No. 753,038. PATENTED FEB. 23, 1904.

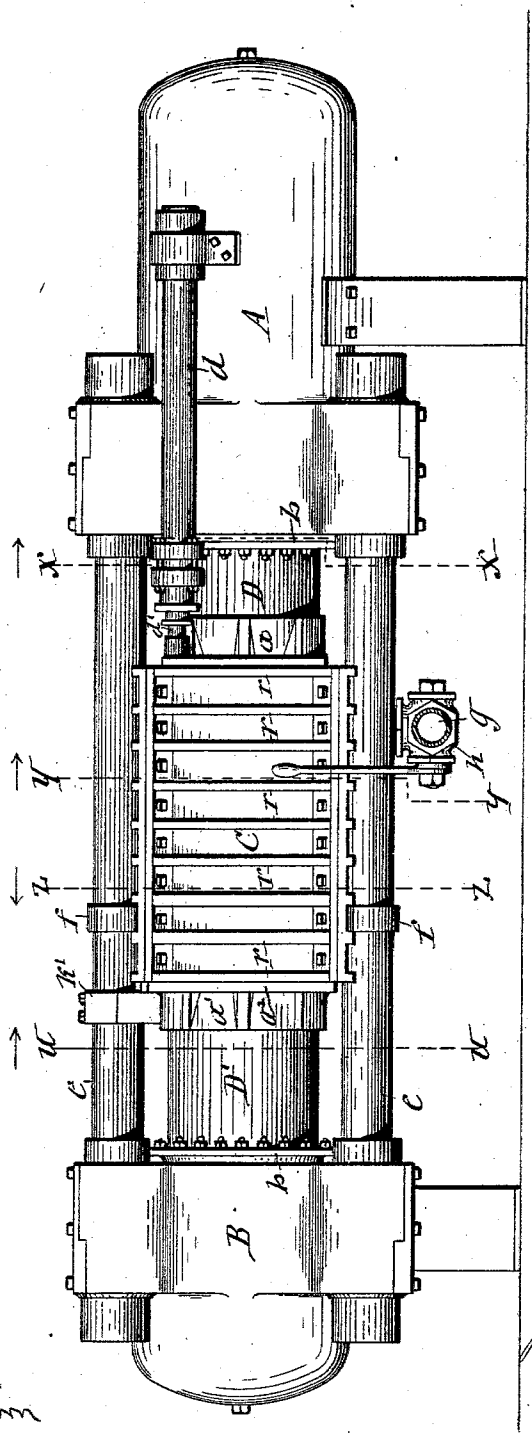
R. E. BOSCHERT.

WOOD PULP PRESS.

APPLICATION FILED MAY 14, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1



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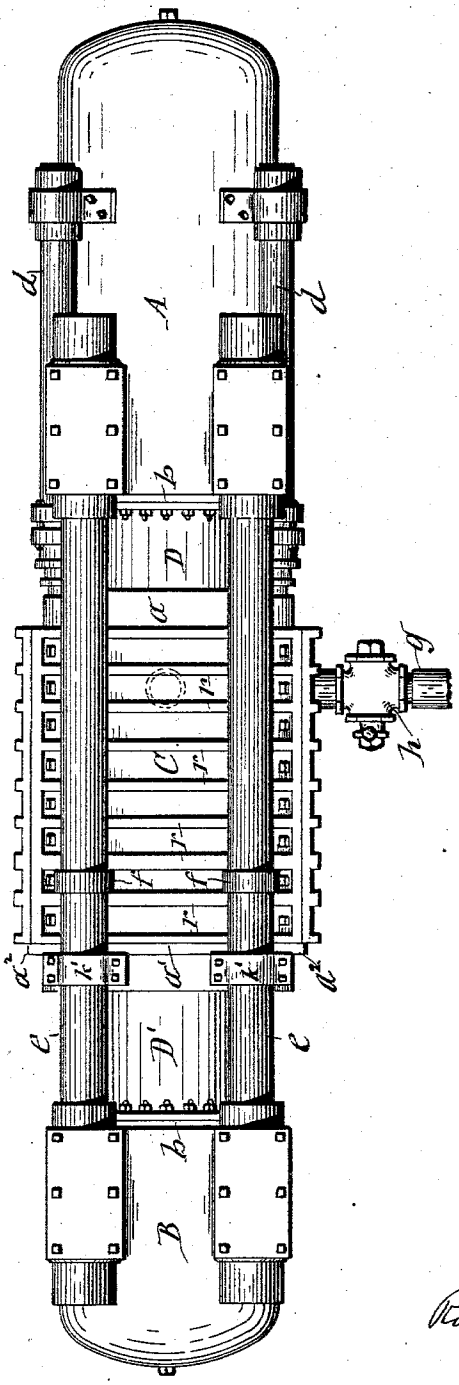
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NO MODEL. 4 SHEETS—SHEET 2.

