No. 757,585. PATENTED APR. 19, 1904.

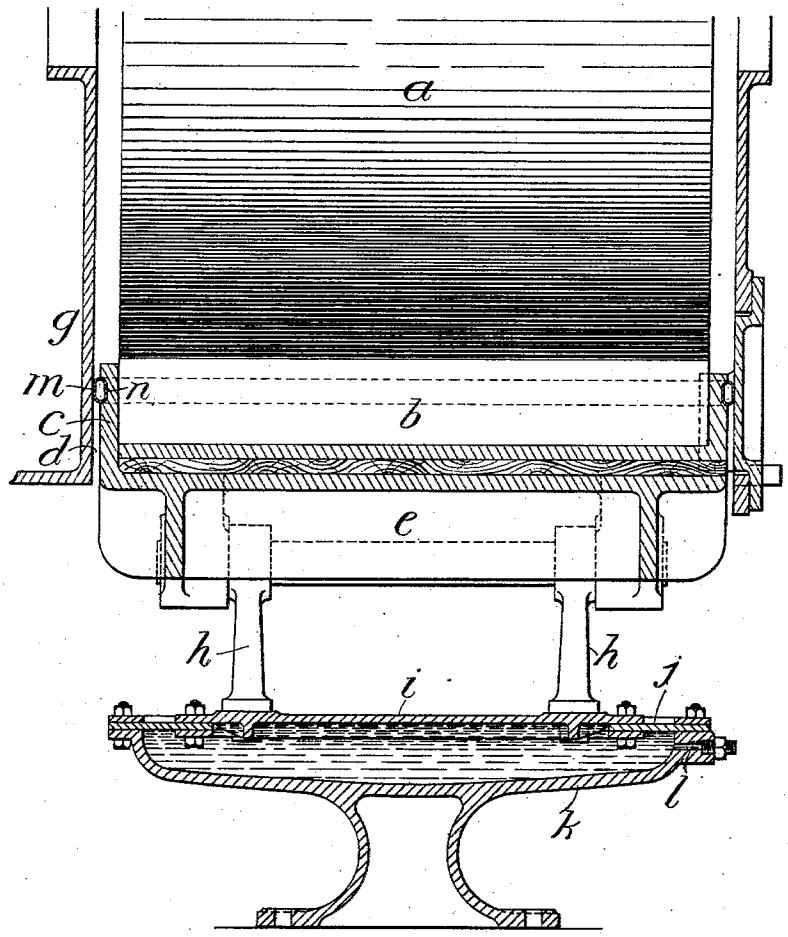
J. WHITE.

PULP BEATING ENGINE.

