No. 740,168. PATENTED SEPT. 29, 1903.

J. NEUERT.

ROTARY PRESS.

APPLICATION FILED MAR. 25, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

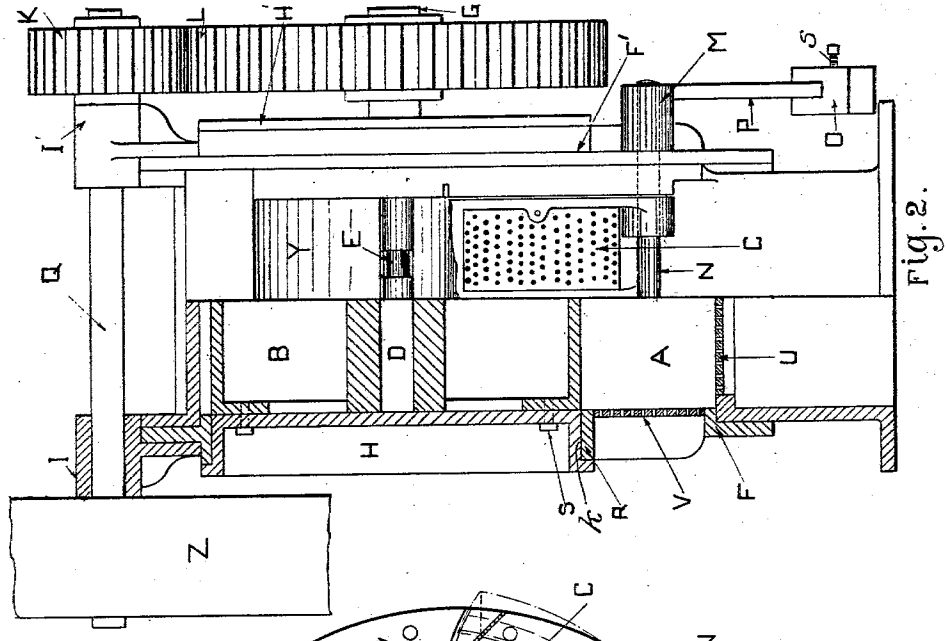


Fig. 2.

