

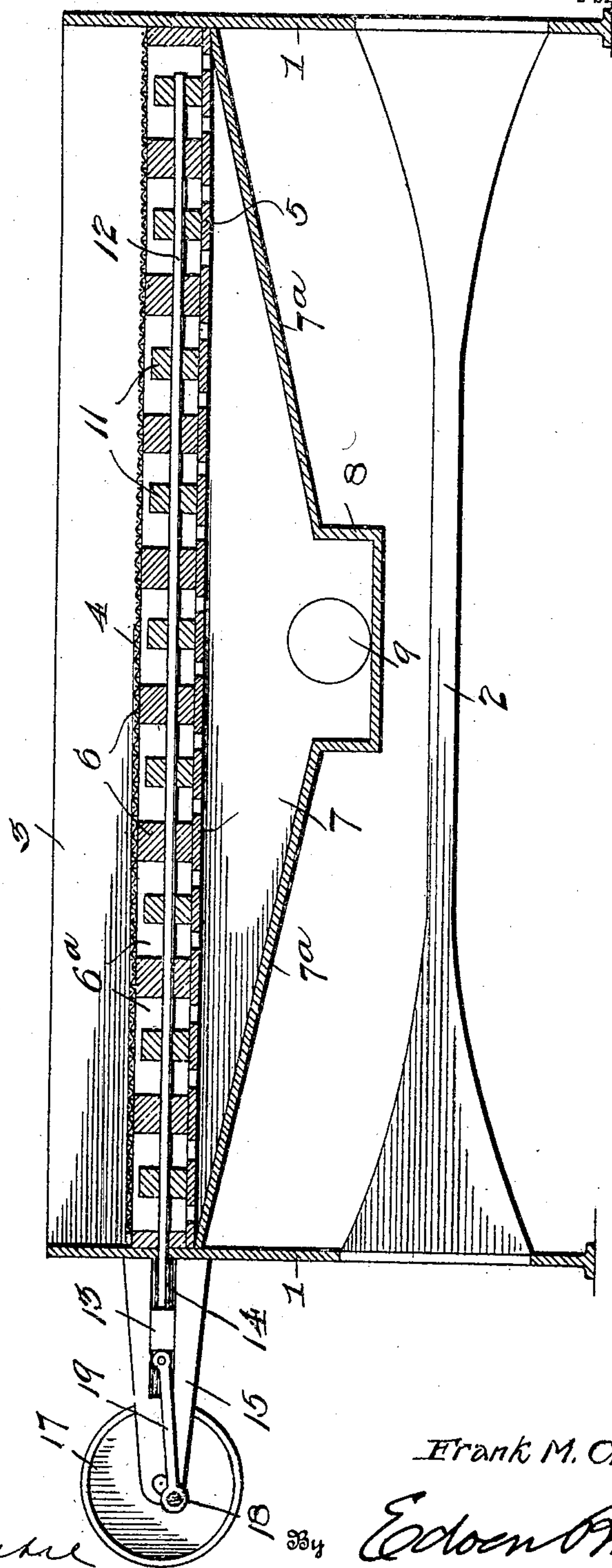
No. 814,587.

PATENTED MAR. 6, 1906.

