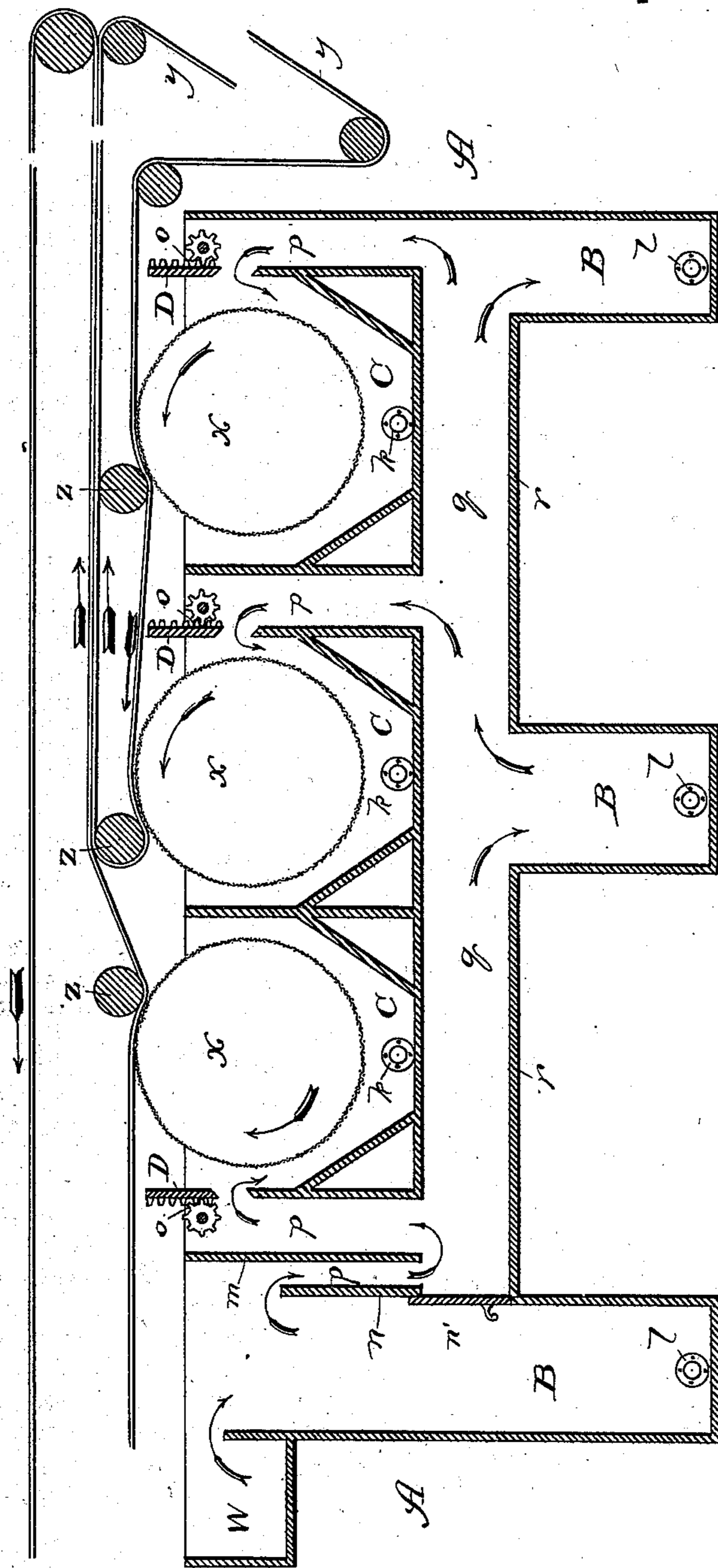


(No Model.)

S. WILMOT.  
PAPER MAKING MACHINERY.

No. 401,917.

Patented Apr. 23, 1889.



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# UNITED STATES PATENT OFFICE.

SAMUEL WILMOT, OF LOCKPORT, ILLINOIS.

## PAPER-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 401,917, dated April 23, 1889.

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*To all whom it may concern:*

Be it known that I, SAMUEL WILMOT, a citizen of the United States, residing at Lockport, in the county of Will and State of Illinois, have invented a new and useful Improvement in Paper-Making Machinery, of which the following is a specification.

My invention relates particularly to an improvement in the construction of the "cylinder-vats" of paper-making machinery, and, while it may be employed with advantage in paper-making machinery generally, it is more especially designed for use in machines for the manufacture of paper from wheat or other straw, and I therefore describe my improvement in connection with machinery of that particular class.

The cylinder-vat to which my improvement relates is the receptacle into which the paper-stock is introduced after mixture with water to reduce it to the proper consistency, and in which are located cylinders that gather the pulp and form it into wet paper, whence it is transferred to the felts. As heretofore commonly constructed the cylinder-vat consisted merely of a box or receptacle in which the wire-cloth cylinder or cylinders revolved, the vat having a drainage-opening at the bottom. Notwithstanding the "washing" to which the pulp is subjected before it reaches the vat containing the cylinders, a certain quantity of foreign matter, which would streak or otherwise deleteriously affect the paper, remains mixed with the pulp and is gathered up by the cylinders. Moreover, in the reduction of straw, and especially wheat straw, to paper-stock, the knots, which are tougher than the balance of the stalk, tend to resist the action of the grinders. The knots left unground, unless abstracted from the pulp, also tend injuriously to affect the quality of the paper.

The foreign substances and knots above referred to are generally heavier than the paper-stock or "half-stuff," as it is also termed, and will settle to the bottom of the vat, so that to prevent their accumulating in large quantities, and thus lessen the danger of their being picked up by the revolving cylinders, it has been necessary to drain and scour the vat several times each day. These operations waste a large quantity of paper-stock, as a great deal

of good material has to be sacrificed in draining off the deleterious matter. It has also been necessary at each cleaning of the vat to shut down the entire machine while the draining and scouring were being performed, thereby entailing considerable loss in consequence of the reduction of the output of the mill.

