

(No Model.)

C. J. FOSTER.  
PULP SCREENING MACHINE.

No. 488,067.

Patented Dec. 13, 1892.

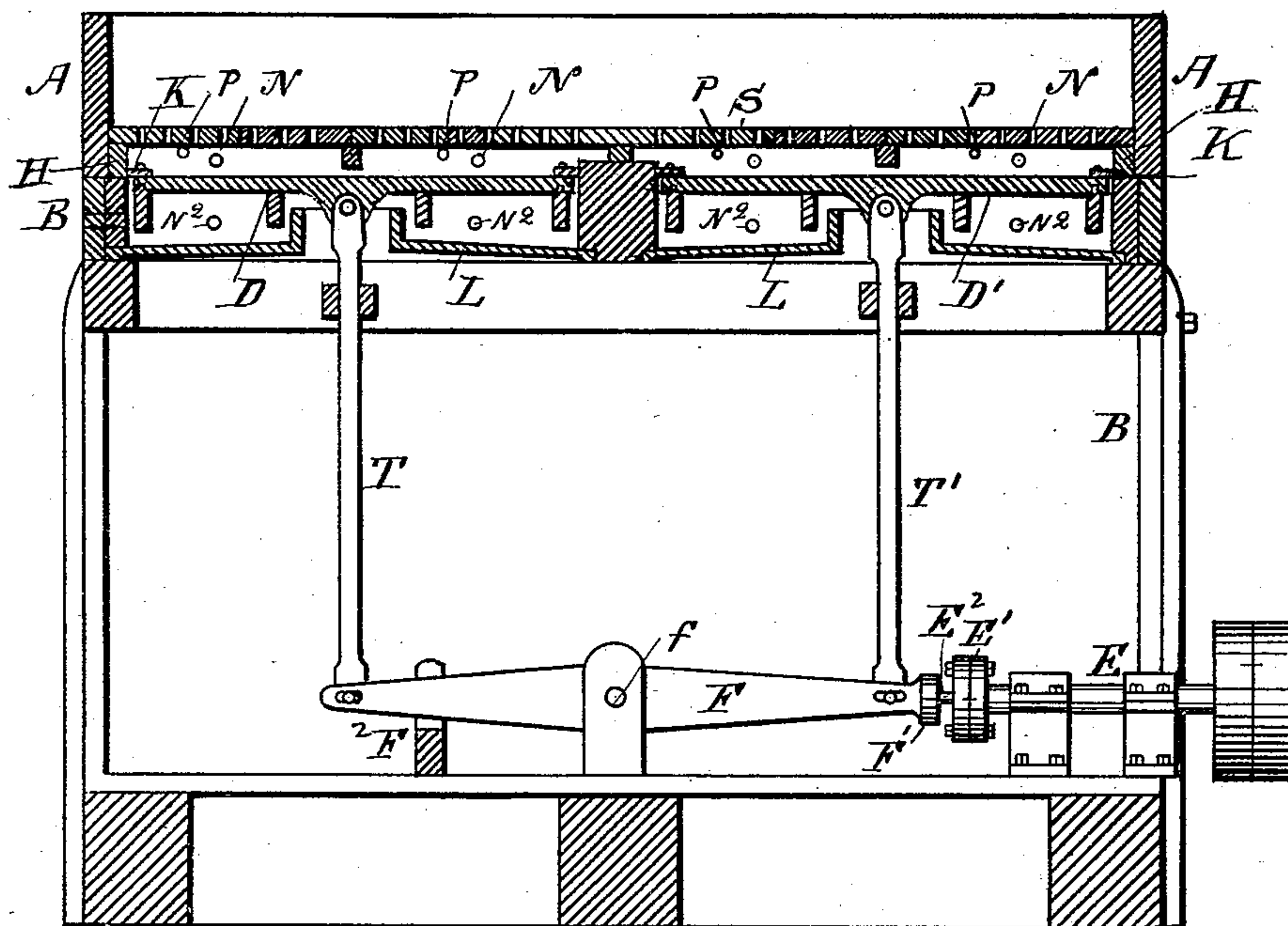


Fig. 1.

