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METHOD AND DEVICE IN THE MANUFACTURE OF PAPER

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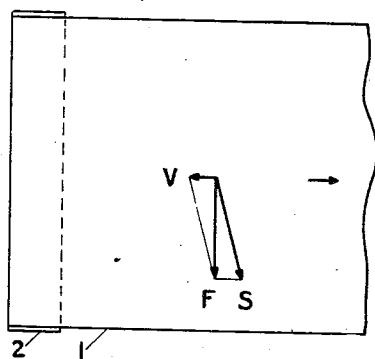


Fig. 1

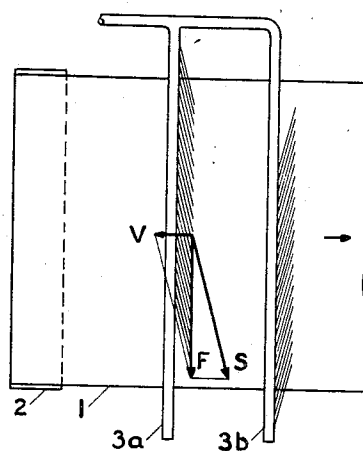


Fig. 2

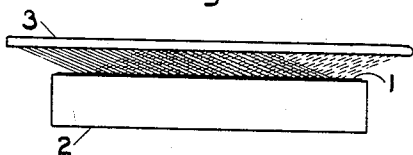


Fig. 4

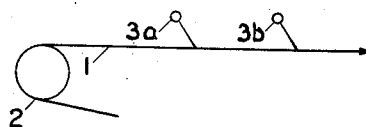


Fig. 3

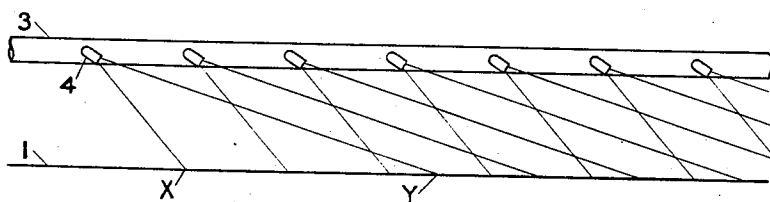


Fig. 5

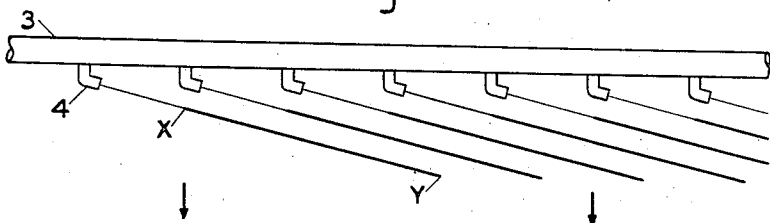


Fig. 6

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METHOD AND DEVICE IN THE MANUFACTURE OF PAPER

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2 Claims. (Cl. 92—38)

The present invention relates to paper making machines of the Fourdrinier type. It is a known fact that the fibres when flowing out on the wire will have a tendency to position themselves with their length direction parallel with the direction of movement of the wire. By such parallel positioning of the fibres the strength of the paper will, of course, be different in different directions thereof.

The invention has for its object to provide means whereby part of the fibres will adjust themselves transversely to the direction of movement of the pulp, thus increasing the "crosswise strength" of the paper. Another object of the invention is to distribute the fibres evenly in the paper.

In accompanying drawing, Figure 1 shows by means of a parallelogram diagrammatically the manner of operation of the present device. Figures 2, 3 and 4 show a fibre distributing device in plan, side and front view respectively. Figures 5 and 6 show in front and plan view a fibre distributing device according to another embodiment of the invention.

In the drawing, 1 denotes the wire-cloth running over the breast roller 2 of the Fourdrinier paper making machine and upon which the fibre suspension flows out. The direction of movement of the wire is indicated by an arrow. In reality, the wire-cloth moves, and a member discharging an outflowing medium, by which the fibres are distributed, is still, but in relation to the wire the discharge member has the direction of movement and the velocity V forming one of the components of a parallelogram of movement, the resultant F of which is approximately perpendicular to the direction of movement of the wire-cloth, and the second component S of which is the movement and velocity of outflowing water or other liquid, steam or vapour, air or gas obliquely directed in relation to the direction of movement of the wire and causing currents in the water intermingled with fibres upon the wire-cloth. The resultant F is the desired direction of movement of said liquid, vapour or gas in relation to the wire-cloth in motion. As V is assumed to be constant on a certain occasion, F can be varied by varying the direction of movement and velocity of S .

The aim of the invention is to produce currents in the liquid on the wire with the direction and velocity F . Thus, the pulp is treated by the liquid, vapour or gas on that portion of the wire where the fibres still are movable in the water. Those fibres that are influenced by the currents thus

produced will adjust themselves so that their longitudinal direction will be substantially parallel with these currents.

The device for producing said currents, according to Figures 2 to 4, comprises one or more sprayer pipes or the like 3a, 3b extending transversely or obliquely above the wire from one side thereof to the other and having each a row of fine outlet openings which may also be formed by a longitudinal, fine outlet slot with oblique thin intermediate walls or guide plates giving the medium the oblique outflow direction desired. By preference, this outlet slot is of such a nature as to cause the liquid or the like to come in contact with the sheet of fibre suspension upon the wire in the form of a substantially homogeneous, thin sheet without interruption. The discharge openings are directed obliquely to the plane of the wire in such a manner that the jets discharged therethrough lie in vertical planes forming an angle to the direction of movement of the wire (see Figure 2). The medium leaves the discharge member 3 with the velocity and direction S . As the direction of movement and the velocity of the discharge member in relation to the wire is V , in the water upon the wire movements are caused by the outflowing medium with the resulting velocity and direction F . The fibres in the range of said movements or currents will tend to adjust or lay themselves in the same direction.

One, two or more discharge members 3 may be arranged. If two such members are provided, their outlet openings may be arranged so that the medium flowing out through one member is directed to one side obliquely to the direction of movement of the wire, and the medium flowing out through the other member is directed to the other side obliquely to the direction of movement of the wire, as shown by Figures 2 and 4.

In the embodiment of Figures 5 and 6 the discharge pipe 3 is provided with a row of discharge nozzles 4 of such a character that the jet or bunch of jets discharged by each nozzle is substantially fan-shaped. Each jet or bunch of jets strikes against the pulp sheet on the wire along a line $x-y$ forming an angle to the direction of movement of the wire, the sheets of jets lying so close together that the whole width of the pulp sheet will be uniformly and efficiently treated by the discharged medium.

I do not desire to confine my invention to the fibre distributing device above described but the details thereof may be varied within the scope of the appended claims.

What I claim is:—

1. A method in the manufacture of paper by a Fourdrinier paper making machine consisting in supplying a mixture of fibres and liquid in the
5 state of a suspension to the wire of the machine, exposing the sheet of fibre suspension on the wire to the action of a flowing medium supplied from an outer source, and giving said medium a so directed movement that in the pulp sheet upon the
10 wire currents are produced in a direction sub-

stantially perpendicular to the lengthwise direction of the wire.

2. In combination with a Fourdrinier paper making machine, a device with a row of discharge openings for a flowing medium above the
5 wire, said openings directed obliquely to the upper surface of the wire so that the jets discharged through the openings lie in vertical planes forming angles to the direction of movement of the wire.

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