A. GARDNER.

Paper-Pulp Engines.

No. 166,519. Patented Aug. 10, 1875.

Fig. 1

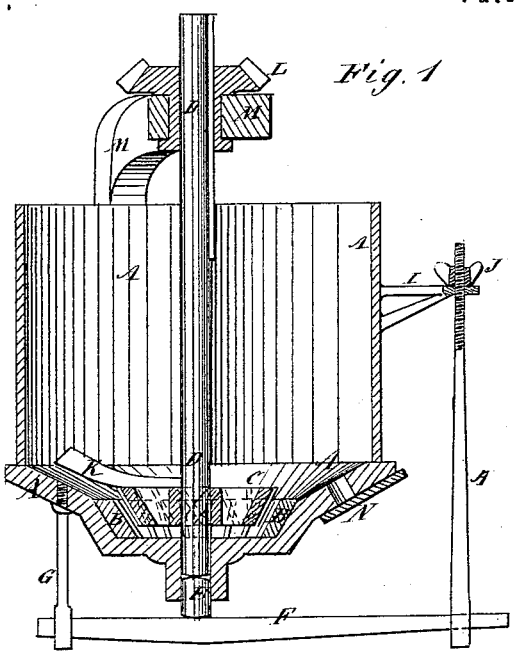


Fig. 2

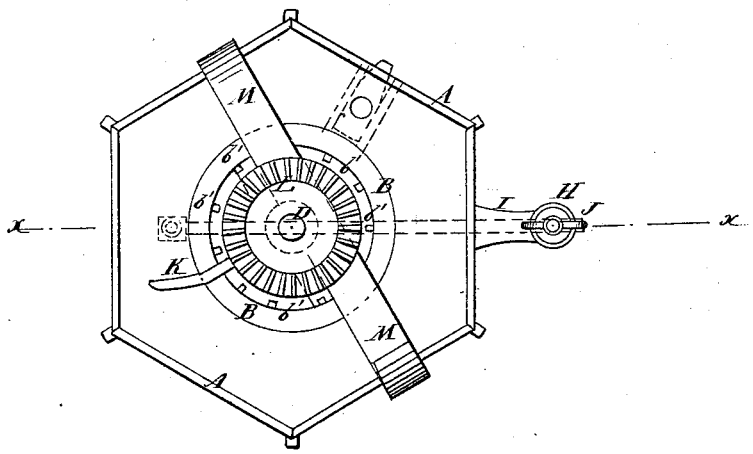
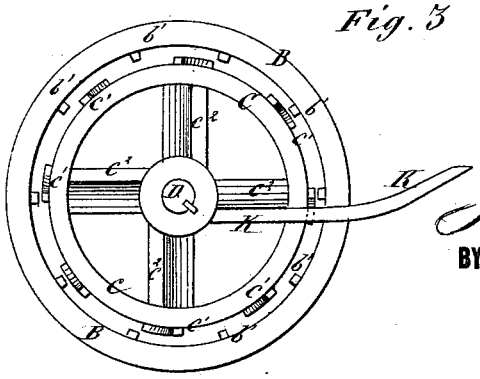


Fig. 3



WITNESSES:

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ALVIN GARDNER, OF WINDSOR, CANADA.

IMPROVEMENT IN PAPER-PULP ENGINES.

Specification forming part of Letters Patent No. **166,519**, dated August 10, 1875; application filed June 12, 1875.

To all whom it may concern:

Be it known that I, ALVIN GARDNER, of Windsor, in the county of Richmond and Province of Quebec, Dominion of Canada, have invented a new and useful Improvement in Pulp-Engine, of which the following is a specification:

Figure 1 is a vertical section of my improved pulp-engine, taken through the line *x x*, Fig. 2. Fig. 2 is a top view of the same. Fig. 3 is a detail top view of the beveled wheel and ring.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for reducing rags to pulp in paper-making, and which shall be simple in construction, and efficient in operation, reducing the rags rapidly and thoroughly.

The invention will first be fully described, and then pointed out in the claims.

A is a box of six, more or less, sides. The sides of the box A have flanges formed upon their side edges, and are bolted to each other, or they are secured to each other by a framework. The bottom of the box A inclines downward toward its center, and has a tapering recess or well formed in its middle part, into which is fitted a tapering ring, B. In grooves in the face of the tapering ring B are secured a number of knives, b', which are set at an angle or inclination. In the cavity of the tapering ring B is placed a beveled wheel, C, to the face of which are attached knives c^1, which are also set at an angle or inclination. The beveled wheel C is connected with a shaft, D, by arms c^2, which are inclined, as shown in Fig. 3. The lower end of the shaft D passes down through a hole in the center of the bottom of the box A, and revolves upon the upper end of a plug, E, which enters the lower end of the said hole, and the lower end of which rests upon a lever, F. One end of the lever F is pivoted to an arm, G, attached to the box A, and to its other end is pivoted the lower end of a rod, H, which passes up along the side of the box A, passes through a hole in a bracket or arm, I, attached to the side of the box A, and has a screw-thread cut upon its upper end to receive the hand-nut J.

By this construction the wheel C can be raised out of the ring B by raising the shaft D by means of the rod H and lever F.

To the top of the wheel C is attached a scraper, K, by which the pulp is pushed outward toward the walls of the box A. The upper part of the shaft D passes up through the hub of the bevel-gear wheel L, with which it is connected by a feather and groove, so that the said gear-wheel may carry the said shaft with it in its revolution, while allowing the said shaft to move up and down through it freely.

The gear-wheel L revolves in, and is swiveled to, bearings in the bridge-tree M, attached to the top of the box A, and to it motion is given from any convenient power.

In using the engine, the wheel C is raised, the rags to be cut are placed beneath it in the cavity of the ring B, and the wheel is lowered upon them. As the wheel C is revolved the rags are cut by the knives c^1 b', the inclination of the said knives preventing the cut from being made short, and tending to produce a pulp with a longer fiber, and thus forms a better and stronger paper. The inclination of the arms c^2 tends to draw the pulp down through the wheel, or, in other words, makes the suction stronger. The scraper K moves the pulp toward the walls of the box A, and enables the engine to be run more slowly, while at the same time producing a proper circulation of the pulp. The operation of the wheel C and scraper K tends to produce a circular current in the pulp, which current is broken up by the angles of the box A, thus producing a thorough mixing of the pulp. The pulp is drawn off through a valve, N, in the bottom of the box A.

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

1. The combination, with box A, having tapered well at the bottom, of inclined knives b' c^1, held, respectively, in beveled ring and wheel, open inside the rim, as and for the purpose specified.

2. The combination of the scraper K with the polygonal box A, the tapering knife-ring B, and the beveled knife-wheel C, open inside the rim, substantially as herein shown and described.

ALVIN GARDNER.

Witnesses:
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