

J. JANSON.
PAPER PULP SCREEN BOX.
APPLICATION FILED FEB. 25, 1907.

899,169.

Patented Sept. 22, 1908.

2 SHEETS—SHEET 1.

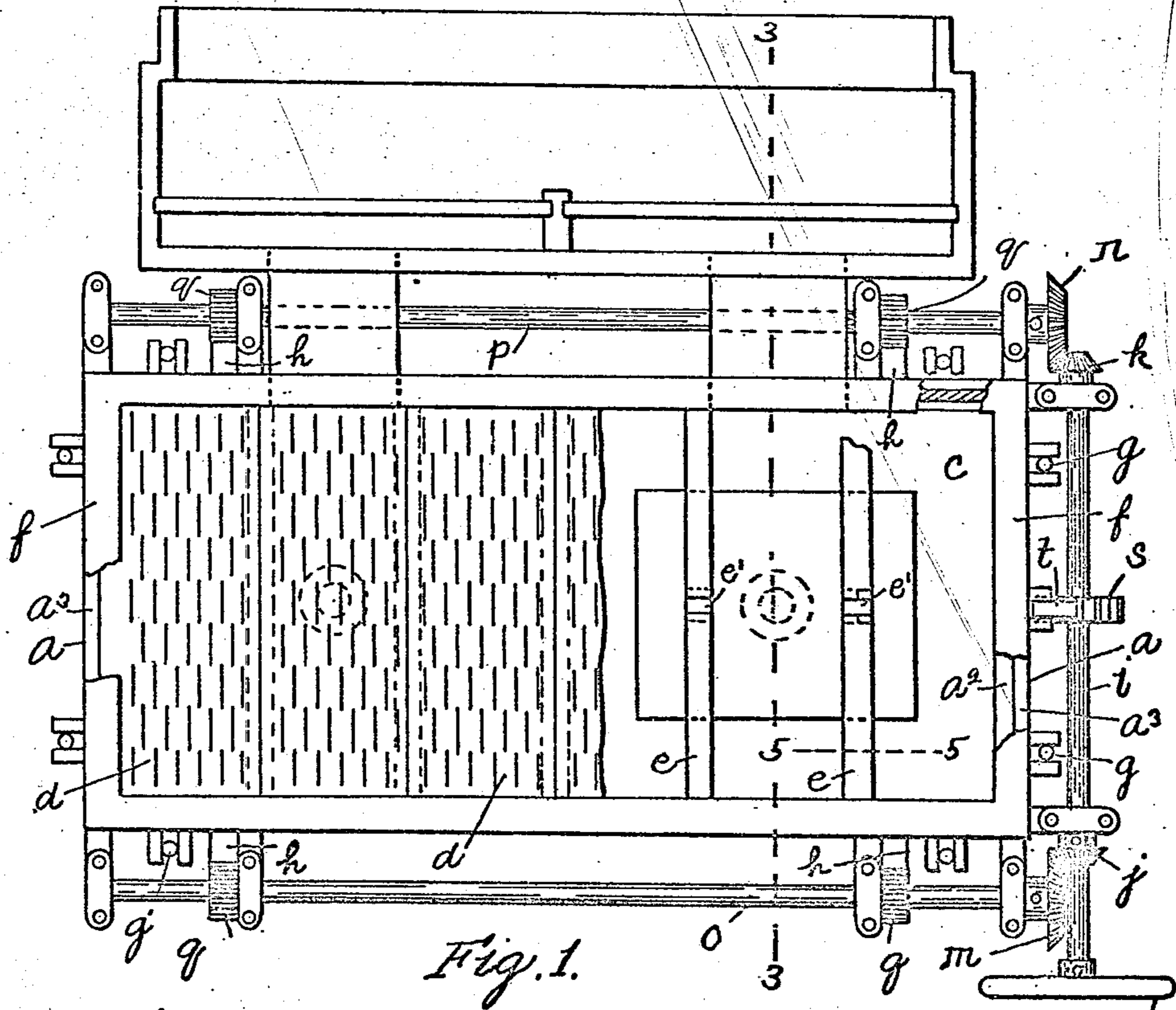


Fig. 1.

