(No Model.)

A. HEMPEL.

PULP ENGINE.

No. 406,136. Patented July 2, 1889.

Fig. 1

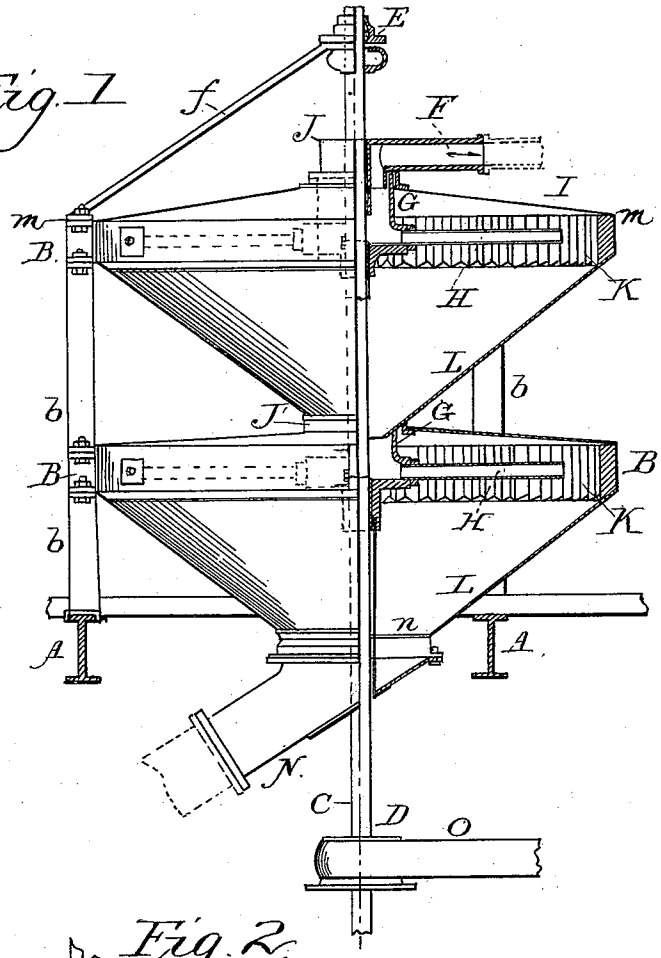
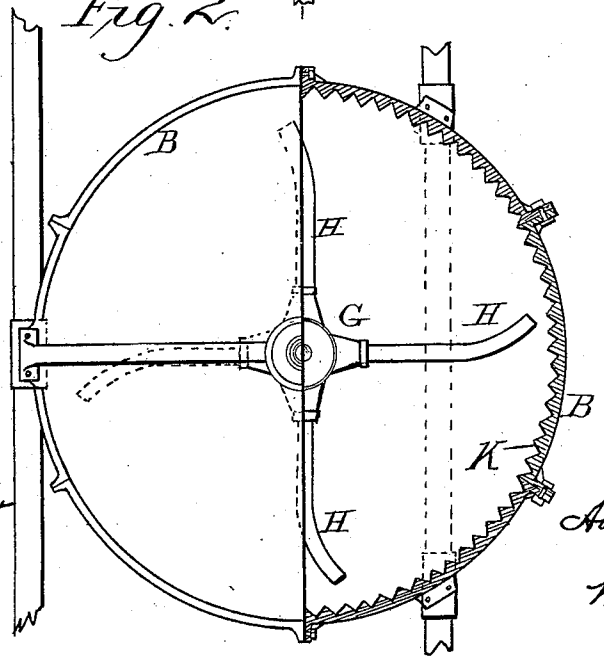


Fig. 2.



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UNITED STATES PATENT OFFICE.

ADOLPH HEMPEL, OF CÖSLIN, PRUSSIA, GERMANY.

PULP-ENGINE.

SPECIFICATION forming part of Letters Patent No. 406,136, dated July 2, 1889.

Application filed January 9, 1888. Serial No. 260,250. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH HEMPEL, a subject of the Emperor of Germany, residing at Cöslin, in the Kingdom of Prussia, Germany, have invented new and useful Improvements in Pulp-Engines; and I do hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification.

My invention relates to machines for completing the reduction to paper-pulp of fibrous material which has already been worked to some extent and saturated with water, so as to be partly fluid and capable of passing easily through a feed-pipe.

The object of said invention is to insure equally effective treatment of all parts of the mass. This object is effected by means of a rotating shaft carrying radial distributing-tubes which discharge the material aforesaid against the interior of an inclosing-cylinder armed with corrugations for comminuting said material. The devices are duplicated or further multiplied to secure cumulative effect in the reduction of the material under treatment to homogeneous paper-pulp.

In the accompanying drawings, Figure 1 represents a side view, partly in elevation and partly in vertical section, of the mechanism embodying my invention. Fig. 2 represents a view of the same from above, partly a plan and partly a horizontal section, on the line *m m* of Fig. 1.

A designates two horizontal iron rails, which support the frame *b* of the machine. To this frame cylinders B are fixed, one above the other, each cylinder having vertical corrugations K arranged in series on its inner face. Oblique brace-bars *f*, extending upward and inward from said frame, support a bearing E, in which the upper end of a vertical shaft C is journaled, said shaft receiving rotation through its belt-pulley D and belt O from any convenient motor. Each cylinder B is provided with an upper shell I, of sheet metal, tapering slowly upward and inward in the form of a very broad truncated cone. It also has below it a sheet-metal funnel L. The upper shell I of the upper cylinder B is provided with a hollow drum J, which receives the semi-fluid pulp discharged by feed-pipe F. The funnel L of said upper cylinder extends down within a smaller drum J′ of the upper shell I of lower cylinder B. The shaft C passes vertically through the centers of the drums, shells, cylinders, and funnels, and it is provided just below drum J with a hollow hub G, having radial tubular arms H, which communicate with the interior of said hub and present their outlet ends to the blades K of upper cylinder B at only a slight distance therefrom. A similar drum G, with tubular arms H, is arranged in the same manner within the lower cylinder and below the open lower end of the funnel L of the upper cylinder.

The operation is as follows: The shaft C being rotated, the semi-fluid fibrous material is fed into the upper drum J, and the liquid passes into the upper hollow hub G, whence it is discharged by centrifugal action against the corrugations K of the upper cylinder B. The rotary motion of said arms causes the material to be comminuted by said corrugations, all parts being acted on in the same manner and to the same extent. The material then descends through funnel L, enters the second hollow hub G, and the operation is repeated. Of course there may be as many cylinders and hubs as may be thought advisable. Instead of the corrugations described blades or knives may be used. From the last of the funnels (the second as shown) the comminuted material passes by discharge-pipe N, and the operation is ended.

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

In a paper-pulp engine, a fixed cylinder having corrugations on its inner surface and a funnel extending downward therefrom and open at the bottom, in combination with a vertically-rotary shaft extending through said cylinder and funnel, a hollow hub mounted on said shaft within said cylinder, tubular radial arms extending from said hub nearly to said corrugations, and a feed-pipe supplying said hub with the material to be acted upon, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ADOLPH HEMPEL.

Witnesses:
CARL GRAEPER,
EMIL GENZ.