(No Model.) 3 Sheets—Sheet 1.

P. H. CRAGIN.

PAPER PULP SCREEN.

No. 403,577. Patented May 21, 1889.

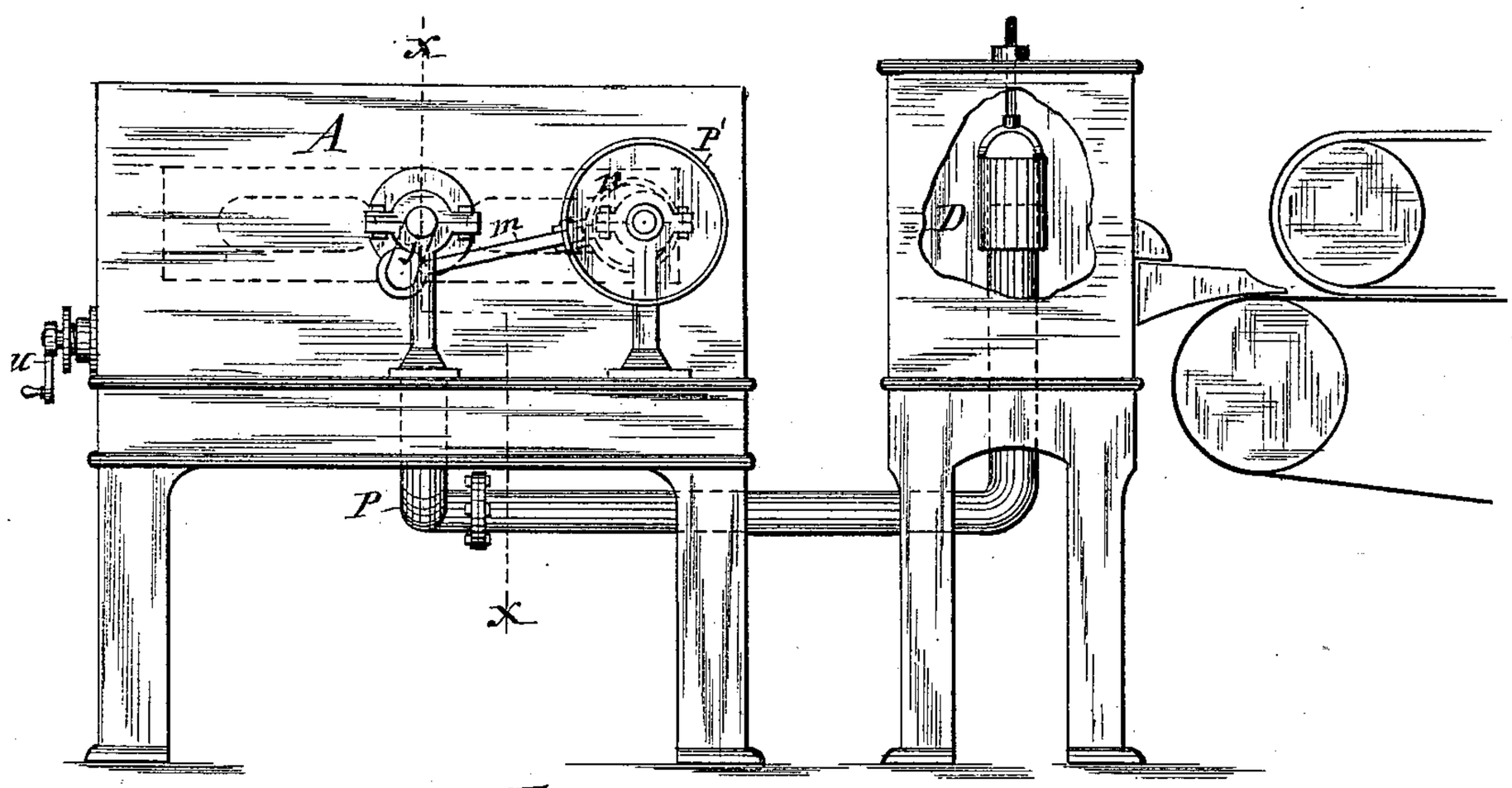

Fig. 1

