

No. 841,981.

PATENTED JAN. 22, 1907.

E. A. JONES.
BEATING ENGINE.

APPLICATION FILED MAY 16, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

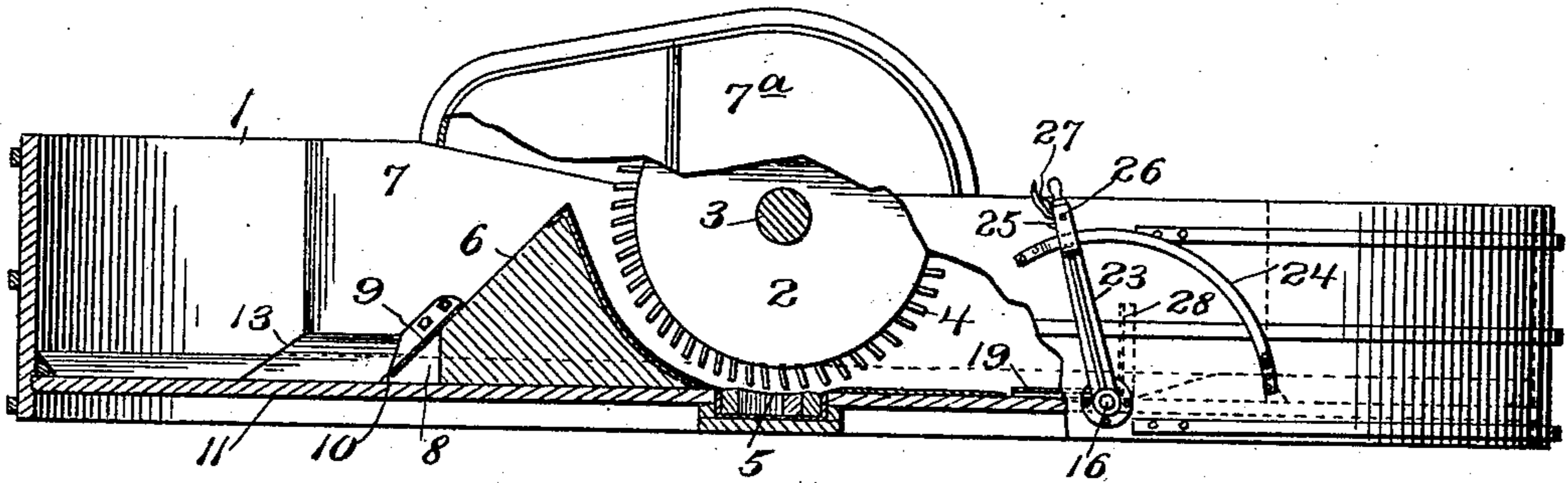
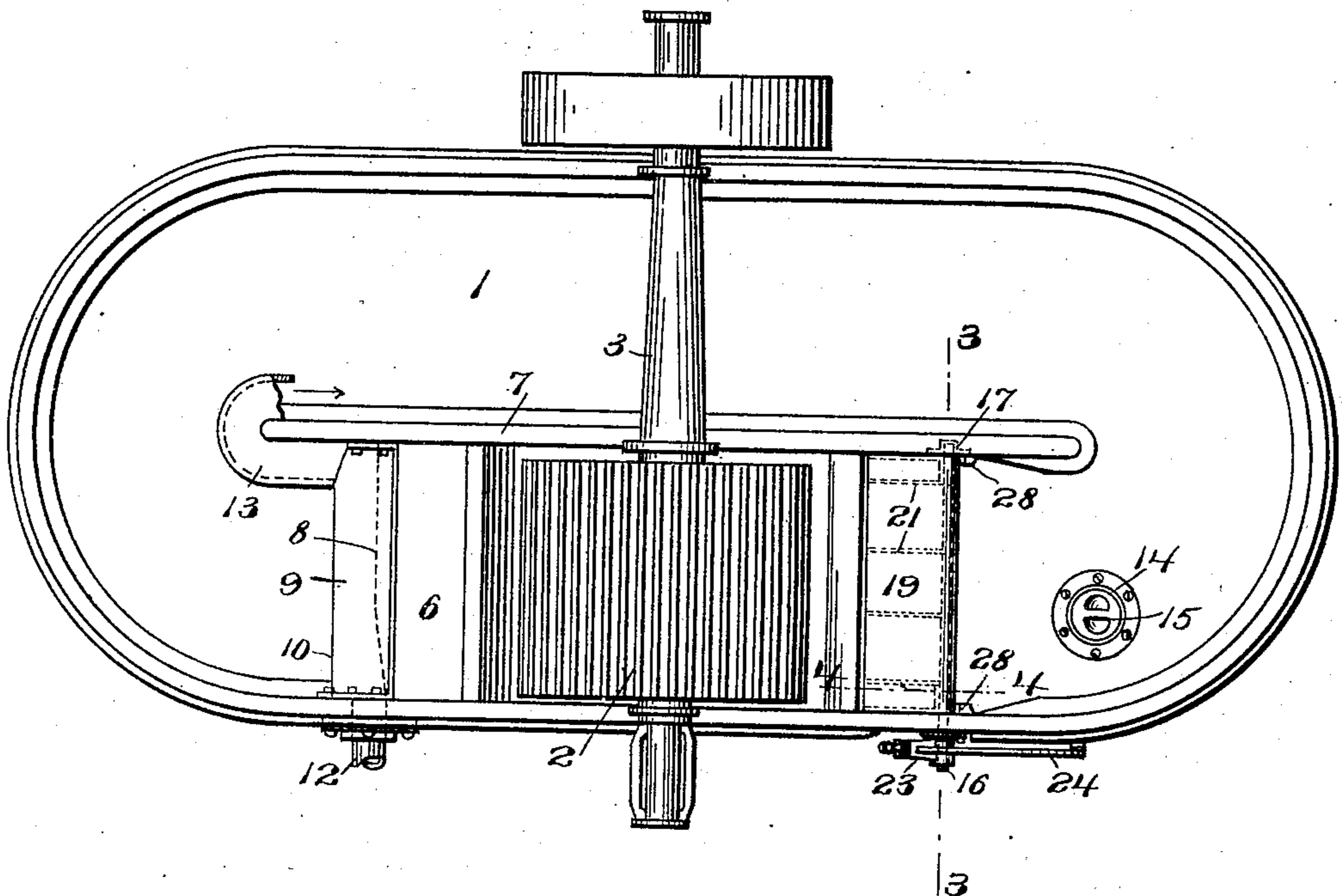


