3 Sheets—Sheet 1.

J. TAYLOR.

Manufacture of Paper-Pulp from Wood.

No. 207,568. **Patented Aug. 27, 1878.**

Fig. 1.

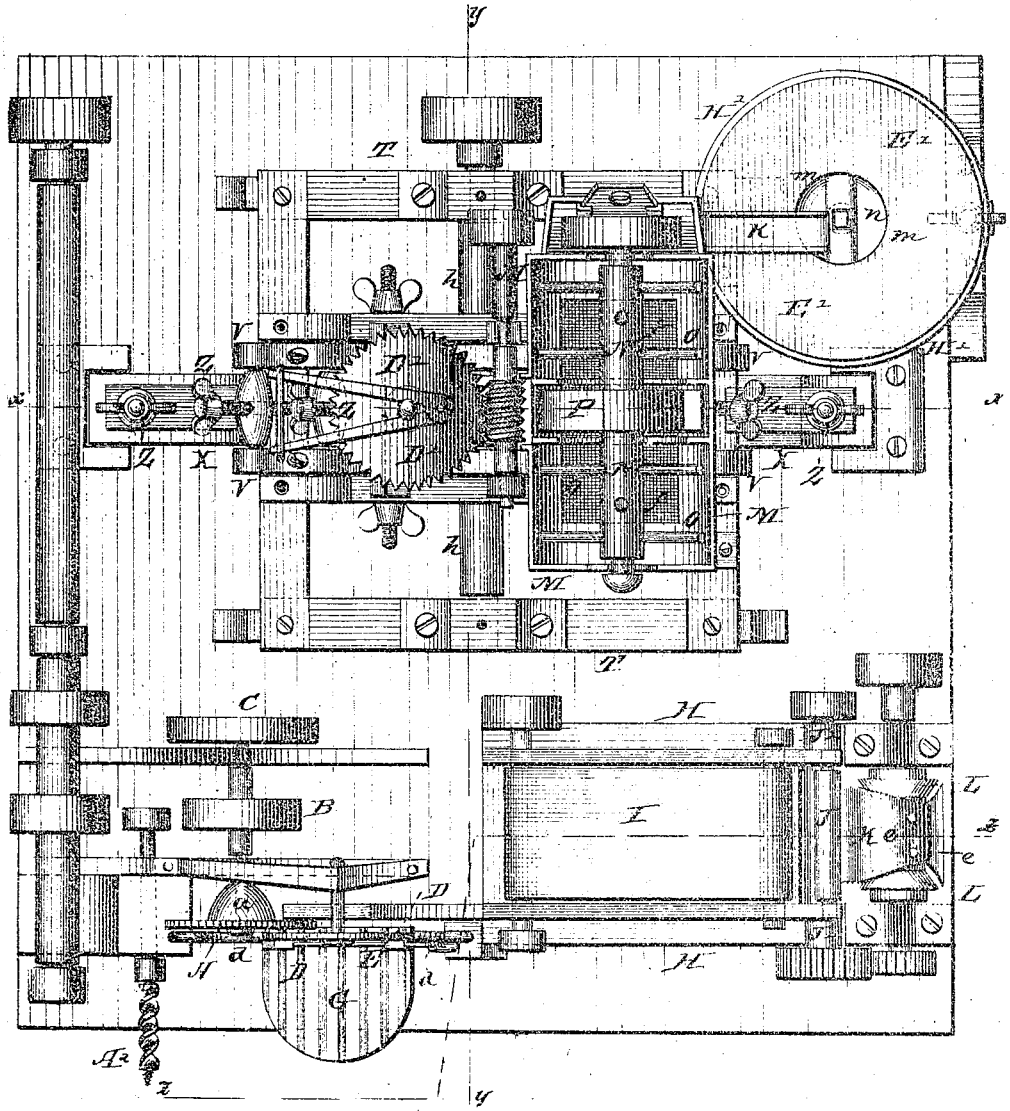

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Fig. 2.

