

N. BRYANT.
 SAVE ALL FOR PAPER MAKING MACHINES.
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964,897.

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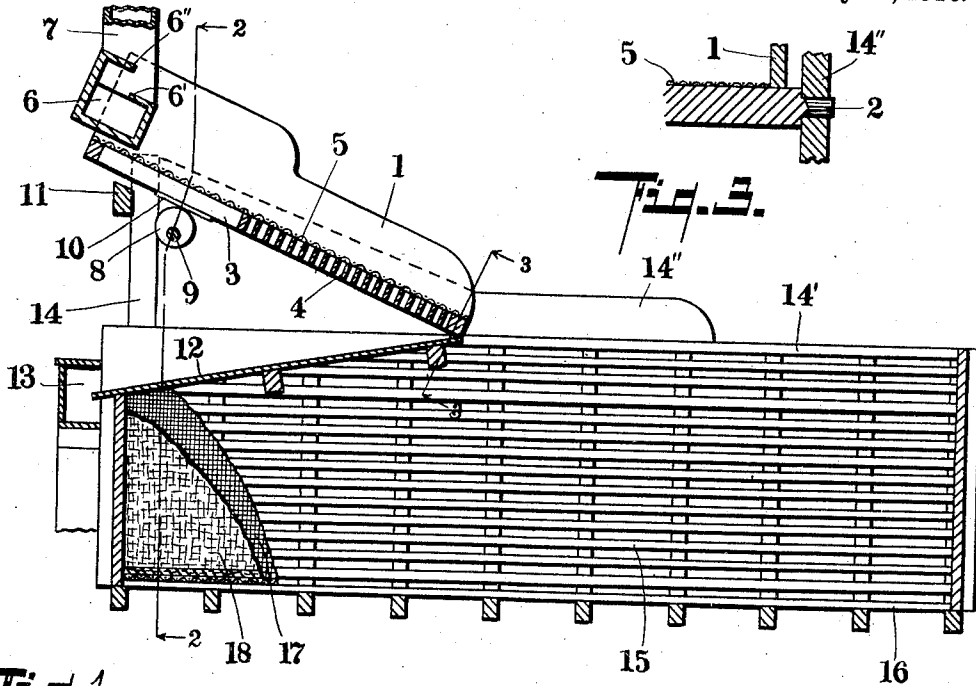


Fig. 1.

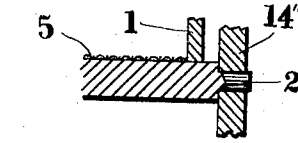


Fig. 3.

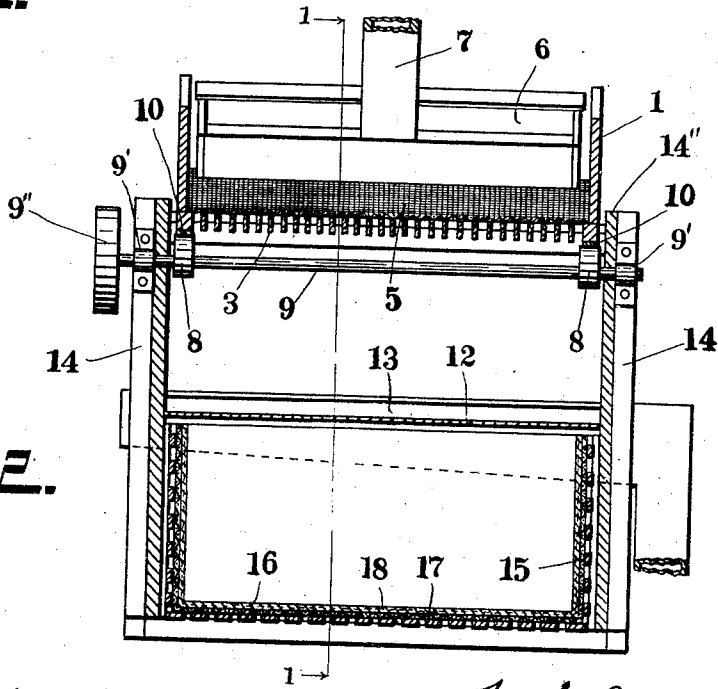


Fig. 2.

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SAVE-ALL FOR PAPER-MAKING MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NOAH BRYANT, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Save-Alls for Paper-Making Machines, of which the following is a specification.

This invention relates to improvements in save-alls for paper making machines.

The object of the invention is to provide an effective means of separating the pulp from the water from the overflow of a paper making machine, whereby the same will be saved and only the water passed out of the mill.

Objects relating to details of construction will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a longitudinal detail sectional elevation view taken on a plane corresponding to line 1—1 of Fig. 2; Fig. 2 is a transverse sectional elevation view taken on a plane corresponding to the irregular line 2—2 of Fig. 1; and Fig. 3 is an enlarged detail sectional view taken on a plane corresponding to line 3—3 of Fig. 1, showing the details of the pivot for supporting the vibrating frame of my improved machine.

