

May 20, 1930.

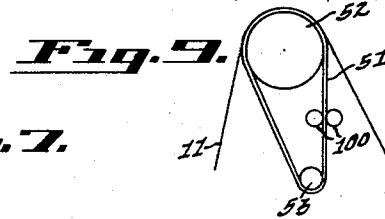
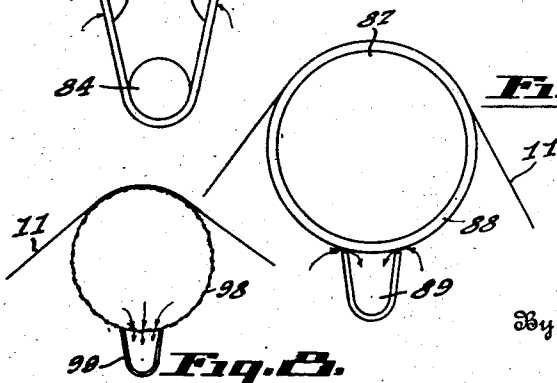
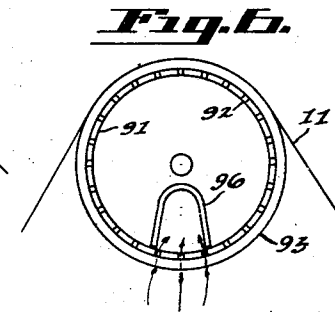
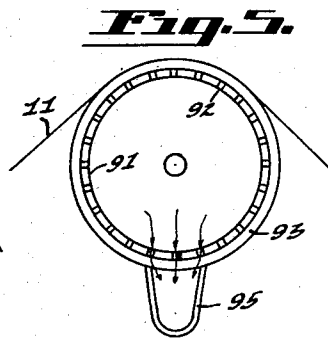
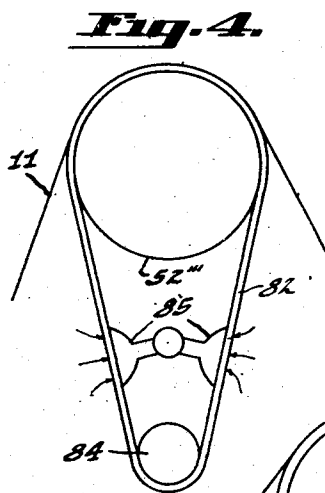
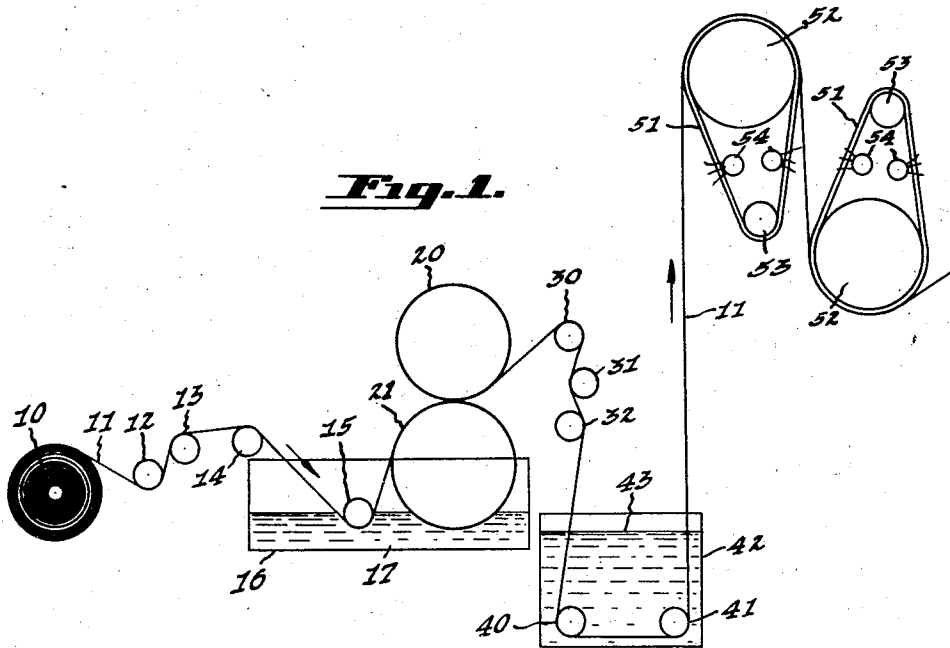
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1,759,600

