H. HOLLINGSWORTH.

Paper-Pulp Washer.

No. 206,877. Patented Aug. 13, 1878.

Fig. 1.

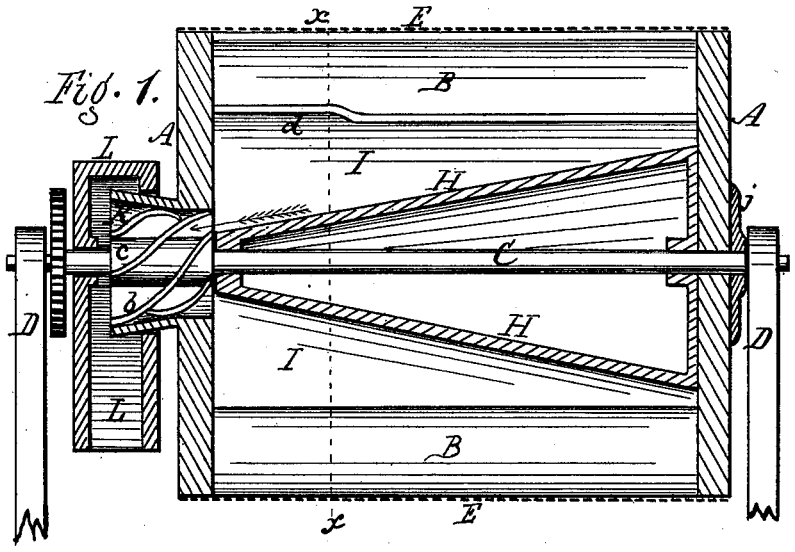


Fig. 2.

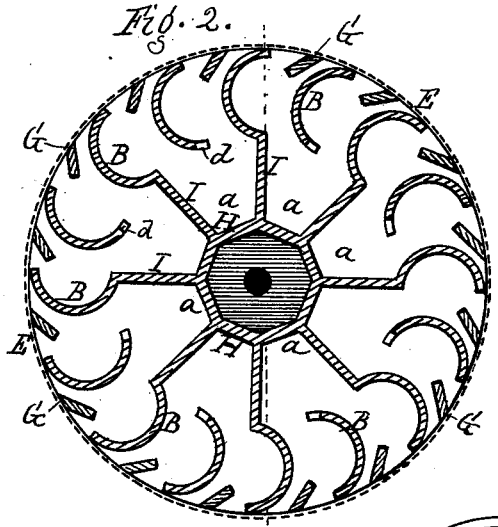


Fig. 3

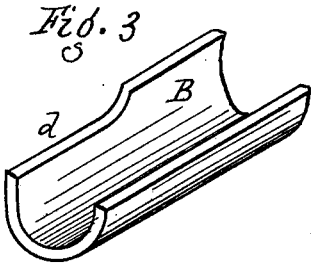
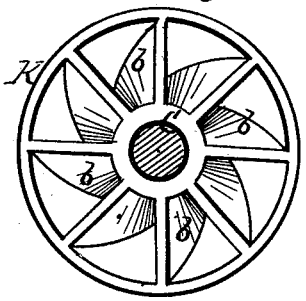


Fig. 4.



Attest.

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UNITED STATES PATENT OFFICE.

HENRY HOLLINGSWORTH, OF DANSVILLE, NEW YORK.

IMPROVEMENT IN PAPER-PULP WASHERS.

Specification forming part of Letters Patent No. **206,877**, dated August 13, 1878; application filed July 19, 1878.

To all whom it may concern:

Be it known that I, HENRY HOLLINGSWORTH, of Dansville, in the county of Livingston and State of New York, have invented a certain new and useful Improvement in Paper-Pulp Washers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section through the machine. Fig. 2 is a cross-section on line *x x* of Fig. 1. Fig. 3 is a perspective view of the discharge end of one of the buckets. Fig. 4 is an end elevation of the discharge-opening at the end of the machine.

My invention relates to apparatus for washing paper-stock; and consists in the construction and arrangement hereinafter described, whereby the water is more effectually raised from the engine and discharged in a more rapid manner.

In general principle the device is similar to others of its class, consisting of a cylinder armed with buckets, which raise the water and discharge it through the end.

A A are the two heads of the cylinder. B B B are the buckets, of which any desired number may be used, preferably about sixteen. These buckets are clamped between the heads, which are grooved out to receive the ends.

The cylinder rests on a shaft, C, having its bearings in suitable standards or supports D D, and it rests in the engine horizontally, so that when it is revolved the buckets will dip up the water and discharge the same inside, whence the water escapes through the discharge-opening in the end of the cylinder, hereinafter more fully described.

The exterior of the cylinder is covered with wire-cloth E, which prevents the passage of the pulp to the inside.

