2 Sheets—Sheet 1.

E. SUMNER.

PULP-ENGINE.

No. 191,898. Patented June 12, 1877.

Fig. 1.

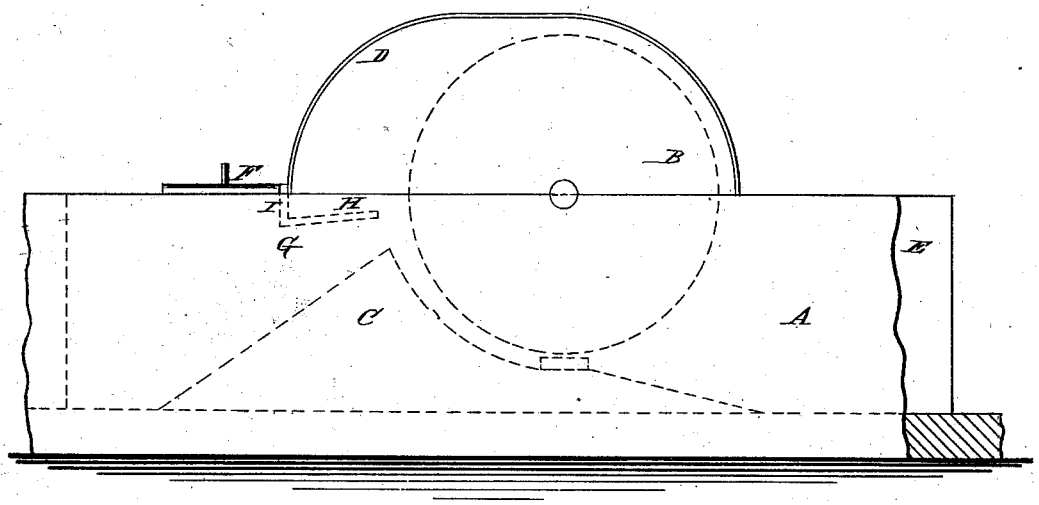


Fig. 2.

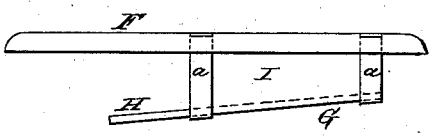


Fig. 3.

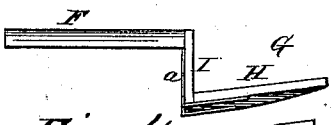
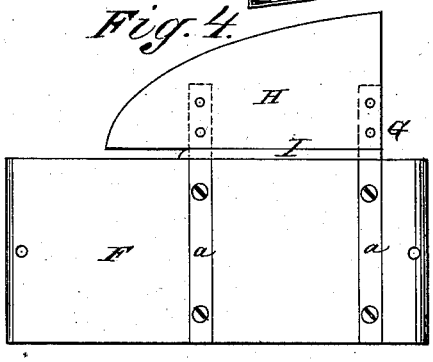


Fig. 4.



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2 Sheets—Sheet 2.

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PULP-ENGINE.

No. 191,898. Patented June 12, 1877.

