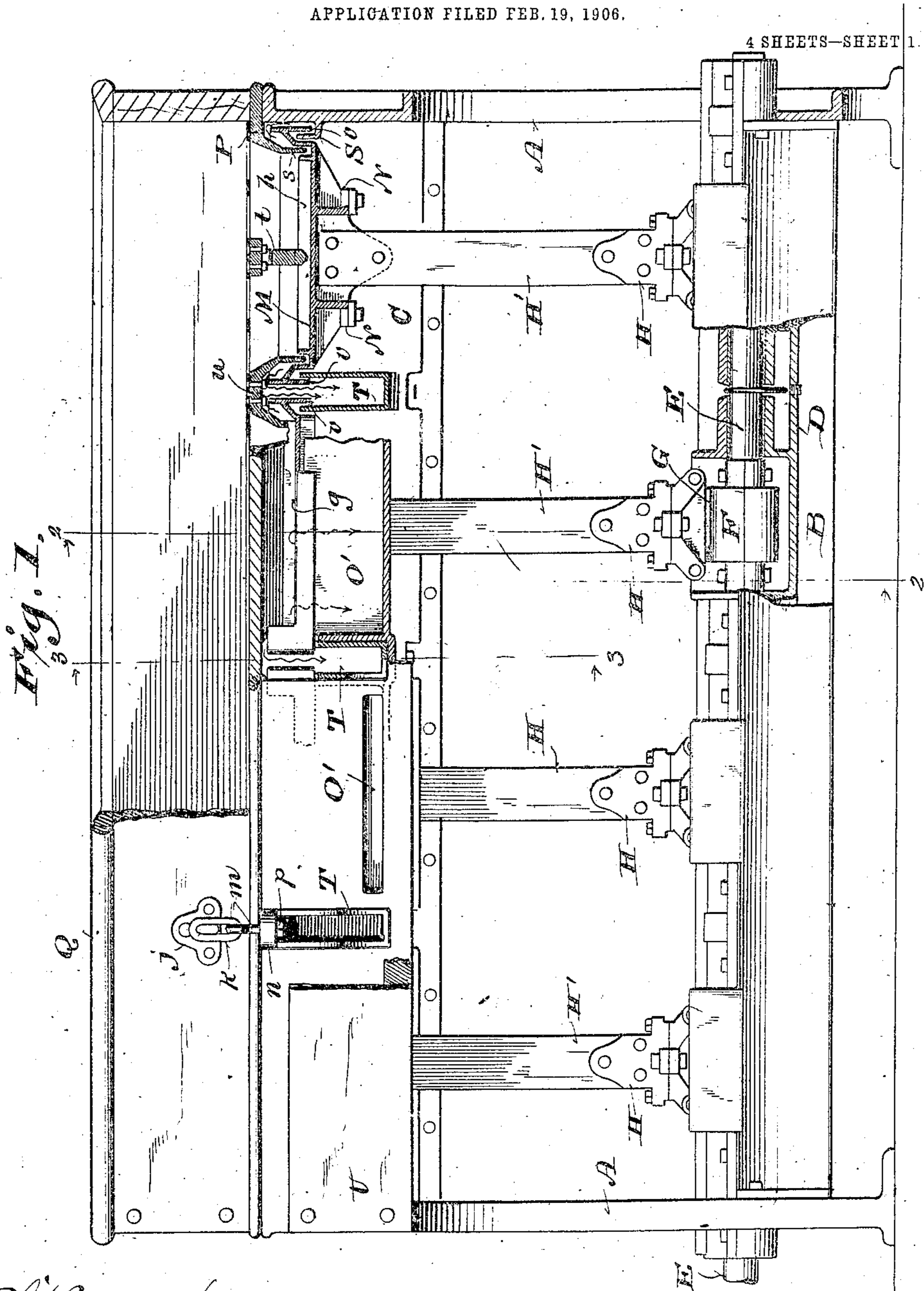


No. 822,599.

PATENTED JUNE 5, 1906.

