W. W. D. JEFFERS.

Machine for Preparing Wood for Making Paper-Pulp.

No. 200,540. Patented Feb. 19, 1878.

Fig. 1.

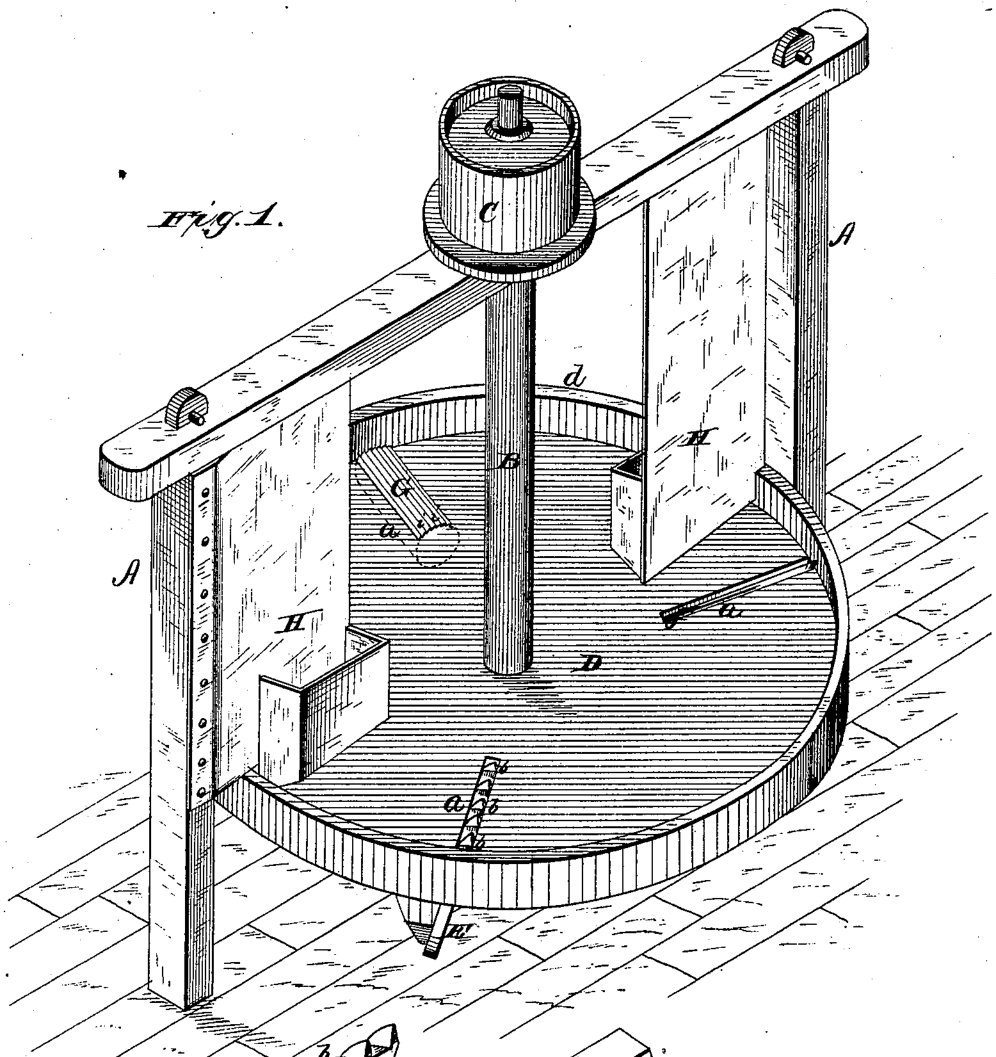
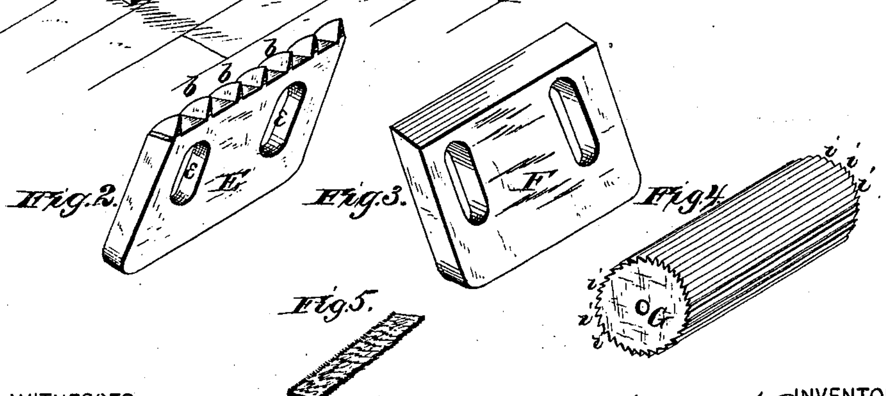


Fig. 2. Fig. 3. Fig. 4. Fig. 5.



WITNESSES

Franck L. Ourand

Frank Galt

INVENTOR

Wallace W. D. Jeffers.

Alexander & Mason

ATTORNEYS

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WALLACE W. D. JEFFERS, OF GLENS FALLS, NEW YORK.

IMPROVEMENT IN MACHINES FOR PREPARING WOOD FOR MAKING PAPER-PULP.