F. M. CHAPMAN.
PAPER AND PULP SCREEN.
APPLICATION FILED JUNE 14, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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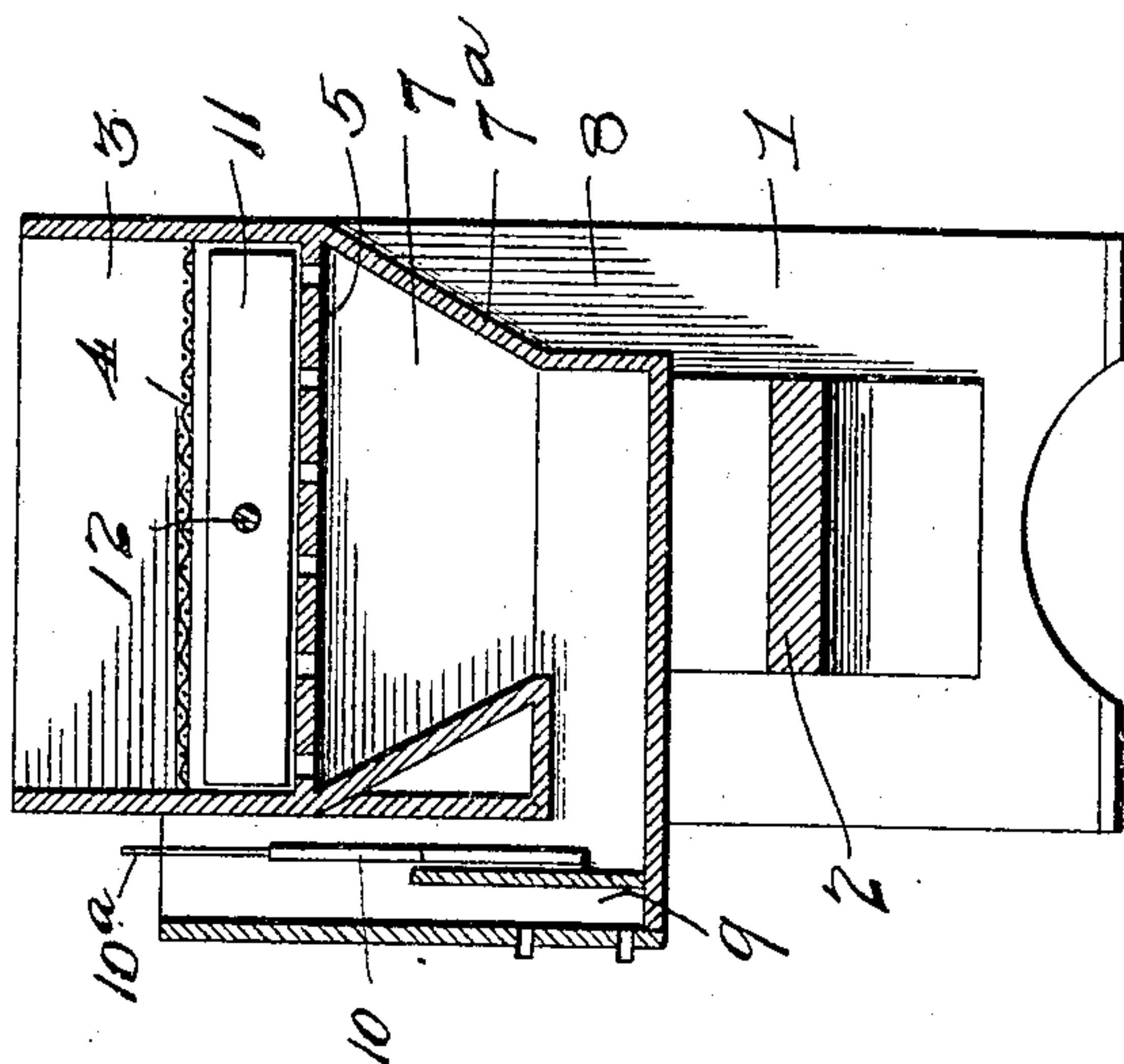
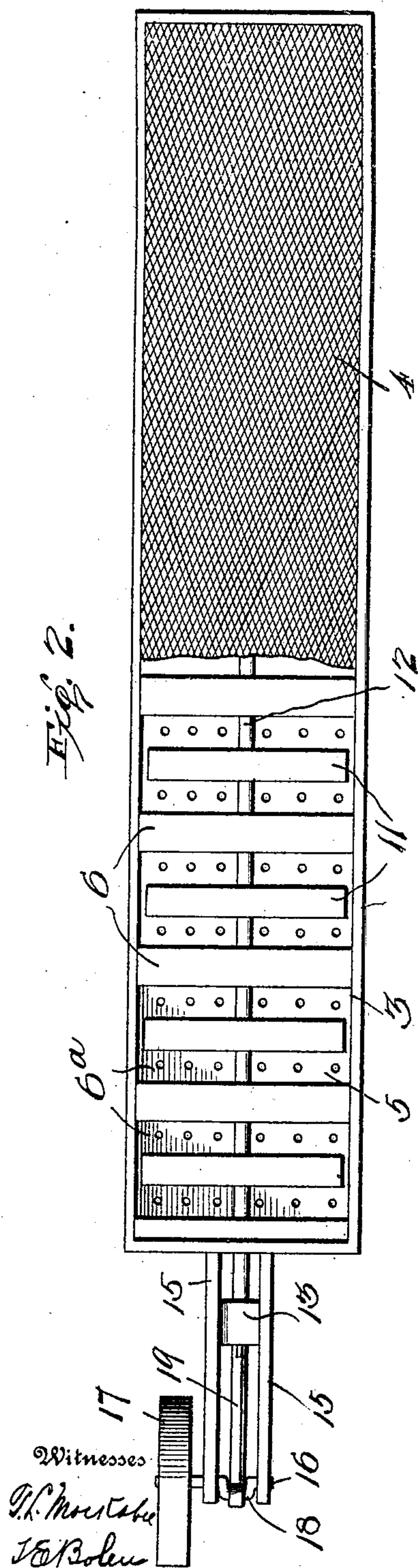
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK M. CHAPMAN, OF PORT EDWARD, NEW YORK, ASSIGNOR, BY
DIRECT AND MESNE ASSIGNMENTS, TO MILL MACHINERY MANU-
FACTURERS, OF SANDY HILL, NEW YORK, A CORPORATION OF
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PAPER AND PULP SCREEN.