My object is to provide a cylinder-vat for a paper-making machine, by the use of which the operation of cleaning may be accomplished with but little loss of paper-stock and without the necessity of stopping the machinery, whereby the process of paper-making may proceed without interruption.

To this end my invention consists in the general construction of my improved machine and in details of construction and combinations of parts, all as hereinafter more fully described and claimed.

The drawing shows a vertical section of a pulp-vat of my improved construction.

A is the vat, having traps or "settling-boxes" B and raised compartments or cylinder-vats C. The traps and cylinder-vats each extend, preferably, entirely across the vat A, the bottoms of the cylinder-vats being raised above the floor of the vat A to afford a horizontal passage, *q*, between them. Vertical passages *p*, arranged, preferably, as shown, extend from the passage *q* to the height of the cylinder-vats. The passages *q* and *p* form a conduit through which a supply of pulp is directed to the vats C, as hereinafter described. The cylinder-vats C are each provided at the upper edges of the sides, adjacent to their respective passages *p*, with gates D, which latter are raised and lowered to open and close by means of racks and pinions *o*, operated by winches. (Not shown.)

*n* is a partition rising from the floor of the vat A to a point some distance below the top of the vat and provided at its lower edge with a sliding gate, *n'*. *m* is another partition extending from the top of the vat A to a point in line with the flows of the cylinder-vats. A passage, *p*, intervenes between the partitions *n* and *m*.

The pulp enters from the mixing-trough or reservoir W, and, filling the first trap B, rises until it overflows the partition *n*, the gate *n'* being down. It thence flows to and fills the

second and third traps B and passage *q*, and, rising in the passages *p*, the gates D being open, it fills the cylinder-vats C. The wire-cloth cylinders X, of common construction, 5 revolve and form the wet paper in the usual manner and deposit it upon the "wet felts" Y, which travel between the cylinders and couch-rolls Z and over the latter to the "wet-press rolls." (Not shown.) As the pulp flows 10 to the cylinder-vats, the greater part of the foreign substances and knots before mentioned settle in the traps B, so that comparatively little deleterious material ever reaches the cylinder-vats. The traps are each pro- 15 vided near their bases with outlets *l*, controlled by valves, (not shown), through which the material at the bottom of the traps may be drawn off from time to time and passed through a grinding-machine especially des- 20 signed for disintegrating knots, after which the material may be turned into the vat and utilized, the foreign matter being caught in the traps, as before.

While very little deleterious material es- 25 capes the traps, it is nevertheless necessary occasionally, though not by any means as frequently as where my improved apparatus is not employed, to cleanse the cylinder-vats. By means of my improved construction each of 30 the vats may be drained and scoured independently without necessitating stoppage of the machinery or interference with the operation of the other vat or vats. The said cylinder-vats are each provided with a drainage- 35 outlet, *k*, opened and closed by means of a valve. (Not shown.) To facilitate the drainage of the vats, their sides are made to converge, and thus diminish the width of the vats as they approach the bottoms, as shown. The 40 bottoms, furthermore, incline from the opposite sides of the vats to the outlets *k*. Owing to the nature of the view selected, this last feature of my improved construction is not shown in the drawing. It is thought, how- 45 ever, that the description renders the construction sufficiently comprehensive.

To accomplish the cleaning of any one of the cylinder-vats, its respective gate D is closed, thereby shutting off the supply of pulp, 50 which in practice would never rise above a few inches below the top of the gate when the latter is closed. The vat is then drained of its contents by opening the outlet *k*, and the scouring effected in the usual manner. The

pulp which is drawn off may be allowed to flow 55 into a trap or settling-reservoir provided for the purpose, and what is good thereof saved and utilized.

About once a week, ordinarily, it is desirable to cleanse the settling-boxes or traps B 60 and passages *q* and *p*, and to do this it becomes necessary to shut down the entire machine. The outlets *l* are opened and the traps and passages drained of their contents, after which the gate *n'* is opened by sliding it up- 65 ward and a hose inserted, by means of which the passages and traps are freely cleaned by flushing.

What I claim as new, and desire to secure by Letters Patent, is— 70

1. In a paper-making machine, the combination of the pulp-reservoir W, cylinders X, separate cylinder-vats C, provided with controllable outlets *k*, conduits leading to said vats, and gates D, whereby one vat may be filled 75 or emptied independently of the other or others, substantially as described.

2. In a paper-making machine, the combination of a vat, A, cylinders X, separate cylinder-vats C, provided with controllable outlets 80 *k*, supported within the vat A above its floor and forming a passage, *q*, passages *p*, and gates D, substantially as described.

3. In a paper-making machine, the combination of cylinders X and independent cylinder-vats C, having inlet-gates D and control- 85 lable outlets *k*, the side walls of the vats converging toward said outlets, substantially as described.

4. In a paper-making machine, the combination of the pulp-reservoir W, cylinders X, cylinder-vats C, and suitable conduits leading 90 from the pulp-reservoir to the cylinder-vats provided with traps or settling-boxes, substantially as described. 95

5. In a paper-making machine, the combination of a pulp-reservoir, a vat, A, cylinders X, cylinder-vats C, provided with controllable outlets *k*, supported within the vat A above its floor and forming a passage, *q*, passages *p*, 100 partitions *m* and *n*, gates D and *n'*, and traps or settling-boxes B, having controllable outlets *l*, substantially as described.

SAMUEL WILMOT.

In presence of—

J. W. DYRENFORTH,  
M. J. BOWERS.