No. 745,859. PATENTED DEC. 1, 1903.

E. A. JONES.

BEATING ENGINE.

APPLICATION FILED MAR. 5, 1903.

NO MODEL.

Fig. 1.

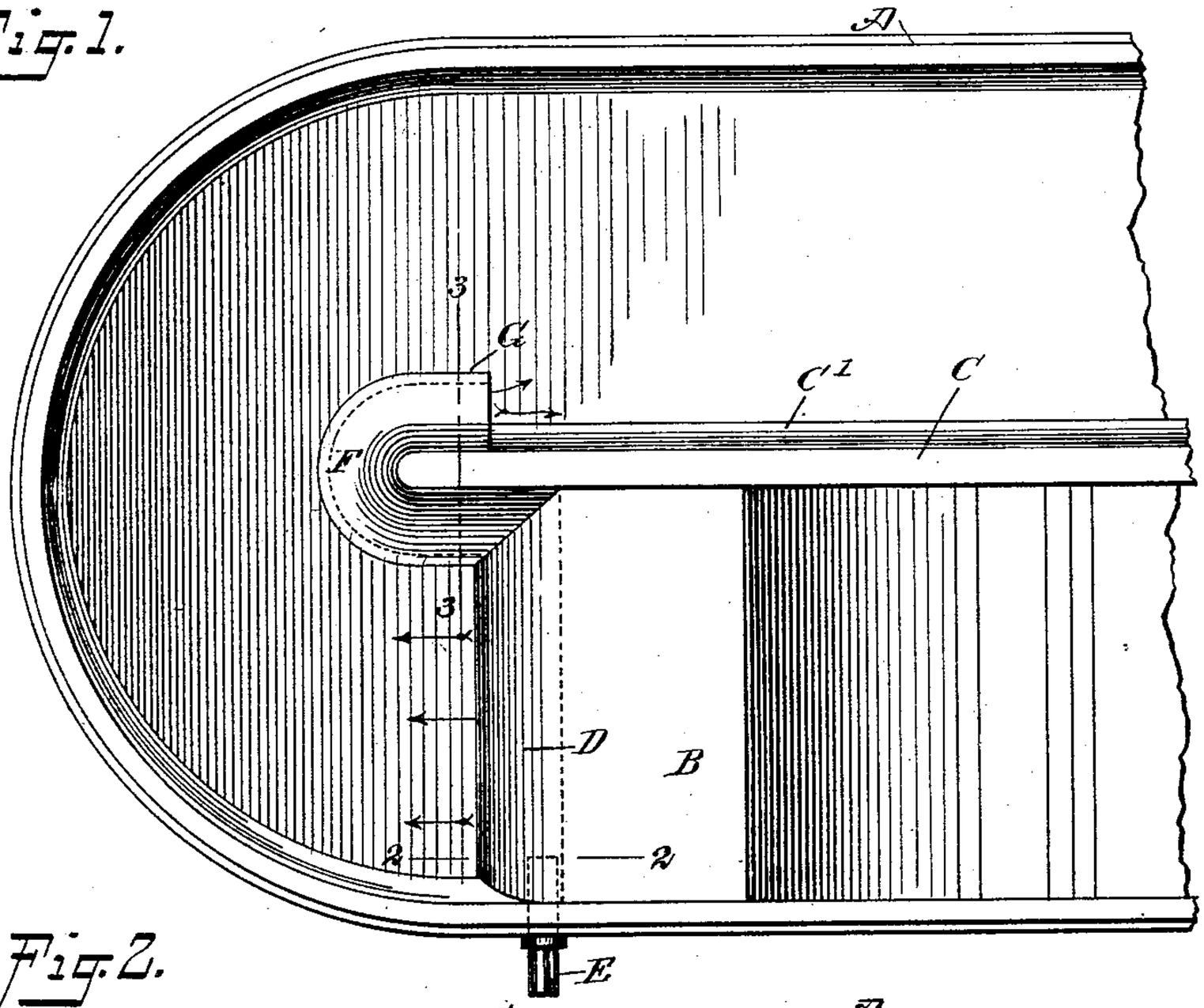


Fig. 2.