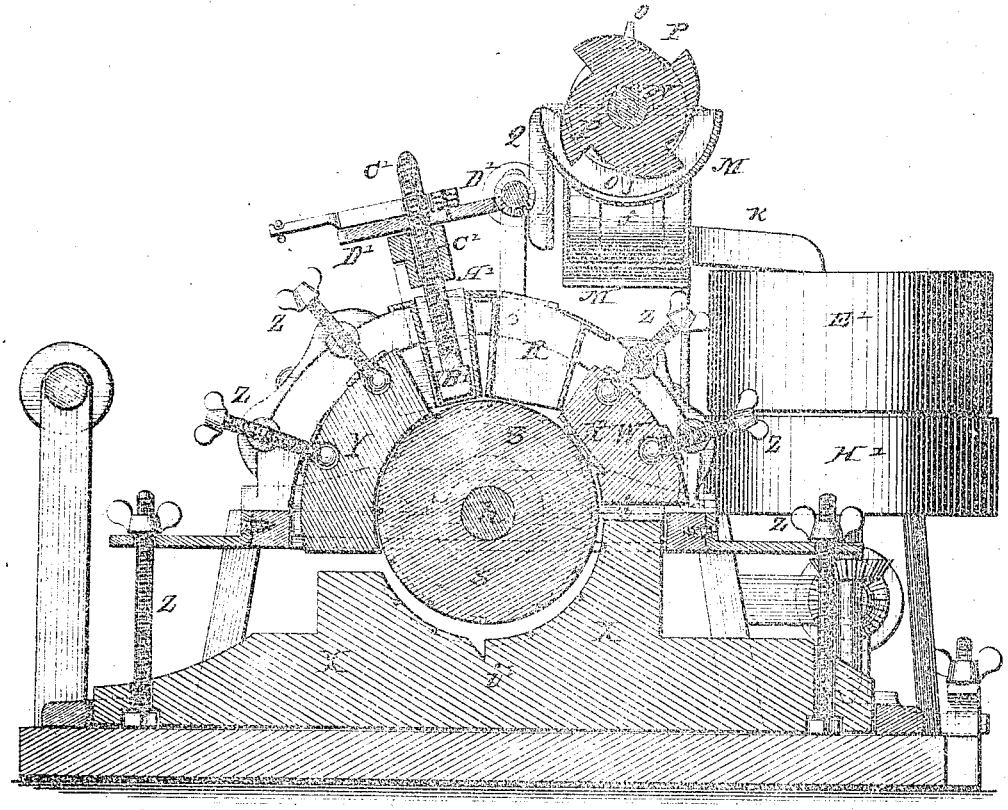
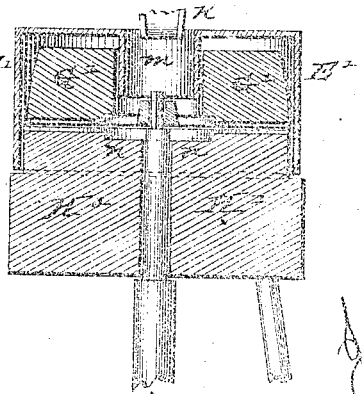


Fig. 5.



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3 Sheets—Sheet 3.

J. TAYLOR.

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Fig. 3.