E. W. GOODRICK.
PULP SCREENING MACHINE.
APPLICATION FILED FEB. 19, 1906.

4 SHEETS—SHEET 1.



Witnesses:
Fred Palm.
George Helber.

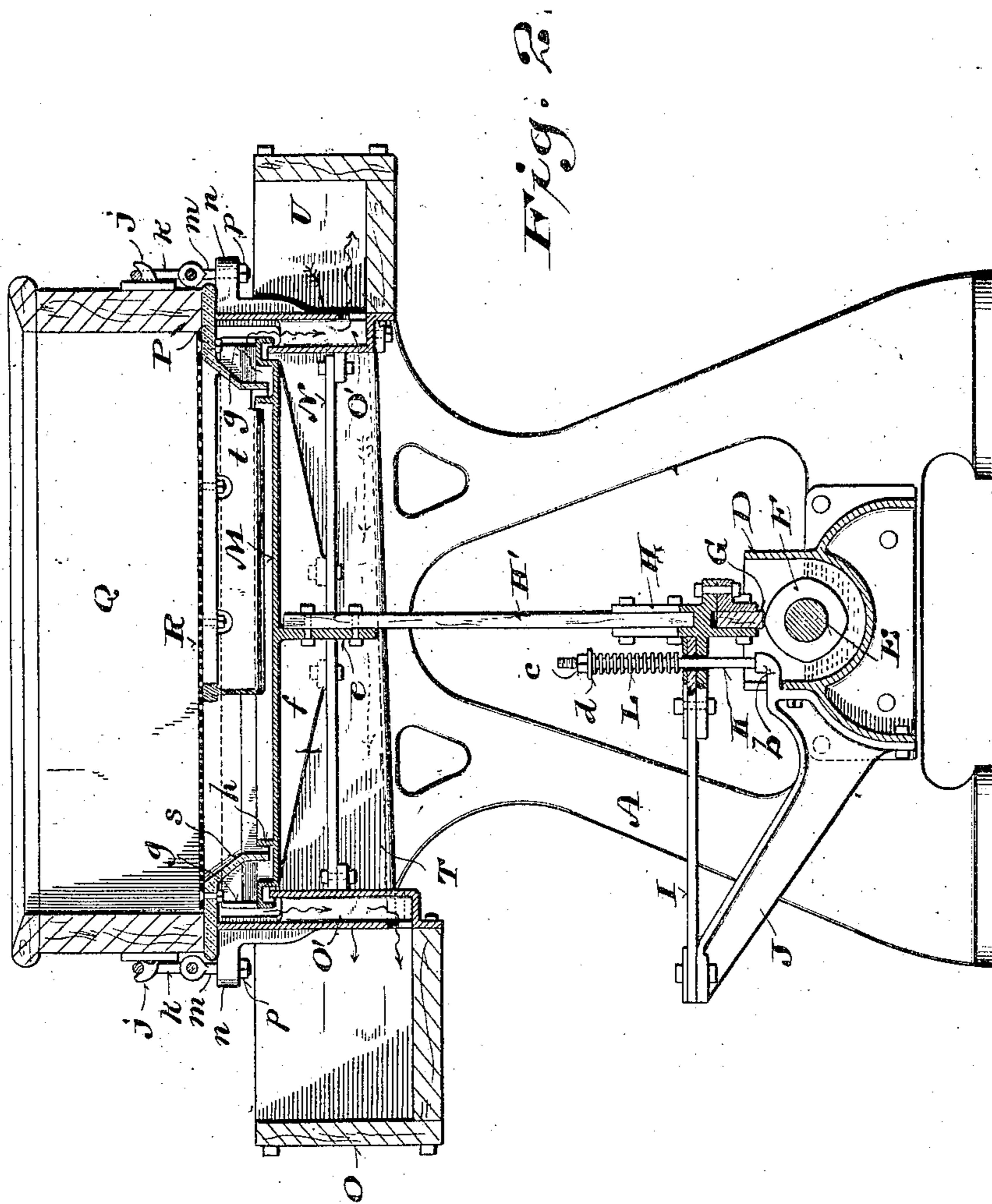
Inventor
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4 SHEETS—SHEET 2.



