(No Model.)

H. FRASCH.

MANUFACTURE OF WAXED PAPER.

No. 304,309. Patented Sept. 2, 1884.

Fig. 1.

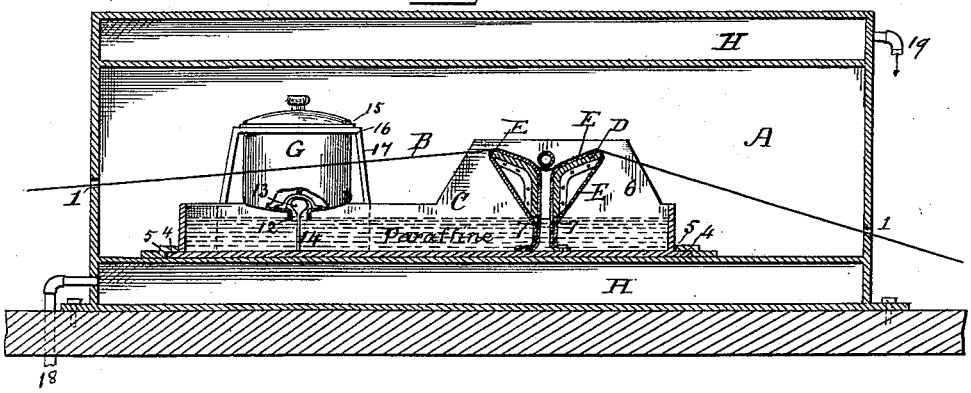


Fig. 2.

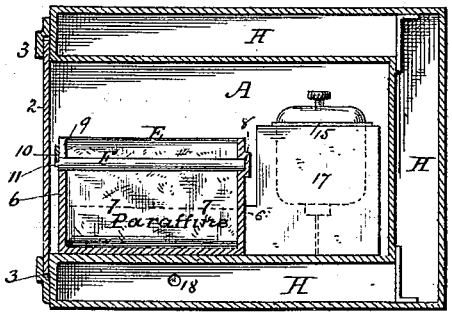


Fig. 3.

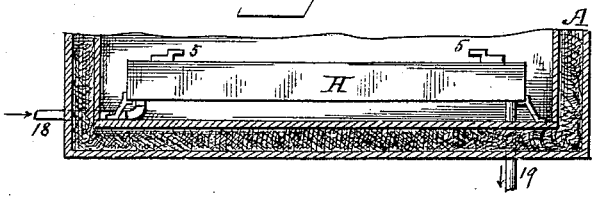


Fig. 4.

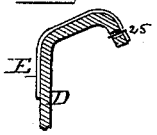
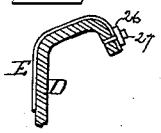


Fig. 5.



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UNITED STATES PATENT OFFICE.

HERMAN FRASCH, OF CLEVELAND, OHIO.

MANUFACTURE OF WAXED PAPER.

SPECIFICATION forming part of Letters Patent No. 304,309, dated September 2, 1884.

Application filed May 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, HERMAN FRASCH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Waxed Paper, of which the following specification is a full, clear, and exact description.

This invention has reference to coating paper with paraffine or other wax, which is applied thereto in a liquefied state by means of absorbent material. Pieces of such material dip into the melted wax and draw it up by capillary attraction. The paper being moved over and in contact with the absorbent material, becomes coated with the wax, which has been drawn up, and which remains in a liquefied state. Capillary attraction renews the supply of wax as it is carried off by the paper. In order that the paper may be coated evenly, it is necessary to have a comparatively large rubbing-surface. Heretofore the paper has been passed over the upper ends of blocks of felt, which blocks have constituted the absorbent material. The rubbing-surface therefore corresponds with the cross-section of the felt blocks or capillary conductors. With conductors made of large cross-section to secure the necessary rubbing-surface, the absorptive power is so great that an excess of wax is supplied to the paper. A portion has therefore to be removed, the same as when the paper is run through a bath of the melted paraffine. A roller has therefore been arranged above the ends of the felt blocks to press the paper against them, so that they act as scrapers. The paper, however, in any case is saturated, if not supersaturated, with the wax.

The present invention consists in increasing the rubbing area in comparison with the cross-section of the conductor. This is most easily secured by making the paper rub against the side, instead of the end, of the capillary conductor or conductors. In this way the cross-section of the conductor is rendered independent of the dimensions of the rubbing-surface, and may be such as to supply just the desired amount of wax. The paper may therefore be evenly coated with the paraffine to any desired degree up to saturation. The pressing-roller is or may be dispensed with.

The invention also comprises certain special constructions and combinations of parts, as hereinafter set forth.

In the accompanying drawings, Figure 1 represents in vertical longitudinal section a coating apparatus constructed in accordance with the invention; Fig. 2, a vertical cross-section of the same, Fig. 3 a partial view in longitudinal section of a slightly-modified form of the apparatus, and Figs. 4 and 5 detail views showing modes of fastening the wick or capillary conductors to their supports.