APPLICATION FILED SEPT. 10, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



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

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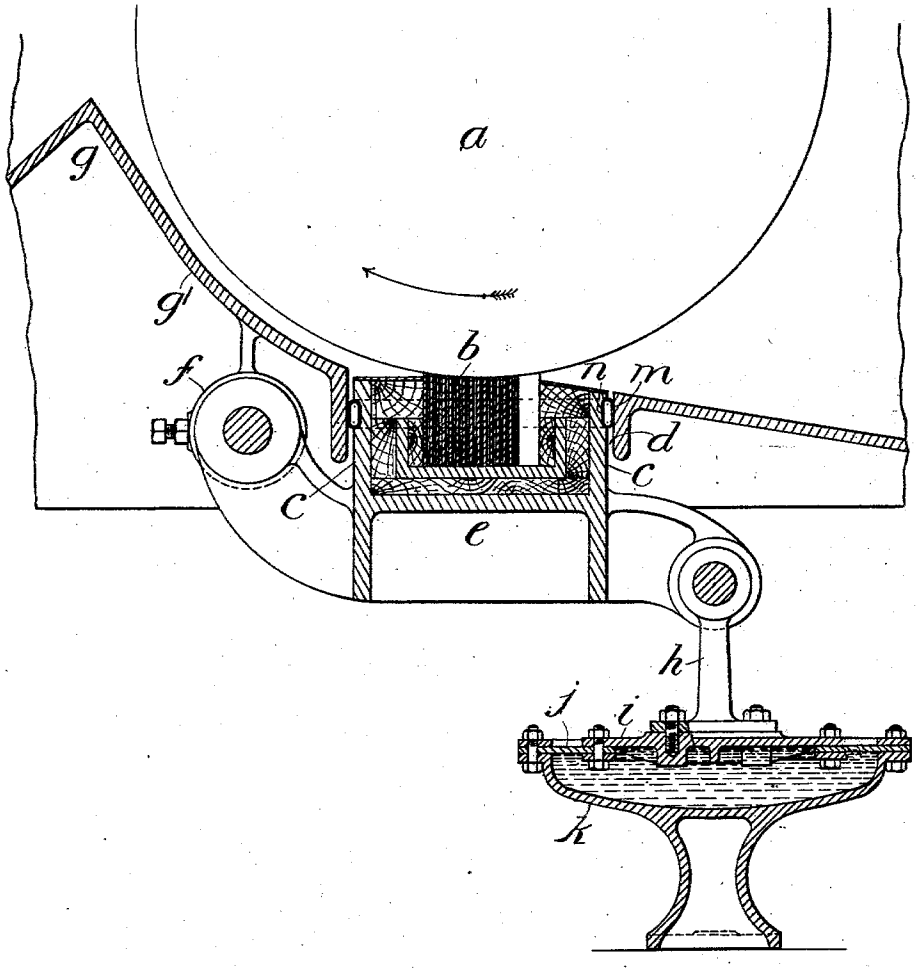
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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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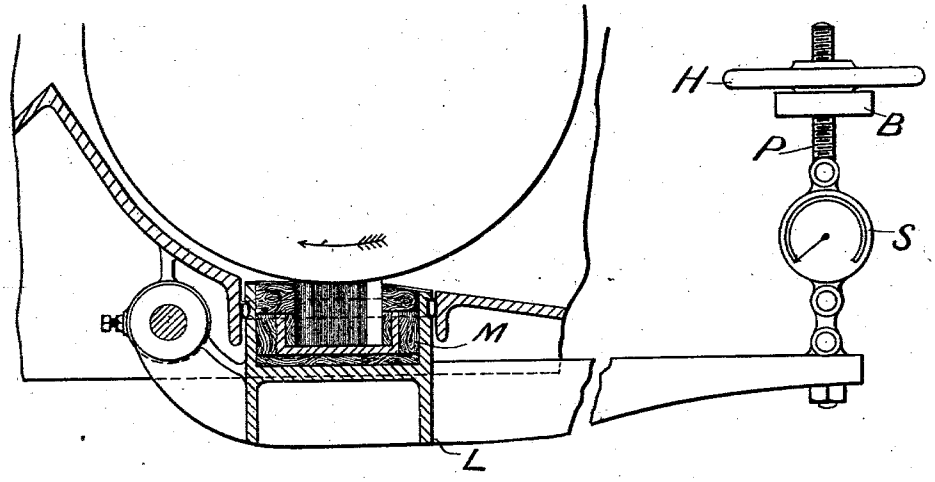
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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.



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No. 757,585. Patented April 19, 1904.

UNITED STATES PATENT OFFICE.

JOHN WHITE, OF EDINBURGH, SCOTLAND.

PULP-BEATING ENGINE.

SPECIFICATION forming part of Letters Patent No. 757,585, dated April 19, 1904.

Application filed September 10, 1903. Serial No. 172,612. (No model.)

To all whom it may concern:

Be it known that I, JOHN WHITE, a citizen of the United Kingdom of Great Britain and Ireland, residing at Leith Walk Foundry, Edinburgh, Scotland, have invented certain new and useful Improvements in Pulp-Beating Engines, of which the following is a specification.

This invention, which relates to beating-engines or hollanders for beating paper-pulp, has for its object to provide simple and efficient means for training or adjusting the knife-plate in relation to the beating-roll in substitution for the usual means of training the roll to the plate. With the existing arrangement of adjusting the roll to the plate it is difficult for the attendant to determine with what pressure the roll bears on the plate. As beating-engines are almost invariably driven from below, when the roll in the existing arrangement is lowered onto the plate the distance between the center of the roll and the center of the driving-shaft is shortened, thus slackening the belt when the roll is in contact with the plate and tightening the belt when the roll is not in contact with the plate. My arrangement obviates all these difficulties, as the attendant has only to look at a hydraulic gage connected with a water-chamber which acts on the plate-box in order to ascertain the pressure which the roll exerts on the plate instead of using the crude and uncertain methods now in use to determine this. Further, as the roll remains in a fixed position the distance between the center of the roll and the center of the driving-shaft is never altered.

In the accompanying drawings, which illustrate the invention, Figure 1 is a longitudinal section, and Fig. 2 is a cross-section, of part of a hollander or beating-engine, showing the means adopted for adjusting the knife-plate in relation to the beating-roll. Fig. 3 is a view corresponding to Fig. 1 and illustrating a modification.

