No. 721,039. PATENTED FEB. 17, 1903.

E. HAZELTON.

PULP MACHINE.

APPLICATION FILED APR. 7, 1902.

NO MODEL.

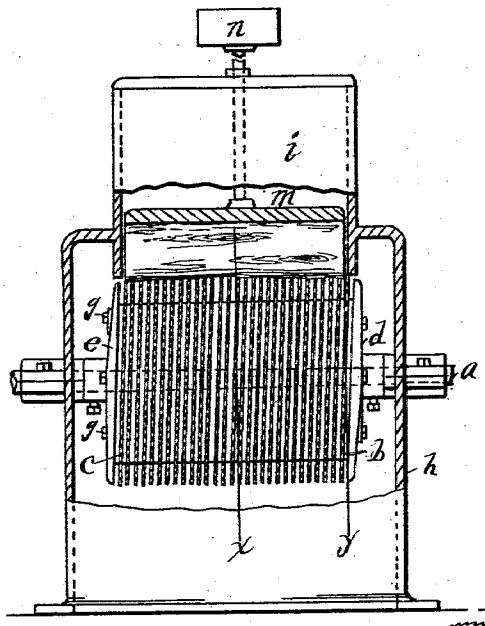


Fig. 1.

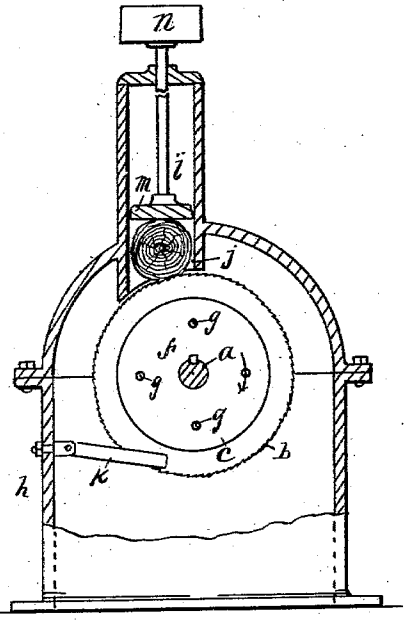


Fig. 2.

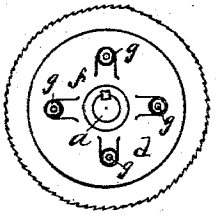


Fig. 3.

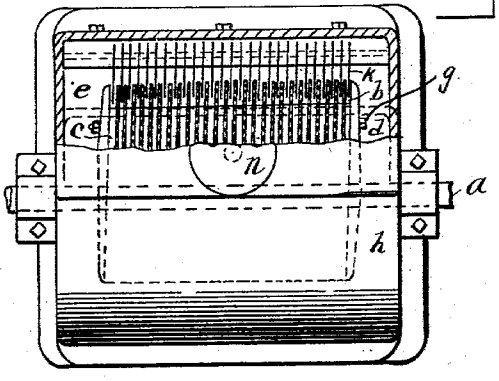


Fig. 4.

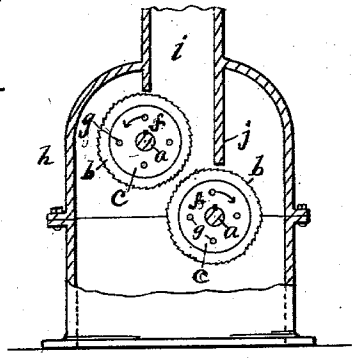


Fig. 5.

WITNESSES.

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ELIAS HAZELTON, OF LANSING, MICHIGAN.

PULP-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,039, dated February 17, 1903.

Application filed April 7, 1902. Serial No. 101,683. (No model.)

To all whom it may concern:

Be it known that I, ELIAS HAZELTON, a citizen of the United States, residing at Lansing, county of Ingham, State of Michigan, have invented a certain new and useful Improvement in Pulp-Machines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention is designed to provide a pulp-machine for reducing wood to pulp or powder; and it consists of the construction, combination, and arrangement of devices hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation showing parts broken away. Fig. 2 is a view in end elevation showing parts broken away. Fig. 3 is an end view of the cylinder. Fig. 4 is a plan view showing parts broken away. Fig. 5 is an end view of reduced size, illustrating a modification showing parts broken away.

More particularly, my invention is designed to provide a pulp-machine for reducing wood to pulp or powder for use as an absorbent, the same being adapted for various applications, as an absorbent for explosives, for example.