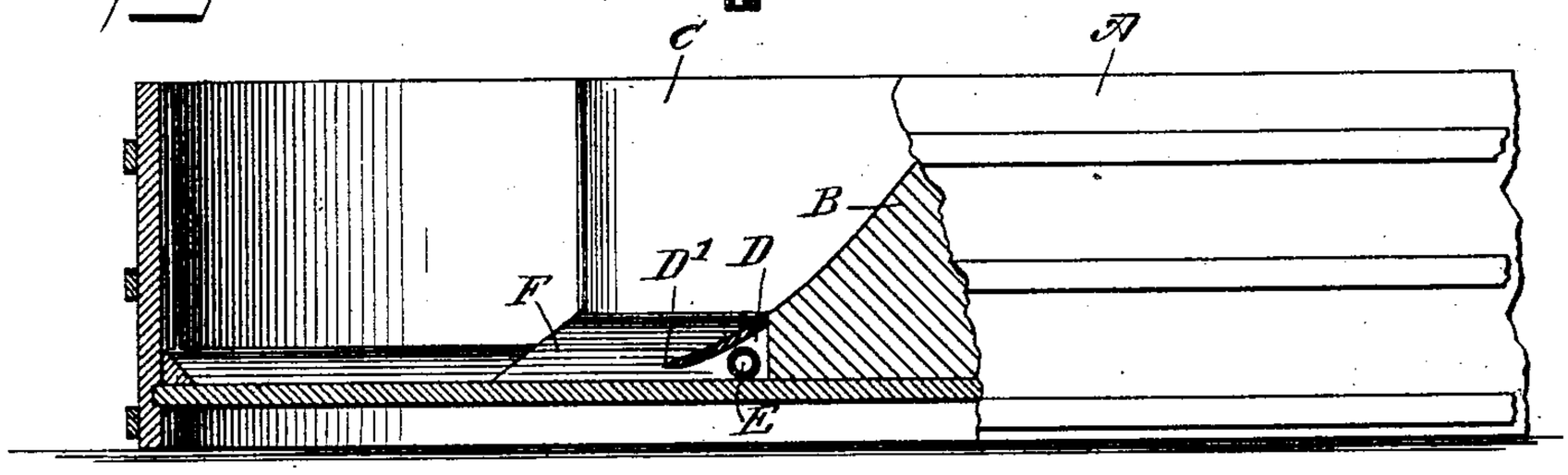
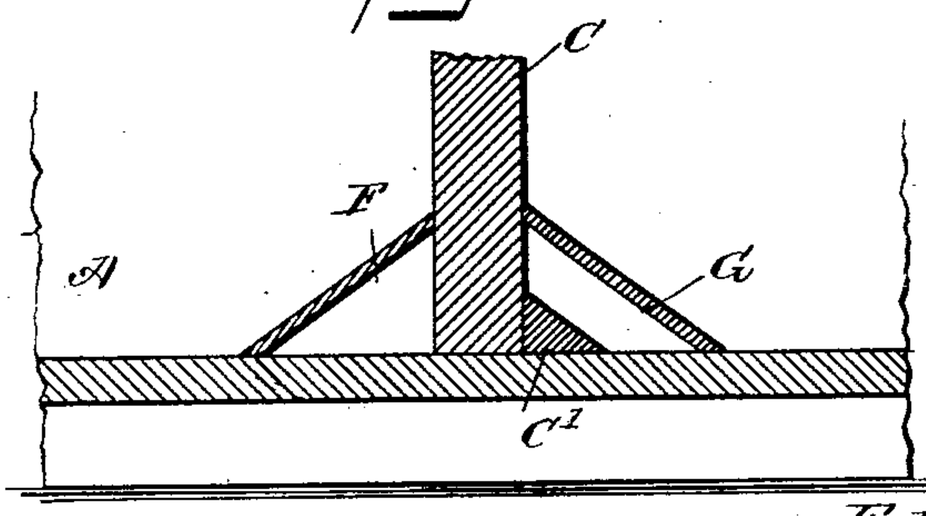


Fig. 3.



WITNESSES:

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No. 745,859. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

EDWARD A. JONES, OF PITTSFIELD, MASSACHUSETTS.

BEATING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 745,859, dated December 1, 1903.

Application filed March 5, 1903. Serial No. 146,354. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. JONES, a citizen of the United States, and a resident of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Beating-Engine, of which the following is a full, clear, and exact description.

The invention relates to the manufacture of paper, and more particularly to beating-engines such as shown and described, for instance, in the Letters Patent of the United States No. 717,209, granted to me December 30, 1902.

The object of the present invention is to provide a new and improved beating-engine which is simple and durable in construction and arranged to insure a proper circulation of the pulp or stock in the vat and to cause the stock to readily flow to the discharge-pipe when emptying the vat without requiring manually-actuated rakes for pushing the stock to the discharge-pipe.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1, and Fig. 3 is an enlarged transverse section of the same on the line 3 3 of Fig. 1.