Specification forming part of Letters Patent No. **200,540**, dated February 19, 1878; application filed February 14, 1878.

To all whom it may concern:

Be it known that I, WALLACE W. D. JEFFERS, of Glens Falls, in the county of Warren, and in the State of New York, have invented certain new and useful Improvements in Machines for Preparing Wood for Making Paper-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 a process for preparing wood for paper-pulp; and it consists in cutting the fibers of the wood while in the block crosswise—or, in other words, terminating the fibers—and then scraping or cutting them at an angle to the cross-cuts.

My invention further consists in creasing or indenting the wood by means of cutters lengthwise of the fibers, either before or after they are cut or creased crosswise, and then scraping or cutting, or otherwise severing or separating, the fibers from the block.

My invention also consists in a mechanism by which said process is to be carried out, all as 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 perspective view of one form of apparatus by which my process may be carried out. Figs. 2, 3, and 4 are detailed views of parts thereof. Fig. 5 shows the product of the machine.

A represents a suitable frame-work, in which is a vertical shaft, B, provided with a pulley, C, to receive motion by a belt, or otherwise, from any convenient power.

On the shaft B is secured a metallic disk, D, of any suitable dimensions, and provided around its periphery with an upwardly-projecting rim or flange, *d*, as shown.

The disk D is provided with radial slots *a a*, of suitable length and width, and on the under side of the disk are formed or attached ribs for the attachment of the operating parts.

E represents a steel plate, provided with slots *e e*, and on its upper edge with a series of spurs or cutters, *b b*. This plate is fastened by screws or bolts to one of the ribs under the disk, and adjusted up and down, so that the cutters *b* will project through one of the slots *a* more or less above the upper face of the disk.

F represents another steel plate, having its upper edge forming a continuous cutter, like a plane-bit, and this is adjusted in like manner through another of the slots *a*. G represents a cylinder, having its entire periphery formed with a series of longitudinal cutting-teeth, *i*, as shown in Fig. 4. This cylinder is journaled in one of the ribs under the disk, in such a manner that its upper cutting-edges will project slightly through one of the slots *a* above the upper face of the disk. Instead of one of these cylinders, I may arrange three, two of them on a line, and the third either in front or rear, breaking joints with the others.

H H are boxes or hoppers, in which the blocks of wood are placed and held down on the revolving disk, either by their own gravity or by such mechanical means as may be deemed best suited for the purpose.

The machine being arranged as shown in the drawing, the cylinder or cylinders G first come in contact with the wood, then the cutters *b*, and lastly the cutter F. The wood is cut into blocks, in such a manner that when placed in the boxes H the fibers of the wood will run parallel with the radii of the disk D, or nearly so. When, now, the cylinder or cylinders G come in contact with the under face of the wood, a series of fine creases or indentations are made in the wood lengthwise of the fibers, or, in other words, parallel or nearly parallel with them, thereby in a measure separating the fibers, or at least facilitating the subsequent separation of the fibers. The cutters *b* next come in contact with the wood and form a series of creases or indentations across the fibers, either at right angles to them or at any other angle, according to the arrangement of the machine. This part of my process is a very important one, and can be accomplished either by the kind of cutters shown in the drawing or by revolving cutters, if desired. These cutters, operating as they do across the fibers, determine the length of the fibers, according as said fibers are placed closer together or farther apart. They also separate the ends of the fibers thus cut off, as will be readily

understood, because, the wood being green or kept in a wet, soft condition by artificial means, the knives or cutters will draw the fibers in the direction of their own movement, and of course the edges will be like a brush, the fibers standing off from each other. The cutter F now comes to the thus prepared wood, and scrapes or cuts it off to any desired thickness, according to the adjustment of the cutter. The cutter F operates both lengthwise of the fibers, and also more or less diagonally, and the pieces thus cut off are of the required length—that is, fibers—and the fibers are in a certain degree already separated, so that the final separation is greatly facilitated.

The cylinder or cylinders G may follow the cutters *b* instead of precede them, if so desired. It is, however, not absolutely necessary to use these cylinders in all cases. They may be dispensed with, if so desired.

I do not confine myself to the particular arrangement of the mechanism shown, as I may, for instance, arrange the operating devices in a horizontal revolving cylinder, and feed the wood radially to the face thereof, or in any other suitable manner.

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

1. The process for preparing wood for paper-pulp by cutting the fibers crosswise while in the block, and thus terminating the same, and then scraping or cutting them at an angle to the cross-cuts, substantially as herein set forth.

2. The process for preparing wood for paper-pulp by creasing or indenting the wood lengthwise of the fibers, then cutting or creasing across the fibers, and then scraping or cutting at an angle to the cross-cuts, substantially as herein set forth.

3. In a machine for preparing wood for paper-pulp, the combination of the series of cutters *b* and the single cutter F, arranged with relation to each other, substantially as herein set forth.

4. In a machine for preparing wood for paper-pulp, the combination of one or more cylinders, G, having longitudinal teeth *i*, the series of cutters *b*, and the single cutter F, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 11th day of February, 1878.

W. W. D. JEFFERS. [L. S.]

Witnesses:
J. M. MASON,
H. A. HOWARD.