METHOD AND APPARATUS FOR TREATING COATED MATERIAL

Filed Feb. 19, 1926

2 Sheets-Sheet 1



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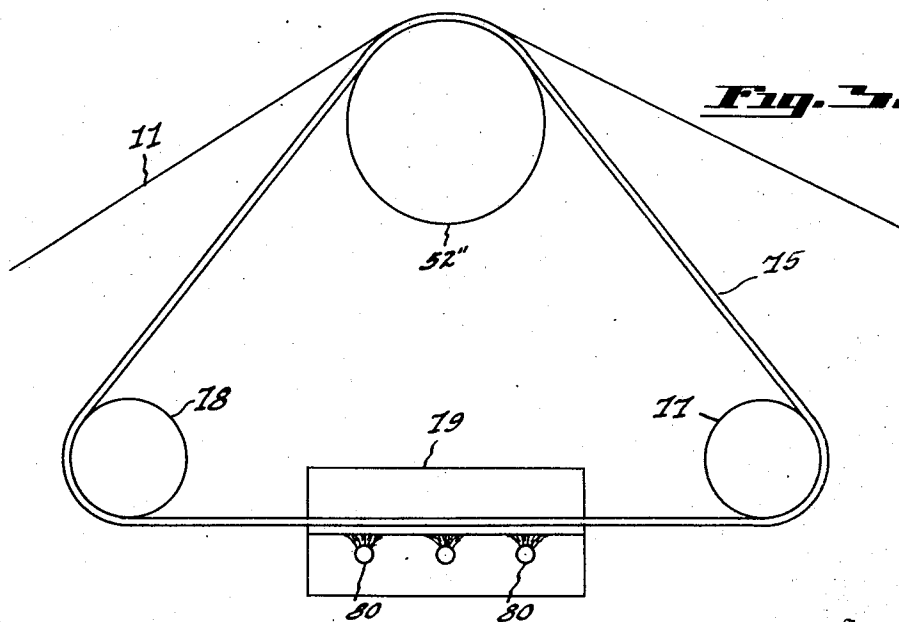
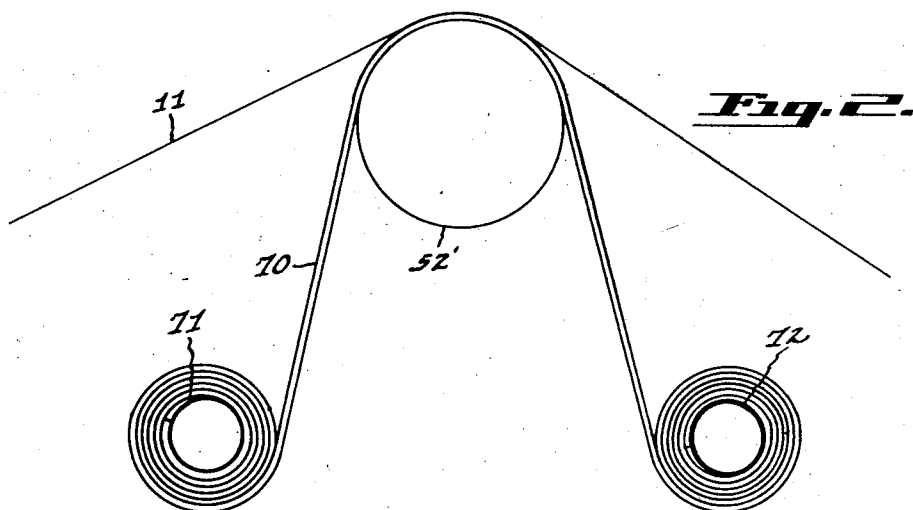
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METHOD AND APPARATUS FOR TREATING COATED MATERIAL

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METHOD AND APPARATUS FOR TREATING COATED MATERIAL

Application filed February 19, 1926. Serial No. 89,349.

This invention relates to a method and apparatus for coating or impregnating a web of fibrous material, and relates more particularly to a method and apparatus for coating paper with paraffin.

One of the principal objects of the invention is to provide a novel apparatus and method of removing water or other liquid from the web of a coated material after it has been subjected to the action of cooling water or other liquid.

Other objects of the invention will appear from the following description taken in connection with the accompanying drawing in which:—

Fig. 1 is a diagrammatic view showing a machine embodying the present invention; and

Figs. 2 to 9 show alternative forms of my invention.

The present invention is herein illustrated in connection with a machine for coating paper with paraffin wax, but it will be understood that the invention is susceptible of other uses.

In the embodiment of the invention illustrated in Fig. 1, 10 designates a supply roll of the paper to be waxed. From the supply roll the paper 11 is led under a roll 12 and over rolls 13 and 14 and thence under a guide roll 15 which is mounted in tank 16 in such position as to guide the paper below the level of melted paraffin wax in the tank 16, such melted paraffin wax being indicated by the reference numeral 17. Any suitable means may be provided for maintaining the paraffin or other coating material in such a condition as to properly coat or impregnate the paper or web of fibrous material passing therethrough, and further it should be understood that any other suitable or desired means of applying the coating to the fibrous material may be employed.