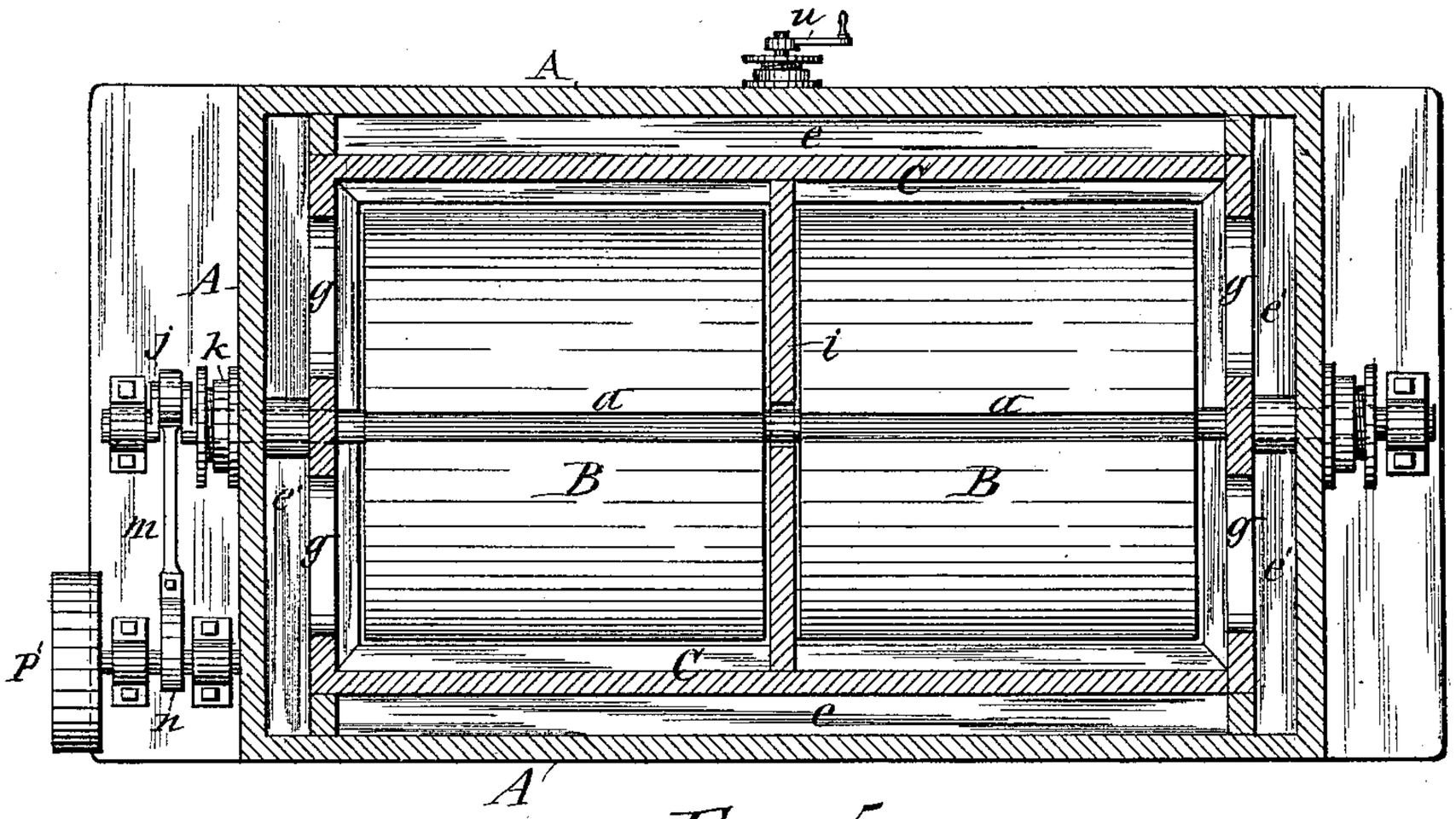

Fig. 5

WITNESSES:

C. L. Bendixon.

H. M. Seamans

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(No Model.) 3 Sheets—Sheet 2.