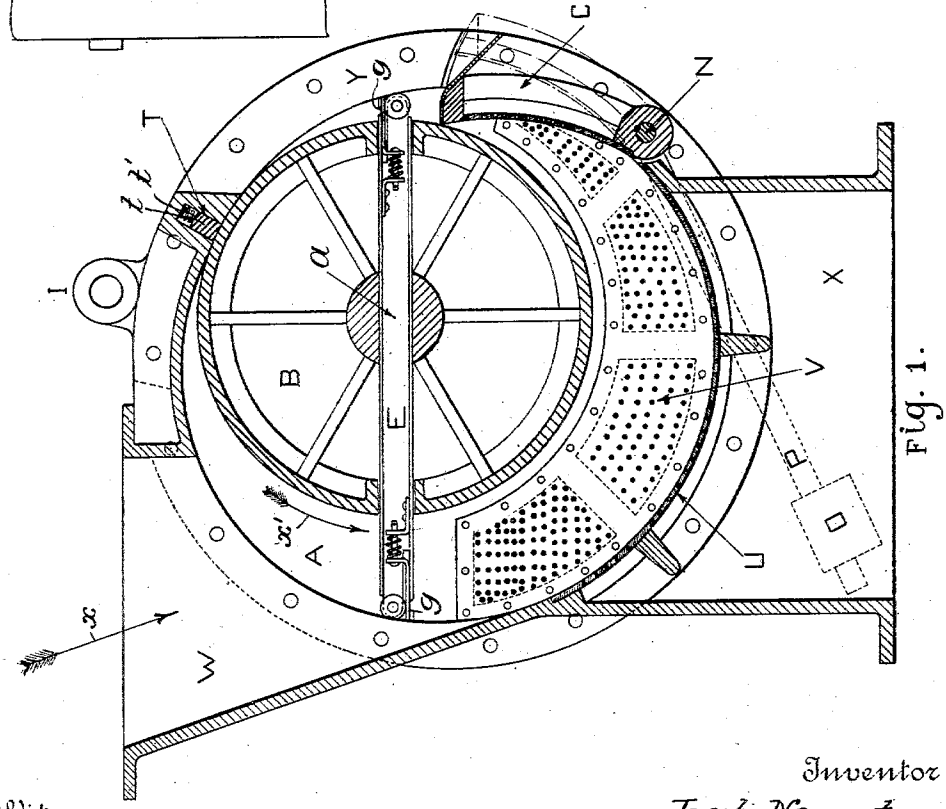


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 3 SHEETS—SHEET 2.

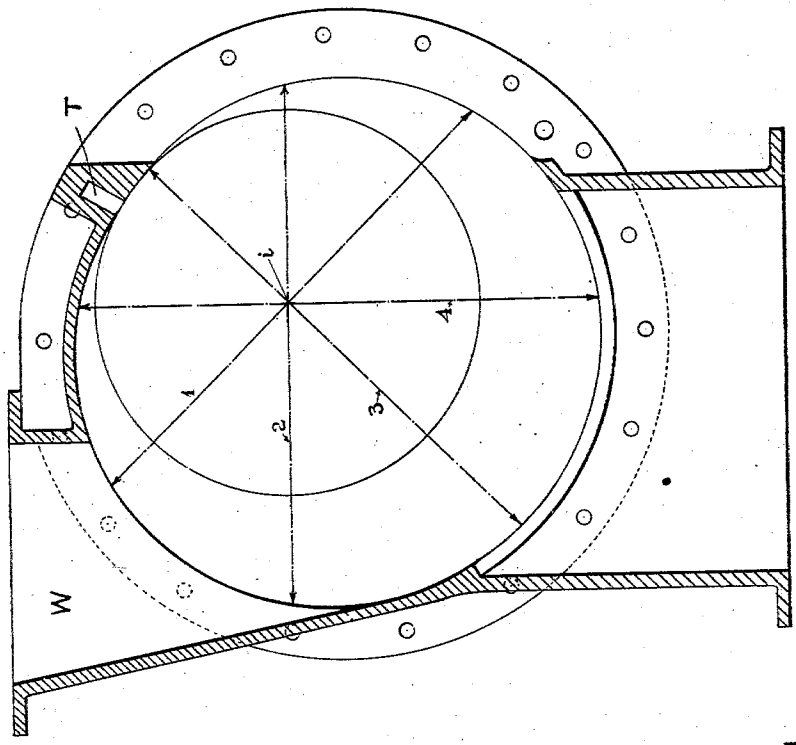


Fig 5.

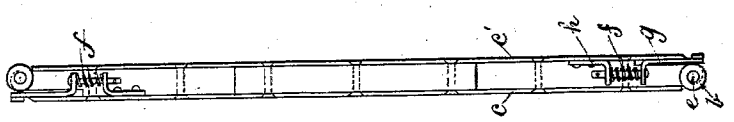


Fig. 4.

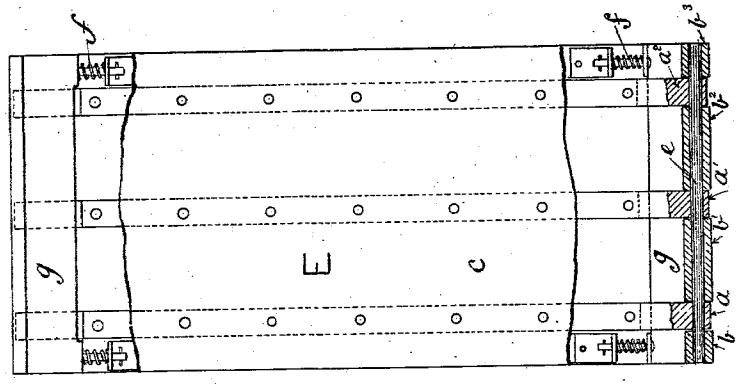


Fig. 3.