The beating-roll *a* is held in a fixed position in stationary bearings or the existing roll-lifting mechanism may be utilized to bring the roll down when excessive wear has taken place on the bars of the roll and plate; but according to my invention the knife-plate *b* is made adjustable. The plate *b* instead of being fixed to the "den" of the beater is carried in a plate-box *c*, which, as shown, may form part of a beam or beams *e*, hinged or pivoted at one end on a bracket *f*, which may be conveniently fixed under the backfall *g'* of the beater-trough *g* or at any other suitable point, while the opposite end is carried by a link or links *h* (which may be adjustable) on a resilient support. This support consists, preferably, of a plate *i*, secured to the diaphragm *j*, of rubber, leather, or other material, secured on and forming the cover of a box or chamber *k*, to which water or other fluid is admitted under suitable pressure to bring the plate *b* into contact with the roll *a*, the diaphragm-plate *i*, to which the free end of the beam *e* is adjustably connected by the link or links *h*, being free to move vertically to raise or lower the knife-plate *b* of the beating-engine through an opening *d* in the bottom of the trough where the usual den is formed. When it is desired to take the plate *b* off or out of contact with the roll *a*, an outlet *l* for the fluid in the water-chamber is opened and the water allowed to escape, whereupon the beam *e* and plate *b* descend by their own weight and may be brought to rest upon an adjustable stop on the water-chamber.

In order that a water-tight joint may be formed between the sides of the plate-box *c* and the orifice *d* in the bottom of the beater-trough *g*, through which said box passes, a packing *m* is fitted around the orifice, the said packing being composed of one or more endless tubes, of rubber or other like material, held in recesses or cavities *n*, prepared for them in the plate-box or in the beater-trough and inflated with air, water, or other fluid or supplied with fluid by a connecting pipe or hose from an overhead tank. As will be observed, no part of the lever *e* can come into contact with the stuff.

In the modification of the invention shown in Fig. 3 the pressure is regulated by a spring-balance and screw instead of by the hydraulic arrangement above described. The knife-plate and plate-box M are carried by the pivoted lever L, the other end of which is resili-

ently supported from the bracket B, being connected thereto by the spring-balance S and the screw P, which latter is controlled by the hand-wheel H.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a pulp-beating engine the combination with the beating-roll, of a knife-plate, a plate-box movable in relation to the roll and carrying said knife-plate, a resilient support maintaining said plate-box in operative position, and a connection of said plate-box to said support wholly out of contact with the stuff, as described.

2. In a pulp-beating engine the combination with the beating-roll of a knife-plate, a plate-box which is movable in relation to the roll and carrying said knife-plate and a flexible diaphragm connected to said box and maintaining said box in operative position by fluid-pressure acting on said diaphragm, the connection of said diaphragm to said plate-box being wholly out of contact with the stuff as described.

3. In a pulp-beating engine the combination with the beating-roll and the beater-trough of a knife-plate, a movable plate-box carrying said knife-plate projecting through an opening in the beater-trough, the said box being maintained in operative position by a resilient support and a pivoted beam carrying said box and wholly out of contact with the stuff, substantially as described.

4. In a pulp-beating engine the combination with the beating-roll and the beater-trough of a knife-plate a movable plate-box carrying said knife-plate and projecting through an opening in the beater-trough a pivoted beam carrying said box and wholly out of contact with the stuff and a flexible diaphragm connected to said beam and maintaining said box in operative position by fluid-pressure acting on said diaphragm.

5. In a pulp-beating engine the combination with the beating-roll and the beater-trough having an opening therein under the beating-roll of a knife-plate, a plate-box carrying the said knife-plate and vertically movable in said opening, a pivoted beam carrying said plate-box and wholly out of contact with the stuff, a fluid-pressure chamber, and a flexible diaphragm in said chamber arranged to support said beam and maintain the knife-plate in operative position in relation to the beating-roll.

6. In a pulp-beating engine the combination with the beating-roll and the beater-trough having a flanged opening therein under the beating-roll, of a plate-box carrying a knife-plate and fitted so as to be vertically movable in said opening, a packing composed of flexible tubing interposed between the plate-box and the sides of the flanged opening, a resilient support, and a connection of said support to said plate-box wholly out of contact with the stuff substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WHITE.

Witnesses:

WALLACE CRANSTON FAIRWEATHER.

JAMES WRIGHT.