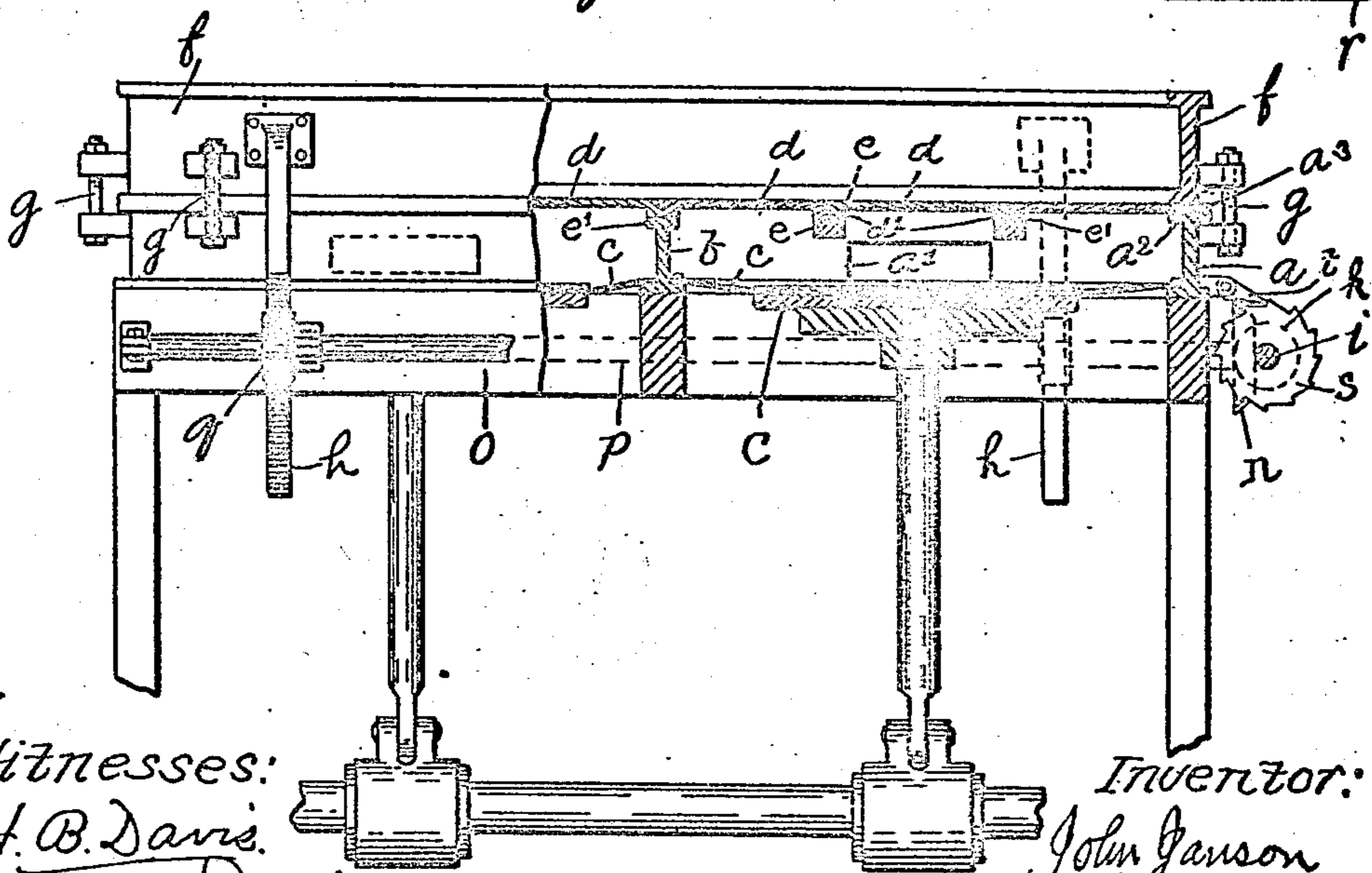


Fig. 2.