Witnesses:
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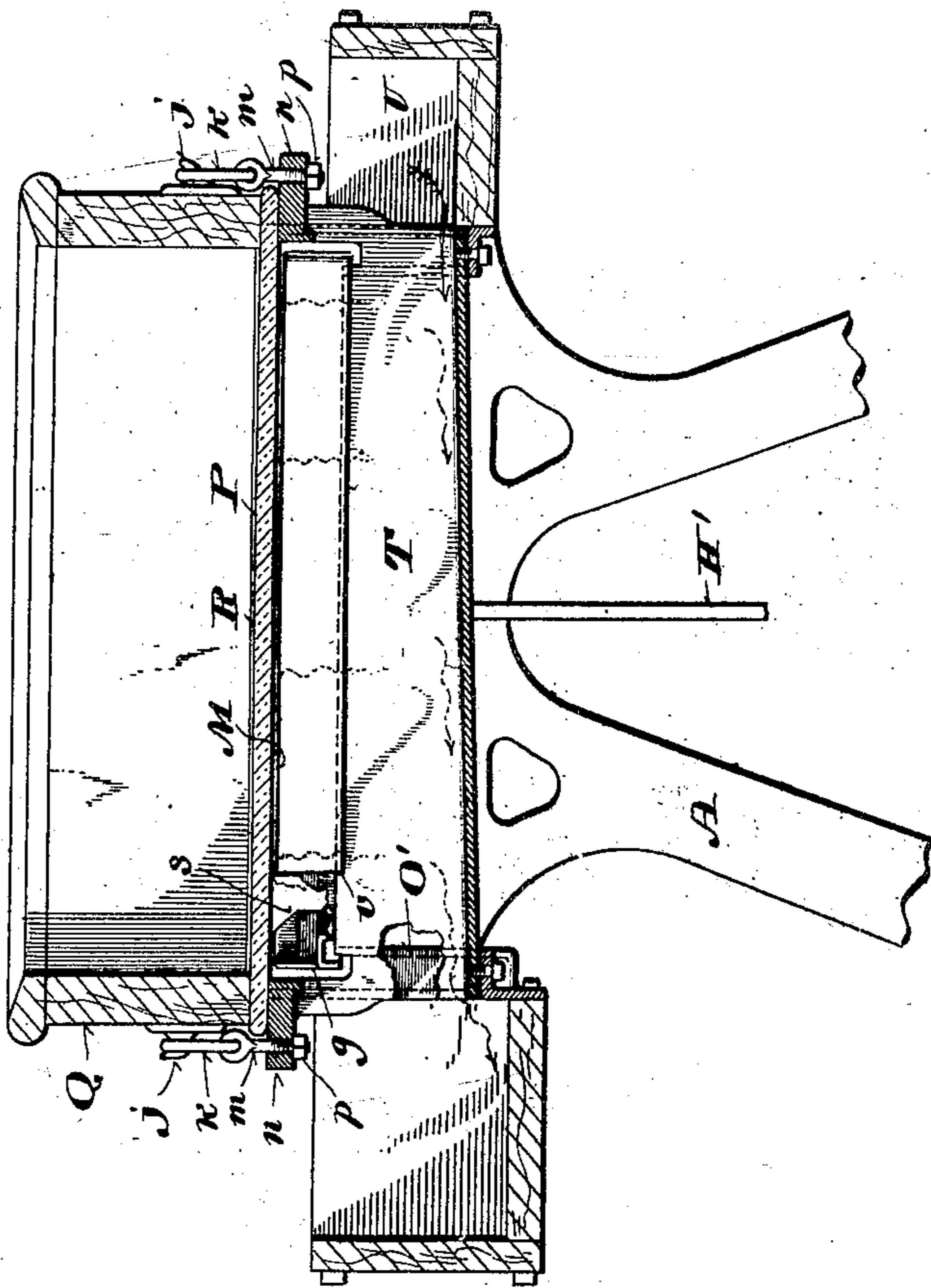
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4 SHEETS—SHEET 3.

Fig. 3.