In the drawing the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar reference numerals refer to similar parts throughout the several views.

Considering the numbered parts of the drawing, the vibrating frame 1 is hinged or supported on a pair of similar pivots 2 at each side thereof, one of said pivots being indicated in Fig. 3. This frame is supported in an inclined position and is provided with longitudinal bottom slats 3 toward its upper portion and transverse slats 4 toward its lower portion, and on these slats I arrange a fine wire screen 5. This screen has 60 to 80 mesh to the inch, and when inclined, as shown, water is supported on it and flows along it unless it is effectively jarred, par-

ticularly when a light feed of water containing pulp passes over it.

A transverse delivery trough or box 6 receives the overflow from the paper machine through a suitable conductor pipe 7. This delivery trough is provided with an inwardly projecting ledge like lip 6' over which the water is delivered to the screen. This serves to spread the water so that it is delivered to the screen in a sheet-like stream. The conduit 7 is adapted to deliver into the trough centrally thereof, and this, with the ledge, causes a circulation or agitation in the trough, thereby preventing the settling of the pulp in the trough, which would, of course, clog the same and cause the water to be delivered from the spout to the screen in a large volume at the central part of the screen, which would be likely to cause it to flow rapidly across the same and into the drain tank. The delivery trough is also preferably provided with an overhanging ledge 6'' on its rear wall, which prevents splashing the material out of the trough and further assists in spreading the water; that is, preventing its rushing out of the trough at the central point.

The vibration frame is actuated by a pair of cams 8, supported on a shaft 9, which is carried in suitable journal boxes 9' at each end and is driven preferably by a pulley 9''. Metal plates 10 are put at each side of the frame 1 to contact with the cams 8. A cross stop bar 11 is supported on the end post 14 of the receiving tank below at such a height that when the cam rotates the vibrating frame 1 will strike against this stop bar 11 with a sharp blow that jars any water that may descend upon the screen 5 and causes it to pass through the same.

Beneath the vibration frame 1 is an apron or platform 12, which collects the water that passes through the screen and discharges it into a chute 13, whence it passes out of the mill. Any pulp that will descend upon the screen will roll off from the lower edge of the same and is collected in a tank or box 14', which has upwardly projecting sides 14'', between which is arranged the vibrating frame 1. This tank or box is provided with slatted sides 15 and a bottom made up of a slat construction 16 with suitably gunny sack or canvas lining 17, with an inner wall 18 of cocoanut matting for collecting the pulp and permitting the contained water to gradually soak or drain out of it. This co-

coanut matting holds up the pulp so that the water readily drains therefrom and is of such a nature that a shovel may be readily used in shoveling the pulp from the tank.

- 5 It forms a very clean lining and one which is very desirable and does not become clogged in use.

I have thus described the various parts of my improved construction, the operation of which is as follows: The overflow from the paper machine descends through the conductor out into the delivery box or trough 6, whence it gradually overflows onto the screen 5 of the vibrating frame 1. The shaft 9, being driven from the pulley 9', acts through the cams 8 on the under side of the same, raising it upward and permitting the same to drop suddenly with a blow against the stop bar 11 at each revolution of the shaft. This sudden jar causes the water to pass through the fine screen, which screen is so fine that it collects the pulp fiber, which, owing to the jarring motion, rolls on down off the screen into the drain tank or box beneath. The water passing through the screen is collected on the platform 12 and passes out as waste water through the chute 13 out of the mill.

Having thus described the various parts of my improved save-all, I desire to remark that the structure can be considerably varied without departing from my invention. The particular arrangement of the slates in the bottom underneath the fine wire screen I have found to be most effective, as this allows the water to pass freely through the upper part where it is delivered in volume and assists in preventing the forming of little streams or rivulets through the collected pulp to the lower end of the screen, but I am aware that the machine would operate fairly well if the screen was otherwise supported. The sudden jarring of the screen also serves to prevent its becoming clogged by the pulp passing over the same.

It is necessary for the frame to vibrate the screen and cause it to strike with a sharp blow in order to compel the water which is naturally retained upon the screen by the force of capillary attraction to descend through the screen in place of flowing down over the lower edge of the frame.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a save-all for paper pulp, the combination of the inclined oscillating frame 1 provided with a slatted bottom having longitudinal slats 3 toward its upper edge and transverse slats 4 toward its lower edge, with a fine wire screen 5 resting upon the same; a suitable pivot support 2 at the lower end of said frame; cams 8 on shaft 9 beneath the frame for oscillating the same up and down; a stop 11 for arresting the

downward motion of the frame; a trough 6 for discharging waste water from a paper machine upon the said screen; a platform or apron beneath the oscillating frame; and a box for collecting the pulp that is screened from the water, substantially as described and for the purpose specified. 70