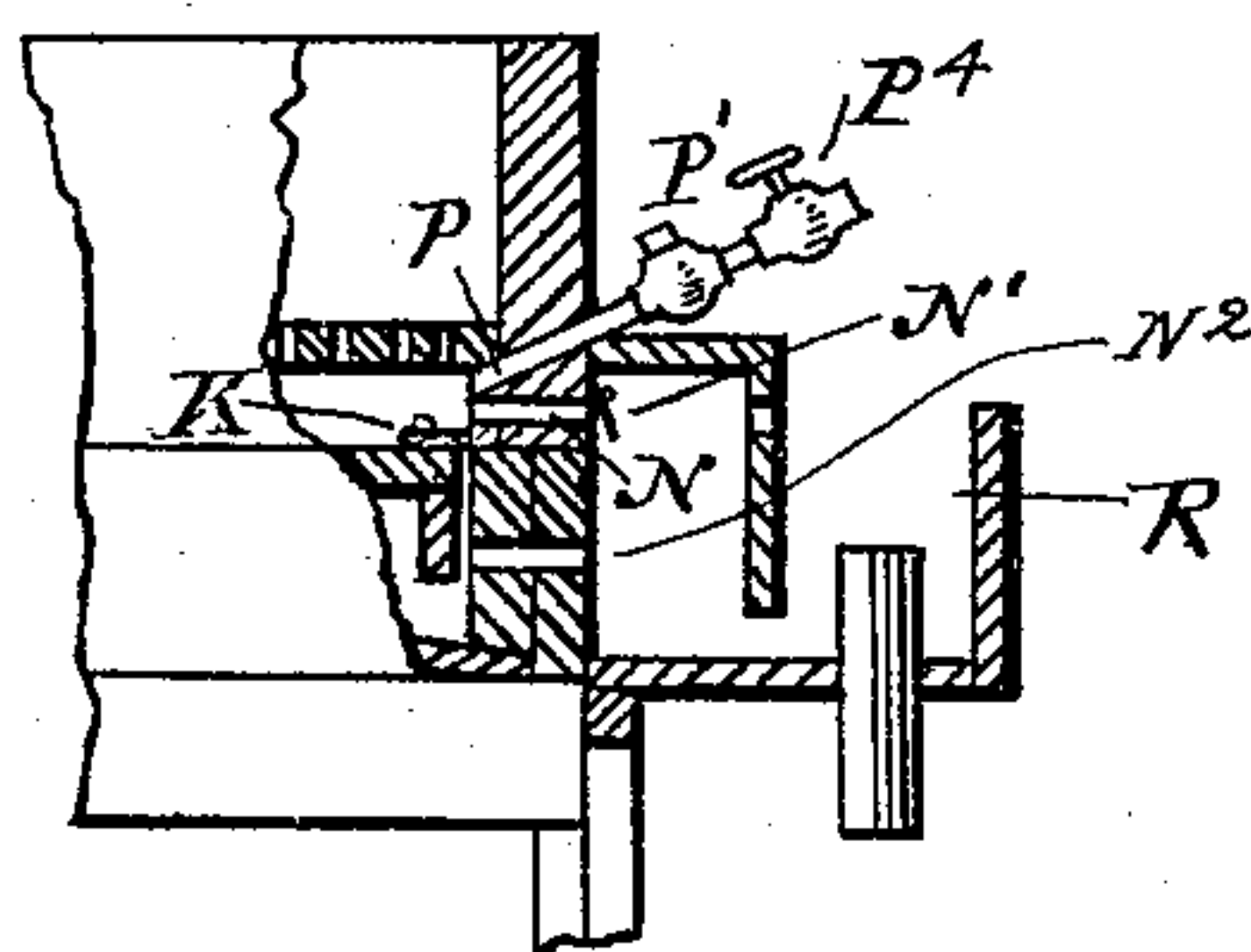


Fig. 2.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## PULP-SCREENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 488,067, dated December 13, 1892.

Application filed April 22, 1891. Serial No. 389,986. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. FOSTER, a citizen of the United States, and a resident of Westbrook, in the county of Cumberland and State of Maine, have invented new and useful Improvements in Pulp-Screening Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in pulp-screening machines, the object being to so improve the construction and arrangement of the parts that the whole shall become a cheap and easily-working machine. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a view showing in longitudinal vertical section the main machine and its frame, some of the smaller parts being shown in elevation. Fig. 2 is a cross-vertical section showing some of the parts more in detail.