G G G are thin slats set into the heads between the buckets B B, and resting flush with the buckets. They stand inclined, as shown, in the direction of motion, and rest at such an angle as to cut the water and facilitate its entrance into the buckets.

Two or more thicker slats or stays may be used on opposite sides of the cylinder for tacking the wire-cloth to, and the edges of the slats G G and the buckets B B are so beveled that the wire-cloth has a full bearing on said edges all the way around.

H is a central core or body, extending from head to head through the cylinder, and made of conical form, smallest at the discharge end of the cylinder. It is closed on all sides, so that the water drawn in by the buckets will run down the outside of said core to the discharge-outlet at the end of the cylinder.

The core may be made of any desired form in cross-section, but preferably polygonal, as shown in Fig. 2. It is made a fixture with the cylinder and revolves with it.

From the several angles of the core partitions or diaphragms I I extend outward radially and join the inner edges of the buckets, thereby forming as many separate channels or water-ways *a a* as there are angles. Each of these channels discharges its own water independently of the others, and is not impeded by the same. In the drawing the partitions are shown as engaging with every alternate bucket.

K is a collar or rim projecting outward from the outside of the head at the discharge end of the machine, and inclosing the discharge-opening. It is made flaring, being widest at the outer end, so that the bottom of the same will form an incline for the water to run down, as shown in Fig. 1. Within this collar are a set of wings, *b b*, set spirally or inclined in such a direction as to draw or force the water from the interior of the cylinder outward as the cylinder revolves, thereby having a tendency to produce an exhaust in the cylinder and facilitating the discharge. The inner closed end of the core H is of smaller diameter than the discharge-opening, as shown in Fig. 1, thereby leaving sufficient space for the passage of the water. The hub *c* of the collar and the cap *j* at the opposite end of the cylinder are keyed to the shaft, which passes through, so that the cylinder revolves with the shaft. The shaft is driven by any convenient gearing or banding.

L is a discharge-spout, arranged over the outer end of the collar K for the purpose of directing the water downward.

The buckets B B B are made inclined, or are the deepest at the discharge end, so that the tendency of the water in being raised is to

run rapidly down said buckets. On the inner edges of the discharge ends of the buckets are also formed long notches or depressions *d d d*, as shown in Fig. 3. These notches allow a ready escape of the water over the buckets at that point, and prevent the damming up and consequent overflow that would otherwise occur from the rapid running down of the water through the inclined buckets. A false head might be placed inside the buckets, leaving a space between it and the outer head, if desired.

The object of this invention is to produce a more rapid flow of the water outward than in ordinary cylinders of the kind. To this end the buckets are inclined, as before described. The inner ends are notched, the spaces around the core between it and the buckets are formed into separate and independent channels to produce distinct currents of water, and an exhaust device is provided at the outlet, which draws the water outward by positive action; in which particulars my device differs from those in common use and well known.

I am aware that cylinders having buckets, also central cones, have before been used, the cone, being stationary, not revolving with the cylinder, and the water from the buckets falling through a slot in the top of the cone and being discharged from the latter into a spout at the end of the machine. Such I disclaim.

I claim—

1. In a paper-pulp washer, the combination of the inclined buckets B B, provided with the notches or depressions *d d* at the discharge end, the angular slats G G, the central conical core H, revolving with the cylinder, the partitions I I, connecting the core with the buckets and forming separate water-ways, and the flaring collar K at the end of the cylinder, provided with the spiral or twisted wings *b b* for producing an exhaust, the whole covered with wire-cloth E, resting upon the edges of the buckets and slats, as shown and described, and for the purpose specified.

2. In a paper-pulp washer, the cylinder A A, provided with buckets B B, made inclined or deepest at the discharge end, and provided at the discharge end with notches or depressions *d d*, on the inner edge, for the purpose of facilitating rapid discharge of water, as herein shown and described.

3. In a paper-pulp washer, the combination, with a central core or body, H, revolving with the cylinder and with the buckets B B, of the partitions I I, connecting said core with the inner edges of the buckets, and forming thereby separate and independent water-ways *a a a*, down which the water runs to the discharge-opening at the end of the cylinder, as shown and described, and for the purpose specified.

4. In a paper-pulp washer such as described, the combination, with the central core H, provided with a series of separate water-ways, *a a a*, of the flaring collar K at the end of the cylinder, provided with a series of spiral or twisted wings, *b b*, the diameter of the discharge-opening in said collar being greater than that of the end of the core, and the whole so arranged that the water passing down the inclined water-ways *a a* will be received into the discharge-opening and drawn or forced through by the spiral or twisted wings, as shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY HOLLINGSWORTH.

Witnesses:

C. GILETEN,

JAS. GEORGE GROSS.