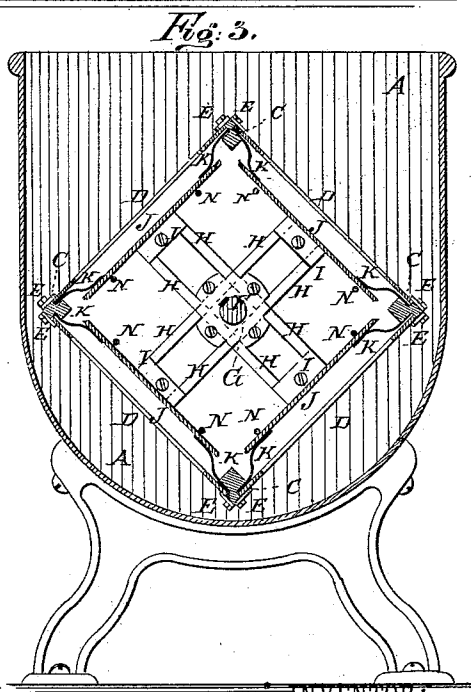
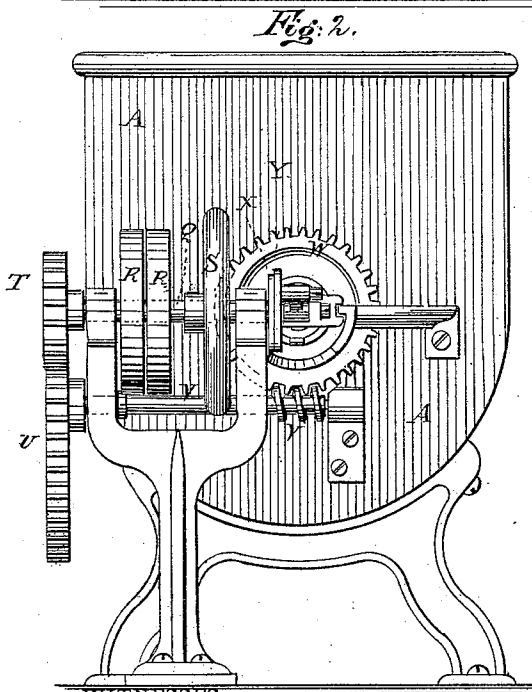
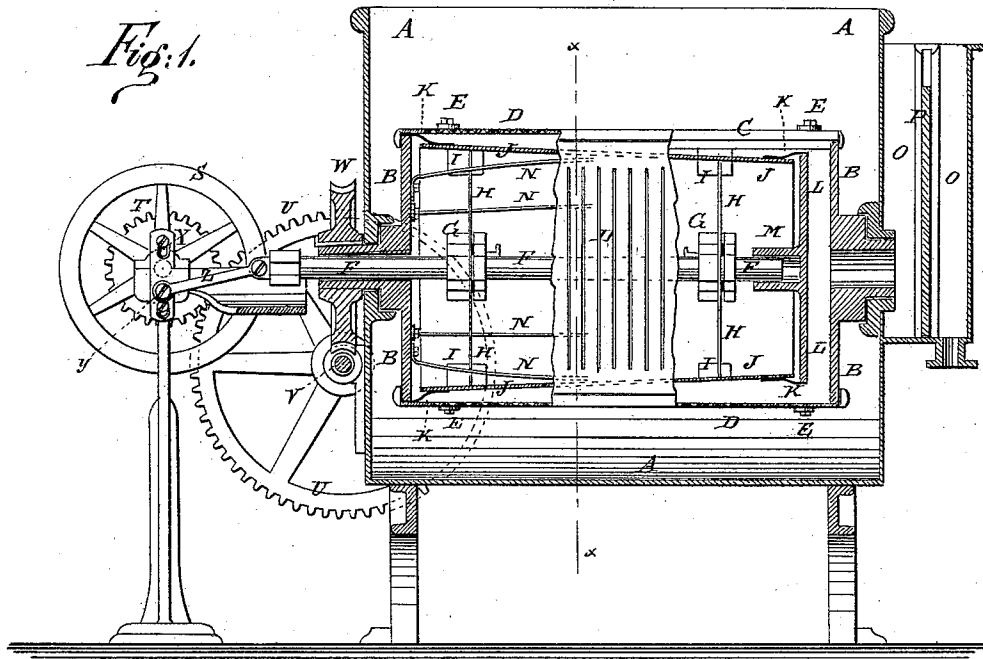


W. L. LONGLEY.  
Revolving Pulp-Screen.

No. 221,330.

Patented Nov. 4, 1879.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM L. LONGLEY, OF CUMBERLAND MILLS, WESTBROOK, MAINE,  
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## IMPROVEMENT IN REVOLVING PULP-SCREENS.

Specification forming part of Letters Patent No. **221,330**, dated November 4, 1879; application filed September 29, 1879.

### *To all whom it may concern:*

Be it known that I, WILLIAM L. LONGLEY, of Cumberland Mills, Westbrook, county of Cumberland, and State of Maine, have invented a new and useful Improvement in Revolving Pulp-Screens, of which the following is a specification.