Fig. 2



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NO MODEL. 4 SHEETS—SHEET 3.

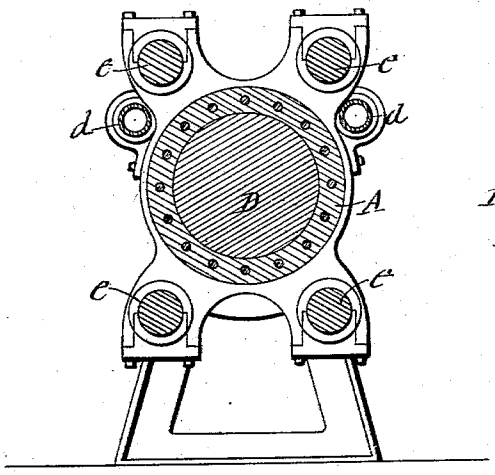


Fig. 3

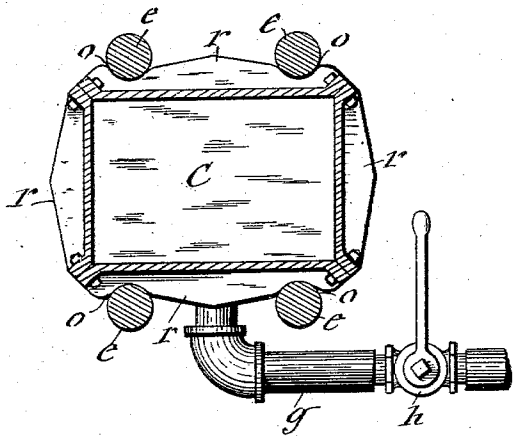


Fig. 4

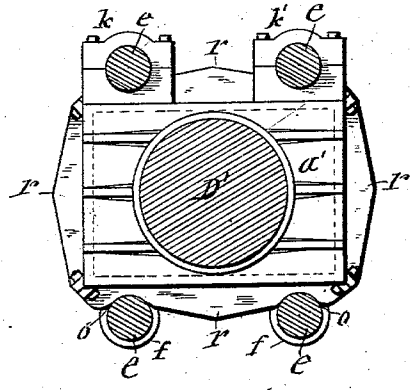


Fig. 6

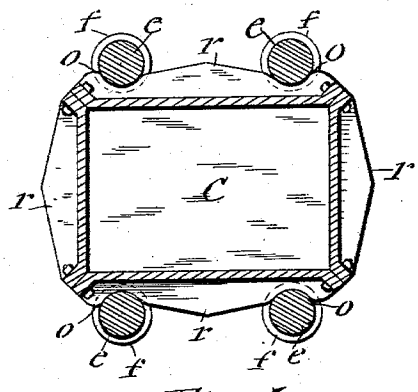


Fig. 5

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APPLICATION FILED MAY 14, 1903.

NO MODEL. 4 SHEETS—SHEET 4.



