

J. A. DECKER & J. GOEBEL.

APPARATUS FOR REGULATING THE CONSISTENCY OF WOOD PULP.

No. 449,251.

Patented Mar. 31, 1891.

Fig. 1

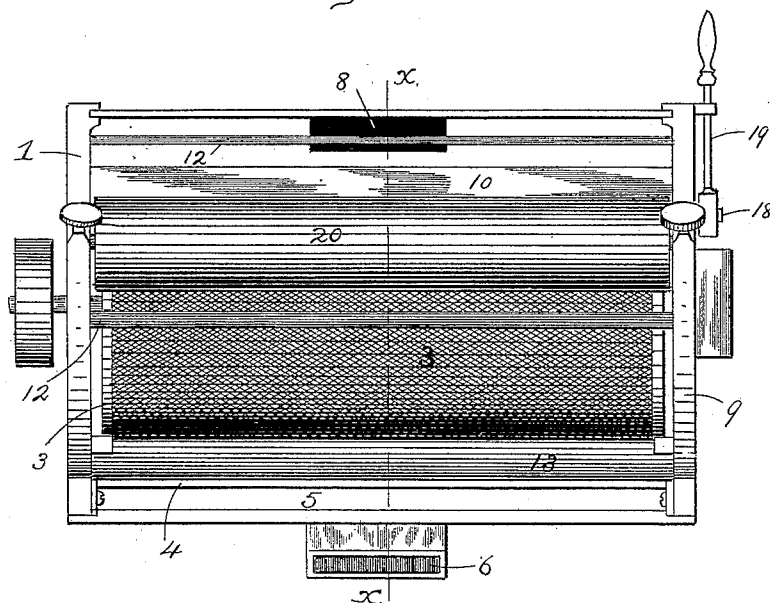
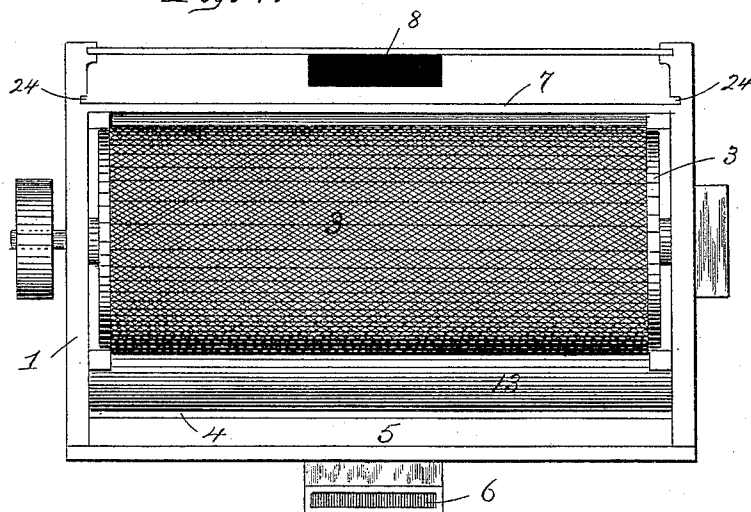


Fig. 4.



Witnesses.

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(No Model.)