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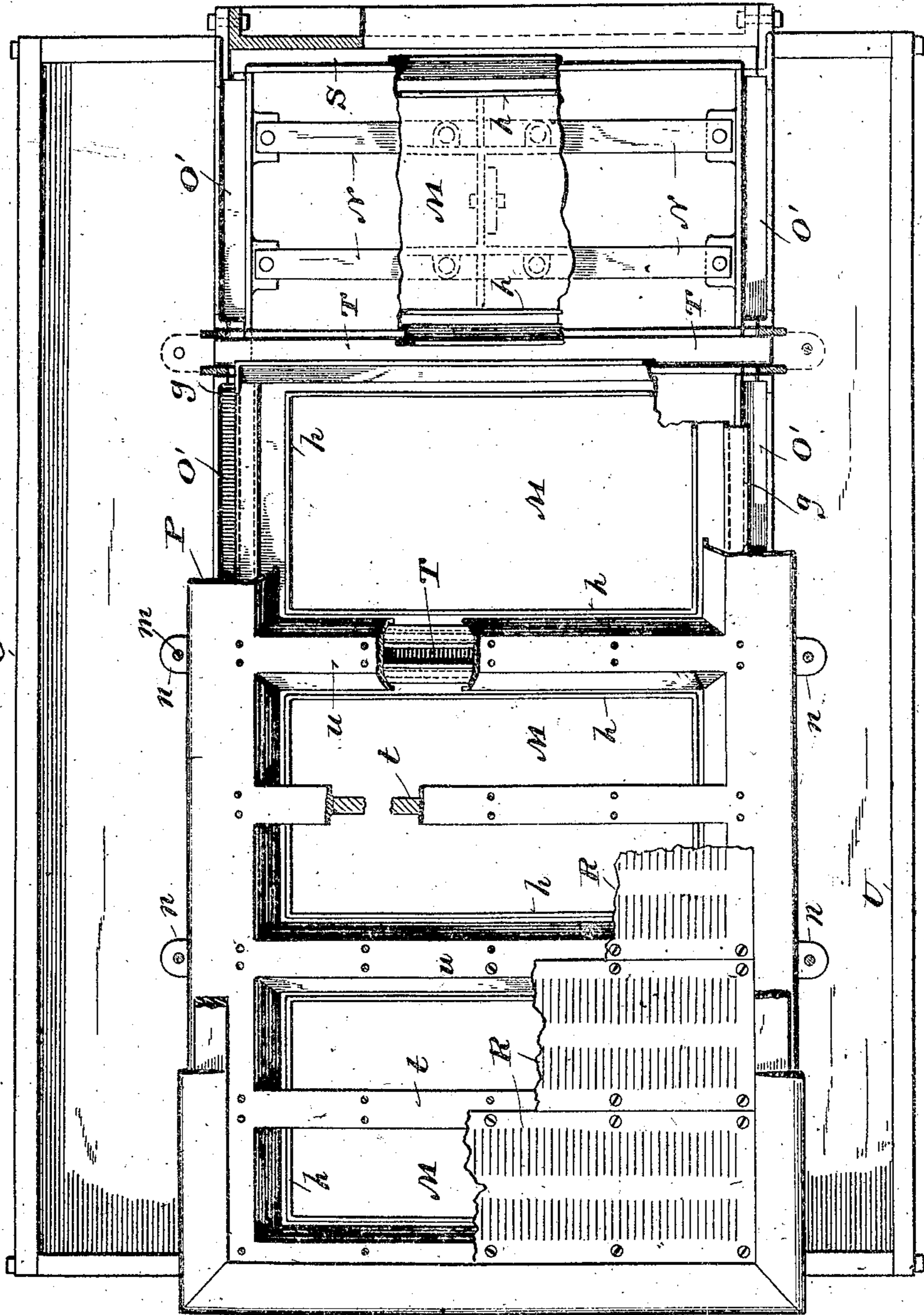
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4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD WILLIAM GOODRICK, OF APPLETON, WISCONSIN, ASSIGNOR
OF ONE-HALF TO APPLETON MACHINE COMPANY, OF APPLETON,
WISCONSIN.