Fig. 7

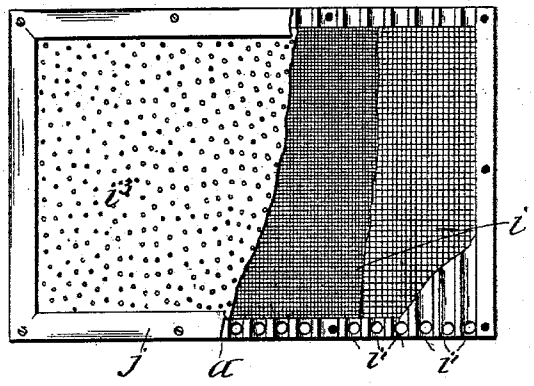


Fig. 8

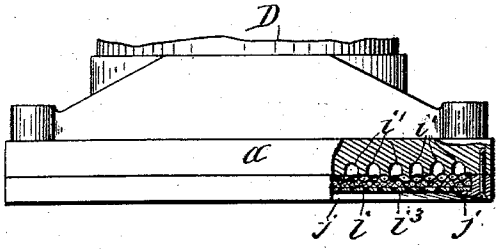


Fig. 9

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No. 753,038. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

RUFUS E. BOSCHERT, OF SYRACUSE, NEW YORK.

WOOD-PULP PRESS.

SPECIFICATION forming part of Letters Patent No. 753,038, dated February 23, 1904.

Application filed May 14, 1903. Serial No. 157,050. (No model.)

To all whom it may concern:

Be it known that I, RUFUS E. BOSCHERT, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Wood-Pulp Presses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of machines which are employed for converting moist or semiliquid substances into sheets or cakes by expressing the liquid from said substances.

The main object of the invention is to provide a machine which shall occupy minimum floor-space and shall afford simple and convenient means for expeditiously removing the compressed substance from the press-chamber.

My invention is more particularly designed for treating fluid or semifluid wood-pulp; and it consists in the novel construction and combination of the component parts of the machine, as hereinafter described, and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, and 6 are transverse sections on lines X X, Y Y, Z Z, and U U, respectively, in Fig. 1. Fig. 7 is a longitudinal sectional view of one of the cylinders containing the pistons which retract the follower in the press-chamber, and Figs. 8 and 9 are enlarged face and top views of the strainer with parts broken away.

Similar letters of reference indicate corresponding parts.

A and B represent two cylinders of ordinary construction for hydraulic or hydrostatic pressure. They are placed axially in line with each other and firmly tied together by means of stout rods or bars *e e*, which serve to hold said cylinders at a uniform distance apart. Between said cylinders and in line therewith is the press-chamber C, which is formed with parallel imperforate sides and open ends and has connected to it the pulp-induction pipe *g*, which is provided with a suitable valve or cock *h* for controlling the flow of the pulp from the elevated tank of the pulp-mill. In case the pulp to be treated is in a semifluid condition or of such a consistency that it cannot readily flow through the pipe, the chamber C is to be provided with a suitable door or gate through which to introduce said pulp. The said press-chamber may be of any desired shape and size in cross-section uniform throughout its length. I preferably form said chamber of cast metal braced by stout ribs *r r*, formed on the exterior of said chamber. The ribs *r r* are formed with saddles *o o*, by which the chamber C is supported on the rods *e e*. The saddles partly embrace said rods, so as to prevent lateral movement of the chamber.

To prevent longitudinal movement of the press-chamber C, the rods *e e* have rigidly attached to them collars *f f*, which abut against the sides of two adjacent ribs *r r*. However, other means may be provided for that purpose.

The two cylinders A B are provided, respectively, with plungers or pistons D D′, which project from the cylinders toward the adjacent ends of the press-chamber C. Suitable packings *b* are provided to form water-tight joints around the pistons in the usual manner. To the piston D is attached a follower *a*, which is shaped to fit closely to the interior of the press-chamber, in which it moves longitudinally during the operation of the machine. At the opposite end of the press-chamber is an abutting head *a′*, entering the press-chamber a short distance and provided with flanges a^2 engaging the end face of the press-chamber C, so as to close said end of the chamber during the process of expressing the liquid from the pulp contained in the press-chamber. This abutting head is attached to the piston D′, by means of which it is carried to and from the end of the press-chamber. The said follower and abutting head are each provided with vertical grooves *i′ i′* in the side facing the chamber C, which grooves communicate with suitable outlets for the liquid expressed from the pulp in said chamber. Over the said grooved face is placed a suitable strainer *i*, preferably formed of one or more sheets of coarse wire cloth or netting placed adjacent to said grooved face, a finer wire-cloth placed upon the coarser, and a still finer

wire-cloth or finely-perforated brass-plate i^3 forms the surface which comes in contact with the semiliquid pulp. Said strainers are seated in recesses in the faces of the follower a and abutting head a' and confined therein by means of frames j, placed on the margins of the exteriors of the strainers and suitably attached to the follower and press-head. The abutting head a' is provided with boxes k' k', riding on the rods e e, which are parallel with the side walls of the chamber C and serve to more positively guide the head a' in line with the movement of the follower.

