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PROCESS OF WATERPROOFING PAPER

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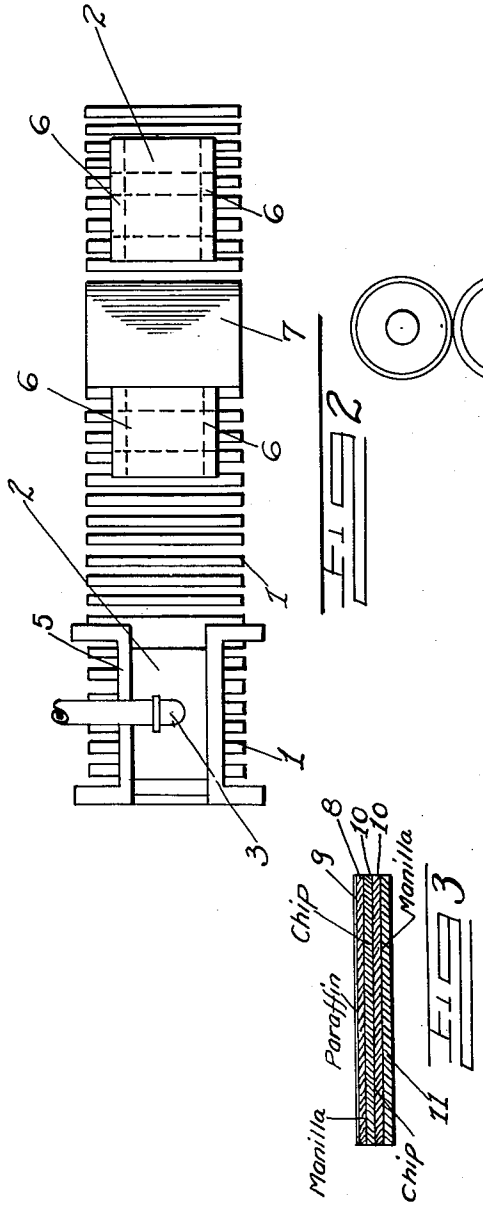


FIG 2

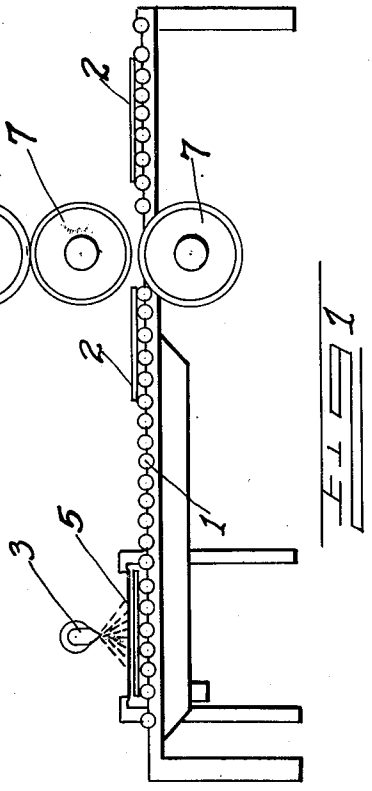


FIG 1

FIG 3

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UNITED STATES PATENT OFFICE

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PROCESS OF WATERPROOFING PAPER

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My invention relates broadly to processes of waterproofing paper, and particularly to processes of waterproofing printed paper such as that from which paper cartons are made.

It is the object of my invention to provide a method for waterproofing paper which will obviate the tendency of a waterproofing material saturating the pores of the paper, and thus rendering it transparent. As a specific object, I have provided a process which will enable the waterproofing or paraffining of board composed of a top layer of light colored fibrous stock such as manila or "patent coated" with underneath layers of mixed waste paper or other cheap stock in which the waterproofing material is not applied so as to saturate the finished outer layer, and to render it transparent so that the darker color of the underneath layers will show through the outer layer.

In manufacturing waterproof cartons such as are required in the art for butter products and the like, it has been customary to form a board of layers of light coated paper stock, to then print and cut and score the cartons and to then pass the printed cartons through a melted paraffin bath to cover the board with a waterproofing layer. The necessity for making the board of layers of light coated or manila stock, has been in order to provide a light exterior, which if cheaper stock were to be used in the underneath layers would not be possible with the paraffin applied in a melted layer, as the outer layer would be sufficiently transparent to allow the color of the underneath layers to show through.