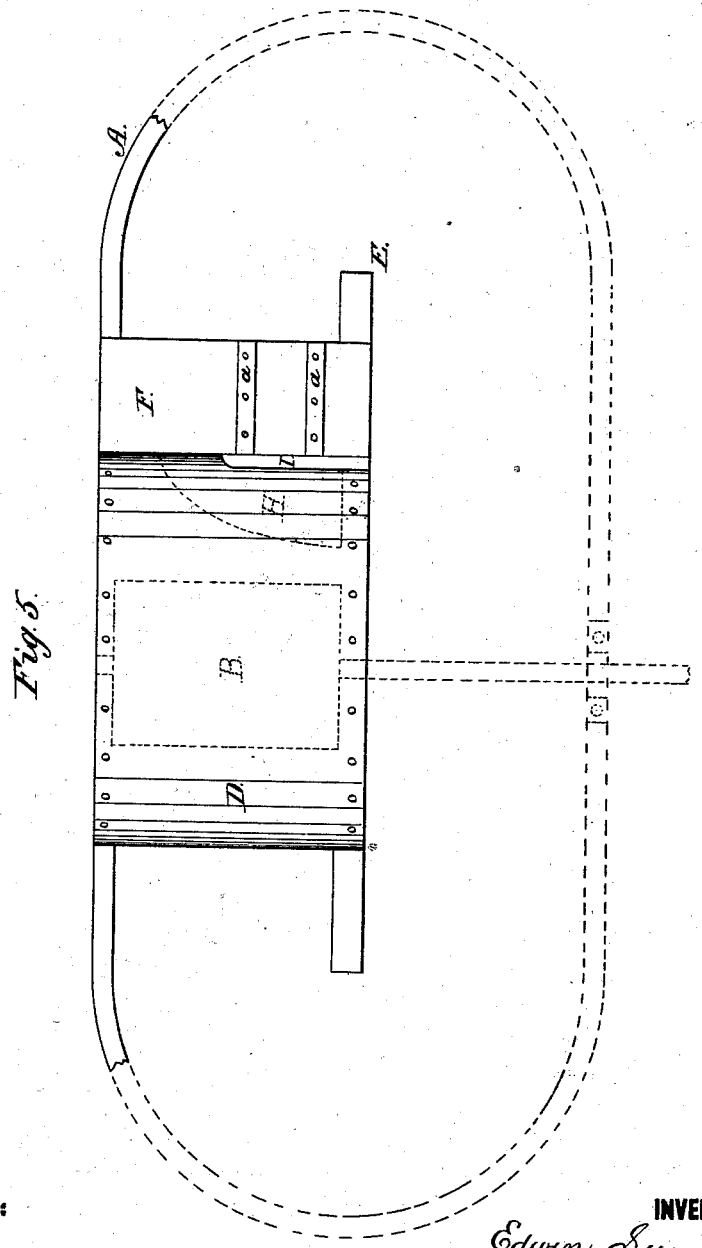

Fig. 5.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PULP-ENGINES.

Specification forming part of Letters Patent No. **191,898**, dated June 12, 1877; application filed November 11, 1876.

To all whom it may concern:

Be it known that I, EDWIN SUMNER, of Baldwinsville, in the county of Worcester and State of Massachusetts, have invented a new and Improved Mixer for Paper-Pulp Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figures 1 and 5 are, respectively, a side elevation, and a plan of a portion of a paper-pulp engine containing my improvement. Figs. 2 3 and 4 are, respectively, side, end, and top views of the mixing device.

My improvement consists in arranging within the roll-cover or hood of a paper-pulp engine, an inclined chute that receives the pulp thrown up by the roll, and carries it transversely toward the outside of the curb, the object being to equalize the velocity of the circulation of the pulp in the curb, so that a homogeneous mass of paper-pulp is produced.

In the drawing, A is the curb of a paper-pulp engine, and B is the grinding-roll of the engine. C is the back-fall, and D is the hood for the roll. E is the midfellow or middle partition of the curb. F is a cross-bar that rests upon the midfellow E, and upon the outer wall of the curb near the cover D. G is an inclined chute, supported by the bent bars *a a*, which are attached to the cross-bar F. This chute consists of a plank, H, and back-piece I. Its wider end abuts against the midfellow E, and it extends toward the outer wall of the curb, and is inclined downward, so that the pulp delivered to it runs toward its outer and narrower end. The back piece I is attached to the bars *a a*, and extends about half way to the outer wall of the curb, and prevents the pulp from running off in that direction. The plank H inclines downward and backward toward the back-piece I.

In paper-pulp engines of the ordinary construction, to which my invention is to be applied, and which is best shown in plan view in Fig. 5, it will be seen that the pulp circulates around the midfellow and inside the curb. Incident to this circulation, certain objections exist as follows: The portions of pulp adjacent to the midfellow have a shorter path in circulating than the portions of the pulp adjacent to the curb, or near the outside, and consequently the pulp next to the midfellow passes under the roll oftener, and is ground finer than that next to the curb. Furthermore, the thicker and heavier portions of the pulp or stock, in turning the bends at the ends are, from centrifugal action, thrown outwardly to the curb, while the thinner and more watery portions of the pulp wash rapidly around close to the midfellow. This still further prevents the homogeneous reduction of the pulp, by increasing the speed of the pulp next to the midfellow, and diminishing that of the pulp next to the curb, which not only involves the same objection of grinding the inner pulp finer than the outer pulp, but also prevents the best action of the engine. These objections have been attempted to be removed by the stirring and mixing of the pulp by paddles in the hands of an attendant, but this method is not automatic, and is imperfect and unsatisfactory.

In the operation of my device, the roll, revolving at a high rate of speed, dashes up the more fluid pulp upon the inclined chute G, whence it rushes outwardly toward the curb and drops off the narrow end of the said chute upon the outside pulp adjacent to the curb. The effect produced is as follows: The inner portions of the pulp next to the midfellow, which have a tendency, as before described, to grind finer, are dumped into the pulp near the outside, which is not ground so fine, by reason of its longer path, and consequently the pulp is more homogeneously mixed and ground. In addition to this result, also, there is another of importance.

It will be remembered that the pulp next to the midfellow is thinner and more watery, by reason of the centrifugal action, before referred to, which throws the heaviest stock to the outside near the curb. Now, as the thinner and more watery pulp is thrown up it rushes down upon the thicker and more sluggish stock near the outside, and, by washing and loosening up the same, serves to quicken its movement, and by causing the same to circulate faster permits the best effect of the engine.

From the foregoing description it will be

seen that the mixing of the pulp is made automatic and continuous, the movement of the outside pulp is accelerated, and the pulp is ground in a uniform and homogeneous mass instead of in different grades.

Having thus described my invention, what I claim as new is—

In a paper-pulp engine, the combination with the grinding-roll, the curb A, and the midfellow E, of an inclined transversely arranged chute, adapted to receive the watery pulp thrown up by the roll, and to effect a homogeneous mixture of the stock, substantially as described, and for the purpose set forth.

EDWIN SUMNER.

Witnesses:
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H. M. SMALL.