(No Model.)

P. DILLON.

BEATING ENGINE FOR RAGS, &c.

No. 524,497. Patented Aug. 14, 1894.

Fig: 1.

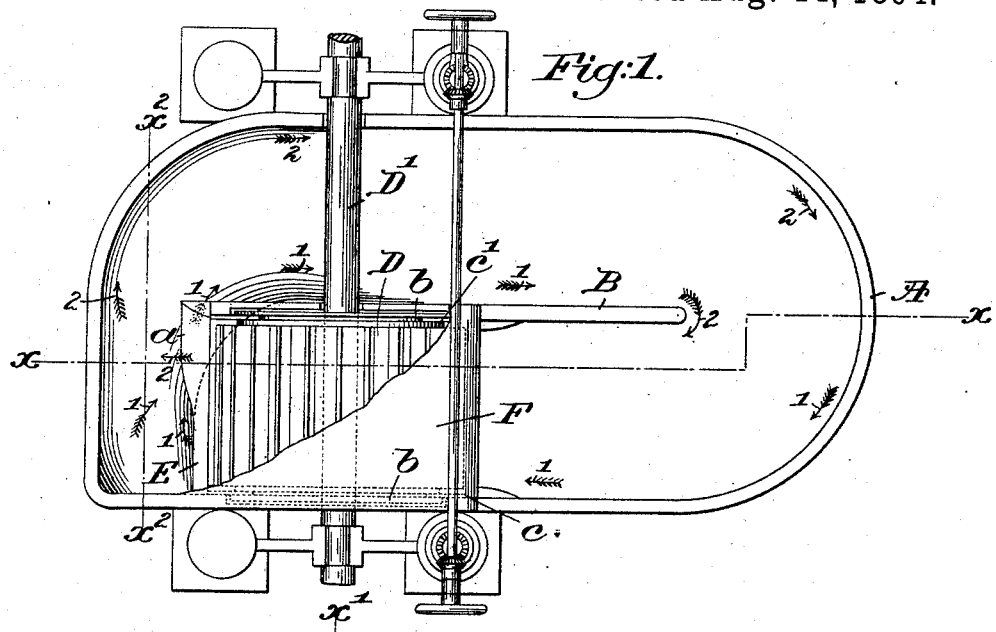


Fig: 2.

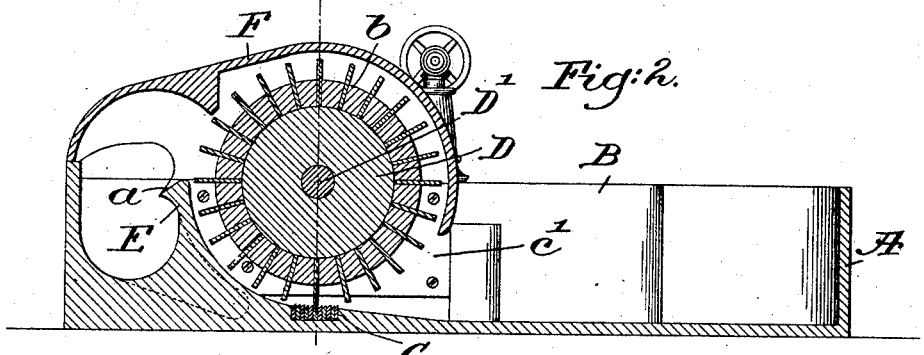


Fig: 3.

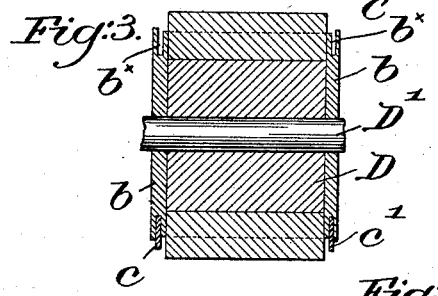


Fig: 4.

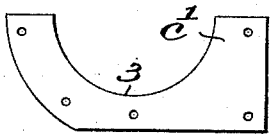
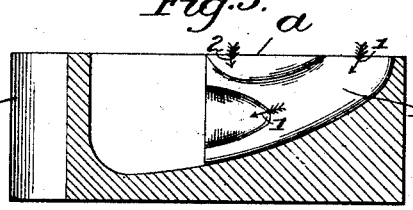


Fig: 5.



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UNITED STATES PATENT OFFICE.

PETER DILLON, OF LAWRENCE, MASSACHUSETTS.

BEATING-ENGINE FOR RAGS, &c.

SPECIFICATION forming part of Letters Patent No. 524,497, dated August 14, 1894.

Application filed May 22, 1893. Serial No. 475,042. (No model.)

To all whom it may concern:

Be it known that I, PETER DILLON, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Beating-Engines for Rags, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

Rag beating engines as now commonly made consist of a rotating cylinder or beater having blades which co-operate with a bed having blades, the bed being located in a curved-ended tank having a short central partition or mid-board, to thus make a raceway in which the pulp-stock may travel, the beater discharging the liquid pulp over what is called a "back fall," so that the circulation of the liquid is insured, the mid-board extending in practice beyond the back fall so as to reform the current of pulp stock after passing the back fall and before turning about the mid-board. It is a great desideratum to thoroughly and uniformly grind the rags or fiber and mix the same, and my present improvements have been devised for that purpose. In the use of the ordinary beating engine, the liquid and fiber or stock which is next the inner side wall of the mid-board when passing under the cylinder, hugs the said inner side throughout its travel around and around in the raceway. I have by experiments devised means whereby the stock is shifted or made to change its position from side to side at the end of the tank where the back fall is located.

