without adherence of the layers. The steam may be superheated in any desired manner so long as it is in a dry and highly heated condition when it is directed against the fabric. In other words, it should not be carrying moisture but should be in the form of a dry, hot vapor. The steam may be passed against the back or uncoated side of the fabric directly, and the fabric may be supported in any suitable manner but, as before stated, the fabric preferably passes through the closed chamber with its uncoated side resting against a perforated wall of the chamber and entirely covering the perforations in the wall, and the steam is directed up through the perforations against the fabric. The result of this method is, as stated, that the fabric is thoroughly conditioned, both the coating and the fabric portion itself, and this conditioning taking place from the uncoated toward the coated side insures the thorough softening up of the coating, not only in its mass itself but that portion of the coating extending into the fibers and interstices of the fabric. The steam being kept at a high temperature very little vapor arises during the operation so that no annoyance is caused to the operatives carrying out the method and no material amount of moisture is discharged into the air, or condensed outside of the apparatus employed.

A comparatively small amount of steam is sufficient and is found thoroughly to condition the fabric. 40

The process is not to be limited to the conditioning of the fabric by the use of the superheated steam alone, because it is evident that the process may be advantageously employed upon fabric previously treated. If, for example, a heavy or stiff fabric is being conditioned it may be desirable to moisten it first with cold or warm water or other liquid, according to particular conditions, before subjecting it to the present process, but any such previous treatment is but auxiliary and does not effect the results secured by this process. 45 50

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is: 55

1. The method of conditioning adhesive coated fabric from the uncoated to the coated side which consists in directing superheated steam against the uncoated side of the fabric. 60

2. The method of conditioning adhesive coated fabric from the uncoated to the coated side which consists in passing the fabric through a closed chamber and in directing superheated steam against the uncoated side of the fabric while inclosed within said chamber. 65

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses. 70

ANDREW THOMA.

Witnesses:

LEONA CHANDLER,  
FREDERICK S. GREENLEAF.

Corrections in Letters Patent No. 983,327.

It is hereby certified that in Letters Patent No. 983,327, granted February 7, 1911, upon the application of Andrew Thoma, of Cambridge, Massachusetts, for an improvement in "Methods of Treating Adhesive-Coated Fabrics," errors appear in the printed specification requiring correction as follows: Page 1, lines 8-10, the clauses "in connection with the accompanying drawing" and "like characters on the drawing representing like parts" should be stricken out; same page, line 9, the comma after the word "specification" should be stricken out and a period inserted instead; page 2, line 30, after the word "but" the word *in* should be inserted; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of March, A. D., 1911.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.



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