My invention contemplates the specific modification involved in methods of waterproofing carton board, for the manufacture of board having an outer layer of light stock and underneath layers of cheaper stock. Instead of passing the board through a bath of waterproofing compound, which will render the outer layer transparent, I cover the board or those portions of the board which I desire to waterproof with a powdered waterproofing material preferably by spraying with melted paraffin or other waxy waterproofing compound, which solidifies on the board or before it strikes the same, and I then pass the board through calender rolls not heated to above the melting point of the waterproof compound, which frictionally extend the waterproofing in a thin, glossy, adherent layer over the outer surface of the board.

Although my invention will presumably supply a means of accomplishing greater economy in the production of waterproofed cartons than in other processes of manufacturing paper in that it will enable the saving of layers of expensive stock and the substitution therefor of layers of cheap stock, there are many advantages of applying a layer of powdered or finely divided waterproofing material to paper to be coated, and of forming a layer of the waterproofing material over the surface of the paper by cold calendering which will at once be obvious to those skilled in the art.

A use within the scope of my invention is in the production of paper tubing, such as mailing tubes and round cartons, which can be made almost as inexpensively with a light exterior waterproofed cover as by the usual process now used for making paper tubes of grey or dark stock.

Referring to the drawings in which I have illustrated diagrammatically apparatus with which my process may be carried out:

Figure 1 is a side elevation of a conveyor adapted for use in my process.

Figure 2 is a top diagrammatic plan view of the mechanism shown in Figure 1.

Figure 3 is a diagrammatic section through a piece of carton board subsequent to the treatment herein disclosed.

Generally indicated at 1 is shown a conveyor composed of rolls which may be rotated by suitable means to carry pieces of carton board of desired shapes or sizes. Blanks which have been printed are indicated at 2, passing along the conveyor underneath the sprayer nozzle 3, with a fixed shield, so disposed with relation to the sprayer and the carton blank as to shield desired portions of the carton. Inasmuch as it is sometimes difficult to glue flaps which have been paraffined, I have provided a shield 5 for shielding those portions which are to be used for sealing.

The portions of the carton blanks indicated at 6, have been shielded from the paraffin spray, and they indicate those portions of the carton blank to which glue is to be later applied in the setting up of the cartons. The carton blanks or the pieces which are to form the carton are passed from under the spray to a set of calender rolls 7, which spreads out the layer of paraffin in a smooth, glossy layer which as far as outward appearance is concerned seems comparable to paraffined board which has had the layers thereof saturated in a bath. Figure 3 indicates a section of a piece of finished board. It will be noted that the board is formed of a top layer 8, of manila stock, coated with a layer 9 of paraffin, underneath layers 10, of chip stock and a bottom layer 11, of manila stock.

Modifications in the method of applying the finely divided waterproofing material to the board will readily occur to those skilled in the art. It will be entirely practical to stack a layer of carton blanks on a table and to then apply a shield to have a spraying nozzle which is movable so that each carton may be first sprayed and then removed from the stack and passed to calendering rolls or other suitable types of press. It will also be entirely practical to apply the powdered paraffin in a layer from a trough and to heat the paper so that the paraffin will adhere thereto. While the complete adherence of the powdered paraffin is not essential to my process, it is important that it be so evenly distributed and retained on the paper, that it will form a continuous and fairly even layer, though the calendering will usually promote uniformity of thickness.

The side portions which are indicated in the drawings at 6, and which I have advised are to later become the gluing flaps, are merely diagrammatic representations of unparaffined portions. Suitable guard or shielding plates may be employed to prevent the application of paraffin to desired portions of the carton, the size or shape of the shielding plates being within the scope of mechanical modifications such as will be provided in accordance with the requirements of the particular cartons being subjected to the paraffining treatment.

While the calender rolls are preferably unheated, I may employ warm rolls which do not melt the paraffin, but spread out the paraffin by a frictional squeezing action.

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

1. A process of making a waterproof carton adapted to have interengaging glued flaps which consists in printing a blank and spraying melted paraffin over the surface of the blank and subsequently calendering the blank, and during the application of paraffin shielding the surface of said blank to be utilized for gluing flaps.

2. A process of making waterproof cartons which consists in spraying melted paraffin over selected areas of a blank so as to leave glue flaps unparaffined and calendering the blank.

3. A process of making waterproof cartons which consists in spraying melted paraffin over selected areas of a blank so as to leave glue flaps unparaffined and calendering the blank with calender rolls without melting the paraffin.

4. A process of making waterproof cartons which comprises printing a blank and spraying melted paraffin over the printed side thereof, afterward calendering the blank with calender rolls.

5. A process of making waterproof cartons which comprises printing a blank and spraying under non-saturating conditions, melted paraffin over the printed side thereof and afterward calendering the blank with calender rolls.

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