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NO MODEL. 3 SHEETS—SHEET 3.

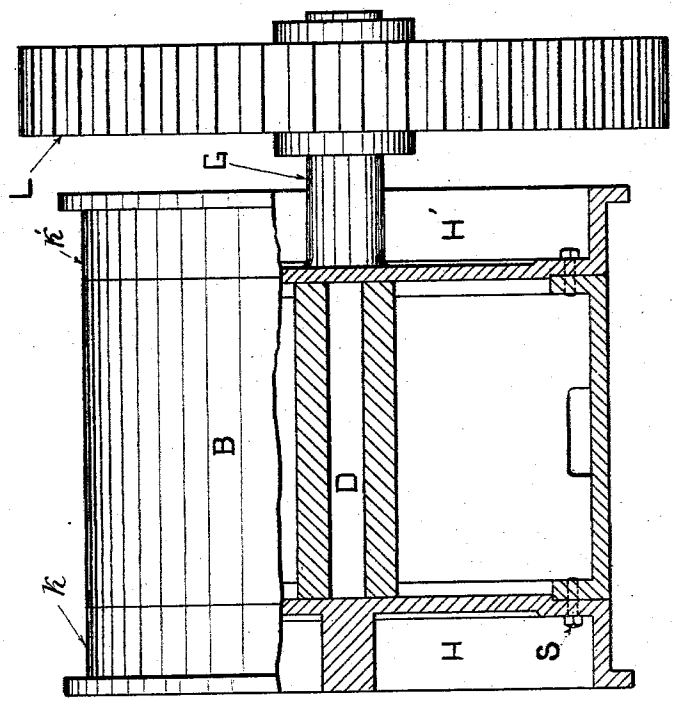


Fig. 7

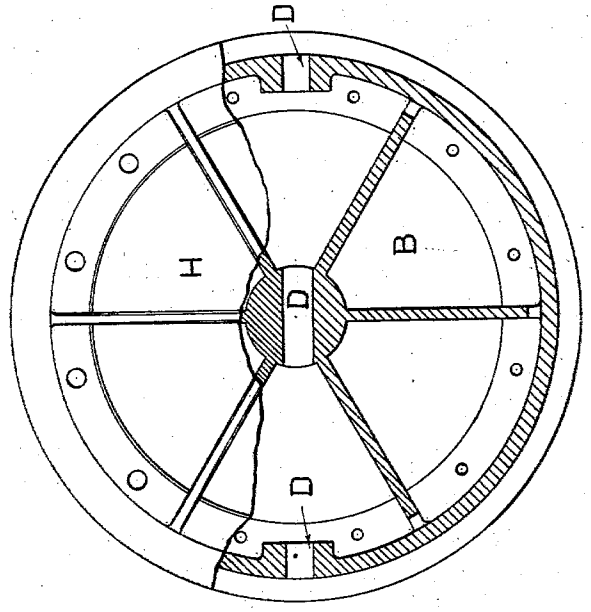


Fig. 6.

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ATTORNEYS

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No. 740,168. Patented September 29, 1903.

UNITED STATES PATENT OFFICE.

JACOB NEUERT, OF CHICAGO, ILLINOIS.

ROTARY PRESS.

SPECIFICATION forming part of Letters Patent No. 740,168, dated September 29, 1903.

Application filed March 25, 1903. Serial No. 149,427. (No model.)

To all whom it may concern:

Be it known that I, JACOB NEUERT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Rotary Presses, of which the following is a specification.

My invention relates to an improvement in rotary presses for separating from a pulpy mass—such as beat-pulp, brewery and distillery slop, tan-bark, paper-pulp, and the like—the solid matter by pressing the liquid out of it; and my object is to provide a novel construction of such a press whereby it shall be adapted to perform its work effectively and expeditiously.

To this end I provide as the generally-stated construction of my improved rotary press a rotary cylinder journaled eccentrically within a circular casing and containing one or more reciprocating pistons set at right angles to the axis of the cylinder and each contacting at its opposite ends with the casing-wall to be reciprocated by the eccentricity of the path in which it rotates with the cylinder and press in advance of the projecting ends the mass to be treated confined between the opposing surfaces of the casing and cylinder.