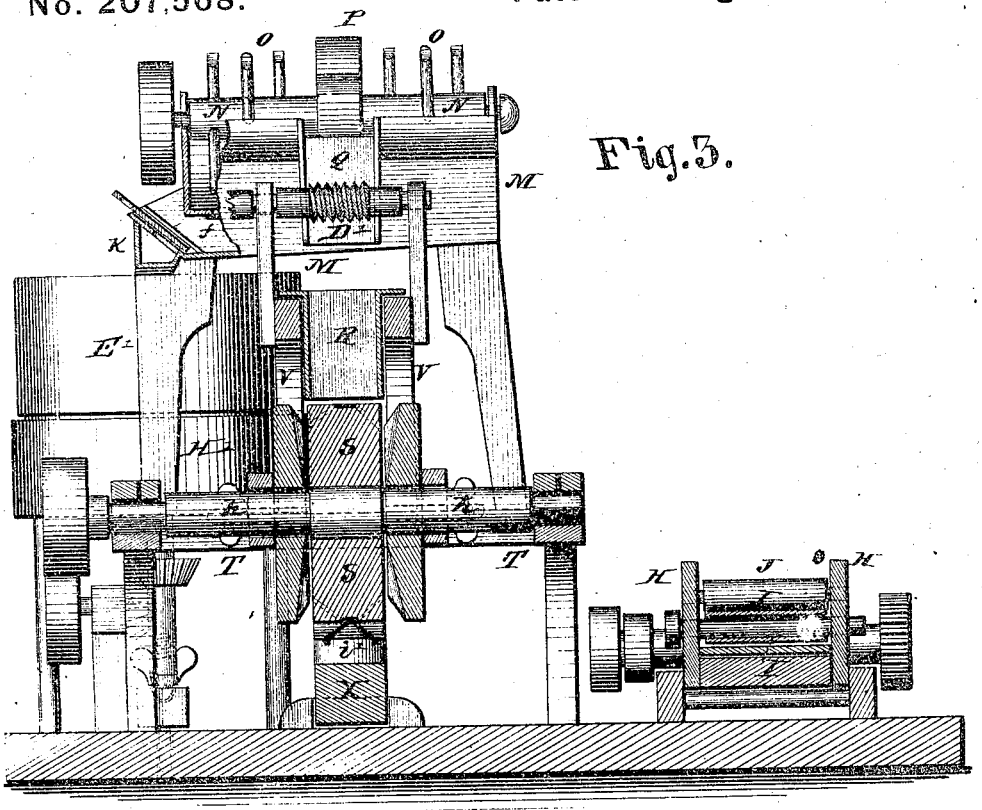
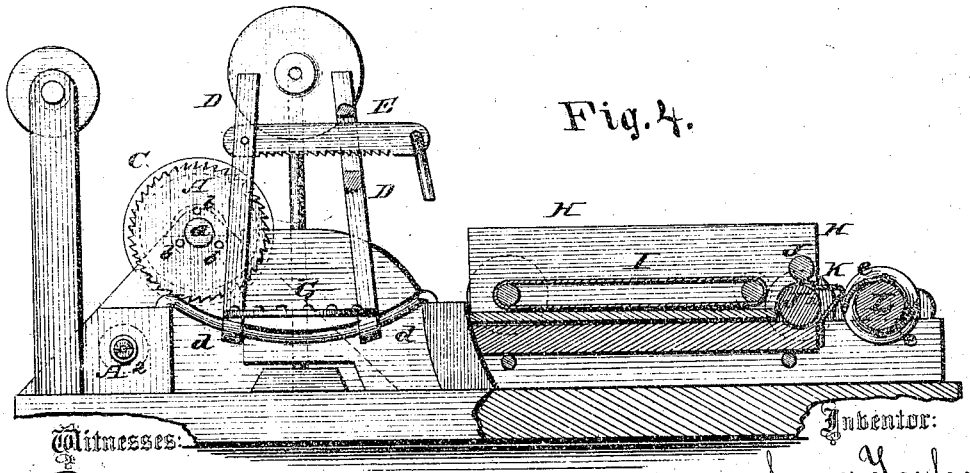


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES TAYLOR, OF LUZERNE, NEW YORK.

IMPROVEMENT IN THE MANUFACTURE OF PAPER-PULP FROM WOOD.

Specification forming part of Letters Patent No. **207,568**, dated August 27, 1878; application filed February 18, 1878.

To all whom it may concern:

Be it known that I, JAMES TAYLOR, of Luzerne, in the county of Warren and State of New York, have invented certain new and useful Improvements in Preparing Wood for Paper-Pulp; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in a process and apparatus for preparing wood for paper-pulp, as will be hereinafter more fully set forth, and pointed out in the claims.

In the annexed drawings, to which reference is made, and which fully illustrate my invention, Figure 1 is a plan view of the entire apparatus. Fig. 2 is a vertical section through the line *x x*, Fig. 1. Fig. 3 is a vertical section through the line *y y*, Fig. 1. Fig. 4 is a vertical section through the line *z z*, Fig. 1. Fig. 5 is a detailed view of a part thereof.

A represents a circular saw mounted upon an arbor, *a*, in suitable bearings, and said arbor or shaft is provided with a pulley, B, and balance-wheel C. In a suitable standard in front of the saw A is suspended a swinging carriage, D, with a toothed lever, E, to hold the wood down upon a ribbed platform, G, the blocks of wood being set up endwise (on said platform) of the grain of the wood. The saw or gang of saws A are fastened on the arbor *a* by means of screw-threads, and their pins *b b* passing through the saws into the arbor. The platform G is attached to the driving-carriage D, and is supported upon a curved guide-bar, *d*, as shown.

By speeding up the saws and feeding the log or block of wood slowly the operator can produce as fine a fiber as desired, or coarser by feeding up faster.

Instead of the gang of saws, a burr having two or more series of circumferential rows of teeth may be used, such burr to be screwed onto the arbor *a*.

