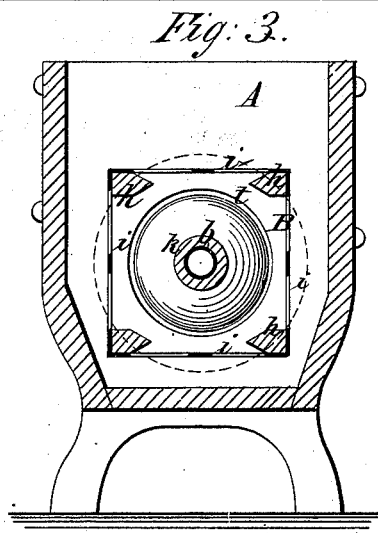
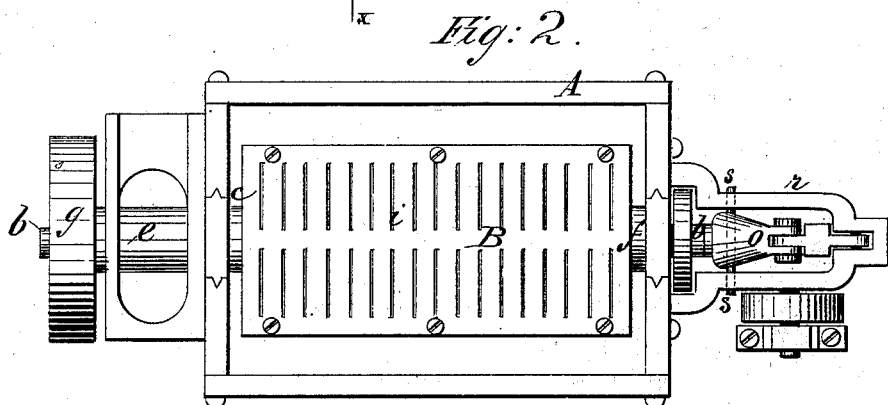
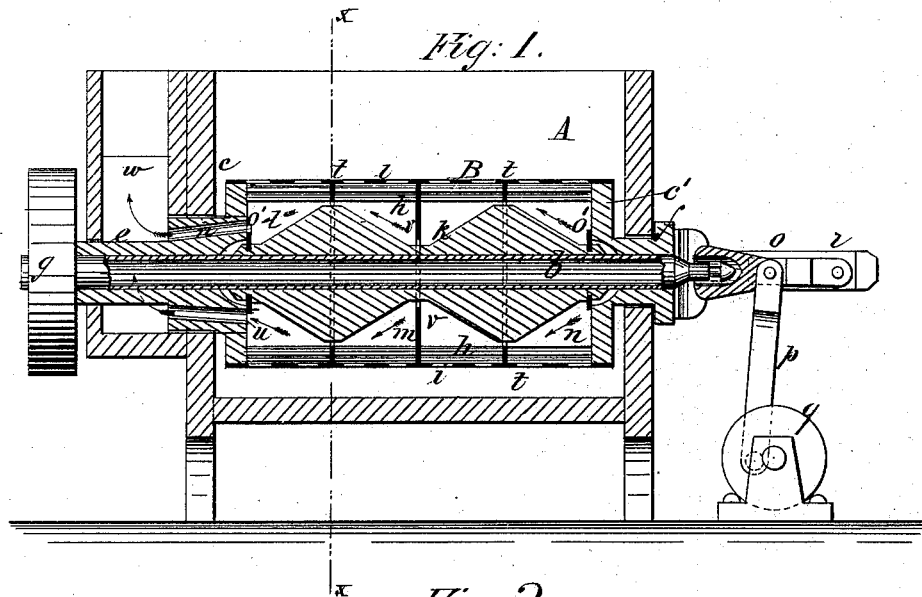


J. S. WARREN.  
Paper-Pulp Screen.

**No. 216,243.**

Patented June 3, 1879.



WITNESSES:

A. Schehl.  
C. Sedgwick

INVENTOR:

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# UNITED STATES PATENT OFFICE

JOHN S. WARREN, OF GARDINER, MAINE.

## IMPROVEMENT IN PAPER-PULP SCREENS.

Specification forming part of Letters Patent No. 216,243, dated June 3, 1879; application filed March 20, 1879.