Referring to the accompanying drawings, Figure 1 is a central transverse section of my improved press; Fig. 2, a view of the same, partly in front elevation and partly in longitudinal section; Fig. 3, a broken and partly-sectional plan view of the piston, showing details of its construction; Fig. 4, an edge view of the piston; Fig. 5, a view like that presented by Fig. 1, but in the nature of a diagram, showing the relative eccentricity of the curvature between the external surface of the rotary cylinder and the internal surface of the casing; Fig. 6, a broken view, in end elevation, partly sectional, of the cylinder on an enlarged scale; and Fig. 7, a broken view of the same in side elevation, partly sectional.

A is the drum-like casing of the machine, provided with a hopper-like opening W, through which to feed, as indicated by an arrow at *x* in Fig. 1, the pulp to be treated, the casing being supported on a suitable base X. The casing-bottom is perforated, as represented at U, preferably by lining it with perforated plate metal. At F and F′ in Fig. 2 are shown the casing-heads, containing coincident eccentric circular openings forming the journal-bearings for the flanged ends of the cylinder B, hereinafter described, and below these openings the casing-heads are numerously perforated, as represented at V. At T in Fig. 1 is shown a recess in the inner side of the casing-wall which extends from head to head to contain a packing-strip *t*, of suitable material, lightly pressed against the surface of the cylinder by a series of spiral springs, one of which is represented at *t′* in Fig. 1, confined between the packing and the base of the recess to prevent leakage from the wet pulp over the cylinder to the discharge side of the press.

The cylinder B is preferably formed of two shells, each of semicircular shape in cross-section, fastened at their ends, as by screws, (indicated at S, Fig. 2,) to heads H H′, shown to be flanged for journaling the cylinder at *k k′*, Fig. 7, in bearings R about the openings in the casing-heads F and F′. The cylinder-sections are so disposed on their supporting-heads as to separate their opposing flat sides sufficiently far to form a way D for the piston E, hereinafter described.

Opposite the feed-opening W in the casing is provided at Y a discharge-opening, partly closed by a gate C, hinged at its lower end on a shaft N, journaled at its opposite ends in the flanges of the casing and heads F F′. The face of the gate is perforated, preferably by lining in with perforated plate metal. The shaft projects beyond its journal-bearings and carries on one end, as shown in Fig. 2, or on each end a crank M, to which is fastened one end of a lever P, carrying adjustably on its free end weight O, held in adjusted position by a set-screw *s*. The function of the weight is to press the free end of the gate against the surface of the cylinder B, thereby to shut off the pulp-chamber in the casing about the cylinder from the discharge-outlet, and the adjustability of the weight by sliding it on the bar and setting it at the desired position adapts it for regulating the degree of pressure necessary to prevent the pulp from which the liquid has been separated, as here-

inafter described, from escaping through the discharge-outlet before it has been sufficiently pressed by the action of the piston E. This piston is flat and is formed as its preferred construction of parallel bars a, a', and a^2, spaced apart and covered on opposite sides by sheet-metal plates c and c', riveted to them, thus forming the piston as a shell, and both light and strong. At each end of the piston, on a stationary shaft e, passing through the bars near their ends, are journaled antifriction-rollers b, b', b^2, and b^3, and over these rollers there projects beyond each end of the piston, on opposite sides thereof, a scraper g, held out resiliently by spiral springs f, confined between the inner edges of the scrapers and angle-bars h, fastened between the plates c and c'. The piston fits slidingly in the way D, formed between the cylinder-sections, with its ends projecting beyond the circumferences of the cylinder to contact with the inner surface of the casing.

G, Figs. 2 and 7, is a stud projecting from the cylinder-head H' and having keyed upon it a gear-wheel L, meshing with a pinion K on one end of a drive-shaft Q, journaled in boxes I on the casing A, and carrying at its opposite end a belt-pulley Z.