PULP-SCREENING MACHINE.

No. 822,599.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed February 19, 1906. Serial No. 301,841.

To all whom it may concern:

Be it known that I, EDWARD WILLIAM GOODRICK, a citizen of the United States, and a resident of Appleton, in the county of Outagamie and State of Wisconsin, have invented certain new and useful Improvements in Pulp-Screening Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to improve the efficiency of the simple, economical, and durable pulp-screening machines set forth in my Patent No. 815,421, granted March 20, 1906, said invention consisting in what is herein shown, described, and claimed.

Figure 1 of the accompanying drawings represents a side elevation of my improved pulp-screening machine, partly in section; Figs. 2 and 3, transverse sectional views of the machine, respectively indicated by lines 2-2 and 3-3 in Fig. 1; and Fig. 4, a plan view of said machine, partly in horizontal section.

Referring by letter to the drawings, A indicates each of a plurality of standards connected to a girth B, and a frame C is bolted or otherwise rigidly secured on the standards. Surmounting the girth, as shown in the patent aforesaid, or cast in one piece with the same, as herein shown, is an oil-box D, provided with bearings for a driven shaft E, and fast on this shaft at suitable intervals thereof are cams F, opposing friction-blocks G, that are each in connection with a coupling H, attached to one end of a horizontal spring-bar I, the other end of this bar being clamped in connection with the upper extremity of an inclined arm J, made fast at its lower extremity to a side of the girth aforesaid. The arm J is herein shown provided with a lug b, that engages a notch in an edge of the oil-box, and socketed in said arm-lug is the lower end of a rod K, that extends through the coupling and spring-bar aforesaid. Arranged on the rod against the coupling is a spiral spring L, and the tension of the spring is regulated by a nut c on the screw-threaded upper end of said rod against an interposed washer d, the construction and arrangement of parts thus far described and a pitman H' in connection with each coupling being similar to what is set forth in the previous application as being common in the art to which my improvements relate.

Bolted or otherwise fastened to the upper end of each pitman H' is a depending center shank e of a pan M, having parallel under ribs f, bolted or otherwise secured to spring stay-bars N, that are fastened at their ends to back-lugs of flow-chambers O' in the frame C aforesaid. As stated in the former application, spring stay-bars in connection with said frame and a vibratory device are common in the art; but the flow-chambers hereinafter more particularly described are novel features of the improved machine in conjunction with the pan that constituted an essential feature of the predecessor machine and which is the same in said improved machine, except as to details herein specified. Each pan is preferably recessed at each end to provide a pulp-outlet g therefrom at a suitable elevation above the bottom; but it may be made with but one such outlet at the preferred end thereof. Each elevated outlet-end portion of the pan straddles the inner upper edge of a flow-chamber O' to insure against loss of pulp over the inner upper edge of said chamber, and, as in the former application, the bottom of each pan is provided with an endless inner flange h, having the function hereinafter specified.

As in the patent aforesaid, a screen-frame P is supported on the frame C of the machine, and a pulp-vat Q rests upon said screen-frame. Likewise, partly inclined and partly vertical endless flanges s of the screen-frame depend into the underlying pans below the outlets of same, preferably outside the inner bottom flanges h of said pans, and said screen-frame is also provided with depending bars t, notched to give clearance for the flanges h of the pans. The screen-plates R are fastened to the ends, sides, bars t, and division-bars u of their supporting-frame P by screws or other suitable means the same as in the former application.

The bottoms of the pans of the improved machine are beveled at the sides and provided with depending flanges v, that extend down into troughs arranged transversely of the machine. The troughs S at the ends of the machine are shallow and communicate with flow-chambers, and the remaining deeper troughs T are each arranged between a pair of pans, all of said troughs being suitably pitched. The troughs T discharge into a flow-box O,

in bolt connection with the machine-frame at one side of same, and another flow-box U, of less dimensions than the one aforesaid, is shown in similar connection with the opposite side of said machine-frame. The bottom of the flow-box U is at a higher level than that of the flow-box O and in communication with the troughs T aforesaid. The ends of these troughs extend through apertures in the sides of the machine and are suitably packed therein to prevent leakage from the flow-boxes. Outer hook-brackets *i* of the pulp-vat Q engage links *k* in connection with eyebolts *m*, that extend through upper outer lug extensions *n* of the troughs T, and clamp-nuts *p* are run on the bolts to oppose the lugs.