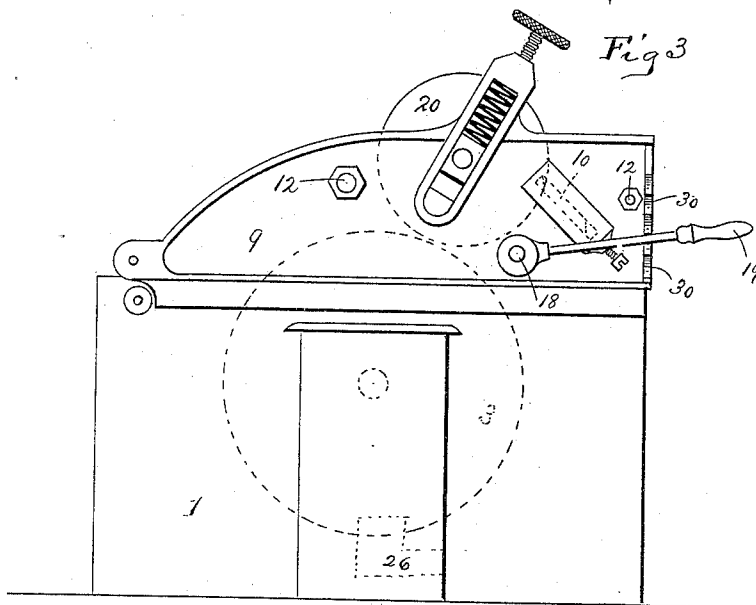
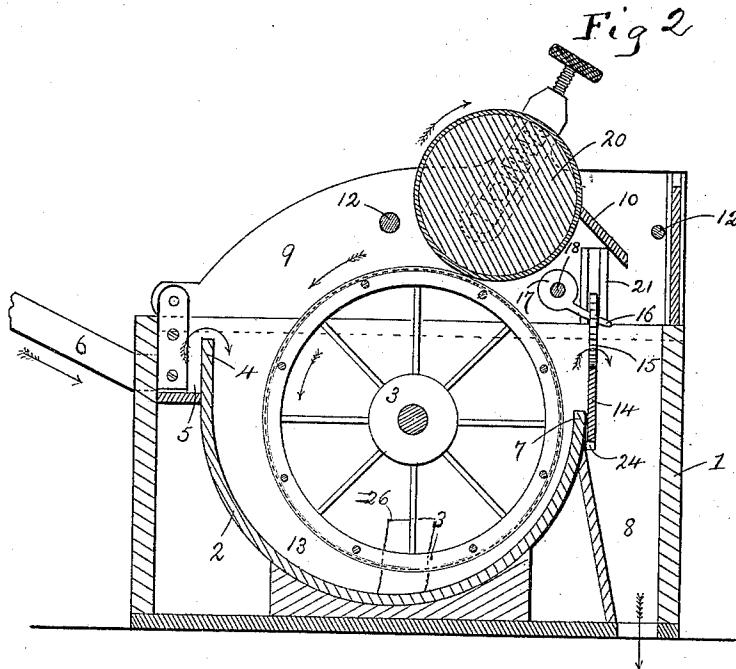
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UNITED STATES PATENT OFFICE.

JOHN A. DECKER AND JOHN GOEBEL, OF BERLIN FALLS, NEW HAMPSHIRE;
SAID DECKER ASSIGNOR TO CLARA L. DECKER.

APPARATUS FOR REGULATING THE CONSISTENCY OF WOOD PULP.

SPECIFICATION forming part of Letters Patent No. 449,251, dated March 31, 1891.

Application filed August 22, 1889. Serial No. 321,621. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. DECKER and JOHN GOEBEL, citizens of the United States, residing at Berlin Falls, in the county of Coos and State of New Hampshire, have invented certain new and useful Improvements in Apparatus for Regulating the Consistency of Wood Pulp; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for regulating the consistency of wood pulp. In the production and manufacture of paper, particularly "news," so called, a large proportion of what is termed "mechanical pulp" is employed.

Our invention relates to and is embodied in a machine by which the proper percentage of liquid or water employed in the wet grinding process for producing wood pulp is to be extracted. This machine is especially adapted for use in places where a pulp and paper mill are combined, as it is found to be best to take the pulp directly from the wood-pulp machine and deliver it to the beating-engine in the proper consistency—that is, a certain amount of water must be extracted therefrom prior to such introduction and mixture with the hard stock in the beating or grinding engines. To extract this superfluous water, which may vary more or less, according to circumstances, is the object of our invention.

The said invention consists in the construction and combinations of parts, as hereinafter more particularly set forth and claimed.

In the drawings, Figure 1 is a plan of a machine embodying our invention, and Fig. 2 a vertical transverse section on line *xx* of Fig. 1. Fig. 3 is an end view of the said machine, showing the lever for operating the movable dam. Fig. 4 is a plan with the pivotal frame and the operating parts mounted therein thrown back from off the vat and its cylinder.