No. 814,587.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed June 14, 1905. Serial No. 265,284.

To all whom it may concern:

Be it known that I, FRANK M. CHAPMAN, a citizen of the United States, residing at Port Edward, in the county of Washington and State of New York, have invented certain new and useful Improvements in Paper and Pulp Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for screening paper and pulp in the manufacture of paper, and particularly to that class of screens in which flat screen-plates are used.

The object of my invention is to provide a screen of the general type of the old diaphragm-screen, but in which suction to draw the pulp through the screen-plates is created by other and more effective means than by diaphragms.

My invention consists, broadly, in the use of horizontally-movable pistons arranged below the horizontal screen-plates as distinguished from the vertically-movable pistons or diaphragms heretofore used.

The invention also consists in the features of construction and combinations of parts hereinafter described, and more particularly pointed out in the claims concluding this specification.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a longitudinal vertical sectional view of a machine constructed in accordance with my invention. Fig. 2 is a plan view thereof, a portion of the screen-plate being broken away to disclose the pistons beneath; and Fig. 3 is a transverse vertical sectional view.

While the preferred embodiment of my invention is illustrated in the accompanying drawings and its construction and operation are described in this specification, the right is reserved to make such changes from the construction shown and described herein as the scope of the claims hereto appended will permit.

In carrying out my invention I construct the vat at the top, the same as in the old flat screens, the bottom of said vat being formed by the screen-plate, which rests upon cross-bars arranged at suitable intervals through-

out the length of the screen. Said cross-bars rest upon the horizontal bottom, through which perforations are made for the passage of the screened stock to the chamber below, from which it passes to the flow-box or outlet. Between said cross-bars are arranged the piston-plates, made of wood, iron, or any other suitable material and each adapted to be reciprocated horizontally below the screen in the chamber formed between the screen-plate, the perforated bottom, and the adjacent cross-bars by any suitable mechanism. A suitable gate or cut-off is arranged in the outlet to control the flow from the flow-box and raise or lower the level of the stock in the screen. The passage from the chamber below the perforated bottom to the flow-box is arranged below the outlet from the flow-box, so that when the flow-box is filled to the outlet with water and screen-pulp air cannot enter from below the screen and lessen the suction created by the pistons.