In practice water is run through the screens ahead of the pulp to accumulate in the pans to a depth that will form a seal between said pans and the depending flanges *s* of the screen-frame, and vertical vibration is imparted to the aforesaid pans by rotation of the shaft E of the machine. Pulp from the vat is sucked through the screens incidental to downward motion of the pans, and reaction is had on the pulp in said vat incidental to upward motion of said pans to prevent said screens from clogging, backflow of pulp from the space between the pan-walls and depending flanges of the screen-frame being retarded by the flanges *h* on the bottoms of the aforesaid pans, all as described in the application aforesaid. The depth of the material in the pans may be increased to a variable degree by suitable damming of the outlets of said pans.

The machine herein set forth is of the plural-pan variety in which it is advantageous to discharge the screened pulp from the ends of the pans into flow-chambers having lower outlets into the flow-boxes adjacent to the bottoms of same, whereby provision is had for a smooth continuous flowage without agitation of the material accumulating in said flow-boxes. Another advantage of the flow-chambers is to give air an opportunity to escape from the screened material, this air having mingled with said material while the same was being drawn through the screen-plates by the action of the vibratory pans.

Due to agitation of the pulp in the vibratory pans when the machine is running there is splash or spraying of the material against the under side of the screen-frame, and in the absence of the transverse troughs S T some of this material will be lost because of drip of the same outside of the pans to the floor upon which the machine is set. In the improved machine the material caught in the troughs finds its way to the flow-box O either through flow-chambers in communication with the troughs S or direct through the troughs T, and these troughs T drain the flow-box U into the opposite flow-box O, the two boxes

being kept about two-thirds full of stock. It is practical and within the scope of my invention to omit the flow-box U and have one outlet end of each of the several pans provided with a flange depending into a trough similar to the ones S above specified, but at right angles to the same and communicating therewith in order that the screened material may find its way to a flow chamber or chambers and from thence into the flow-box O aforesaid. It also follows that the machine may be of the one-pan variety and organized to have all the advantages of the plural-pan type of machine herein particularly described whether of the two or single flow box type, provision being had for collecting into flow-troughs the material that would be otherwise wasted by splashing or spraying against the under side of the screen-frame to drop clear of the sides of the pan.

I claim—

1. In a pulp-screening machine, a vertical vibratory pan provided with one or more outlets, a screen-frame having an endless flange depending into the pan, and flow-troughs arranged to catch material splashed or sprayed from the pan.

2. In a pulp-screening machine, a vertically-vibratory pan having an inner endless bottom flange and provided with one or more outlets, a screen-frame having an endless flange depending into the pan adjacent to said bottom flange of same, and flow-troughs arranged to catch material splashed or sprayed from the pan.

3. In a pulp-screening machine, a vertically-vibratory pan provided with one or more outlets at a suitable elevation above its bottom, a screen-frame having an endless flange depending into the pan below the outlet or outlets of same, and flow-troughs arranged to catch material splashed or sprayed from the pan.

4. In a pulp-screening machine, a vertically-vibratory pan having an inner endless flange on its bottom, and provided with one or more outlets at a suitable elevation above its bottom, a screen-frame having an endless flange depending into the pan below the outlet or outlets of the same adjacent to the bottom flange thereof, and flow-troughs arranged to catch material splashed or sprayed from the pan.

5. In a pulp-screening machine, a plurality of vertically-vibratory pans each provided with one or more outlets above its bottom, a screen-frame having a plurality of endless flanges each of which depends into a pan below the outlet or outlets of same, and flow-troughs arranged to catch material splashed or sprayed from the pans.

6. In a pulp-screening machine, a plurality of vibratory pans each provided with one or more outlets above its bottom and having an endless inner flange on said bottom, a screen-

frame having a plurality of endless flanges each of which depends into a pan below the outlet or outlets of same adjacent to the bottom flange thereof, and flow-troughs arranged to catch material splashed or sprayed from the pans.