In said drawings, 1 represents a rectangular water-tight receptacle, which contains or

forms a vat 2, preferably semicircular in cross-section or approximating in shape to a portion of a cylinder. A cylinder 3 is eccentrically placed therein in most instances, and is open at both ends, which are encircled by packing-rings 25. The periphery of the latter is covered with fine wire-cloth. Within this vat and extending its entire length along the feed or delivery edge 4 is placed a trough 5. This part of the vat is termed the "feed side," since it is here the pulp mixed with water and coming from the wood-pulp machine (not shown) is delivered by the spout 6 into the trough 5, whence it flows over the edge 4 of the vat. This edge of the vat is located in a horizontal plane somewhat above the opposite or discharge side 7 of the vat, for purposes hereinafter specified. Said discharge side is adapted to deliver into a spout 8, which may connect directly with the beating-engines or lead to a stuff-chest or other suitable repository. Each open end of the cylinder is in proximity to an outlet-passage 26 through the frame.

The cylinder is to be continuously revolved by a pulley and some prime motor when the machine is in operation to prevent the pulp from packing against the periphery, and thereby prevent a proper discharge of water.

Surmounting the receptacle 1 is pivotally mounted a swinging frame 9, with twin end castings or standards, in which is journaled a couch-roll 20, the latter co-operating with the cylinder to remove such few particles as stick to the periphery of the latter, and which do not pass from the vat by way of the discharge side. Said roll is spring-mounted and is cleansed or freed from such wood pulp as it collects from the cylinder by means of a doctor or scraper 10, aligned above and over the discharge-spout 8 in such manner that this pulp as it is removed from the surface of the couch-roll drops into said spout 8 and again joins the mass of wood pulp and water discharging through the latter. Connecting-rods or stay-bolts 12 unite said castings and keep the couch-roll in place.

From the above arrangement it is evident that wood pulp, with an excessive amount of water from the wood-pulp machine, is continuously delivered by way of the spout 6 to the

trough or receiver 5, whence it flows over the delivery side 4 of the vat for its entire length, flows through and fills the vat or that part marked 13, which is formed by the bottom of said vat and the perforated periphery of the cylinder adjacent, and thence passes over the discharge side 7 of said vat and is delivered into the spout 8. During its passage through the vat a certain amount of water escapes through the wire-cloth which covers the cylinder; but such amount would be constant unless some steps were taken to provide for a variable area of wetted surface of the cylinder.

It is obvious that with a given amount of wetted surface—that is, when the discharge side of the vat is in a fixed or predetermined plane—the amount of water extracted in a given unit of time must be substantially a fixed quantity; but by creating a movable gate or dam the wetted surface of the cylinder may be made much greater. As a consequence, more water is extracted and the consistency of the wood pulp is increased. Diminution of the wetted surface produces just the opposite effect—that is, the consistency of the wood pulp is reduced or made thinner, since less water is extracted.

We have shown a metallic plate 14 vertically positioned and provided with ears 15 at each end, which are pierced to receive two prongs 16, formed on collars 17. The latter are mounted upon a rod 18 and operated by a lever 19. This lever is to engage in slots or notches 30 to hold the dam fixed in any desired position. Guides 21, cast in the end standards of the frame 9, serve to direct the dam in vertical paths of movement and steady it relatively to the discharge side of the vat. Fur-

ther, to prevent the water charged with wood pulp from flowing around the ends of the dam vertical cuts 24 are made in the ends of the vat and receive the extremities of the plate 14 moving therein.

What we desire to claim is—

1. The combination, with a receptacle 1, a vat 2, a wire-cloth-covered revoluble cylinder 3, a delivery side 4, feed-trough 5, connected to said vat by said delivery side, a discharge side 7, and an emptying-spout 8, united to said vat thereby, of a movable gate 14, its rocking shaft 18, and the lever 19, by which adjustment of said gate is effected, substantially as set forth.

2. The receptacle 1, a vat 2, a foraminous revoluble cylinder 3, and feed and discharge spouts connecting with opposite sides of said vat, in combination with the movable gate 14, its guides 21, the lever 19, and the actuating-rod 18, having prongs 16, which engage said gate, said lever holding the gate in any position to change the horizontal plane of discharge, substantially as set forth.

3. In combination with a vat and a wire cylinder revolving therein, a spout 8, a pivotal frame 9, a couch-roll 20, supported by said frame in contact with said cylinder, and a doctor 10 upon the rear side of said cylinder, discharging any pulp received into the spout 8, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN A. DECKER.
JOHN GOEBEL.

Witnesses:

H. WARREN JOHNSON,
R. H. CHAMBERLIN.