Referring more particularly to the drawings, 1 represents the legs or supports between which is arranged the brace 2.

3 is the vat; 4, the screen-plate; 5, the perforated bottom, and 6 the cross-rods arranged between said screen-plate and bottom and dividing the space between them up into separate chambers 6^a. The sides 7^a of the walls of the chamber 7 for the screened pulp preferably converge from the edge of the screen toward the center to direct the pulp to the flow-box 8, provided with the outlet 9, with the adjustable cut-off 10, adapted to be raised and lowered by the rod 10^a.

In each of the chambers 6^a is arranged a piston 11, and all of said pistons are preferably mounted on a common piston-rod 12 at proper intervals apart. Said piston-rod extends through passages in the cross-rods 6 and through an air-tight-packed opening at one end of the screen. This outer end of said piston-rod is connected to a block 13, mounted to slide horizontally in ways 14 in brackets 15, secured to the end of the screen-frame. Between the ends of said brackets is mounted a revoluble shaft 16, carrying a drive-pulley 17 and having a crank 18, connected to the blocks 13 by a pivoted rod 19.

It will be understood that any other means for reciprocating the pistons other than that shown and described may be used, the num-

ber of piston-chambers 6^a may be increased or decreased, and the pistons may be independently operated without departing from the spirit or sacrificing the advantages of my invention. It has been found by experience with this new screen that the method of suction employed therein is more effective and gives the screen greater capacity for work than the old diaphragm-screen.

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

1. In a machine of the character described, the combination with a screen-plate, of a perforated bottom arranged below said plate, a piston arranged between said screen-plate and bottom and adapted to move in a plane parallel to said plate, and means to reciprocate said piston.

20 2. In a machine of the character described, the combination with a screen-plate, of a bottom plate provided with a series of perforations, and arranged below said screen, a piston arranged between said screen-plate and bottom and adapted to move in a plane parallel to said screen, and means to reciprocate said piston.

3. In a machine of the character described, the combination with a screen-plate, of a perforated bottom arranged below said plate, cross-pieces arranged between said screen-plate and bottom and dividing the space between them into a series of chambers, a series of pistons, one arranged in each of said chambers, and adapted to move in a plane parallel to said plate, and means to reciprocate said pistons in unison.

4. In a machine of the character described, the combination with a screen-plate, of a perforated bottom below said plate, cross-pieces arranged between said screen-plate and bottom and dividing them into a series of cham-

bers, a series of pistons, one arranged in each of said chambers and adapted to move in a plane parallel to said plate, a common piston-rod extending through said cross-pieces and connected to each of said pistons, and means to reciprocate said piston-rods.

5. In a machine of the character described, the combination with a screen-plate, of a perforated bottom below said plate, cross-pieces arranged between said screen-plate and bottom and dividing them into a series of chambers, a series of pistons, one arranged in each of said chambers and adapted to move in a plane parallel to said plate, a common piston-rod extending through said cross-pieces and connected to each of said pistons, brackets secured to the frame of the machine and having ways therein, a block connected to the end of said piston-rod and adapted to move in said ways, a crank-shaft carrying a drive-pulley journaled in said brackets and pivoted rod connection between said crank and block.

6. In a machine of the character described, the combination with a screen-plate, of a perforated bottom below said plate, a chamber for the screened pulp below said bottom, an outletflow-box leading from said chamber, an adjustable cut-off for said flow-box, a series of cross-pieces arranged between said screen-plate and bottom and dividing the space between into a series of piston-chambers, a series of pistons, one arranged in each of said piston-chambers and adapted to move in a plane parallel to said screen-plate, and means to reciprocate said pistons.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. CHAPMAN.

Witnesses:

BRODIE G. HIGLEY,
CAROLINE B. ROBERTSON.