J. S. WARREN.

PAPER-PULP ENGINE.

No. 189,671. Patented April 17, 1877.

Fig. 1

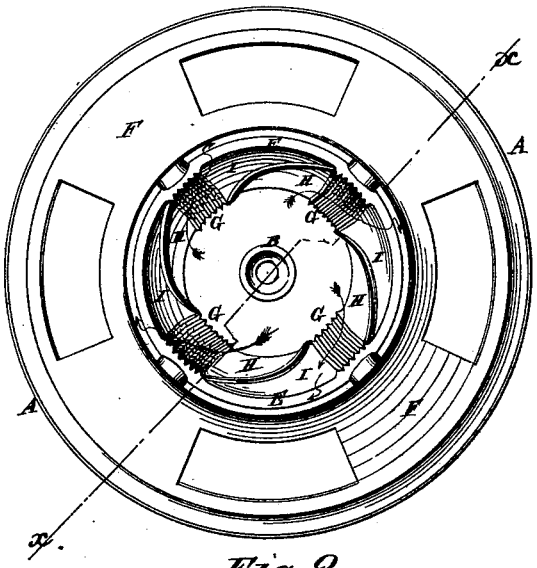
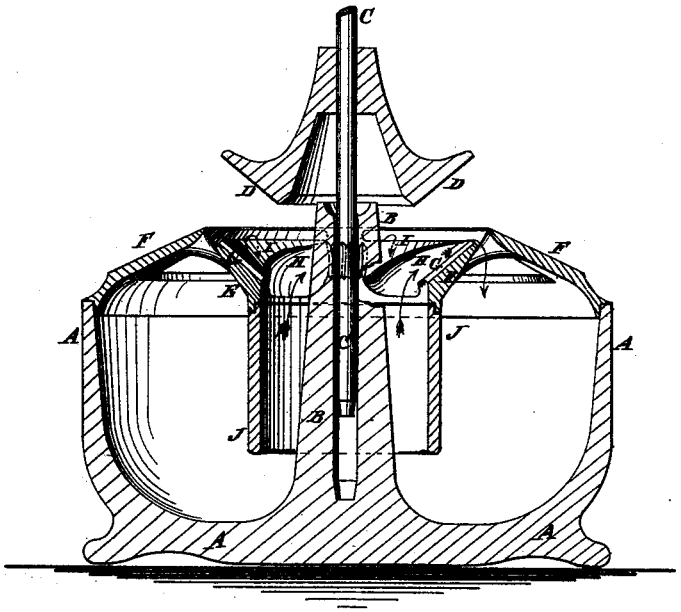


Fig. 2



WITNESSES:

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JOHN S. WARREN, OF CUMBERLAND MILLS, WESTBROOK, MAINE.

IMPROVEMENT IN PAPER-PULP ENGINES.

Specification forming part of Letters Patent No. **189,671**, dated April 17, 1877; application filed March 3, 1877.

To all whom it may concern:

Be it known that I, JOHN S. WARREN, of Cumberland Mills, Westbrook, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Paper-Pulp Beating and Washing Engine, of which the following is a specification:

Figure 1 is a top view of my improved engine, the small cone being removed. Fig. 2 is a vertical section of the same, taken through the line *x x;* Fig. 1, the male cone being shown as raised from its place.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for beating and washing paper-pulp, which shall be simple in construction, effective in operation, and not liable to get out of order.

The invention consists in the female cone, in a paper-pulp engine, provided with groups of radial knives and guide-cavities in the spaces between said groups of knives, as hereinafter fully described.

A represents the curb or case which is made of any desired size, and with a concaved bottom. Upon the center of the bottom of the case A is formed a hollow column, B, to receive and serve as a bearing for the vertical shaft C, and which rises a little above the top of the case A to prevent the pulp from coming in contact with the shaft C, and clogging and wearing it. To the shaft C, above the top of the hollow column B, is attached the hub of an inverted frustum of a cone, D. The lower part of the hub of the cone D is recessed to receive the upper end of the hollow column B, so that the face of the male cone D may coincide with the face of the female cone E, formed upon, or attached to, and supported by, the frame or cover F, that rests upon the upper edge of the case A.

To the face of the cone D are attached radial knives in the usual way, but which are not shown in the drawings. To the face of the cone E are attached knives G, which are arranged in groups, and are made with an angle or curve, as shown in Fig. 1, to prevent them from interlocking with the knives of the cone D. In the face of the cone E, between the groups of knives G, are formed two concavities, H I. The concavity H leads up from the lower edge of the cone E to the front of the group of knives, to serve as a spout to conduct the pulp to said knives; and the concavity I leads from the rear of the group of knives G to the upper edge of the cone E, to serve as a spout to conduct the pulp from the knives to the upper edge of the cone E, so that it may pass freely back into the case or tank A. To the lower edge of the cone E is attached the upper edge of a tube, J, which extends down nearly to the bottom of the case A. With this construction the centrifugal force engendered by the revolution of the cone D causes the pulp to pass up between the cones D E, flow over the upper edge of the cone E, and flow back into the tank A, the pulp from the lower part of the said tank passing into the tube J, and up between the cones D E, so as to establish a circulation, and insure all the pulp being properly acted upon.

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

In a paper-pulp engine, the female cone E, provided with the groups of knives G, and the guide-cavities H I in the spaces between said groups of knives, substantially as herein shown and described.

JOHN S. WARREN.

Witnesses:

GEO. B. MERRILL,

WILFRED BARNES.