In the vat A of the beating-engine is mounted to rotate a beating-drum, (not shown,) and at the rear end of the beating-drum is arranged a backfall B, extending from one side of the vat to a mid-feather C. Under the rear wall of the backfall B is arranged a pressure-chamber D, formed with a jet-opening D′ for discharging water under pressure into and under the pulp or stock at the bottom of the vat and in the direction in which the pulp is flowing, owing to the action of the beating-drum. This pressure-chamber D is connected at the side adjacent to the side of the vat with a supply-pipe E, connected at its outer end with a suitable water-supply under pressure. The end of the pressure-chamber D adjacent to the mid-feather C is connected with a second pressure-chamber G, discharging into the vat on the return side of the mid-feather C.

The connection F extends around the upper or back end of the mid-feather C, and the pressure-chamber has its discharge-opening arranged to open into the pulp on the return side of the mid-feather either in the direction in which the pulp is flowing (see Fig. 1) or at right angles thereto or at any angle between the two positions just referred to, it being, however, understood that in either case the water passing out of the chamber G under pressure assists in the thorough mixing of the pulp and to cause the pulp to flow toward the discharge-opening (not shown) in the lower end of the vat. It is further understood that the strongest current on the return side of the vat is at or near the rear side of the vat, and there is a tendency of the pulp to become sluggish or dead along the mid-feather, and hence when the water issues from the chamber G at the return side of the mid-feather it carries the more sluggish or dead pulp near the mid-feather along and over into the strong current at the rear of the vat. As shown in the drawings, the connection F is U-shaped, and the chamber G has its opening extending over the fillet C′ on the return side of the mid-feather, so as to form a reduced jet-opening, as plainly shown in Fig. 3, for the water under pressure to pass out of the chamber G into and under the pulp at the return side of the mid-feather C. The pressure-chamber G may be extended any desired distance along the return side of the mid-feather C, it being understood, however, that the chamber discharges into the pulp somewhere between the ends of the mid-feather on the return side thereof.

In the patent above referred to I made use of the pressure-chamber D, the same as in the present case, to start the pulp around the upper end of the vat, but by having the second jet of water engaging the pulp at the return side of the vat and directing the jet in the manner described it is evident that the pulp is forced down the return side toward the discharge pipe or opening without the use of a rake in the hands of an operator.

It will further be seen that by the arrange-

ment described the position and construction of the mid-feather C are not disturbed whatever, and by having the top of the return connection F and that of the chamber G beveled or concaved, as shown in Fig. 3, it is evident that the said return connection and chamber do not materially retard the flow of the pulp from the backfall B to the return side of the vat.

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

1. A beating-engine having a pressure-chamber on the return side of the mid-feather for forcing a stream of water into or under the pulp, and a connection between the said pressure-chamber and a source of water-supply, the said connection extending around the upper or back end of the mid-feather, as set forth.

2. A beating-engine having a device in a vat for forcing a stream of water into or under pulp, the device comprising pressure-chambers, one under the rear wall of the backfall and the other at the return side of the mid-feather, the chambers being connected with each other around the upper end of the mid-feather, as set forth.

3. A beating-engine having a device in a vat for forcing a stream of water into or under pulp, the device comprising pressure-chambers, one under the rear wall of the backfall and the other at the return side of the mid-feather, the pressure-chamber at the return side of the mid-feather having a U-shaped connection with the inner end of the pressure-chamber under the rear wall of the backfall, as set forth.

4. A beating-engine having a device in a vat for forcing a stream of water into or under pulp, the device comprising pressure-chambers, one under the rear wall of the backfall and the other at the return side of the mid-feather, the pressure-chamber at the return side of the mid-feather having a U-shaped connection with the inner end of the pressure-chamber under the rear wall of the backfall, the U-shaped connection extending around the upper end of the mid-feather, as set forth.

5. A beating-engine having a device in a vat for forcing a stream of water into or under pulp, the device comprising pressure-chambers, one under the rear wall of the backfall and the other at the return side of the mid-feather, the chambers being connected with each other around the upper end of the mid-feather, and the chamber on the return side of the mid-feather extending over the fillet of the mid-feather, as set forth.

6. A beating-engine having a device in a vat for forcing a stream of water into or under pulp, the device comprising pressure-chambers, one under the rear wall of the backfall and the other at the return side of the mid-feather, the chambers being connected with each other around the upper end of the mid-feather, and the discharge end of the chamber on the return side of the mid-feather being in the direction of the length of the mid-feather, and between the ends thereof, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD A. JONES.

Witnesses:
E. E. SECOR,
WALLACE E. BARDWELL.