P. H. CRAGIN.

PAPER PULP SCREEN.

No. 403,577. Patented May 21, 1889.

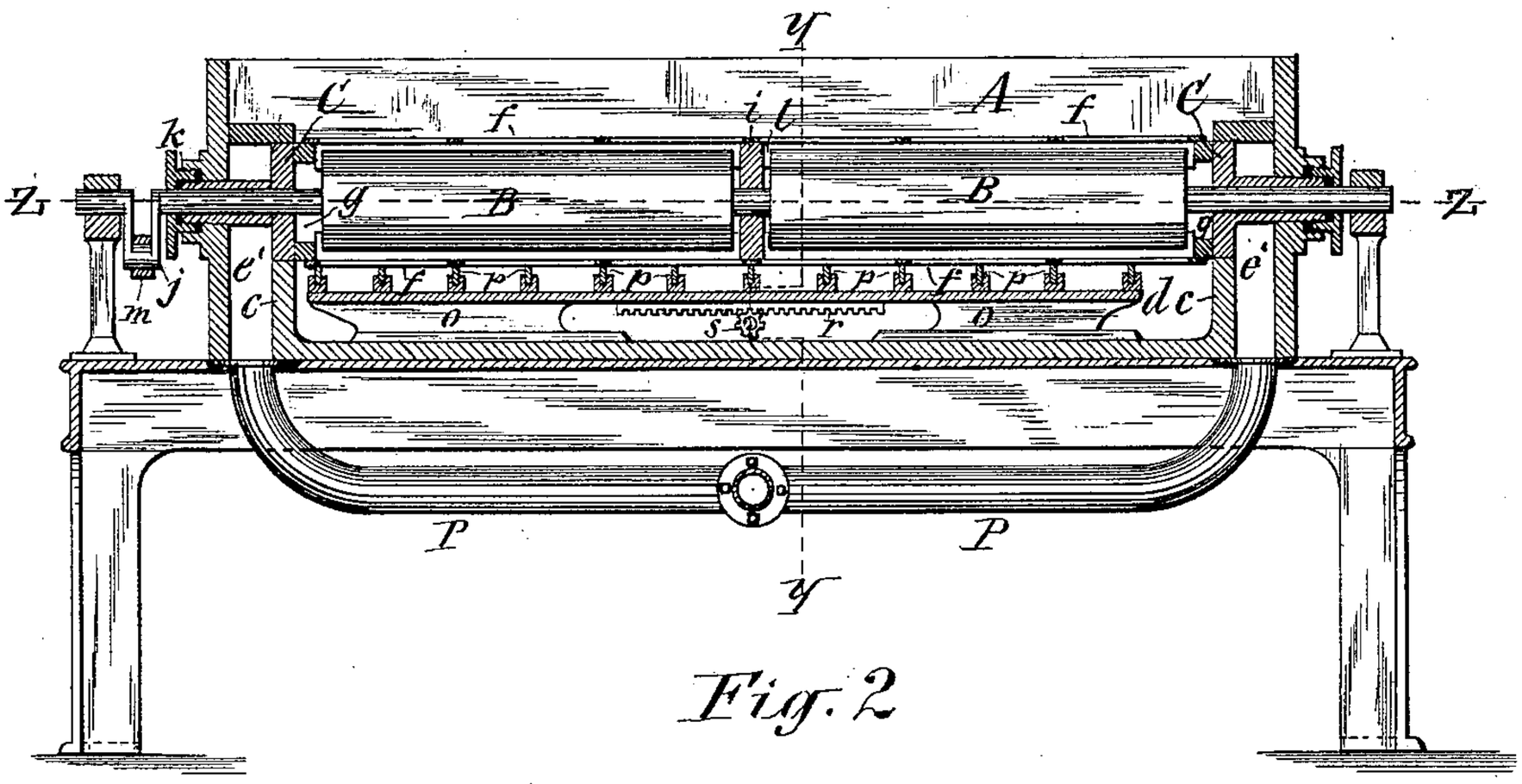

Fig. 2

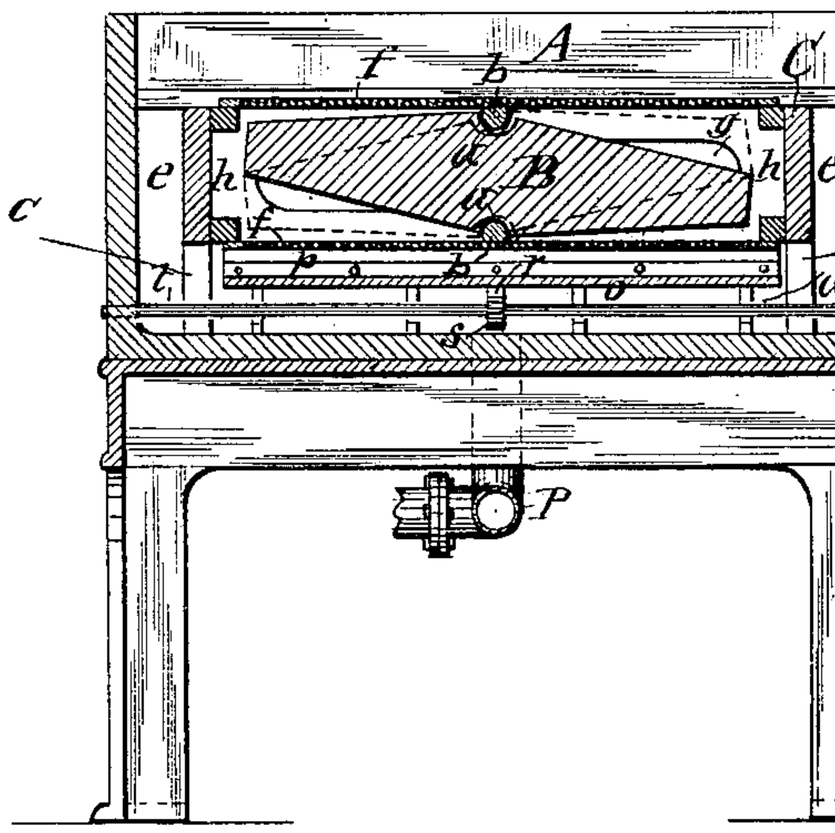

Fig. 3

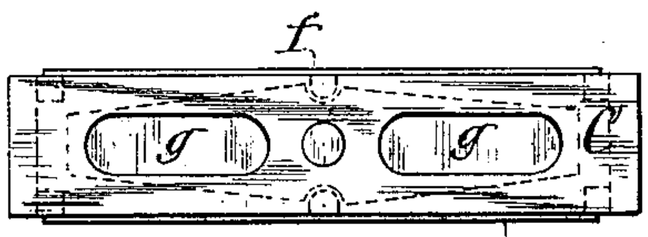

Fig. 4

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(No Model.) 3 Sheets—Sheet 3.

P. H. CRAGIN.

PAPER PULP SCREEN.

No. 403,577. Patented May 21, 1889.