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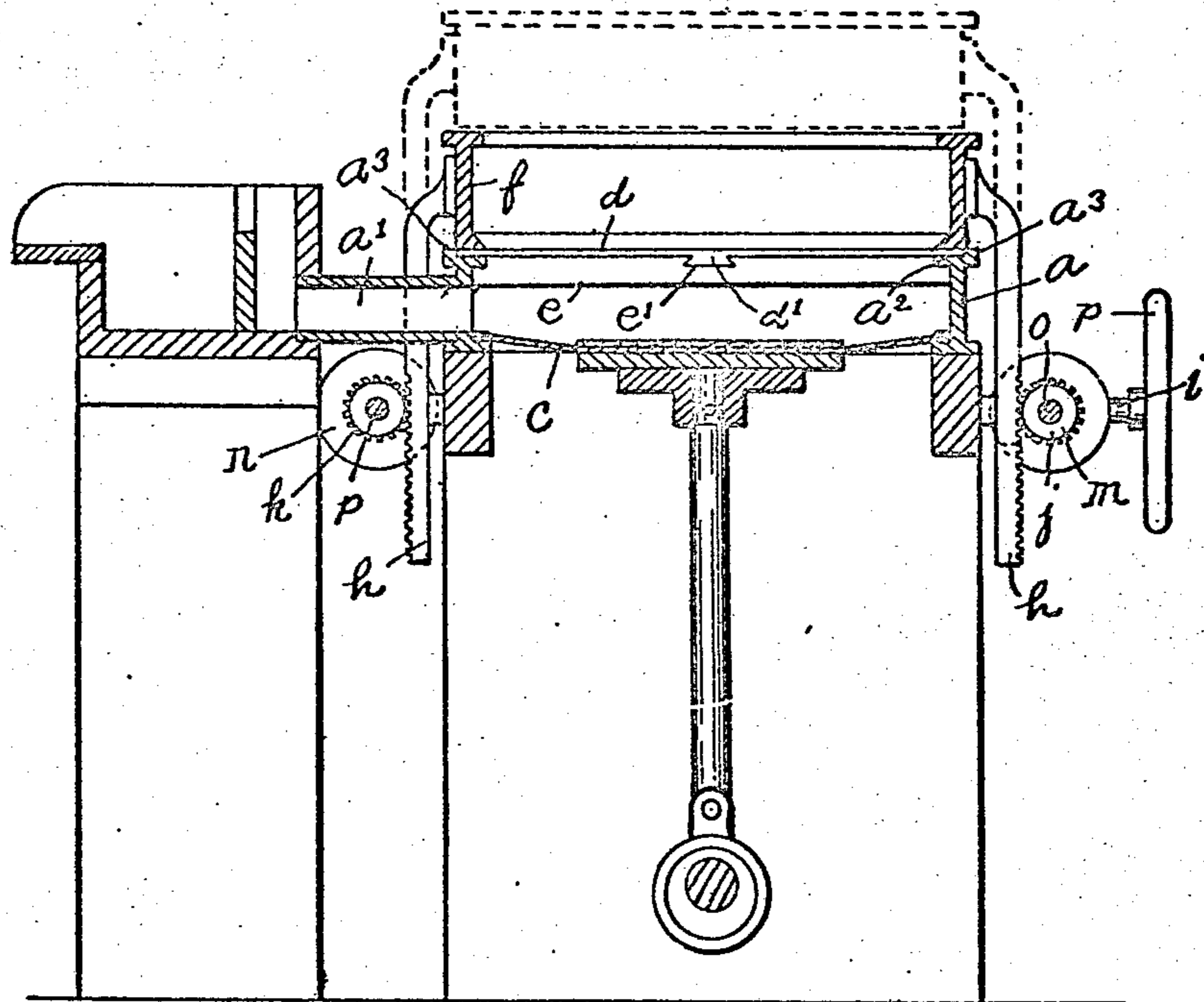


Fig. 3.

