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Patented June 26, 1900.

E. A. JONES.

RAG ENGINE.

(Application filed Aug. 17, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

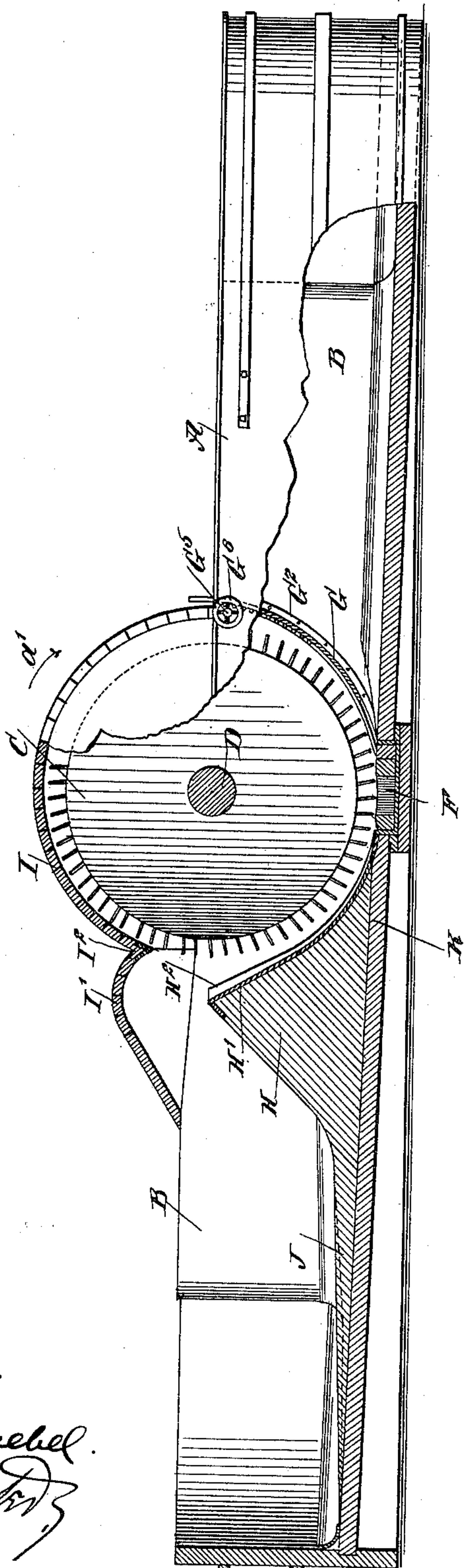
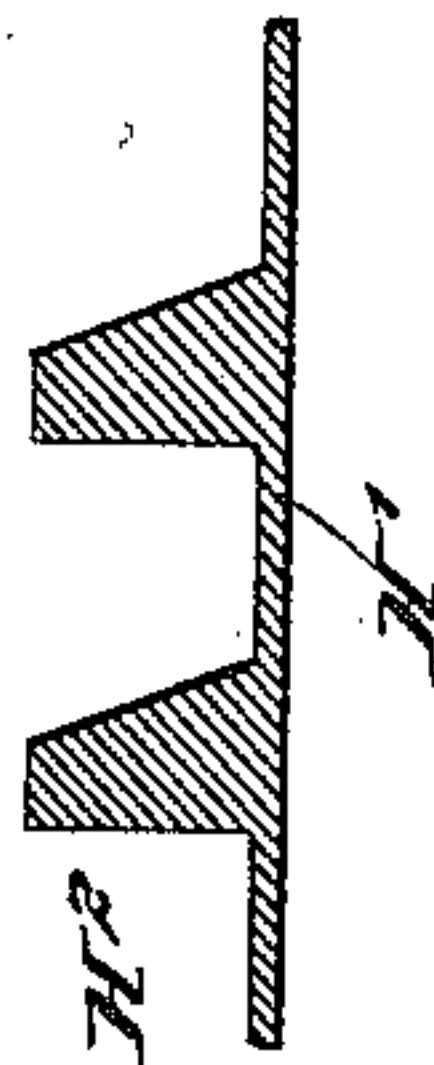


Fig. 3.



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## RAG-ENGINE.

SPECIFICATION forming part of Letters Patent No. 652,561, dated June 26, 1900.

Application filed August 17, 1899. Serial No. 727,534. (No model.)

*To all whom it may concern:*

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

The invention relates to paper-making machines; and its object is to provide a new and improved rag or beating engine which is simple and durable in construction, very effective in operation, and arranged to relieve the beating-drums of unnecessary pressure of the entering pulp, thus saving power in driving the engine and insuring a thorough mixing and agitating of the pulp and a rapid circulation to avoid streaks therein, and to facilitate emptying of the engine of the finished stock.

