

O. ABELL.  
Paper Stock-Grinder.

No. 166,835.

Patented Aug. 17, 1875.

Fig. 1.

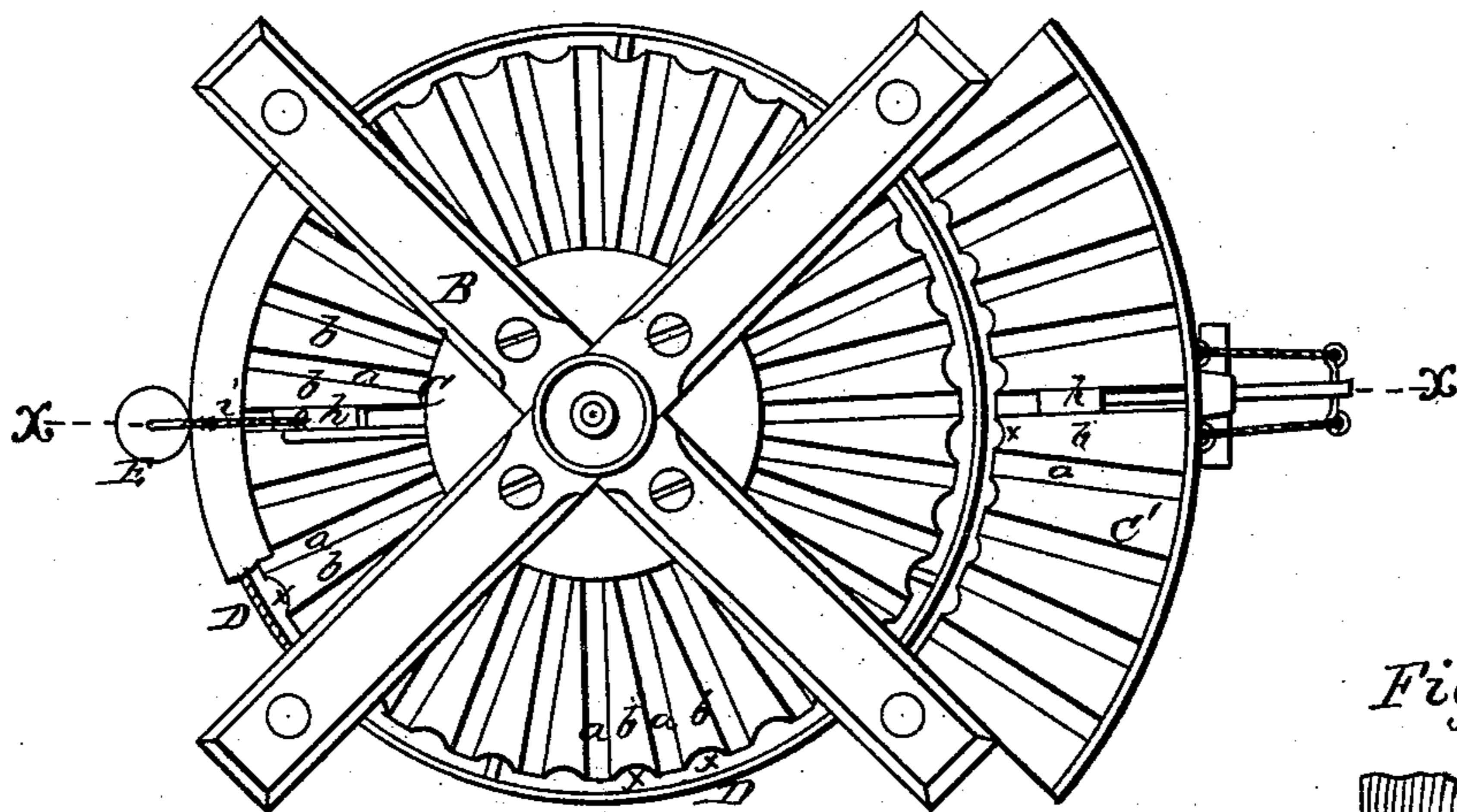


Fig. 2.