Fig. 2.



Witnesses
P. B. Phillips
J. A. Graves

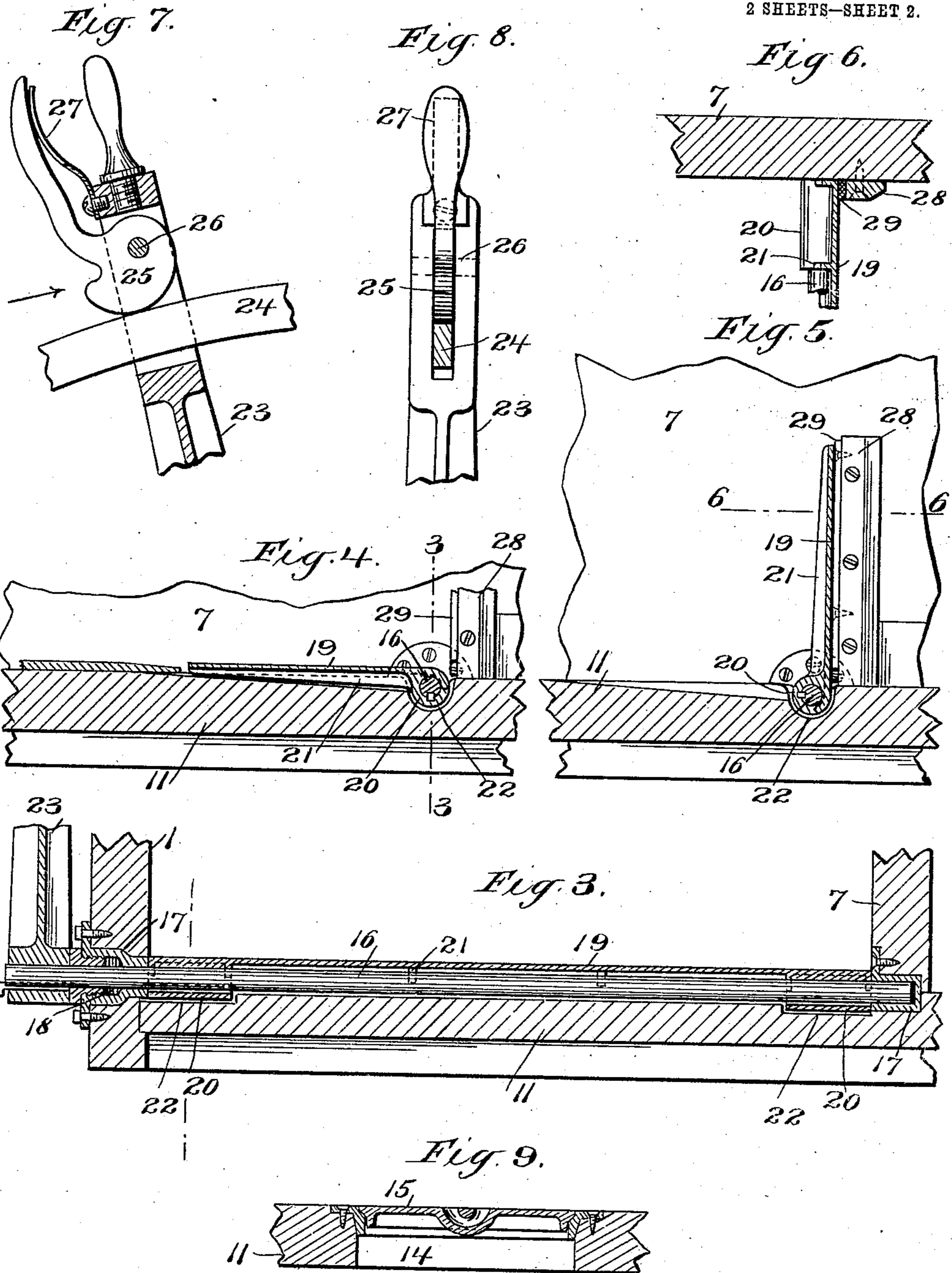
Inventor
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UNITED STATES PATENT OFFICE.

EDWARD A. JONES, OF PITTSFIELD, MASSACHUSETTS.

BEATING-ENGINE.

No. 841,981.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed May 16, 1906. Serial No. 317,068.

To all whom it may concern:

Be it known that I, EDWARD A. JONES, a citizen of the United States, residing at Pittsfield, county of Berkshire, and State of Massachusetts, have invented certain new and useful Improvements in Beating-Engines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to improvements in beating-engines used in the manufacture of paper, and more particularly to improvements in beating-engines such as shown in Letters Patent No. 745,859, granted to me
15 December 1, 1903. In the beating-engine shown in said patent means are provided for supplying water under pressure to the vat of the engine, the water being passed into or under the pulp in the vat for causing the pulp
20 to circulate freely and to readily flow to the discharge-outlet when the vat is emptied without requiring manually-operated rakes for pushing or raking the stock into the outlet, this water being supplied when the stock
25 has been sufficiently operated on by the beating-engine and it is desired to empty the vat. Toward the latter part of the emptying operation the stock becomes very much diluted and does not readily pass through the discharge-outlet, as owing to the speed with
30 which it is carried around the vat by the water it passes over instead of down the discharge.