*To all whom it may concern:*

Be it known that I, JOHN S. WARREN, of Gardiner, in the county of Kennebec and State of Maine, have invented a new and Improved Paper-Pulp Screen, of which the following is a specification.

My improvements relate to paper-pulp screens or dressers wherein the pulp is screened previous to passing to the paper-machine. Heretofore such screens have been arranged to deliver the pulp through hollow journals of the revolving screen, and difficulty has been experienced in keeping the pulp from contact with the bearings.

My invention consists in a hollow screen-box fitted to revolve in a tank, and having within it upon its shaft conical sleeves, which, by a vibrating motion of the shaft, act to agitate the pulp and keep the screens free. The pulp passes in a continuous stream through the head of the screen to the delivery-pipe.

The invention further consists in the mechanism for vibrating the shaft, and to certain other details of construction set forth hereinafter, and shown in the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section. Fig. 2 is a plan view. Fig. 3 is a cross-section on line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

A is a vat, into the top of which the pulp to be screened is led until the vat is nearly full, when the machine is set in operation. B is the screen fitted in tank A upon a horizontal shaft, *b*. The screen consists of heads *c c'*, that are respectively formed with sleeves or trunnions *e f*, that pass through the ends of tank A, to support the screen, and the shaft *b* passes through sleeves *d e* and projects at both ends of the tank. The driving-pulley *g* is attached upon sleeve *e*.

By this construction the screen is revolved by means of pulley *g*, and the shaft *b* has a separate longitudinal vibrating motion by the mechanism hereinafter described.

The heads *c c'* are square and are connected by longitudinal strips *h*. *i i* are the screen-plates attached to the screen-frame. At the inside of the screen, and attached upon shaft *f*, is a sleeve, *k*, which is in the form of two

double cones, as shown, leaving spaces *l, m*, and *n* for pulp. Attached upon heads *c c'* are disks *o'*, of rubber or other flexible material, which disks are apertured for the passage of shaft *d* and sleeve *k*, and the edges of the aperture in each disk enter an annular groove in sleeve *k*. By this means the pulp is prevented from entering the bearings, where it would become dry and create friction.

The shaft *b* is vibrated lengthwise by means of the toggle-connection *o*, pitman *p*, and crank-wheel *q*. The toggle *o* is attached at one end in the hanger *r*, that is connected to the end of tank A, and its other end is supported by pins *s*, that project into slots in the sides of the hanger. The pins *s* also enter an annular groove in shaft *b*, forming a kind of gimbal connection that permits free revolution of shaft *b*, and at the same time a vibrating movement is imparted to the shaft by the toggle.

This device is a simple and convenient means for accomplishing the vibration, but I do not limit myself to it.

To obtain a short and quick action upon the pulp in the screen, the space therein is divided transversely by plates *t t* and *v*, which are placed at the points of largest and smallest diameter of sleeve *k*, and are apertured for the sleeve, the aperture being in each case slightly larger than the sleeve to permit passage of the pulp.

The head *c* is apertured at *u* for the escape of the pulp to the rising passage *w*, through which it passes to the paper-machine. The reciprocation of the cones produces an inward and outward flow of pulp through the screen or dresser-plates, that prevents the fiber from clogging the screen or adhering to the plates.

The described construction prevents contact of pulp with any wearing parts, and the toggle-connection gives a powerful and quick motion to the cones. The movement of the pulp is broken by the plates *t* and *v*, and the pulp forced forward until it passes out by the apertures *u*.

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

1. In a paper-pulp screen and dresser, the screen B, supported in tank A by trunnions *d*

*e*, and upon a vibrating shaft, *b*, the parts being combined and arranged substantially as and for the purposes set forth.

2. The combination, with the screen B, of the vibrating shaft *b*, conical sleeve *k*, and partition-plates *t t v*, substantially as and for the purposes specified.

3. In a paper-pulp screen, the combination, with the shaft *b*, of the toggle *o*, pitman *p*, and crank *q*, substantially as and for the purposes specified.

4. The combination, with the vibrating shaft *b*, sleeve *k*, and screen B, of the flexible disks *o'*, as and for the purposes set forth.

5. In a paper-pulp screen and dresser, the apertured head *e*, of screen B for delivery of the pulp from the screen, as and for the purposes set forth.

JOHN S. WARREN.

Witnesses:

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W. J. LANDERS.