7. In a pulp-screening machine, a vertically-vibratory pan provided with one or more outlets, a flow-chamber arranged to receive material from each outlet of the pan and of itself provided with a lower outlet into a flow-box, and a screen-frame having an endless flange depending into the pan.

8. In a pulp-screening machine, a vertically-vibratory pan provided with one or more outlets and an inner endless bottom flange, a flow-chamber arranged to receive the material from each outlet of the pan and of itself provided with a lower outlet into a flow-box, and a screen-frame having an endless flange depending into the pan adjacent to said bottom flange of same.

9. In a pulp-screening machine, a vertically-vibratory pan provided with one or more outlets, a flow-chamber arranged to receive material from each outlet of the pan and of itself provided with a lower outlet into a flow-box, a screen-frame having an endless flange depending into the pan, and flow-troughs arranged to catch material splashed or sprayed from the pan.

10. In a pulp-screening machine, a vertically-vibratory pan provided with one or more outlets and an inner endless bottom flange, a flow-chamber arranged to receive the material from each outlet of the pan and of itself provided with a lower outlet into a flow-box, a screen-frame having an endless flange depending into the pan adjacent to said bottom flange of same, and flow-troughs arranged to catch material splashed or sprayed from the pan.

11. In a pulp-screening machine, a vertically-vibratory pan having elevated outlet ends and depending side flanges, flow-chambers having upper edges thereof straddled by said outlet ends of the pans, flow-troughs in which said side flanges of the pans have play, and a screen-frame having an endless flange depending into the pan.

12. In a pulp-screening machine, a plurality of vertically-vibratory pans each having elevated outlet ends and depending side flanges, flow-chambers having upper edges thereof straddled by the outlet ends of the pans, flow-troughs in which said side flanges have play, and a screen-frame having a plurality of endless flanges each of which depends into a pan below the outlets of same.

13. In a pulp-screening machine, a verti-

cally-vibratory pan having elevated outlet ends, depending side flanges and an endless inner flange on its bottom; flow-chambers having upper edges thereof straddled by the outlet ends of the pan, flow-troughs in which said side flanges of the pan have play, and a screen-frame having endless flanges depending into the pan adjacent to said bottom flange thereof and below the outlets of same.

14. In a pulp-screening machine, a plurality of vertical vibratory pans each having elevated outlet ends, depending side flanges and an endless inner flange on its bottom; flow-chambers having upper edges thereof straddled by the outlet ends of the pans, flow-troughs in which said side flanges of the pans have play, screen-frames having endless flanges depending into the pans adjacent to said bottom flanges thereof and below the outlets of same.

15. In a pulp-screening machine a plurality of vertically-vibratory pans each having end outlets, flow-chambers arranged to receive material from the pan-outlets, opposite flow-boxes longitudinally of the machine at different levels and with which the flow-chambers communicate, transverse flow-troughs connecting the flow-boxes, other transverse flow-troughs communicating with flow-chambers, the arrangement of all the flow-troughs being such as to catch material splashed or sprayed from the pans, and a screen-frame having an endless flange depending into the pans below the outlets of same.

16. In a pulp-screening machine a plurality of vertically-vibratory pans, each having an end outlet, and an inner endless bottom flange; flow-chambers arranged to receive material from the pan-outlets, opposite flow-boxes longitudinally of the machine at different levels and with which the flow-chambers communicate, transverse flow-troughs connecting the flow-boxes, other transverse flow-troughs communicating with the flow-chambers, the arrangement of all the flow-troughs being such as to catch material splashed or sprayed from the pans, and a screen-frame having endless flanges depending into the pans below their outlets and adjacent to their inner endless bottom flanges.

In testimony that I claim the foregoing I have hereunto set my hand, at Appleton, in the county of Outagamie and State of Wisconsin, in the presence of two witnesses.

EDWARD WILLIAM GOODRICK.

Witnesses:

E. F. OLMSTEAD,

G. M. HEATWOLE.