

No. 608,849.

Patented Aug. 9, 1898.

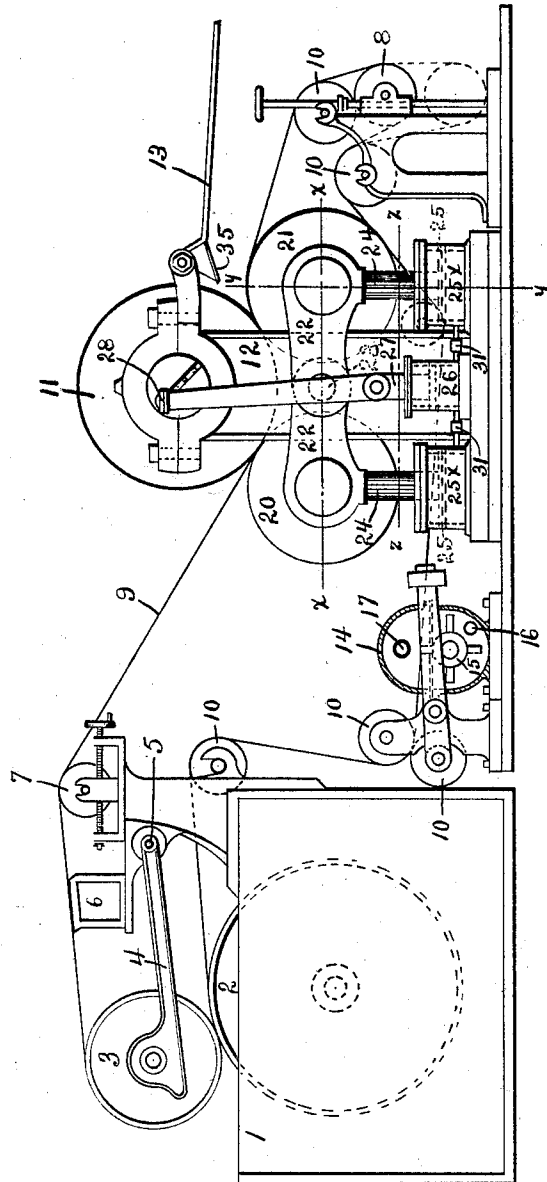
B. EILERS.
PAPER MACHINE.

(Application filed Jan. 4, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses.

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Fig. 2.

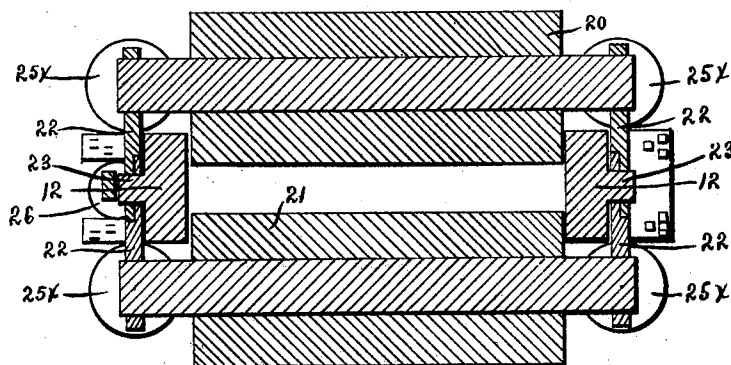


Fig. 3.

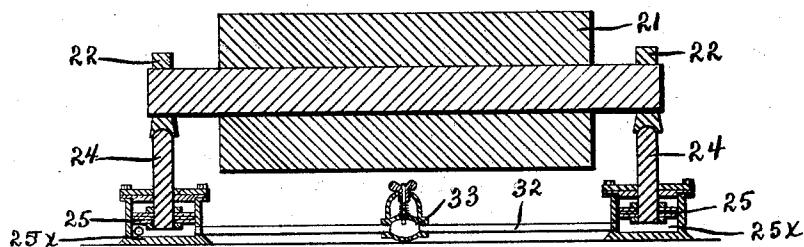
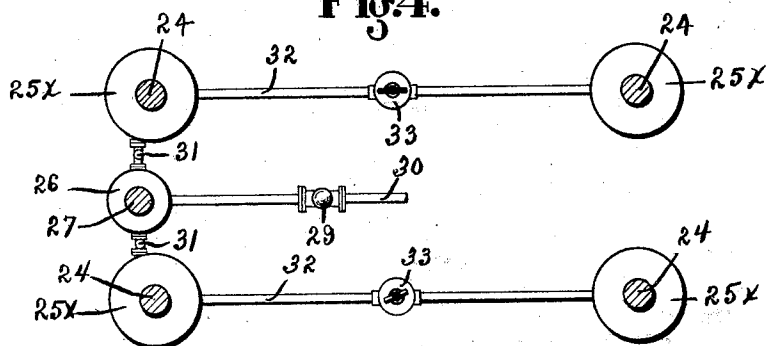


Fig. 4.



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UNITED STATES PATENT OFFICE.

BERNERD EILERS, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO
WILLIAM A. MURPHY, OF SAME PLACE.

PAPER-MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,849, dated August 9, 1898.

Application filed January 4, 1897. Serial No. 617,908. (No model.)