From the roll 15 the web of paper passes between the rolls 20 and 21 which are preferably so mounted or supported that the space between them may be varied as desired, and which in practice are so spaced as to control the thickness of the coating of paraffin wax left on the paper, the excess being squeezed

back between the rolls and returned to the tank 16. From the rolls 20 and 21 the web of paper passes over the rolls 30, 31 and 32 which are adapted for ironing or smoothing the coating of paraffin wax. Preferably these rolls are heated in any suitable manner, as by means of steam. The roll 30 preferably rotates with the paper and at the same surface speed. Rolls 31 and 32 may be held stationary or rotated in a direction either the same or opposed to the direction of travel of the web of paper, as may be desired; it being merely desirable that there be a suitable relative motion between the surfaces of the rolls and the coated paper passing thereover.

Upon leaving the roll 32 the web of paper passes under rolls 40 and 41 mounted in such position in a tank 42 as to cause the paper to pass through a liquid bath. In the embodiment of the invention illustrated this liquid is water; but other suitable liquid adapted to cool and set the wax coating may be used.

As the web of waxed paper emerges from the water bath it passes over drying means for removing from the paper such water as may adhere thereto when the paper leaves the water bath, and for drying the same in order to prevent spotting of the waxed paper which may result if the water is not removed from the paper. And after leaving the drying means the paper passes on to a winding reel which may be of any suitable construction, where it is wound into a roll.

The method of drying waxed paper in accordance with this invention consists in blotting up the globules of water or liquid which may adhere to the surface of the paper after it comes from the water bath, and for practicing this method several mechanisms or means varying in construction and arrangement of parts may be used. Inasmuch as water adheres to both sides of the paper means is provided upon each side of the paper for removing the water therefrom.

One embodiment of such means for drying the paper is illustrated in Fig. 1 wherein is shown two duplicate means, each comprising an endless belt 51 of blotting material which passes over a large guide roll 52 and a small guide roll 53. Each side of the paper

is brought into contact with one of the blotting materials for a sufficient time to enable such blotting materials to take up and remove the globules or film of water from both sides of the paper, and as shown the paper is in contact with the blotting materials while passing over the large guide roll 52. Preferably the belt of blotting material is moved at the surface speed of the web of paper and in the same direction. Suitable means may be provided for maintaining the blotting materials in condition for continuously and effectively absorbing the water from the web of paper, and such means may comprise provisions for drying the blotting material or otherwise removing the water therefrom. As illustrated in Fig. 1, a plurality of conduits 54 are provided which may be connected with a suitable source of drying air, and which conduits are so arranged with reference to the blotting materials that the drying air may be caused to impinge against or pass through the blotting materials to remove water therefrom. Or if desired the conduits 54 may be connected with suitable exhausting means whereby water and moisture is sucked from the blotting materials into the conduits 54 as the blotting materials pass over the conduits.

In Fig. 2 there is illustrated a form of drying mechanism in which the blotting material 70 may be wound from a mandrel 71 onto a mandrel 72, such blotting material passing over a guide roll 52' whereby it is brought into contact with the paper 11 to remove the water therefrom. In this form of the drying means, when the supply of blotting material has been exhausted from the mandrel 71, the machine may be stopped and the mandrels replaced by other mandrels carrying fresh blotting material, or the mandrels 71 and 72 may be reversed so as to reroll the blotting material upon the mandrel 71. In this figure, as in each of the other modifications shown, only one of the drying means is illustrated—it being understood however, that two such means will ordinarily be used as is shown in Fig. 1; but since these two means will be of duplicate construction only one is shown to illustrate the construction.

In Fig. 3 there is shown another form of drying means in which the blotting material is formed as an endless belt 75 passing over the guide rolls 52'', 77 and 78, the blotting material being brought into blotting relationship with the waxed paper as it is passing over the guide roll 52''. In this form of the invention the endless belt of blotting material passes through a drying chamber 79 provided with burners 80, or other suitable arrangements, for heating the blotting material and vaporizing the water therefrom.

Fig. 4 shows a form of drying means resembling that illustrated in Fig. 1, there

being an endless belt of blotting material 82 which passes over guide rolls 52'' and 84, and there being suction nozzles 85 in juxtaposition to the moving belt for sucking or withdrawing the water therefrom as it passes over the suction nozzles. In the form of the drying means shown in Fig. 7 the second guide roll is dispensed with and the blotting material is applied to the large guide roll 87 as a covering, indicated at 88, which is brought into absorbing relationship with the waxed paper 11 as the paper travels over the surface of the guide roll. This form of the invention is also provided with a suction nozzle 89 for withdrawing, by suction, water from the blotting material 88 to maintain the same in blotting or absorbing condition.