A is a tight box, having a slot, 1, at each end for the passage of the paper B. It contains a pan, C, for holding the melted paraffine or wax, or other coating material, the wick-supports D, the wicks or capillary conductors E, the guide-rod F, and a fountain or reservoir, G, for maintaining the level of the liquid in the pan. Said box is further provided with chambers H, for the circulation of hot water, steam, or other heating-fluid. The side 2 of the box is removable. As shown, the edges slide in grooves 3; but other suitable arrangement could be adopted. The pan C has at each end a flange, 4, which slips under the flange 5, which is fastened to the bottom of the box, or to some part which itself is secured to said bottom. The object of this arrangement is to allow the pan to be withdrawn when desirable and to hold it stationary when inserted. Other means for retaining it in place could be used. The wick-supports D are in the form of plates bent at an obtuse angle. They are fastened between extensions 6 of the sides of the pan. Flanges on the supports may be bolted to the side, or other receiving means may be employed. The width of the pan at this point is equal to, or it may be greater than, the width of the paper to be coated. The wicks or capillary conductors E extend over the faces of said support and dip at their lower edges into the paraffine in the pan. As shown in Fig. 1, the material composing the capillary conductor is folded around its support, and the ends are stitched or otherwise fastened together at 7. After the stitching the wick or

conductor can be turned into the position shown. The wick should fit the support close enough to prevent its being carried around by the paper when the latter is drawn over it. In Figs. 4 and 5 the wick is not folded around the support, but is placed only on the inner face thereof, and it is fastened to said support. In Fig. 4 stitches 25 pass through holes in the bent-over ends of the support and through the wick material. In Fig. 5 the wick is clamped between the bar 26 and the support. Bolts 27 hold the bar in place. The paper is held down between the adjacent inclined faces of the wick-supports and against the surface of the wicks or capillary conductors by the guide-rod F. This rod extends the full width of the wicks and wick-supports, and is removable to permit the introduction of the paper. The inner end fits in a socket, 8; the outer end is held at the bottom of a slot, 9, by the bolt or catch 10. This bolt or catch 10, which may slide or turn, extends over the reduced extremity 11 of the guide-rod, and prevents it either from being accidentally lifted up or drawn out. When it is desired to remove the rod, it is only necessary to draw back the bolt, when the outer end may be raised and the inner withdrawn from the socket. The fountain or reservoir G is such as in common use in student-lamps. It is closed except through the neck 12, and has at the bottom a valve, 13, which is held open by the pin 14 when the reservoir is in place. It is supported by the flange 15, fastened to the reservoir, and resting upon the surrounding plate 16 at the top of the uprights 17, which latter are fastened to the pan. The reservoir is set to one side of the pan, out of the way of the paper to be drawn through the apparatus.

The pan C, wick-support D, guide-rod F, and reservoir G, and so also the box A of Fig. 1 and the heating-chamber H of Fig. 3, are or may be constructed of metal, the guide-rod and reservoir being made of brass, the other parts of galvanized iron.

In Fig. 3 the walls of box A are made double, with an intermediate space, which is filled with non-conducting material, such as felt, mineral wool, &c. The pan, with its appurtenances, is supported upon the heating-chamber H, which is provided with feet that are fastened to the bottom of the box. In both figures, therefore, the pan rests upon the top of a heating-chamber, and this is desirable, but it is not essential. The pan might rest directly upon the bottom of box A of Fig. 3 and the proper temperature be produced in said box by means of a steam-coil or other suitable appliance. The hot fluid is introduced into the heating-chambers by the pipes 18 and escapes by pipes 19. The supply and receiving rolls are not shown, because they are or may be such as heretofore used in waxing-machines. The paper is stretched between them, and in passing from one to the other it goes through the waxing apparatus, as shown in Fig. 1, rubbing over the surfaces of the wicks or capillary conductors, against which it is held by the guide-rod F, and also by the tension of the rolls. Being heated before reaching the conductors, it is in the best condition to absorb the wax with which the pores of the wicks are filled. The speed at which the paper is fed forward and the character and thickness of the wicks used depend upon the character and thickness of the paper to be waxed and the degree of saturation which is desired. The higher the speed of the paper and the less the thickness or absorbent capacity of the wick the smaller will be the proportion of wax applied to the paper.

For preparing waxed or paraffined tissue paper for wrapping candies and for similar purposes, which paper is from one sixty-fourth to one thirty-second of an inch thick, the following is recommended: temperature in the box, 150° Fahrenheit; speed of paper, thirty feet per minute; rubbing-surface on two wicks, six running inches each, measured in the direction in which the paper moves; material for the wicks, felt one-eighth of an inch thick. These figures are of course variable, and that within wide limits. They are only given by way of example. Modifications may also be made in the proportions, dimensions, and materials of which the apparatus is composed, and in other details of construction, without departing from the spirit of the invention, and parts of the invention may be used separately.

I claim the new improvements described, all and several, to wit:

1. The improvement in waxing paper by rubbing the paper against the side of a wick or capillary conductor whose end dips into the melted wax, the rubbing area being greater than the cross section of the wick, substantially as described.

2. An apparatus for waxing paper, having one or more wicks or capillary conductors for absorbing the wax and applying it to the paper, the wick-surface exposed to the rubbing against the paper being many times greater than the cross-section of the said wick or wicks, substantially as described.

3. In a paper-coating apparatus, the combination, with the pan or receptacle for the material to be applied, of one or more wick-supports and one or more guides for the paper, said parts being arranged so that the paper rubs over the side of the wick or wicks which rest upon said supports and dip into the liquid in said pan, substantially as described.

4. In a paper-coating apparatus, the combination, with wick-supports inclined toward each other, of the guide-rod between the same, substantially as described.

5. The combination of the pan, wick-supports, and reservoir, substantially as described.

6. The combination, with the pan of a paper-waxing apparatus, of a heating-chamber under said pan, substantially as described.

7. A paper-waxing apparatus, comprising, in combination, a close box, one or more heating-chambers, a pan, one or more wick-supports, one or more wicks, paper-guides, and a reservoir or fountain, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN FRASCH.

Witnesses:
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W. H. BARTRAM.