To all whom it may concern:

Be it known that I, BERNERD EILERS, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Paper-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to that class of paper-machines in which the wet paper-pulp deposited on a felt apron is wound around a cylinder in successive layers and the water expressed therefrom; and it has for its object to improve the construction and operation of such a machine, whereby the moisture is expressed from the pulp in a more thorough manner and a uniform layer of pulp is deposited upon the receiving-roller and there is no liability of damaging the pulp-carrying apron; and to these ends the invention consists in certain improved means of supporting and operating the expressing-rollers and other details of construction hereinafter specifically described, the novel features being pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a side elevation of a paper-machine embodying my improvements; Fig. 2, a horizontal sectional view on the line *xx* of Fig. 1; Fig. 3, a vertical sectional view on the line *yy* of Fig. 1; Fig. 4, a sectional view on the line *zz* of Fig. 1.

Similar reference-numerals indicate similar parts.

1 indicates the usual pulp-vat, in which is arranged the making-cylinder or mold-roll 2; 3, the couch-rolls, supported on arms 4, pivoted at 5; 6, the suction-box; 7 and 8, adjustable tension-rollers for the felt apron 9, and 10 the wringer-rolls for expressing moisture from the apron after washing. 11 indicates the usual pulp-receiving roller, preferably constructed of wood, journaled in suitable bearings in the frame 12, and upon which roller a web of pulp from the apron 9 is deposited, and 13 a counterweighted knife for severing the pulp on the roller when a suffi-

cient quantity has been wound thereon. All of these parts are of the usual or any preferred construction and in themselves form no part of my present invention.

Located preferably in proximity to the tank 1 is an apron-cleansing device for cleansing the apron or felt of pulp before it reenters the tank, said device embodying a casing 14, having slots or apertures at the end through which the apron passes, and a rotary beater 15, operating therein and contacting with the outer surface of the felt as it passes through it. The casing is provided at the bottom with a valve 16 and at the top with a water-pipe 17, so that when the valve 16 is opened water may be passed directly through the apron, or when closed the casing may contain a soap-and-water or other solution for cleansing or treating the apron. I employ in connection with the single roller 11 above the apron two pressing-rollers 20 21 beneath it and with both of which it coöperates, the first roller 20 serving to squeeze and remove the majority of the moisture from the pulp and the second one to remove all or nearly all of the remainder, and at the same time to consolidate the pulp on said roller, and by this means I obtain double the amount of pressure upon the pulp while on the receiving-roller without subjecting the felt to too severe a pressure at one time. The rollers 20 and 21 are mounted in the outer free ends of arms 22, pivoted on suitable journals 23 on the frame, said arms being pressed upward by hydraulic devices embodying rams or rods 24, having pistons 25 thereon operating in cylinders 25^x, arranged on the base of the machine and supplied with water from a pump 26 or otherwise. The pump in the present instance is arranged on the base of the frame 12, and the plunger 27 thereof is actuated from a wrist-pin 28, adjustable on the shaft of the roller 11. Suitable check-valves 29 are arranged in the supply-pipe to the pump and check-valves 31 between the pump and hydraulic cylinder. The cylinders 25^x of each of the rollers are connected by pipe 32, in which are located adjustable relief or safety valves 33, so that the pressure at each end of the rolls is equalized and may be regulated for each roll separately as desired.

From the above the operation of the machine will be understood, the pulp received by the felt being wound on the receiving-roller 11 until a sufficient amount has accumulated, when the band is cut by the knife 35 and removed at the rear of the machine. The arrangement of the rollers insures the removal of the pulp in a comparatively dry state, as when the layer is cut the pressure between rollers 11 and 20 will cause part of the moisture to be squeezed out and that between rollers 11 and 21 nearly all the remainder without subjecting the pulp again to the action of a wet apron or to fresh wet pulp.

Of course more than two rollers could be employed around the roller 11, but two, as shown, are sufficient.

The employment of the pump on the base of the machine actuated from the pulp-receiving roller brings all the operating parts into one structure, and the adjustable relief-valves equalize and control the pressure as desired and further enable the pressure exerted by each pressing-roller to be regulated independently by the adjustment of the relief-valves 33.

I claim as my invention—

1. In a paper-machine, the combination with the main frame, and the pulp-receiving roller journaled therein, and the apron, of two pressing-rollers arranged below and at the sides of the receiving-roller and cooperating therewith, a pair of pivoted supporting-arms

for each of the lower rollers, a cylinder, and a piston operating therein, cooperating with each arm, pipe connections between the cylinders operating on the same rollers, and means for supplying fluid under pressure to the cylinders.

2. In a paper-machine, the combination with the pulp-apron 9, of the main frame, the pulp-receiving roller 11 journaled in the upper portion thereof, the arms 22 pivoted on the frame, and the pressing-rollers 20 at the free ends of the arms cooperating with the roller 11, the pump mounted on the main frame, the piston thereof connected to a wrist-pin on the shaft of the roller 11, hydraulic pressing devices operating on the arms 22 connected with the pulp-cylinder, and adjusting-valves for regulating the pressure.

3. In a paper-machine, the combination with the main frame, the pulp-apron 9, the receiving-roller 11, the pressing-rollers 20 and 21, hydraulic cylinders operating to press the rollers 20 and 21 toward the receiving-roller, a single supply-pump for said cylinder, and separate pipe connections between the pump and the cylinders of the two movable pressing-rollers, and means for independently regulating the pressure on the cylinder of each pressing-roll, substantially as described.

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Witnesses:

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