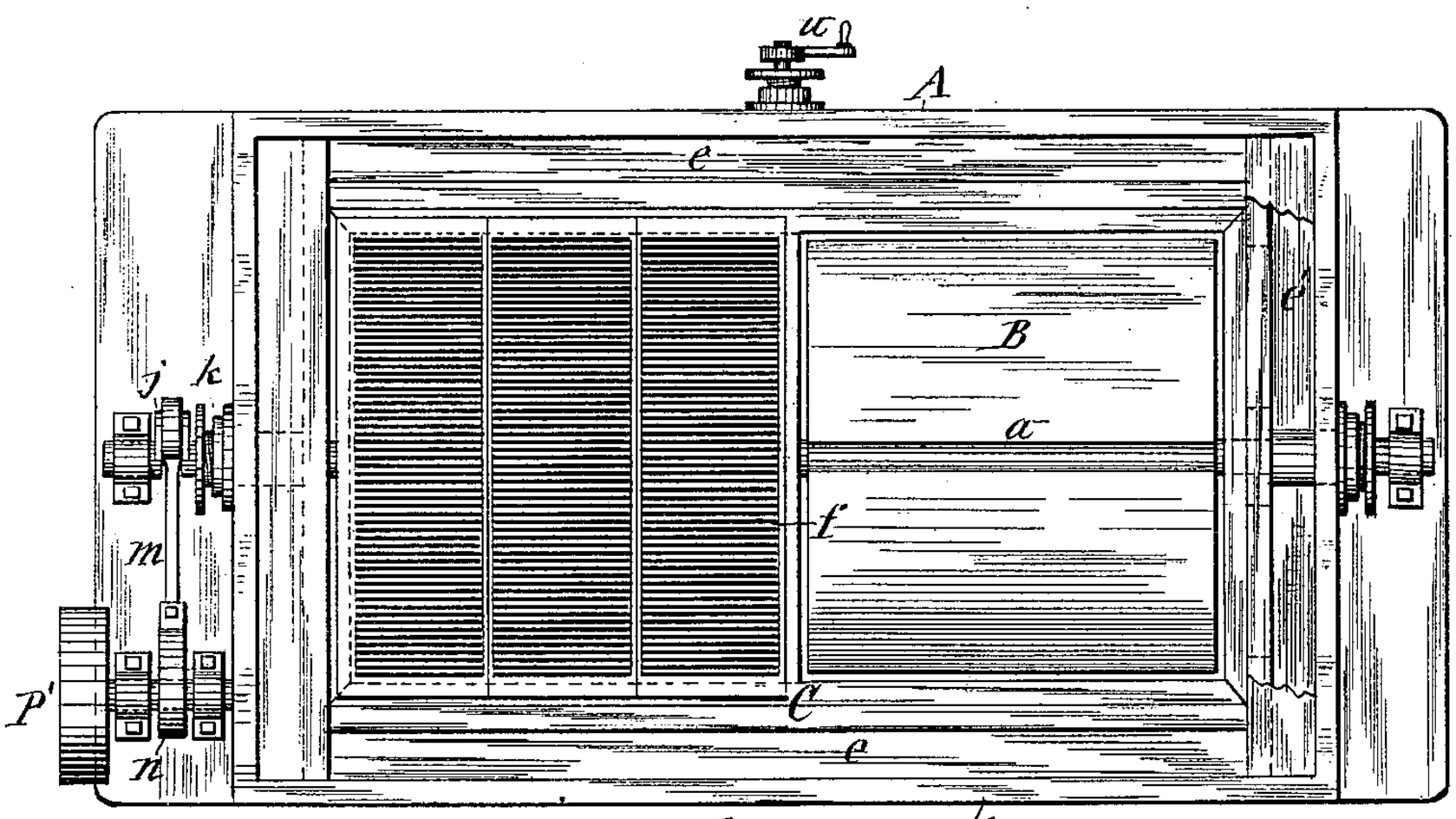

Fig. 7

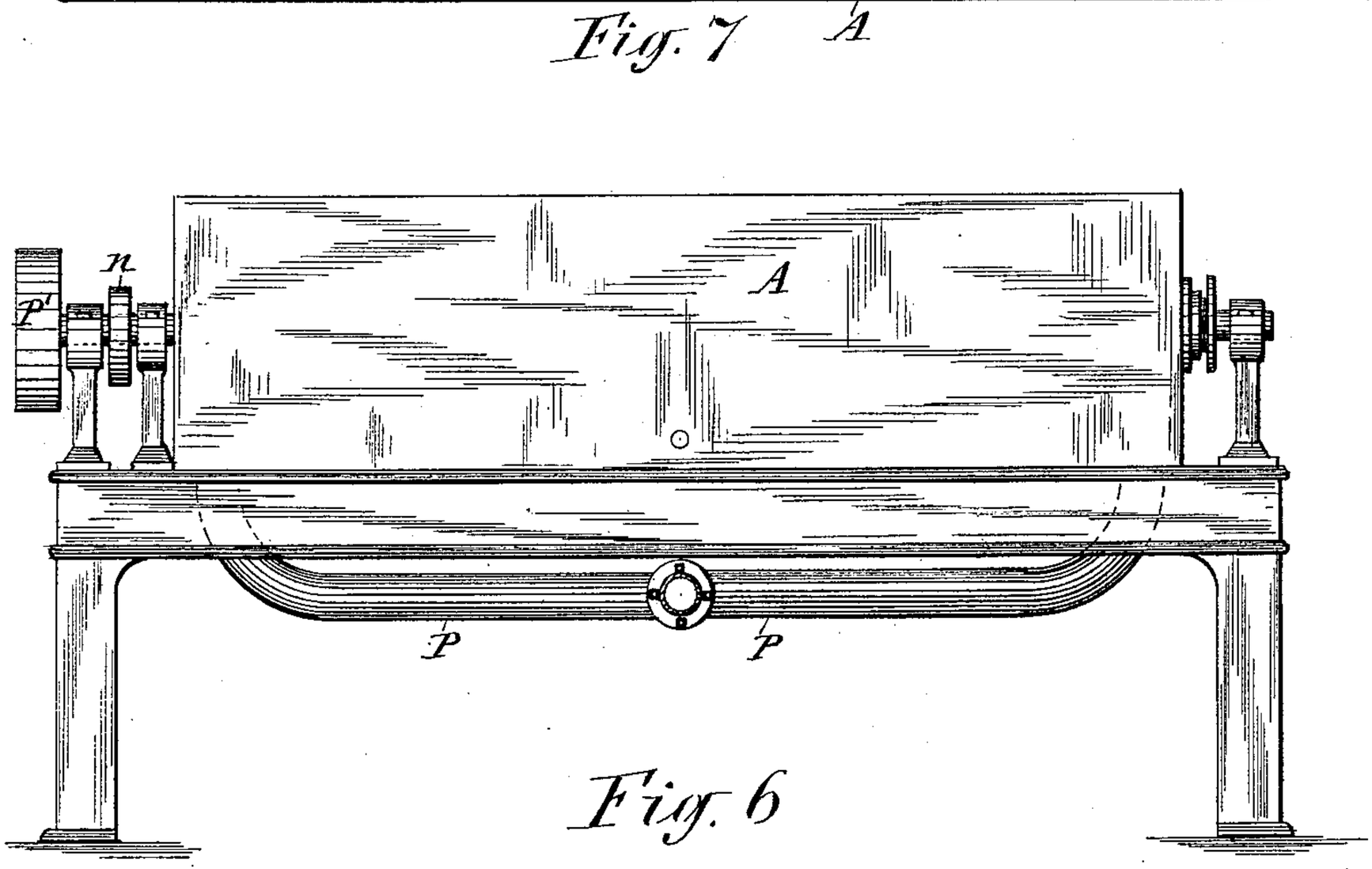

Fig. 6

WITNESSES:

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H. M. Seaman

INVENTOR

Patrick H. Cragin

BY

Hull, Laass & Hull

ATTORNEYS

UNITED STATES PATENT OFFICE.