d d represent supplemental cylinders attached to the main cylinder A and disposed axially parallel therewith. These supplemental cylinders are also constructed for hydraulic or hydrostatic pressure and have their pistons d' d' connected to the follower a for the purpose of retracting said follower after the completion of the process of expressing the liquid from the pulp in the press-chamber C. The ends of the cylinders d d farthest from the press-chamber are open to permit free retrograde movement of the pistons d' d'.

Suitable valves are provided for operating the main cylinders A B and the supplemental cylinders d d in the usual way.

The operation of my improved wood-pulp press is as follows: Water under pressure having been admitted into the cylinder B causes the piston D' to force the abutting head a' against the end of the press-chamber to close said end. The cylinder A at the opposite end of the press-chamber having been released from pressure and the cylinders d' d' charged with water-pressure causes the follower a to be retracted in the press-chamber, thus leaving the chamber C in condition for receiving the semifluid pulp to be treated therein. The fluid or semifluid pulp is then introduced into the press-chamber, and when this is properly charged the pulp-inlet is closed. The water-pressure is then admitted into the main cylinder A, the supplemental cylinders d d having been relieved from such pressure, while the water-pressure is maintained in the cylinder B to keep the press-chamber closed. The pressure applied to the piston D of the cylinder A forces the follower a inward in the press-chamber and compresses the pulp, so as to expel the liquid therefrom and convert it into a comparatively dry sheet or cake. After this is accomplished the cylinder B is relieved from water-pressure, thus allowing the abutting head to yield to the pressure of the pulp and to be forced from the end of the press-chamber by a secondary inward pressure applied to the follower, which pushes both the compressed pulp and abutting head a' simultaneously from the press-chamber. The imperforate walls of the press-chamber are essential in my invention, inasmuch as they allow the compressed pulp to freely slide out of the end of the press-chamber without tearing or roughening the edges of said pulp. After this has been accomplished the piston D, with the follower a, is retracted, leaving the sheet or cake of pulp free to be removed from the machine and the abutting head to be simultaneously reseated on the press-chamber by water-pressure, as before. The piston D having at the same time been completely retracted in the cylinder A by the pistons of the supplemental cylinders d d leaves the machine in condition to operate on another supply of fluid or semifluid pulp. I do not, however, limit myself to employing hydraulic or hydrostatic power for operating the press, inasmuch as the follower a and the abutting head a' may be operated by either a screw, levers, cams, or other suitable mechanical power. The salient feature of the operation of said follower a and abutting head a' in the open-ended press-chamber is the convenient and expeditious discharge of the pressed pulp therefrom.

What I claim as my invention is—

1. The combination with the press-chamber and follower, of a head closing one end of said chamber, means for pressing the head to its closed position, means for releasing said head from said pressure, and means for applying pressure to the follower and thereby force the released head and compressed material simultaneously from the press-chamber.

2. A wood-pulp press provided with the pressing-follower in one end of the press-chamber, an abutting head closing the opposite end of said chamber and sustained movably in a line parallel with the axis of the follower and to a remote position from the press-chamber, and means for forcing the follower inward and simultaneously forcing the compressed pulp and abutting head from the press-chamber by the pressure of the follower as set forth.

3. The improved wood-pulp press consisting of a press-chamber formed with imperforate sides and open ends, an abutting head movable to and from one end of said chamber, a strainer on the inner face of said abutting head, means for forcing said head to the press-chamber, a main cylinder facing the opposite end of the press-chamber, a follower in said press-chamber forced inward by the piston of said main cylinder and receiving a secondary inward movement to force the compressed pulp and abutting head from the press-chamber, supplemental cylinders disposed parallel with said main cylinder, and pistons in the supplemental cylinders actuated reverse from the piston of the main cylinder and connected to the follower to retract the same, all constructed and combined to operate in the manner set forth.

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