Figure 1 is a longitudinal sectional elevation of the machine. Fig. 2 is an end elevation. Fig. 3 is a cross-sectional elevation taken through the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved revolving screen for treating paper-pulp, so constructed as to screen the pulp rapidly and thoroughly, and expel it promptly from the machine.

The invention consists in the combination, with the interior surfaces of the screen-plates, of corresponding bellows-plates, the latter being so arranged and operated in connection with the screen-plates that when the pulp-screen revolves a motion will also be given to the bellows-plates, whereby the pulp will be sucked by the bellows-plates through the screen-plates, and an effective pulsation thereby imparted to the pulp.

The revolving screen consists of an outer vat containing a revolving frame of any desired number of sides, to which are attached the screen-plates, thus forming a cylinder of square, hexagonal, octagonal, or any other desired cross-section, within which is a bellows constructed with sides corresponding with the screen-plates, but slightly diverging therefrom toward the outlet end, to allow of the free flow of the stuff, and connected at their edges and one end with the frame holding the screen-plates, and at the other or outlet end to an auxiliary head by means of flexible packing. The sides of the bellows are connected with a central shaft by means of flexible metal springs, and said shaft, passing through the cylinder-head and vat, receives a reciprocating motion by means of a crank and pin, thus imparting to the bellows a regular and positive motion with regard to the screen-plates, which may be regulated by changing the length of stroke of the aforesaid crank.

The whole internal cylinder, with the bellows and shaft, receives at the same time a rotary motion by means of a worm-gear outside the vat connected by means of a sleeve with the cylinder-head. The cylinder-head at the outlet end is provided with a hollow bearing, which provides an outlet for the stuff.

Having thus given a general statement of my improvement, I will now describe its construction in detail.

A represents a vat to receive the pulp, which vat A is made with a semi-cylindrical bottom. B are two plates, of square or other polygonal form, and which are connected at their angles by bars C, the plates B and bars C forming the screen-frame. The bars C are rabbeted to receive the screen-plates D, which are slotted in the usual way, and which are secured to the bars C by screw-bolts E. The plates B are provided with hollow journals, which revolve in bearings in the ends of the vat A. The cavity of the journal of the rear plate B serves as an outlet for the pulp, and the cavity of the journal of the forward plate B serves as a bearing for the shaft F. To the shaft F, within the screen, are keyed or otherwise secured two collars, G, to which are clamped springs H. The outer ends of the springs H are secured to blocks I, attached to plates J, placed opposite the screen-plates D, but with their rear ends a little farther from the said screen-plates D than their forward ends. The plates J, at their side edges and forward ends, are connected with the screen-frame and screen-plates B C D by flexible packing K, of rubber or other suitable material. The plates J are connected at their rear ends by flexible packing K with the edges of a plate, L, which is made of the same shape as the plates B of the screen-frame, but smaller. The plate L is provided at the center of its inner side with a socket, M, to receive the end of the shaft F. The plates J are pressed outward by springs N, which rest against their inner sides, and are attached to the forward plate B.

With this construction, as the shaft F moves back and forth longitudinally, the plates J will move in and out as a bellows to pulsate the pulp, drawing it in through the screen-plates D, and forcing it out around the

edges of the plate L into the space between the plate L and the rear plate B, whence it passes through the hollow journal of the plate B into the outlet-chamber O. The chamber O is divided by a partition, P, into two compartments. The pulp enters the inner compartment of the chamber O, passes over the upper edge of the partition P, and escapes through a discharge-opening in the bottom of the outer compartment.

Q is the driving-shaft, to which are attached pulleys R, to receive a driving-belt, and a fly-wheel, S, to give steadiness of motion to the machine. To the outer end of the shaft Q is attached a small gear-wheel, T, the teeth of which mesh into the teeth of a large gear-wheel, U. The gear-wheel U is attached to the outer end of the worm-shaft V, which engages with a worm-wheel, W, attached to the outer end of the hollow journal of the plate B, to revolve the screen. To the inner end of the driving-shaft Q is attached a cross-head, X, to which is attached a bar, Y, provided with a crank-pin. The end parts of the bar Y are slotted longitudinally to receive the fastening-screws, so that the crank-pin *y* may be adjusted to give a longer or shorter stroke, as may be required. To the crank-pin *y* is pivoted the end of a pitman, Z, the other end of which is hinged to the forward end of the

shaft F, so that the said shaft may receive a reciprocating movement to operate the bellows at the same time that the screen is revolved.

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

1. In a revolving pulp-screen, the combination, with the screen-plates D, of the bellows-plates J, operating, substantially as herein shown and described, to give pulsations to the pulp, as set forth.

2. The pulp-screen formed by the combination of the screen-plates D with the bars C and the polygonal plates B, substantially as herein shown and described.

3. The combination of the plates J, the flexible packing K, and the polygonal plate L with the screen-plates D, the screen frame B C, and the shaft F, substantially as herein shown and described.

4. The combination of the springs H with the bellows-plates J, the end plate B of the screen-frame, and the reciprocating shaft F, substantially as herein shown and described.

WILLIAM L. LONGLEY.

Witnesses:

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