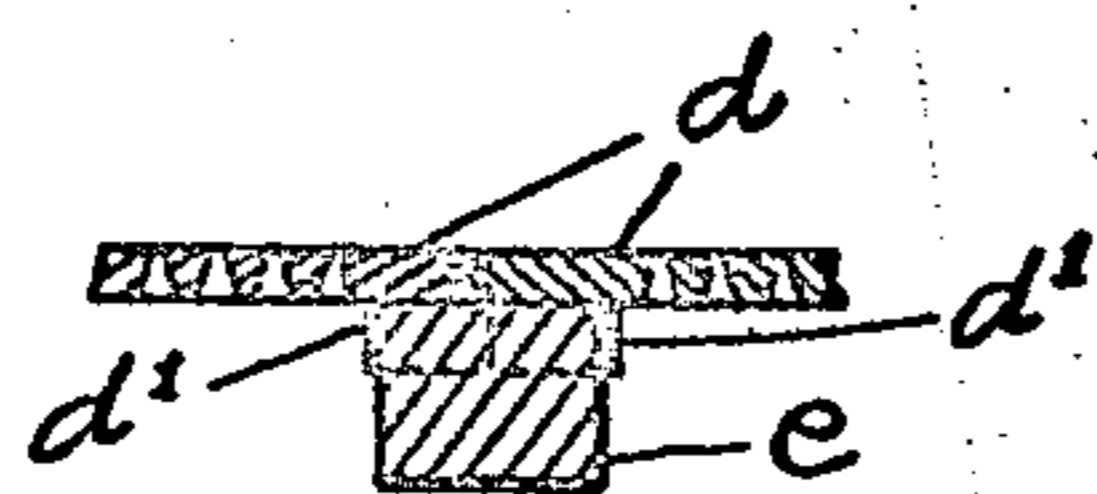


Fig. 5.