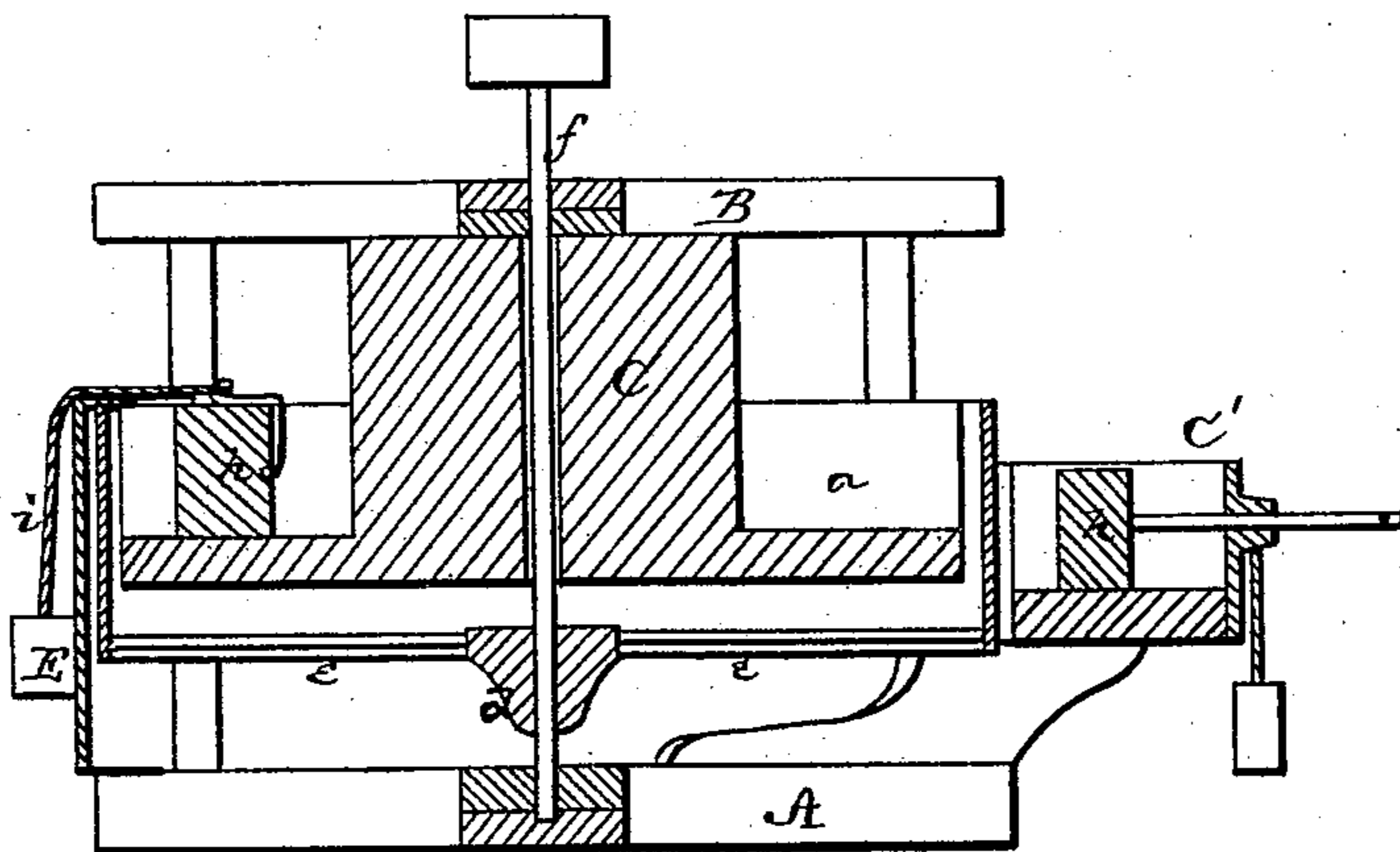
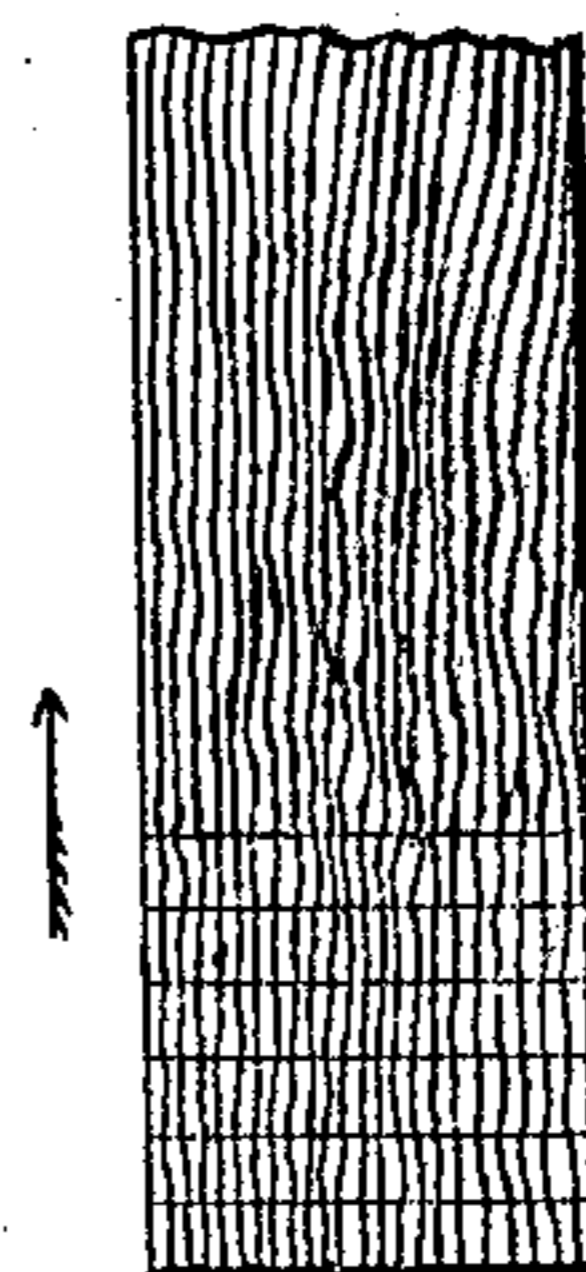


Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

OLIF ABELL, OF WOLCOTT, VERMONT.

## IMPROVEMENT IN PAPER-STOCK GRINDERS.

Specification forming part of Letters Patent No. 166,835, dated August 17, 1875; application filed June 18, 1875.

*To all whom it may concern:*

Be it known that I, OLIF ABELL, of Wolcott, in the county of Lamoille and in the State of Vermont, have invented certain new and useful Improvements in Grinding Wood for Pulp; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

My invention relates to grinding wood for paper-pulp; and it consists in cutting or grinding the wood lengthwise of the grain, by the construction of the machine for grinding the wood in such a manner as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view of my machine. Fig. 2 is a longitudinal section of the same. Fig. 3 shows the mode of preparing the wood for use in my machine.

A represents a suitable base or foundation of my machine, upon which is erected a frame, B. From this frame is suspended a stationary wheel, C, formed with a series of radial slots, *a a*, of such size as to receive the pieces of wood to be ground.

The parts or partitions *b b* of the wheel C, between the slots *a a*, are provided with vertical grooves *f* in their outer ends for the pulp to pass downward as soon it is cut off or ground off from the wood, without having to pass by or come in contact with the next block of wood.

D represents a circular rim or annular wheel of emery, supported upon arms *e e*, projecting from a hub, *d*, which is secured on a vertical shaft, *f*, passing through the center of the wheel C, and having its bearings in the base A and frame B, and revolved by any suitable means.

In each slot *a* of the wheel C is a slide, *h*, forced outward by means of a weight, E, and cord *i*. The blocks of wood are placed in the slots *a a* and forced outward against the emery rim D by means of these weighted slides, which continue to keep the wood against the same as it is ground by the rim.

Instead of grinding on or by the interior

surface of the rim D, the grinding may be done on the exterior surface by arranging an annular wheel, C', on the outer side of and surrounding said rim, this exterior wheel being constructed in the same manner as described for the wheel C on the inside of the emery-rim, and this exterior wheel provided with grooves and slides the same as the interior wheel.

Heretofore in grinding wood for paper-pulp it has generally been done across the grain of the wood. When it has been attempted to grind it lengthwise of the grain the revolving wheel has scooped out the wood, and hence practically made two cuts crosswise of the grain—one into the wood and the other out again.

It is well known that cutting or grinding the wood lengthwise of the grain gives longer and better fibers than when ground across the grain.

By experiments I have found that it is practicable to grind wood lengthwise of the grain in the following manner: The wood is first sawed crosswise into narrow blocks or pieces, in each of which the grain or fibers run across the ends, so that when these blocks are placed in the machine and ground by the emery-wheel from the ends the fibers or grain will be cut lengthwise, and in no case across the grain. The fibers of the wood, as soon as ground, pass downward through the grooves *x x* without coming in between the emery-rim and the succeeding block or strip of wood.

To facilitate the discharge of pulp a constant stream of water may be employed.

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

In a machine for grinding wood-pulp, the combination of a revolving emery-rim and a stationary wheel formed with a series of radial grooves, *a*, and the partition *b* between said grooves formed with vertical grooves *x* at their outer ends, and slides *h* placed in the grooves *a*, all substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of May, 1875.

OLIF ABELL.

Witnesses:

C. L. EVERT,  
CHAS. P. WEBSTER.