I carry out my invention as follows:

In the drawings, *a* indicates a rotatable shaft driven from any suitable source of power. Upon said shaft are mounted a series of disks *b*, having teeth or sharp points on their periphery. These toothed disks are spaced one from another by intermediate disks or plates *c*, mounted upon the shaft. An important feature of my invention is to locate the disks *b* upon the shaft at an angle to a plane at a right angle to the shaft, so that in revolving the toothed disks will wabble or have a spiral motion. The toothed disks within the scope of my invention may be set and held in place at such an angle to the shaft in any suitable manner and constitute a revolving cylinder, wherein all the teeth of the cylinder describe a spiral movement in the revolution of the cylinder. As shown, the cylinder at its extremities is provided with heads, (indicatedat *d* and *e*,) said heads being so shaped and mounted that the inner faces of the two heads will extend at an angle to a plane at a right angle to the shaft. The disks *b* and *c*, with the heads, may be keyed to the shaft, (indicated at *f*,) and all may be held firmly together by means of rods *g*, extending therethrough lengthwise of the cylinder. The shaft *a* may have its bearings in an inclosing case or housing *h*. Leading into the chamber inclosed by said housing is a feeding-chute *i* for feeding the stock to the cylinder. It is important that the chute should be so arranged that its interior surface toward which the cylinder is revolving—in other words, the pressure side of the chute, as the surface *j*—should be directly over the longitudinal center of the cylinder, so that all the stock will be worked up and no portion thereof be thrown out unpulverized. The wood is to be fed through the chute so that the toothed disks of the cylinder will strike the wood crosswise of the grain. For certain purposes the chute *i* is provided with a follower *m*, and it may be provided with a weight (indicated at *n*) to force the stock in the chute down upon the cylinder.

While I have described the cylinder as constructed of toothed disks set at an angle to the shaft, I do not limit myself to such a specific structure of the cylinder, inasmuch as any suitable cylinder is contemplated as coming within the scope of my invention which is provided with sharp points upon its periphery, said points traveling in a wabbling or spiral movement in the revolution of the cylinder. In a cylinder so constructed it will be seen that no two teeth strike the stock in the same place.

It will be evident that owing to the wabbling or spiral motion of the teeth of the cylinder the teeth of the cylinder strike in succession each a little farther over than the other into the wood a certain distance at each revolution of the cylinder, the fineness of the resulting pulp depending upon this successive movement of the teeth of the cylinder one after another. The teeth on the periphery of the cylinder are designed to travel in spiral form over the space which the saws are apart. The result is that the wood is reduced to a fine pulp or powder.

The disks *b* and *c* are made of different di-

ameters and are set alternately, leaving a space between the larger disks at their periphery.

A cleaning device *k* is employed, preferably constructed of flexible metal strips, secured to the adjacent side of the frame or housing and extending into the spaces between the peripheries of the disks *b*.

In Fig. 5 is shown a modification wherein two cylinders are employed, each being of similar construction, the use of the two cylinders being to save waste and enabling the wood to be fed to the cylinders in logs of substantially equal length with the cylinders. Where two cylinders are employed, the one cylinder is located a little above the other in order that the two cylinders may lap the one past the other. It will be obvious that where two cylinders are employed the upper cylinder cuts away the log to a corresponding extent and the lower cylinder finishes it. Where two cylinders are employed, I prefer that they should rotate in opposite directions.

The operation of the machine will now be understood.

What I claim as my invention is—

1. In a machine for the reduction of wood to pulp or powder, a rotatable cylinder constructed with disks of different diameters set alternately at an angle to a plane at a right angle to a shaft leaving a space between the larger disks, and a cleaning device to clear the spaces between the larger disks.

2. In a machine for the reduction of wood to pulp or powder a rotatable cylinder constructed of disks of different diameters set alternately at an angle to a plane at a right angle to the shaft, leaving a space between the larger disks and a cleaning device constructed of flexible strips extending into the spaces between said larger disks.

3. In a machine for the reduction of wood to pulp or powder two rotatable cylinders toothed on their peripheries the one located above the other, and a feeding chamber or chute above said cylinder leading into the interior of the case and having its pressure side in a plane central to the shaft of the lower cylinder.

4. In a machine for the reduction of wood to pulp or powder, the combination of a rotatable shaft, toothed disks located upon said shaft at an angle to a plane at right angles to the shaft, heads mounted upon said shaft outside said disks having their inner faces extended at an angle to a plane at right angles to the shaft, spacing-disks intermediate the toothed disks and heads, said toothed and spacing disks keyed to the shaft, and rods extending through said disks and heads lengthwise of the shaft, a housing, and a feed-chute leading into the interior of the housing.

In testimony whereof I sign this specification in the presence of two witnesses.

ELIAS HAZELTON.

Witnesses:
GEO. A. DYER,
F. PAINE.