PATRICK HENRY CRAGIN, OF PENN YAN, NEW YORK, ASSIGNOR TO THE SENECA SCREEN COMPANY, OF SAME PLACE.

PAPER-PULP SCREEN.

SPECIFICATION forming part of Letters Patent No. 403,577, dated May 21, 1889.

Application filed August 18, 1888. Serial No. 283,113. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HENRY CRAGIN, of Penn Yan, in the county of Yates, in the State of New York, have invented new and useful Improvements in Paper-Pulp Screens, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists, chiefly, in the combination, with a pulp-vat, of a screen-box seated in said vat, with a pulp-space between their sides and bottoms, and provided with screen-plates at the top and bottom of said box and an agitator in the screen-box. A pulp-screen thus constructed possesses superior efficiency, as hereinafter set forth.

The invention also consists in certain peculiarities of the details of the aforesaid pulp-screen and auxiliary devices connected therewith, as hereinafter fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is an end elevation of a paper-pulp screen embodying my invention. Fig. 2 is a vertical longitudinal section of the vat and screen-box, taken on line *x x*, Fig. 1. Fig. 3 is a vertical transverse section on line *y y*, Fig. 2. Fig. 4 is a detached end view of the screen-box. Fig. 5 is a horizontal section on line *z z*, Fig. 2. Fig. 6 is a side elevation of the pulp-vat; and Fig. 7 is a top plan view of the same, some of the screen-plates being removed and a portion of the frame-work broken away to illustrate the subjacent parts.

Similar letters of reference indicate corresponding parts.

A represents the pulp-vat, in which I place a screen-box, C, supported on props *c c*, so as to leave a pulp-space, *d*, between the bottoms of said vat and box. The screen-box is sufficiently shorter and narrower than the interior of the vat A to form pulp-passages *e e* between their sides, and similar passages *e' e'* between their ends, the latter passages being separated from the passages *e e* and from the pulp-space *d* and closed at the top to render it air-tight. The screen-box C has screen-plates *f f* secured to its top and bottom and supports the top screen-plates in proximity to the pulp-line of the vat. The ends of the screen-box are provided with ports *g g*, by which it communicates with the passages *e' e'*, which latter, in connection with pipes P P, extended therefrom, constitute ducts leading from the ports *g g* to the so-called "supply-box" D, from which the pulp passes to the paper-machine in the usual manner.

In the screen-box C, I arrange a suitable agitator, B, to produce the requisite pumping action for drawing the pulp through the interstices of the screen-plates. For said agitator I preferably employ a rocking bar similar in some respects to that shown in the patent of Russell and Cragin, No. 359,544, dated March 15, 1887. This rocking bar is pivoted longitudinally in the center of the screen-box and has its axis in the center of its cross-section, and in order to bring the surfaces at opposite sides of the axis of the bar nearly or quite level when they come in proximity to the screen-plates I slope said surfaces from lines central thereof and parallel with the axis toward the edges of the bar, as shown in Fig. 3 of the drawings.

The approach and retreat of the level surfaces to and from the screen-plates during the operation of the machine enhances the pumping action. During the operation of the said agitator or rocking bar B pulp is drawn into the screen-box from the bottom as well as from the top of the vat, and thus the screening capacity of the vat is greatly augmented, and at the same time the pulp is mixed in a uniform manner and the flow of pulp to the machine is rendered very steady. The screen-box is provided with recesses *h h* along the sides and ends of its interior, to allow the pulp to pass out of the box through the ports *g g* thereof. The space in the vat underneath the screen-box answers the purpose of collecting sand and other heavy substances which may accompany the pulp, said heavy substances settling in said space of the vat.

