(No Model.)

S. M. CHESTER.

METHOD OF COATING PAPER AND OTHER MATERIAL WITH WAX.

No. 353,122. Patented Nov. 23, 1886.

Fig. 1.

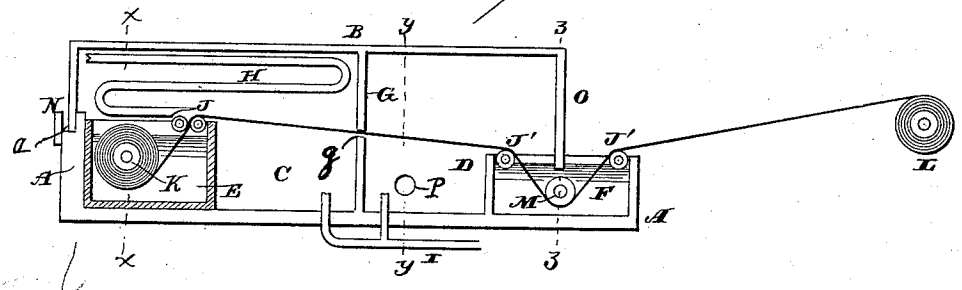


Fig. 2.

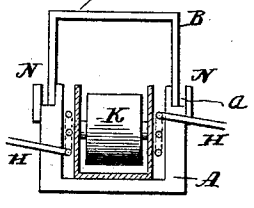


Fig. 3.

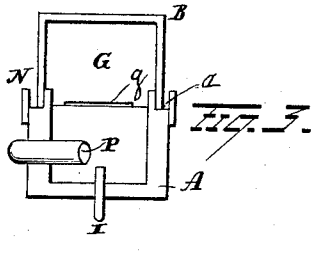
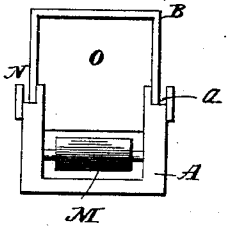


Fig. 4.



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METHOD OF COATING PAPER AND OTHER MATERIAL WITH WAX.

SPECIFICATION forming part of Letters Patent No. 353,122, dated November 23, 1886.

Application filed May 1, 1886. Serial No. 200,841. (No specimens.)

To all whom it may concern:

Be it known that I, STEPHEN M. CHESTER, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in the Method of Coating Paper and other Material with Wax; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in the method of coating paper and other material with wax, and more particularly with paraffine wax.

For many years paper coated or partially or entirely saturated with paraffine has been employed in the construction of certain electric machines and by confectioners and druggists. To prepare this paper properly and in quantity, especially for the latter uses mentioned, elaborate and somewhat expensive machinery has been employed. The process has been substantially as follows: The paper, after having been soaked in melted wax, has been passed between heated metallic rollers. When sufficiently cool, it has been carefully scraped to remove all excess of wax from the surfaces, when it has been again passed through calender-rollers to level, smooth, and polish the surfaces.

While thin and porous paper, when soaked in nearly boiling paraffine, will become saturated therewith, it is next to impossible, no matter what the heat, to cause pure paraffine to penetrate wood and many other materials to any desirable depth. Wood soaked in boiling wax for hours, when allowed to cool, may be freed from wax by simply scraping its surface.

The object of my present invention is to provide a method by which the wax may be made to penetrate the paper and other material with moderate heat, and by which a smooth polished-like surface may be attained without the use of scrapers or calender-rollers.

With these ends in view my invention consists in first dissolving the wax in a volatile solvent and then applying the dissolved wax to the paper or other material in a fluid or liquid form, and finally evaporating the volatile solvent.

The accompanying drawings represent one of several forms of machines which may be advantageously employed to prepare paper or other flexible material, and which will suffice to illustrate my method.

Figure 1 is a vertical longitudinal section. Fig. 2 is a cross-section through line *x x* of Fig. 1. Fig. 3 is a cross-section through line *y y* of Fig. 1, and Fig. 4 is a cross-section through line *z z* of Fig. 1.

A represents a tight box or trough having a groove, *a*, cut in its upper edge.

B is an air-tight cover, which drops down upon and into the groove *a*, cut in the upper edges of A, which is filled with water. This renders the box, when closed, absolutely air-tight.

E is a tank of wood or metal placed at left-hand end of trough, provided with half-journals, into which axis of reel K may drop, and further provided with rollers J, the right-hand one of which runs in the tank or lower trough, and the left-hand one is fixed in the cover.

The interior of the entire box is divided into two chambers, C and D, by the partition G, which has a slot or slit, *g*, cut in it just large enough to permit the slip of paper to pass through. The partition G is preferably composed of two pieces, one half being fixed in cover and the other in lower box, A. The slot *g* is better shown in Fig. 3.

F, at the right-hand end, represents another tank, in which are placed the rollers J′ M J′, the use of which is obvious.

H represents a steam-pipe designed to warm chambers C and tank E. In Fig. 1 the pipe H is represented as occupying the upper part of the chamber. It is in general, however, better to place it in the lower part, as shown in Fig. 2.

P, Figs. 1 and 3, is the terminal of a blast or blower pipe.

I is an escape-pipe, having orifices in each chamber, and it is supposed to terminate in

a condensing-worm. The roll of paper or other material is placed upon the reel K and is drawn off through the machine by the reel L.

The tank E contains refined paraffine wax dissolved in naphtha or other volatile solvent.

The tank F contains water, and the end of cover B is extended, as shown at O, to plunge into the water.

The roll of paper or other material having been placed in the tank E, the end is drawn over the right-hand roller J, over lower half of the partition G, over left-hand roller J′, under M, and over right-hand roller J′ to the reel L. The cover B being now placed in position, the left-hand roller J will press upon the paper, the slit in partition G will be formed, and because of the groove *a* and water-tank the whole interior will be hermetically sealed. The rollers J may be of metal or wood covered with cloth or leather. Such heat only need be maintained in chamber C as will keep the composition in tank E in a fluid or liquid state. Exhaust-steam, for example, is quite sufficient. The heat also evaporates the volatile solvent as it leaves the rollers J. The blast-pipe P greatly assists in promoting rapid evaporation, and also drives the vapor off through the escape-worm I, where it is recondensed, so that it may be used again and again.

The apparatus or machine hereinabove described forms no part of my present invention, but is reserved as the subject-matter of a separate application.

By the above method I am enabled to cause the wax to penetrate any material which I find it desirable to coat, and when the volatile solvent has been driven off, the surface will be left in a smooth even condition, and will have all the appearance and value of a surface which has been formed by the more complicated and expensive process hitherto employed.

I am aware that it is not new to waterproof material by dipping it in a solution of wax and subsequently removing it from the solution and drying it. I am also aware that it is old to submit material which has been treated with wax to a cooling-blast, and that roofing fabric, after having come hot from the making-machine, has been artificially cooled by passing it through water.

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

1. The method of coating paper or other material with wax, consisting, essentially, in first impregnating the paper or other material with wax; secondly, submitting the impregnated paper to an evaporating-blast, and, thirdly, passing it through water.

2. The method of coating paper or other material with wax, consisting in first soaking the paper or other material in a solution of wax, then exposing it to an evaporating-blast, and subsequently passing it through water.

3. The method of coating paper or other material with wax, consisting in first impregnating the paper with wax, then subjecting it heat to assist evaporation, and then passing it through water.

4. The method of coating paper and other material with wax, consisting, essentially, in first soaking the paper or other material in a solution of wax, then exposing it to an evaporating-blast in an air-tight chamber, and finally passing it through a tank of water, substantially as set forth.

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Witnesses:
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