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

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

Figure 1 is a plan view of the improvement with parts broken out. Fig. 2 is a sectional side elevation of the same on the line 2 2 in Fig. 1. Fig. 3 is an enlarged sectional plan view of the backfall-plate.

The improved rag-engine is provided with a vat A, containing the usual midfeather B, on one side of which is mounted to rotate a beating-drum C, secured on a shaft D, journaled in suitable bearings and provided with a pulley E, connected by a belt with other machinery for imparting a rotary motion to the said pulley, the shaft D, and the drum C in the direction of the arrow  $a'$ . (Indicated in Fig. 2.)

The knives or cutters of the drum C operate in conjunction with the usual bottom blades F, and in the front of said drum C, at the feed side thereof, is arranged a shield G, preferably made segmental and fitted to slide up and down in suitable guideways  $G'$   $G^2$ , of which the guideway  $G'$  is secured to the inner face of one side of the vat and the other guideway  $G^2$  is attached to the midfeather B.

On the inside of the shield G, near the ends thereof, are secured segmental racks  $G^3$ , in mesh with gear-wheels  $G^4$ , secured on a transversely-extending shaft  $G^5$ , journaled in suitable bearings in the side of the vat and the midfeather, a hand-wheel  $G^6$  being on one outer end of the shaft to permit the operator to turn the shaft to raise and lower the shield by the gear-wheels meshing in the racks  $G^3$ . A suitable locking device  $G^7$  is adapted to engage the hand-wheel  $G^6$  to lock the latter, the shaft, and the shield in place after the desired adjustment is made.

By reference to Figs. 1 and 2 it will be seen that the shield G extends downward from the top of the vat to a suitable place within the bottom thereof, so that the front or feed side of the drum C is shielded from the stock in the vat, and consequently the said drum is relieved of pressure from the stock at this side, so that the engine can be run at a high rate of speed with comparatively little power. The shield G is raised or lowered to leave sufficient opening near the bottom of the vat for the proper amount of pulp to enter to the knives and cutters of the drum at the blades F.

On the discharge side of the drum C is arranged a V-shaped backfall H, provided on its front face with a plate  $H'$ , formed with or supporting sets of ribs  $H^2$   $H^3$ , inclined obliquely one to the other, as is plainly shown in Fig. 1, a space being left between the sets of ribs at the middle of the plate  $H'$ .

As shown in Fig. 1, the sets of ribs are inclined toward each other from the bottom upward, so that the pulp passing up on this face of the backfall, near the sides thereof, passes between adjacent ribs of the sets and is thus caused to travel in an oblique direction, so that the pulp is thrown toward the middle of the backfall, and consequently the pulp is thoroughly mixed. If desired, the ribs may be arranged to throw the pulp from the middle to the sides to accomplish the same purpose.

In order to prevent some of the pulp from being carried over by the drum C, a cover I is provided attached to one side of the vat and to the top of the mid-feather B, the rear end of the cover being formed with an arched



extension I', located over the backfall H, with a V-shaped plate at the junction of the extension I' with the cover and with the said plate close to the knives or cutters of the drum to form a doctor for the same to prevent any of the pulp from being carried over by the drum. Furthermore, the arched extension I' serves as a deflector, so that the pulp flows upward over the backfall in the manner described and is deflected downward upon the back of the said backfall, to then flow upon the downwardly and outwardly inclined bed J, which forms a continuation of the backfall and which bed extends to the upper end of the inclined bottom K of the vat, the inclination extending downward from the end of the bed J to the discharge-valve L in the lower end of the vat.

It is evident from the foregoing that after the pulp is discharged down the backfall it flows by its own gravity from the bed J down the inclined bottom K, back to the shield G, and through the feed-opening thereof to the drum C. The flow of the pulp is thus greatly facilitated, and as the drum is considerably relieved of the pressure of the pulp at the front or feed side thereof it is evident that the machine can be run with comparatively little power to accomplish the desired result.

Having thus fully described my invention,

I claim as new and desire to secure by Letters Patent—

1. In a rag-engine, a beating-drum, and a backfall whose face adjacent the drum is formed with two sets of spaced-apart ribs, one set being spaced from the other and the ribs of one set extending obliquely toward the ribs of the other set, as set forth.

2. A rag-engine, provided with a backfall having obliquely-disposed ribs for mixing the pulp after leaving the drum, substantially as shown and described.

3. A rag-engine, provided with a backfall having its face adjacent to the beating-drum provided with spaced-apart sets of ribs standing obliquely to one another, to mix the pulp after leaving the drum, substantially as shown and described.

4. A rag-engine, provided with a backfall having its face adjacent to the drum provided with spaced sets of ribs for throwing the pulp passing up the backfall from the sides to the center at the rear face of the backfall, to mix the pulp, substantially as shown and described.

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Witnesses:

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