From the saws A the long fibers fall onto an endless apron, I, arranged in a frame, H, below the saws, and by said apron the fibers are carried and dropped on a roller, J, and passed between said roller and another roller, J′. These rollers are arranged, as shown, so as to crush the fibers, thus making them a soft fibrous mass, and also carry this mass to a metal guard, K, formed with a shear-edge. Against this shear-edge works a series of knives, *e e*, attached to a roller, L, for cutting off the fibers, and thus making the mass ready for the agitator. By changing the speed of the roller L the fibers may be cut long or short, as desired.

The two machines above described are in a full-sized apparatus to be mounted on a frame or platform elevated high enough so that when the fibers have been crushed and cut by the knives *e* to the desired length they can be carried down a spout into the agitator M, and a proper quantity of water run in with the fibers to separate the fine fibers from the coarse ones, the fine fibers passing through a wire screen or sieve, *f*.

In the agitator M is a longitudinal rotating shaft, N, with arms O O, and a notched pulley, P, which latter acts as an elevator to carry the coarse fibers down through a spout, Q, into a box, R, arranged over the rotating stone S. This stone is arranged upon a shaft, *h*, in a frame, T, and above the stone are semicircular guards or guides V V, in which the box R is held. The stone, rotating, carries the fibers between a roughened piece of iron, *h′*, fastened to a stone, W, and the rotating stone, a mouth or opening being left at *i* to take large or small pieces of wood that may need grinding before coming between the stone S and the bottom or bed stone X. This latter stone has a cell or chamber, *i′*, cut in it at the bottom to receive what fibers may get off. The rotating stone S, as well as the side stones W and Y, are dressed so as to draw the fibers into this cell, the motion of the center stone carrying all the fibers under the stone Y, which I call the "finisher."

The stones W, X, and Y are all adjustable to and from the center stone by regulating-screws *Z Z*, or any other suitable means.

At the upper end of the stone or finisher Y is a box, A′, set at an angle of about forty-five degrees or more, to carry or turn off the refined pulp. This box A′ answers two pur-

poses—first, to turn off the finished pulp, and also to insert the cants or strips of wood that are left at the saws, thus making a saving of all the wood. The pulp when finished is turned into conductors and carried into an ordinary wet-press to deprive it of a portion of the water and render it fit for transportation.

In the box A^1 is placed a plunger, B′, with screw-shaft C′, operated by worm-gear D′, for holding the small waste pieces of wood onto the rotating stone.

The fine fibers that pass through the sieve *f* in the agitator M run down a spout, *k*, into a tube, *m*, made fast to a curb, E′. This tube is stationary, thereby preventing the accumulation of the material to be ground in the tube or eye of the running burr, which always occurs and causes a great deal of trouble when this tube rotates with the burr. G′ and H′ are the two burrs, mounted in a suitable frame.

The bottom stone H′ has a circular recess, *n*, in the center, forming a receptacle for a supply of fiber to accumulate in, for the stone G′ to draw from.

The skirts of the stones or burrs G′ H′ are laid out in quarters—say, twelve in a four-foot stone—and the quarters laid out in lands one inch wide and furrows one inch wide, the lands left smooth and the furrows middling deep.

Suitable gearing, pulleys, and belts are to be arranged for rotating the various parts.

In connection with my machine, as above described, I propose to use an auger, A^2, for boring out the knots or black spots in the wood preparatory to severing the fibers for pulp, as black specks in the pulp render it worthless. By boring out the black spots and knots considerable of the wood is saved, as the chopping out of the knots wastes the wood and leaves it in bad shape to be worked up or applied to the machine.

The auger A^2 is mounted on a suitable frame, and run by gears or pulley, as desired.

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

1. The combination of one or more rotating saws, a swinging carriage with platform, and a toothed lever, whereby the wood is held on the platform, and a long fiber cut by the saws endwise of the grain of the wood, as herein set forth.

2. The combination of the endless apron I, rollers J J′, the guard K, having shear-edge, and the knives *e e*, secured upon the rotating roller L, all substantially as and for the purposes herein set forth.

3. The agitator M, with sieve *f*, rotating shaft N, arms O O, notched elevator P, and spout Q, substantially as and for the purposes herein set forth.

4. The combination of the rotating stone S, the box R, adjustable stones W X Y, and angle-box A^1, substantially as and for the purposes herein set forth.

5. The plunger B′, with screw-shaft C′ and worm-gear D′, in combination with the box A^1 and rotating stone S, for the purposes herein set forth.

6. The stationary tube *m*, made fast in the curb E′, in combination with the burrs G′ H′, for the purposes set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JAMES TAYLOR.

Witnesses:
CHARLES R. MCEWAN,
JAMES H. LAWRENCE.