In the drawings, Fig. 1, B B represents the frame and supports of the machine, and A A the receiving tank or tanks. The screen-plates S S are made in the usual manner and serve to receive and hold the unscreened pulp.

D D' are diaphragms adapted to be moved up and down by the pitmen T and T', which are operated by a walking-beam F, or by any other suitable mechanism, the motion of the two diaphragms being alternate, one going up while the other is coming down.

It being necessary for the well-working of the machine that the diaphragms D D' shall be practically air and water tight, I use closely-fitting plates K K, preferably of brass, which are connected adjustably to the upper edges of the diaphragms D D', as shown, their outer edges fitting accurately against the brass packing-plates H. This arrangement admits of the diaphragms moving up and down and yet making a practically air-tight joint.

The outlet-pipes N N, Figs. 1 and 2, which are located between the screen-plates and the diaphragms, serve to allow the screened pulp to flow into the receiver R, (see Fig. 2,) one of the ends of these pipes N N be-

ing shown at N'. Each of the outlet-pipes N N is provided with a suitable self-acting valve, which will allow the pulp to flow out but not to re-enter. These check-valves in the pipes N N are very important, as they serve, when the diaphragms are going down, to increase the vacuum in the space between the screen-plates and the diaphragms and thus to increase to a very great extent the production of the machine.

Another important feature of my invention consists in the air-pipe arrangement, which I will now explain.

Immediately under each screen-plate I place an air-pipe P, provided with an air-check valve P'. (See Fig. 2.) The object of the air-pipes P is to regulate the suction through the screen-plates; also to admit air under the screen-plates to clear the latter during each upward stroke of the diaphragms, the air being prevented from going out through said pipes P by the check-valves on said pipes. Each of the pipes P also has a valve P<sup>4</sup>, Fig. 2, by which the amount of air flowing into the pipe P and through it into the space between the diaphragms and screens may be regulated.

L L, Fig. 1, represent a trough, which is located under the edges of the diaphragms and serves to catch any leakage that may pass between the packing-joints of the diaphragms. N<sup>2</sup>, Figs. 1 and 2, are outlets leading from the leakage-trough to the receiving-trough R.

The operation of my machine is as follows: The pulp to be screened is placed in the tank or tanks and the machine is started. As the diaphragms D D' move they form, in connection with the screen-plate, bellows, which alternately compress and exhaust, the action of compression being to force air up through the screen-plates, thus cleaning them at each upward motion, and the downward or exhausting motion of the diaphragms, serve to draw the pulp down through the screen-plates, thus filling the space between the screens and the diaphragms up to the level of the outlet-pipes N. While the diaphragm is going down, a sufficiency of air is drawn in through the air-pipes P to act (while the diaphragm



goes up) to clean the screen-plates by forcing air through them. These actions are repeated at each motion of the diaphragms.

I claim—

5 1. In a pulp-screening machine, the combination, with suitable tank, screen-plates and diaphragms, and mechanism for operating said diaphragms, of air-tubes opening into the space between the screen-plates and the  
10 diaphragms, and an automatic valve to prevent the outflow of air, substantially as and for the purposes set forth.

2. In a pulp-screening machine, the combination, with suitable tank, screen-plates, and  
15 diaphragms, of air-tubes opening into the space between the screen-plates and diaphragms, said air-tubes having automatic valves to prevent the outflow of air, and an  
20 adjusting-valve to regulate the amount of flowing air, substantially as and for the purposes set forth.

3. In a pulp-screening machine, the combination, with a suitable tank, screen-plates, diaphragms, and a pulp-receiving trough located in front of said tank, of a leakage-  
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trough located beneath said diaphragms, and outlet-tubes from said leakage-troughs into the receiving-trough, substantially as and for the purposes set forth.

4. In a pulp-screening machine, the combination, with a receiving-tank having screen-plates in the bottom thereof, balancing-diaphragms, means for imparting an alternate up-and-down motion to the same, a collecting-trough located outside of said tank, and a leakage-trough located below said diaphragms, of  
30 independent outlets opening one from the space between the diaphragms and screen-plates and the other from the leakage-trough into the collecting-trough, substantially as  
35 and for the purposes set forth.  
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In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 21st day of April, A. D. 1891.

CHARLES J. FOSTER.

Witnesses:

ALBAN ANDRÉN,  
ALICE A. PERKINS.