In a large pulp-vat I prefer to stiffen the screen-box at the center by a partition, *i*, extended across said box. In this case the said rocking bar is to be provided with a slot, *l*, to accommodate the partition. On the inner sides of the screen-plates and lengthwise of the center thereof are ribs *b b*, secured to the screen-box, and the agitator or rocking bar B

is provided in its top and bottom with longitudinal grooves *a a*, into which the aforesaid ribs extend. Said ribs serve to support the screen-plates at their centers, and at the same time form barriers which prevent the pulp from being thrown from one side of the screen-box to the opposite side thereof during the operation of the agitator B.

The agitator receives its rocking motion by a crank, *j*, on one of the trunnions thereof, projecting through a stuffing-box, *k*, on the vat, and a pitman, *m*, connecting said crank with an eccentric, *n*, on a shaft to which the driving-pulley P′ is attached.

Between the bottom of the vat A and bottom of the screen-box C, I place a horizontally-movable frame, *o*, on which are mounted a series of wipers or scrapers, *p p*, preferably of the form of rubber strips, secured by suitable clamps and held with their free edges in contact with the bottom screen-plates. The frame *o* has secured to it a rack, *r*, with which engages a pinion, *s*, attached to a shaft, *t*, extended through the vat and provided at the exterior of the vat with a hand-crank, *u*, by which to turn it alternately in opposite directions, and by doing the latter the frame *o* is made to slide back and forth and draw the wipers or scrapers across the screen-plates and thereby clean said plates when required.

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

1. The combination, with a pulp-vat, of a screen-box seated in said vat with a pulp-space between their sides and bottoms and provided with screen-plates at the top and bottom of said box, and an agitator in the screen-box, substantially as set forth.

2. The combination, with the pulp-vat, of a screen-box seated in said vat with pulp-passages between their sides and bottoms, and provided with ports through its ends and with screen-plates at its top and bottom, an agitator in the screen-box, and pulp-ducts leading from the ports of the screen-box, as set forth.

3. In combination with the pulp-vat, a screen-box seated in said vat with pulp-passages between their sides and bottoms and provided with ports through its ends, with screen-plates at its top and bottom and with recesses along the sides and ends of its interior, an agitator in said screen-box, and pulp-ducts leading from the ports of the screen-box, as set forth and shown.

4. In combination with a pulp-vat and a screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom of said box, scrapers or wipers under the bottom screen-plates, substantially as and for the purpose set forth.

5. In combination with a pulp-vat and a screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom and top of said box, an agitator in the screen-box, and scrapers under the bottom screen-plates, substantially as described and shown.

6. In combination with the pulp-vat and the screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom of the said box, a horizontally-movable frame between the bottom of the vat and bottom of the screen-box, wipers or scrapers carried on said frame and in contact with the under side of the bottom screen-plates, a rack on the same frame, a shaft extended through the vat, and a pinion on said shaft meshing with the aforesaid rack, substantially as described and shown.

7. In combination with the pulp-vat, a screen-box seated therein with a pulp-space between their bottoms, and screen-plates on the top and bottom of said box, the rocking bar B, pivoted longitudinally in the center of said screen-box and having its top and bottom surfaces sloping from lines central of said surfaces and parallel with the axis of the bar, substantially as described and shown.

8. In combination with the pulp-vat, a screen-box seated therein with a pulp-space between their bottoms, and screen-plates on the top and bottom of said box, the rocking bar B, pivoted longitudinally in the center of said screen-box and provided midway the width of its top and bottom surfaces with the longitudinal grooves *a a*, and the ribs *b b*, secured to the screen-box and extending from the screen-plates into the aforesaid grooves, substantially as described and shown.

In testimony whereof I have hereunto signed my name, in the presence of two witnesses, at Penn Yan, in the county of Yates, in the State of New York, this 14th day of August, 1888.

PATRICK HENRY CRAGIN. [L. S.]

Witnesses:
THOMAS S. BURNS,
WILLIAM W. PALMER.