In accordance with my invention I have reduced the length of the back fall, thus making it more abrupt, and I have cut away or omitted the mid-board beyond the back fall and so shaped the rear side of the back fall by under-cutting the same or removing a portion of it at its end in the line of the mid-board, and between the bottom of the tank and the top of the back-fall, as to enable the pulp-stock running over the back fall nearest the inner wall of the tank to take a quick sharp turn from the tank wall toward the line of the mid-board and at the foot of the back fall, it turning sharply about the back fall in the line of the mid-board and getting under the pulp-stock then being discharged over the back fall near the line of the mid-board. To do this in the simplest form, I have, in this instance of my invention provided the top of the back fall, commencing at or near the mid-board, with an apron which is extended across and projects beyond the back fall for about half, more or less, of its width, and I have elevated or inclined upwardly the bottom of the tank at the rear of the back fall, from at or about the line of the mid-board to the side wall of the tank, and have concaved said bottom and cut under the rear side of the back fall from near the side wall of the tank to the junction of the mid-board and back fall, and so lowered the bottom of the tank near the junction of the back fall and mid-board as to form a passage-way along which the pulp-stock may travel quickly and easily. In other words, I have provided the back fall with a lip or apron of such shape, taken in connection with the cut under rear side of the back fall and the raceway bottom that the body or sheet of liquid stock will be given a twist or will be overturned as it passes over the back fall.

Figure 1 is a top view of a beating engine embodying my invention, with the cylinder cover partially broken away. Fig. 2 is a vertical sectional view in the line x, Fig. 1. Fig. 3 is a transverse sectional view taken in the line x', Fig. 2, parts beyond the roll being omitted. Fig. 4 is a detached view of one of the plates to be connected to the mid-board and side wall; and Fig. 5 is a sectional detail to be referred to, taken on the line x^2, Fig. 1.

The tank A, the bed-plate C, the roll or beater D, and cover F are and may be all as usual.

The ordinary form of beater engine has a mid-board and a back fall, but in this my invention the mid-board and back fall have been altered in construction, I have shortened the back fall E, cut most of it away in the direction of the length of the tank and have made its rear side more abrupt, as shown in Fig. 3, and I have shortened the mid-board B so that its end no longer extends beyond the back fall. I have so shaped the back fall by cutting under its rear side below its top and between the side wall and the mid-board as to present a lip or apron a, it being extended from at or near the line of the mid-board to-

ward the side of the tank along the top of and for about half the length of the back fall more or less. I have also changed the shape of the bottom of the tank at the rear of the back fall so that the tank bottom is made concave, and is contracted, and the said bottom is also concave in the dotted line x^2, Fig. 1, being lowest near the junction of the mid-board and the back fall, so that the pulp liquid coming along at the side of the tank as designated by arrows 1, and discharged over that part of the back fall where there is no lip or apron, will, by reason of the curvature of the bottom of the tank at the rear of the back fall, and the under cutting of the back fall, turn sharply about the junction of the back fall and mid-board and follow along the side of the mid-board.

The liquid pulp stock discharged over the part of the back fall having the apron will be made to cross over the top of the liquid pulp stock designated by arrows 1, discharged over the unaproned part of the back fall, and will follow along the inner side of the wall of the tank, as designated by arrows 2.

From the foregoing, it will be understood that the liquid discharged over the inner end of the back fall will be returned to the back fall in position to be passed over the outer end or portion of the back fall, and vice-versa, and in this way, the liquid is, as I may say, overturned or made to change from outer to inner side of raceway, thus thoroughly mixing the liquid and its contents and subjecting all parts of the stock to equal beating.

Sometimes with usual beaters, the stock becomes jammed in between the end of the beater and the wall of the tank, or the end of the beater and the mid-board. To overcome this I have provided the beater at its ends with an annular projection, preferably in the form of a metallic ring *b*, see Figs. 1 and 3, having a groove $b^{\times}$ into which is entered the concave edges 3, of metallic plates *c*, *c'*, attached to the side wall of the tank and to the mid-board, respectively, and also to the inner sides of the cover, one of said plates being shown detached in Fig. 4.

The side walls of the tank, and the mid-board are each notched as is the cover, to receive the annular projections *b*.

This invention is not limited to the exact shape shown for the apron or lip at the inner end of the back fall, so long as the rear side of the back fall at or near its junction with the mid-board is so shaped as to enable the pulp discharged over the outer end of the back fall to pass under the pulp being discharged over the back wall near the mid-board.

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

1. In a beater engine, the combination, with a tank having a back fall cut under at its rear side gradually from near the side to the mid-board; a mid-board; and a beater, of an apron at the top of and projecting above the cut under portion of the back fall, to operate, substantially as described.

2. The combination with a tank and mid-board, of a back-fall cut under at its rear side adjacent to the mid-board, to cause the material discharged over it near the line of the mid-board to cross over the material discharged over the end of the back-fall nearest the side wall of the tank, the latter portion of the material passing along said cut under portion, substantially as described.

3. The beater having one or more grooved hubs or projections, and the tank and partition, combined with plates engaging the grooves of said hubs, to operate, substantially as described.

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

PETER DILLON.

Witnesses:
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