Fig. 5 illustrates the eccentricity and curvature of the inside of the casing. This curvature is so designed that the distances at all points of the circumference through the center i are of the same length, (represented by the lines 1, 2, 3, and 4,) thereby permitting the piston to be formed in one piece.

To operate the press, the shaft Q is set in motion, thereby rotating the cylinder B in its bearings in the direction indicated by the arrow at x' on Fig. 1. The pulp to be treated is fed into the casing at the opening W and settles between the casing-wall and cylinder, but is prevented from discharging out of the press by the gate C being held closed by the weights O until its resistance is overcome by the pressure against it of the pulp under the pressure against the latter of the revolving piston, being guided at its ends by the curvature of the casing in which the cylinder, being journaled eccentrically, forces the piston lengthwise in its way D, projecting it beyond the surface of the cylinder at the side of eccentricity where it presses the pulp ahead of it, separating from it the liquid which escapes through the perforations in the casing. The degree of liquid extraction may be regulated by the pressure of the weights O, for which, however, springs may be substituted. Any lodgment of the material under treatment on the surface of the casing or on the rollers is prevented by the scrapers in advance of the latter.

I have illustrated and described as the construction of my improved press the best form thereof in the matter of details now known to me. The details may, however, be variously modified without departure from my invention, as by providing a plurality of pistons and in other particulars, so that I do not wish to be understood as intending to limit my invention to the details of construction shown and described.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet provided with means for its closure, of a cylinder eccentrically journaled in the casing, and a longitudinally-reciprocable piston having antifriction-rollers at its opposite ends and confined in the cylinder to contact at said ends with the casing-wall to be actuated thereby in the rotation of the cylinder, substantially as described.

2. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet provided with means for its closure, of a cylinder eccentrically journaled in the casing and a longitudinally-reciprocable piston having antifriction-rollers and yielding scrapers at its opposite ends and confined in the cylinder to contact at said ends with the casing-wall to be actuated thereby in the rotation of the cylinder, substantially as described.

3. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet, of a cylinder eccentrically journaled in the casing, a piston reciprocably confined in the cylinder to contact at its ends with the casing-wall and be actuated thereby in the rotation of the cylinder, and a gate hinged at said outlet and yieldingly held to bear its free end against the cylinder-surface, substantially as described.

4. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet, of a cylinder eccentrically journaled in the casing, a longitudinally-reciprocable piston confined in the cylinder to extend across the axis thereof and contact at its ends with the casing-wall to be actuated thereby in the rotation of the cylinder, and a perforate gate hinged at said outlet and yieldingly held to bear its free end against the cylinder-surface, substantially as described.

5. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet provided with means for its closure, of a cylinder eccentrically journaled in the casing, composed of arc-shaped sections secured together and forming a diametrical piston-way and a piston reciprocably confined in said way to contact at its ends with the casing-wall and be actuated thereby in the rotation of the cylinder, substantially as described.

6. In a rotary press of the character described, the combination with a perforate casing having a feed-inlet and a discharge-outlet provided with means for its closure, of a cylinder composed of arc-shaped sections and

heads securing them together, on which the cylinder is journaled in eccentric openings in the casing-heads, said sections forming a piston-way extending through the cylinder transversely of its axis, and a piston having anti-friction-rollers and scrapers at its opposite ends and reciprocably confined in said way to contact at said ends with the casing-wall and be actuated thereby in the rotation of the cylinder, substantially as described.

7. A rotary press of the character described comprising, in combination, a perforate casing having eccentric openings in its ends and provided with a feed-inlet and a discharge-outlet, a cylinder journaled on its ends in said openings and containing a piston-way extending through it across its axis, a piston reciprocably confined in said way to contact at its ends with the casing-wall and be actuated thereby in the rotation of the cylinder, driving-gear connected with said cylinder, and a gate hinged at said outlet and yieldingly held to bear its free end against the cylinder-surface, substantially as described.

JACOB NEUERT.

In presence of—
WALTER N. WINBERG,
A. C. KITTLESON.