2. In a save-all for paper pulp, the combination of the inclined oscillating frame 1 provided with a slatted bottom, with a fine screen 5 resting upon the same; a suitable pivot support 2 at the lower end of the said frame; cams 8 on shaft 9 beneath the frame for oscillating the same up and down; a stop 11 for arresting the downward motion of the frame; a trough 6 for discharging waste water from a paper machine upon the said screen; a platform or apron beneath the oscillating frame; and a box for collecting the pulp that is screened from the water, substantially as described and for the purpose specified. 75 80 85

3. In a save-all for pulp, the combination of an inclined oscillating frame provided with a slatted bottom, with a fine wire screen resting thereon; said screen being of a mesh sufficiently fine to prevent the passage of pulp fiber therethrough; a pivot support for said frame; means for oscillating the said frame up and down; and a suitable stop for arresting the downward motion of the said frame, whereby the same will be given a sharp jar; an apron for collecting the water that passes through the screen, and a receptacle for collecting the pulp that rolls over the side thereof, coacting for the purpose specified. 90 95 100

4. In a save-all for pulp, the combination of an inclined oscillating frame with a fine wire screen suitably supported in its bottom, said screen being of a mesh sufficiently fine to prevent the passage of pulp fiber therethrough and carry water flowing over it in a light sheet; a pivot support for said frame; means of oscillating the said frame up and down; a suitable stop for arresting the motion of the said frame, whereby the same will be given a jar; and a receptacle for collecting the pulp that rolls over the side thereof, coacting for the purpose specified. 105 110 115

5. In a structure of the class described, the combination with an inclined oscillating frame comprising a slatted bottom having longitudinal slats toward its upper end and transverse slats toward its lower end with a fine wire screen resting upon the same; a pivoted support at the lower end of said frame; a means for oscillating said frame up and down; a stop for arresting the downward motion of the frame; a delivery trough arranged above the upper end of said frame transversely thereof, said delivery trough having an inwardly projecting lip on its forward edge over which the ma- 120 125 130

terial is delivered to said screen; and a delivery conduit arranged to deliver centrally to said delivery trough.

6. In a structure of the class described, the combination with an inclined oscillating frame comprising a slatted bottom having longitudinal slats toward its upper end and transverse slats toward its lower end with a fine wire screen resting upon the same; means for shaking said frame; a delivery trough arranged above the upper end of said frame transversely thereof, said delivery trough having an inwardly projecting lip on its forward edge over which the material is delivered to said screen; and a delivery conduit arranged to deliver centrally to said delivery trough.

7. In a structure of the class described, the combination with an inclined oscillating frame comprising a slatted bottom having longitudinal slats toward its upper end and transverse slats toward its lower end with a fine wire screen resting upon the same; a pivoted support at the lower end of said frame; a means for oscillating said frame; and a stop for arresting the downward motion of the frame.

8. In a structure of the class described, the combination with an inclined oscillating frame comprising a slatted bottom having longitudinal slats toward its upper end and transverse slats toward its lower end with a fine wire screen resting upon the same; and means for shaking said frame.

9. In a structure of the class described, the combination with an inclined screen; a pivoted support at the lower end of said frame; means for oscillating the same up and down; a stop for arresting the downward motion of the frame; a delivery trough arranged above the upper end of said screen transversely thereof, said delivery trough having an inwardly projecting lip on its forward edge over which the material is delivered to said screen and an overhanging guard on its rear wall; and a delivery conduit arranged to deliver centrally to said delivery trough.

10. In a structure of the class described, the combination with an inclined screen;

means for shaking said screen; a delivery trough arranged above the upper end of said screen transversely thereof, said delivery trough having an inwardly projecting lip on its forward edge over which the material is delivered to said screen; and a delivery conduit arranged to deliver centrally to said delivery trough.

11. In a structure of the class described, the combination with an inclined screen; means for shaking said screen; and a delivery trough arranged above the upper end of said screen transversely thereof, said delivery trough having an inwardly projecting lip on its forward edge over which the material is delivered to said screen and an overhanging guard on its rear wall.

12. In a structure of the class described, the combination with an inclined oscillating screen, said screen being of a mesh sufficiently fine to prevent the passage of pulp fiber therethrough and carry water flowing over it in a light sheet; means for oscillating said screen; and a suitable stop for arresting the motion of said screen, whereby the same will be given a jar.

13. In a structure of the class described, the combination with an oscillating screen arranged in an inclined position, said screen being of a mesh sufficiently fine to prevent the passage of pulp fiber therethrough and carry water flowing over it in a light sheet; means for oscillating said screen with a jarring motion; a delivery trough arranged at the upper end of said screen adapted to deliver the waste water from a paper machine across the upper end thereof in a sheet-like stream.

14. In a structure of the class described, a drain tank comprising slatted side and bottom walls; a lining of coarse fabric therefor; and an inner wall formed of cocoanut matting.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

NOAH BRYANT. [L. s.]

Witnesses:

L. G. GREENFIELD,
GERTRUDE TALLMAN.