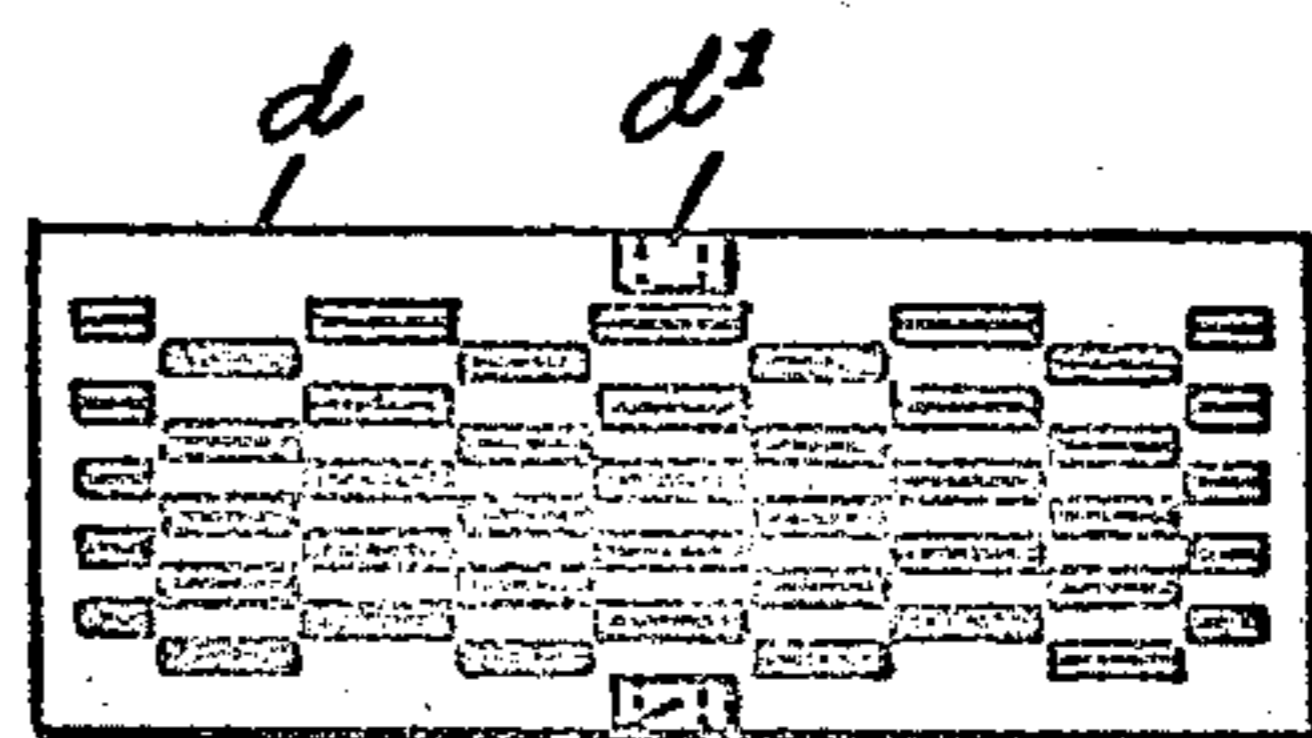


Fig. 4.

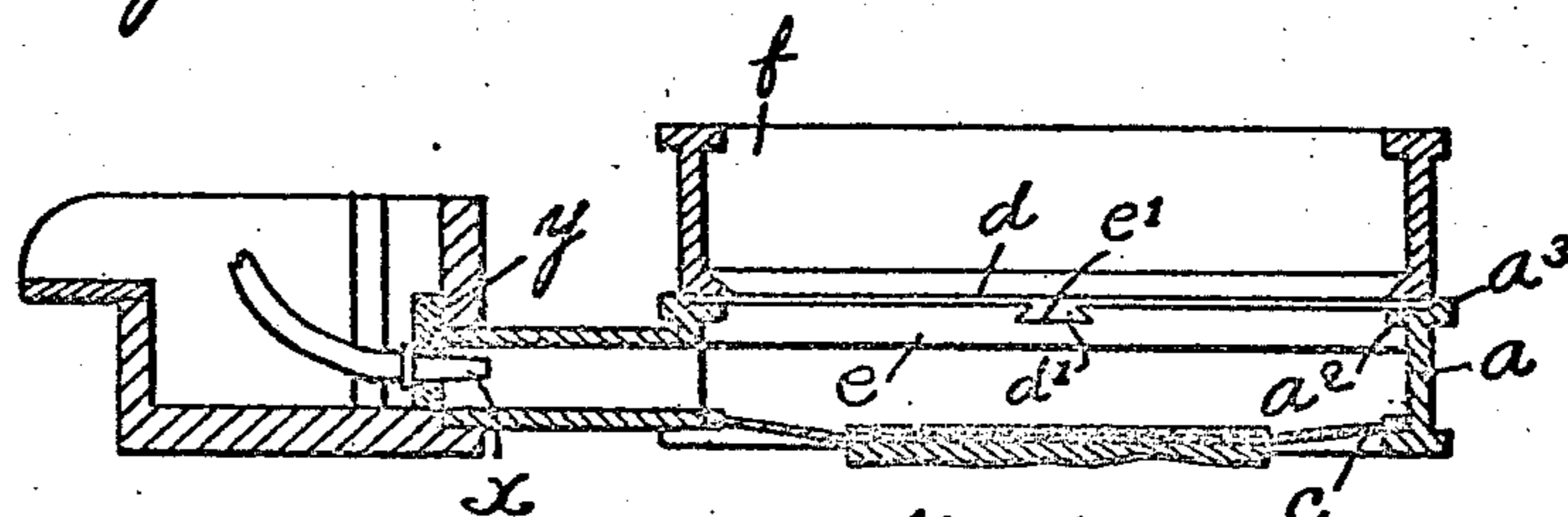


Fig. 6.

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UNITED STATES PATENT OFFICE.

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PAPER-PULP-SCREEN BOX.

No. 899,169.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed February 25, 1907. Serial No. 359,155.

