Jan. 5, 1926.

1,568,363

J. M. CATHCART

PAPER MAKING MACHINE

Filed May 1, 1924

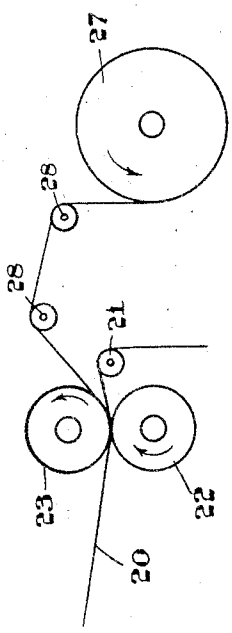


FIG. 2

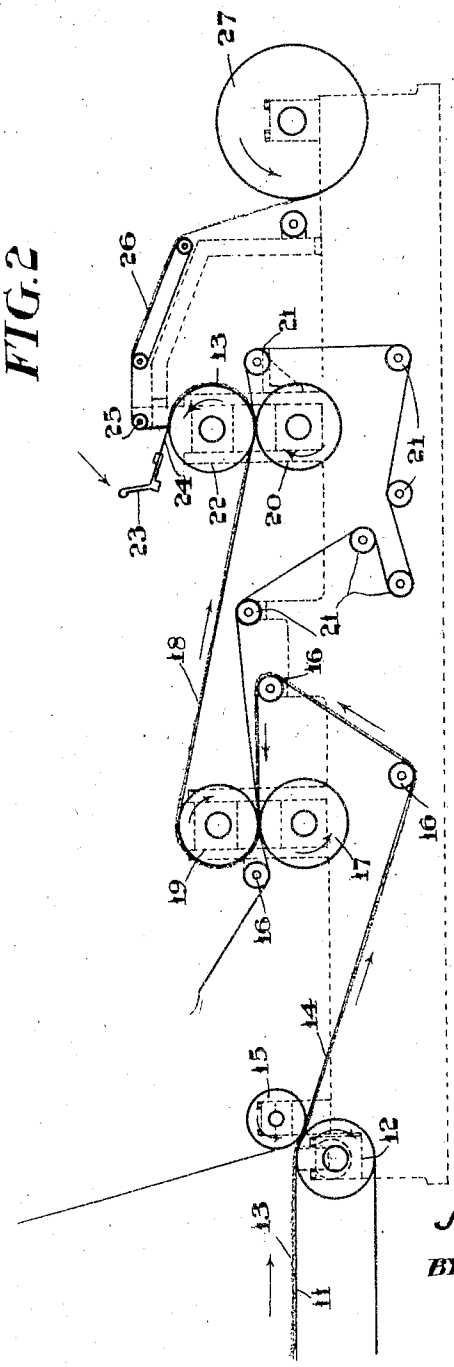


FIG. 1

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UNITED STATES PATENT OFFICE.

JOSEPH M. CATHCART, OF MERRITON, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF TO EDWIN S. CRABTREE, OF MONTREAL, QUEBEC, CANADA.

PAPER-MAKING MACHINE.

Application filed May 1, 1924. Serial No. 710,377.

To all whom it may concern:

Be it known that I, JOSEPH M. CATHCART, a citizen of the United States of America, and resident of Merriton, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a full, clear, and exact description.

This invention relates to new and useful improvements in paper making machines, and is particularly adapted for producing tissue, light weight and newsprint papers at high speeds.

The object of the invention is to provide a high speed paper making machine, in which the paper will not require handling until it is strong and dry enough to allow of same.

Another object is to provide a machine of the character stated, which will be continuous in its action and which will be very easily controlled.

In my invention, I provide a type of paper making machine in which the paper is formed in the usual manner on the wire, and is picked up at the couch rolls by the first felt which passes between them. This felt, with the paper adhering thereto, goes underneath and through the first press, which runs back towards the couch rolls, thereby turning the paper over before reaching the first press. The second felt meets the first felt at this point and the two felts go through the first press with the paper between them. The press action here causes the web of paper to leave the first felt and adhere to the second felt, which carries the paper through the second press. From here, the operation is as usual, the sheet going direct to the dryers or through more presses if desired before going to the dryers. For crêping the paper, which action is done on the press doctor, a travelling felt is used to support the sheet, so that the pull will be slight and the crêpe effect left intact.