It is the object of the present invention to
35 provide means by which the flow of the water and the paper-stock during the latter part of the emptying operation may be controlled or retarded and backed up toward the discharge-outlet, so that the stock will be compelled to
40 pass down the discharge-outlet, and one embodiment of a means by which this desired object is effected will now be described, with reference to the accompanying drawings, in which—

45 Figure 1 is a side elevation, partly in section, of a beating-engine embodying the improvement, certain parts of the construction being broken away for illustrative purposes. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a
50 vertical section, on an enlarged scale, taken on line 3 3, Figs. 2 and 4, illustrating particularly the stock-retarding means for backing up the water and stock toward the discharge-outlet. Fig. 4 is a vertical section, on an enlarged scale, taken on line 4 4, Figs. 2 and 3,
55 illustrating the stock-retarding means in

normal or inoperative position. Fig. 5 is a similar section, showing the stock-retarding means in operative position. Fig. 6 is a horizontal section, on an enlarged scale, taken on
60 line 6 6, Fig. 5. Figs. 7 and 8 are detail views, partly in section and on an enlarged scale, of a hand-lever and connections for adjusting the stock-retarding means to and from
65 operative position; and Fig. 9 is a vertical section of a portion of the bottom of the vat and the discharge-outlet therein and a cover for the latter, which is shown in closing position.

Referring now to said drawings, which
70 illustrate the preferred embodiment of the invention, the beating-engine shown is of the type set forth in my prior patent, hereinbefore referred to, and comprises a vat 1, in which a beating-drum 2 is secured to a shaft
75 3, suitably journaled in the vat sides. This beating-drum 2 is provided with the usual knives 4, which cooperate with a bed-plate 5 of any suitable character, positioned on the bottom of the vat to beat up the stock. At
80 the rear or left-hand side of the beating-drum 2 is arranged the usual backfall 6 which extends from one side of the vat to a mid-feather 7, this mid-feather extending centrally and longitudinally of the vat 1 for
85 a portion of its length. The beating-drum and backfall are inclosed by a cover 7^a of any suitable character. The lower rear or left-hand portion of the backfall 6 is cut away to form a pressure-chamber, (marked 8,) this
90 pressure-chamber extending transversely across the vat between the side of the vat and the mid-feather, the roof of this chamber being formed by a plate 9 of any suitable character, secured on the backfall so as to provide a
95 jet-opening 10 from chamber 8 between the lower edge of the plate and the bottom 11 of the vat, the plate 9 extending to within a suitable distance of the bottom of the vat to provide this opening. The end of this pres-
100 sure-chamber adjacent to the side of the vat is connected with a suitable source of water-supply under pressure, (not shown,) as by pipe 12, as shown in Fig. 2. From the other end of the pressure-chamber 8—that is, the
105 end adjacent to the mid-feather 7—extends a connection 13, passing around the rear or left-hand end of the mid-feather 7. This connection is adapted to supply water from the pressure-chamber 8 to the return side of
110 the mid-feather, the object of this construction being to stir up and carry along the pulp

or stock which is liable to accumulate against the mid-feather on its return side.

The operation of emptying the vat is so well understood that it is sufficient to say that as the stock is moved by the water from pressure-chamber 8 and connection 13 it is discharged from the vat through a discharge-outlet 14 in the bottom of the vat, the cover 15 of which will be removed before the emptying operation. At the beginning of this emptying operation the stock is so thick that it readily leaves the vat through the discharge-outlet 14 as it is pushed along by the water. As the operation proceeds, however, the stock becomes thinner until it reaches a point where it is practically held in suspension in the water, with the result that it does not readily discharge through the outlet 14, but is carried past it by the velocity of the water, the emptying operation being thus seriously interfered with. This difficulty is entirely overcome by the stock-retarding mechanism provided by the present invention, which will now be described. In the particular construction illustrated for this purpose there is provided a rotatable shaft 16, extending transversely of the vat and located at the forward or discharge end thereof between the side of the vat and the mid-feather, being mounted in bushings 17, positioned in the sides of the vat and the mid-feather, respectively.