To all whom it may concern:

Be it known that I, JOHN JANSON, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in
5 Paper-Pulp-Screen Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 The form of pulp screen ordinarily in use in paper making machinery, which comprises a plate having a series of narrow slots therein, becomes clogged from time to time so that it is necessary to clean the slots therein.

15 It has been customary to secure the screen plates to a seat formed in a frame or box adjacent the bottom thereof, by means of screws or bolts, so that the plates had to be removed therefrom to be cleaned and so
20 that the removal thereof was a matter of considerable difficulty. As the paper machine must be shut down while these plates are being removed and replaced, it is of importance that these plates may be changed
25 as expeditiously as possible.

The objects of my invention are to provide a pulp screen apparatus with means whereby the screen plates may be so held that there will be no leakage about their edges, and yet
30 may be readily removed and replaced; and, further, to provide means whereby they may be, at least partially, cleaned without removing them, so that the frequency with which removal for cleaning is necessitated,
35 is diminished. I accomplish these objects by the means shown in the accompanying drawing, in which,

Figure 1 is a plan view, partly broken away, of a pulp screen box made according
40 to my invention. Fig. 2 is a side elevation thereof partly in section on the line 2—2 of Fig. 1. Fig. 3 is a transverse section on the line 3—3 of Fig. 1. Fig. 4 is a bottom perspective view of a screen plate made according
45 to my invention. Fig. 5 is an enlarged detail sectional view on line 5—5 of Fig. 1. Fig. 6 is a sectional view on line 3—3 of Fig. 1, showing, my method of cleaning the screens.

50 The screen plate box or tank which I employ is divided into a series of compartments, the number of these compartments depending on the width of the paper machine in connection with which it is used, but for the

sake of simplifying the illustration a box is
55 shown having only two of such compartments.

As shown in the drawing, a screen plate box is provided comprising a lower section having sides *a* and a separating partition *b*,
60 to divide the same into two compartments, the bottom of the chambers thus formed being closed by a rubber diaphragm *c* which is adapted to be raised and lowered in the usual manner. An outlet *a'* is provided in
65 the discharge side of each chamber, the under side of said outlet being on a level with the diaphragm *c*. A screen seat *a²* is provided on the upper edge of the sides *a*, said seat extending continuously about the entire box
70 and being surrounded by an upright flange *a³*. A series of pulp-screen-plates *d*, of common form, are adapted to rest at their sides and ends upon said seat *a²* and to fit against the flange *a³*, the upper edge of said flange
75 *a³* being on a level with the upper surfaces of said screen plates. As shown in the drawing, I preferably employ three of these plates for each compartment of the box, and in
80 such instance provide each compartment of the box with a pair of cross bars *e*, the upper surfaces, of which are flush and continuous with the seat *a²*.

All of the screen plates, except those at the ends of the box, are provided on their under
85 sides with transversely extending, dove-tail tongues *d'*, one tongue being provided at each side of each plate approximately in the middle thereof, and the cross bars *e*, and partition *b* are each provided with a correspond-
90 ingly shaped groove *e'* adapted and disposed to receive said tongues.

The distances between the cross bars *e* and the separating partition *b* are substantially the same as the width of the screen plates,
95 so that said plates may be moved into such a position that the joints between the meeting edges of the plates will be approximately above the middle of the cross bars *e* and partition *b*. In this position the tongues *d'* will
100 be located in the grooves *e'* of the bars *e*, the length of said tongues being preferably half the width of said cross bars. The meeting edges of the plates are provided with corresponding tongues and grooves, as shown in
105 Fig 5, so that a tight joint therebetween is insured. The tongues *d'* are omitted from the end plates, as the tongues next the seat

a^2 would prevent the plates from being clamped tightly thereon, and they are unnecessary, as will hereafter appear.