In the drawings;—

Fig. 1 is a diagrammatic elevation of my improved paper making machine with crêping doctor,

Fig. 2 is a diagrammatic elevation of a part of the above machine with the crêping means detached.

Referring more particularly to the drawings, 11 designates the wire of an ordinary paper making machine, and 12 the couch roll or suction roll, around which the wire travels. The stock sheet or pulp 13 may be fed to the wire in any suitable manner well known in the art. An endless felt 14 is provided and mounted on top couch roll 15, guide rolls 16 and the bottom press rolls 17. The top couch roll is placed in close proximity to the suction roll 12, so that the paper stock 13 will pass between the wire 11 and the felt 14, which will pick up the stock and carry it towards the first press roll 17, guide rolls being provided for the felt, which runs in such a manner that the stock is turned over before reaching said press roll. A second endless felt 18 is provided and is adapted to pass partially around the top roll 19 of the first press roll and in contact with the second press roll 20 and the guide rolls 21. The stock or paper sheet 13 is adapted to pass between the rolls 17 and 19 and the felts 14 and 18. The felt 18 picks up the sheet and carries it towards the bottom roll 20 of the second press. The paper sheet 13 may then pass partially around the upper roll 22 of the second press and, as shown in Figure 1 where crêpe paper is the type of paper required, a crêpe doctor 23 may be fitted, the edge 24 of which engages with the surface of the top roll 22. The crêped paper is then led over the guide pulley 25 and the travelling endless felt 26 to the drying roll 27. The endless felt 26 is provided to support the paper in its passage from the guide roller 25 to the drying roll, so that the weight of the paper sheet will not pull out or stretch the work done by the crêpe doctor. In Figure 2, where ordinary paper is being manufactured, the paper is led directly over the pulleys 28 to the drying roll 27. The arrangements are diagrammatically shown and variations, such as putting in additional felts and presses, or fitting a suction device in roll 15, may be made without departing from the spirit of the invention.

The operation of the device is as follows;—The direction of the travel of the paper sheet is shown by arrows, so that the operation may be very easily followed. Stock is carried on to the travelling wire of the machine and is carried forward toward the upper couch roll, around which the

first felt passes. The felt is situated in close proximity to the suction roll and the paper is pressed between the wire and the first felt, to which it adheres, and is carried forward and upward, and then again backward toward the first press rolls, the paper being turned over in this operation. Any of the couch rolls 12 or 15 may be fitted with suction boxes to assist in abstracting water from the sheet. The paper then passes through between the felts mounted on the rolls of this first press and the second felt picks up the sheet and carries it towards the second press, the upper roll of which picks up the paper from the second felt and passes it over the guide rolls to the drying roll, or in the case of crêpe paper, the upper roll of the second press carries the paper around until it comes in contact with the crêpe doctor, which guides it over guide rolls and a travelling felt to the drying roll. The rolls may be connected in the usual manner and controlled from one point. It will be noticed that no part of the paper is unsupported until it passes through the second press and then is dry and strong enough to support itself. The press rolls may be of any of the standard types, grooved, rubber covered, metal or granite, according to the class of paper being manufactured.

Having thus described my invention, what I claim is;—

In a paper making machine, an endless travelling wire, a suction roll around which the wire travels, a couch roll, a primary press, a secondary press, a primary felt between the couch roll and the primary press, said felt being adapted to contact with the wire at the couch roll and pick up the paper directly therefrom, means for guiding the primary felt, a secondary felt between the primary and secondary presses adapted to contact with the primary felt at the primary press and pick up the paper sheet directly from the primary press, means for guiding the secondary felt between the primary and secondary presses, means situated at the secondary press for crêping the paper, a drying roll, and an endless conveyor positioned between the crêping means and the drying roll to support the paper in its passage between them.

In witness whereof, I have hereunto set my hand.

JOSEPH M. CATHCART.