In each of the forms of drying means shown in Figs. 5 and 6 there is illustrated a hollow drum or cylinder 91 having perforations or openings 92 in its cylindrical surface, the cylindrical surface of the drum carrying a covering of blotting material 93 which is brought into absorbing relationship with the paper 11 as the drum rotates. These forms of the invention are provided with suction nozzles 94 which may be either external to the cylinder as shown at 95 in Fig. 5, or internal as shown at 96 in Fig. 6. In either case the air is drawn through the blotting material and through the apertures 92 of the cylinder to dry the blotting material. Of course, if desired pressure air may be fed to the nozzles 95 and 96 and forced through the blotting material to accomplish the drying thereof.

The blotting material for blotting up or absorbing the water from the waxed paper may be of any suitable material such as paper, felt or other flexible fibrous material. Such blotting material constitutes in its broadest sense a vehicle or conveyor for taking up and removing the moisture from the web of paper. Although the blotting material has been described generally as consisting of fibrous material, it should be understood that the vehicle or carrier for removing the water is not limited to a fibrous material, but may be of any such construction as will remove the water from the paper by capillary action, or otherwise. One such form of carrier or vehicle for removing water from the paper, and coming within the broad scope of the invention, is illustrated in Fig. 8 wherein the surface of the guide roll consists of a wire or screen 98 of such construction that the globules of water are taken up from the paper by the capillary action of the wire and removed from the paper. The water may be removed from the wire 98 by means of a suction nozzle 99, or it may be blown from the wire by supplying compressed air to the nozzle 99, it being understood that the nozzle 99 may be located on the interior of the roll as desired in a position similar to the nozzle shown in Fig.

6. If the quantity of water which adheres to the paper is not too great, it may be removed from the paper by passing the paper over a roll of plain metal, or other material, and then removed from the roll by suction or pressure means such as described above.

Also the water taken up by the blotting material may be removed therefrom—to a satisfactory degree—by means of squeeze or wringer rolls 100, as shown in Fig. 9. These rolls may be constructed and operated in any conventional manner, as widely used in washing machines, for example.

In the several forms of the invention there have been described and illustrated nozzles or means of supplying drying air under pressure to the blotting material or of applying suction to the blotting material for removing the water, but in every case it should be understood that the nozzles may either be supplied with hot or cold air under pressure for blowing the water out of the blotting material or vaporizing the same, or may be connected with suitable vacuum or suction means for sucking the water out of the blotting material, either as a liquid or as a vapor. Although the invention is herein described and shown as a method and apparatus for blotting water from the web of fibrous material, it should be understood that wherever the term "blotting" or "blotter" is employed in the specification and claims it is intended that such term shall be interpreted broadly to cover any method and apparatus wherein the water is removed from the web by a carrier or medium which removes the water from the web by capillary attraction or otherwise and carries such removed water to a point remote from the web.

While the method herein described, and the form of apparatus for carrying this method into effect, constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to this precise method and form of apparatus, and that changes may be made in either without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. The method of treating paper, or the like, which consists in applying a coating of paraffin to the paper, exposing the coated paper to the action of a liquid, and then removing the surface liquid without marring its surface by blotting the same.

2. A machine for coating paper, or the like, comprising means for applying a coating of paraffin to said paper, means for subjecting the paper to the action of a liquid after the application of the coating material, and blotting means movable with the paper for absorbing liquid from the surface of said paper without marring its surface.

3. In a machine for waxing paper, a dryer comprising a carrier vehicle adapted to ab-

sorb surface liquid from the paper and to carry it to a point remote from the paper, and means for removing liquid from the carrier vehicle at said remote point.

4. In a machine for treating paper or the like, a dryer for removing surface liquid from said paper without marring the surface of the paper comprising a carrier vehicle adapted to receive the liquid from the paper and to carry it to a point remote from the paper, and means for causing relative motion between said carrier and a body of air at said remote point whereby to remove liquid from said carrier.

5. The method of waxing paper which comprises applying a coating of paraffin to a traveling web of paper, conducting the paraffined paper through water, blotting the surface water from both sides of the paper, carrying the water so blotted to a point remote from the traveling paper web, and then removing the water from the blotter, the blotting of the water from both sides of the traveling paper web being carried out simultaneously with the removal of the water from the blotter.

In testimony whereof I hereto affix my signature.

VAN HAMM WILSHIRE.