To prevent leakage around the end of the shaft, which is secured in the vat side, that end is passed through a stuffing-box 18 of any suitable construction. Fast on this shaft and extending transversely of the engine between the side of the vat and the mid-feather is a plate 19 of suitable thickness and of any suitable material, preferably metal. The dimensions of this metal plate may be varied; but it will be of such a height and width that when it is in its raised or operative position or into the path of movement of the water and stock it will act as a barrier or dam to the passage of the water and stock around the vat, and thus tend to back the water toward the discharge-outlet 14 and effect the discharge of the water and suspended stock through said outlet. The plate 19 is secured on the shaft so as to be raised or lowered as the latter is turned by two hubs or sleeves 20, one at each end of the plate and cast therewith. That portion of the swinging plate 19 which extends between the hubs is formed as shown in Fig. 6—that is, with its lower edge bent in under the shaft and with its body provided at suitable intervals with vertical strengthening-ribs 21. In order that there shall be a close fit between the plate and the bottom of the vat, that portion of the vat-bottom which is under the hubs 20 is cut or grooved out, as shown at 22, the hubs lying in these grooves, this construction bringing the plate when in its raised po-

sition down snug on the vat-bottom, as shown in Fig. 5. Suitable means are provided for turning the shaft 16 to bring the plate into and out of operative position. As shown, the shaft 16 is extended through the stuffing-box 18 beyond the side of the vat and has keyed to such extension a lever 23, by which the shaft may be turned and the plate 19 thus raised and lowered. This lever at its upper end engages with a sector 24, (see Fig. 1,) and the lever is held in a fixed position by a locking-cam 25, pivoted on the lever at 26, the locking-face of this cam being normally held in contact with the sector by a spring 27, suitably positioned on the lever. By this construction the plate may be raised or lowered, as desired, and locked in any desired position of adjustment. In order to prevent the plate passing beyond the desired vertical position when being raised, there are provided (see Fig. 8) stop-pieces 28 for engaging and limiting the movement of the plate from normal or inoperative position. These stop-pieces have a rubber face 29, by which leakage around the plate at the sides is prevented.

The discharge-outlet 14 may be located at any desired point at the forward or right-hand end of the vat. Preferably, however, and as shown this outlet is located about on a line between the vat side and the forward or right-hand end of the mid-feather, as by thus positioning the outlet the best results are secured.

While the invention has been described in connection with a beating-engine, it will be understood that the invention may and is intended to be used in connection with washing-engines, in which the raw material is washed and bleached and partially reduced to what is known in the trade as "half-stock," as will be understood by those skilled in the art.

What is claimed is—

1. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, and means for retarding the flow of water and stock to cause the same to pass into the outlet.

2. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, and means movable to operative and inoperative positions, for retarding the flow of water and pulp to cause the same to pass into the outlet.

3. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, and a plate, movable to operative and inoperative positions for re-

tarding the flow of water and pulp to cause the same to pass into the outlet.

4. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, and a swinging plate, movable to operative and inoperative positions for retarding the flow of water and pulp to cause the same to pass into the outlet.

5. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, a swinging plate for retarding the flow of water and stock to cause the same to pass into the outlet, and a lever for swinging the plate to raise and lower the same.

6. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, a swinging plate for retarding the flow of water and stock to cause the same to pass into the outlet, a lever for swinging the plate to raise and lower the same, and connections for locking the lever to hold the plate in a raised or lowered position.

7. The combination in an engine of the kind described having a vat, of a discharge-outlet in the vat, means for supplying water thereto under pressure to cause the stock to

flow readily to the discharge-outlet, and a movable plate for retarding the flow of water and stock to cause the same to pass into the outlet, said plate being positioned between the mid-feather and the side of the vat.

8. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, a swinging plate for retarding the flow of water and stock to cause the same to pass into the outlet, a lever for raising and lowering the plate, and stops for limiting the movement of the plate when raised.

9. The combination in an engine of the kind described having a discharge-outlet, of means for supplying water thereto under pressure to cause the stock to flow readily to the discharge-outlet, a swinging plate for retarding the flow of water and stock to cause the same to pass into the outlet, a lever for raising and lowering the plate, stops for limiting the movement of the plate when raised, and connections for locking the lever to hold the plate in a raised or lowered position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD A. JONES.

Witnesses:

EDSON BONNEY,
GEO. H. FRIEBER.