An upper tank section or frame f is arranged above said plates to provide a receiving chamber therefor, said frame being composed of four side walls of the same shape as the sides of the lower section a , and adapted to rest, when in place, upon the edges of the screen plates directly above the seat a^2 , so that when it is clamped thereon, by means of side bolts g , a tight joint will be made between said frame and the plates and between the plates and the seat a^2 . In practice the under edge of said frame and said seat are provided with rubber packing to make the joint perfectly tight. The frame f is further provided with a series of depending rack bars or arms h which are rigidly secured at their upper ends to opposite sides of said frame, two arms on each side being shown. An operating shaft i is journaled on the sides a at one end thereof, said shaft being provided with beveled gears j and k , adjacent its ends, adapted to mesh with corresponding beveled gears m and n respectively mounted on the ends of shafts o and p , journaled on opposite sides of said lower section. Said shafts o and p are each provided with a pair of pinions q disposed to engage the rack bars h , so that, when said shaft i is rotated, said shafts o and p will also be rotated and will cause the pinions q to engage the rack bars h and to lift the frame f out of engagement with the screen plates, as indicated in dotted lines in Fig. 3. A hand wheel r is provided on the end of the shaft i , as a convenient means for turning the same, and a ratchet s is also provided thereon, with which a pawl t is adapted to engage to hold the frame f in the various positions to which it may be lifted. In practice, therefore, if it is desired to remove the screen plates, it is merely necessary, first to release the clamping bolts g , and then to turn the shaft i so as to raise the frame f to the desired extent. The end plates may then be lifted directly from their seats and then the other plates may be also lifted out after sliding them far enough to disengage their tongues from the cross bars.

With the above described construction the side-wall frame f will be held in parallel planes with relation to the section or frame a , which supports it, as it is raised or lowered, so that a practically unobstructed space of uniform width is provided, when the frame is raised, between the meeting edges of said frames at all sides through which the screen plate may be readily cleaned, as hereafter described. As the frame f is held in parallel planes, when it is lowered the lower edges thereof will simultaneously come into engagement with the seat therefor on the supporting frame.

In case it is desired to clean the slots in the plate without removing them, a nozzle x is inserted in the outlet a^2 , as indicated in Fig. 6, suitable means, such as a stiff rubber plate y which covers the whole outlet, and through which the nozzle is passed, being provided to prevent water from running back about the nozzle. In this manner an upward flow is caused through the plates which will force out the obstructions which may have accumulated in the slots thereof. When this washing action has been continued until the water has risen a short distance above the level of the surface of the screen plates, so that the obstructions which are washed out of the screen slots will be floating in the water above the plates, the frame f will be lifted a few inches and this water and the matter held in suspension will be washed off with a hose pipe. The upper surfaces of the plates may also be conveniently washed and scraped and, as the sides of the lower section do not extend above the level of the plates, all of the waste matter may be readily removed without removing the plates.

In washing out the slots in the screen plates by forcing water back therethrough, the pressure on the under side of the plates might be sufficient to buckle them to an extent if some means were not provided to prevent this action. All buckling from this cause is, however, prevented by the tongue and groove connections between the plates and cross bars above described, the end plates being held from buckling by the frame f and their tongue and groove connections with the next adjacent plates.

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

1. In a pulp screen apparatus, the combination of a supporting frame having a screen plate at its top, a single side-wall frame resting on said supporting frame to form a pulp-receiving chamber, a plurality of upright supports remotely disposed relative to each other at each side of said frames, and means engaging said supports for raising and lowering said side-wall frame with relation to said supporting frame, to provide unobstructed cleaning spaces for the screen plate between said supports at all sides of said frames when the side wall frame is in raised position, substantially as described.

2. In a pulp screen apparatus, the combination of a supporting frame having a screen plate at its top, a single side-wall frame resting on said supporting frame to form a pulp-receiving chamber, a plurality of upright supports connected to said side-wall frame and remotely disposed relatively to each other at opposite sides thereof, and means, engaging said supports for simultaneously moving them longitudinally to raise and

lower said side-wall frame with relation to said supporting frame to provide uninclosed cleaning spaces between said supports at all sides of said frames when the side wall frame is in raised position, substantially as described.

5 In testimony whereof, I have signed my

name to this specification, in the presence of two subscribing witnesses.

JOHN JANSON.

Witnesses:

L. H. HARRIMAN,
H. B. DAVIS.