(Model.)

A. CROSBY.

MACHINE FOR REDUCING WOOD TO PULP FOR PAPER.

No. 261,536. Patented July 25, 1882.

Fig. 1

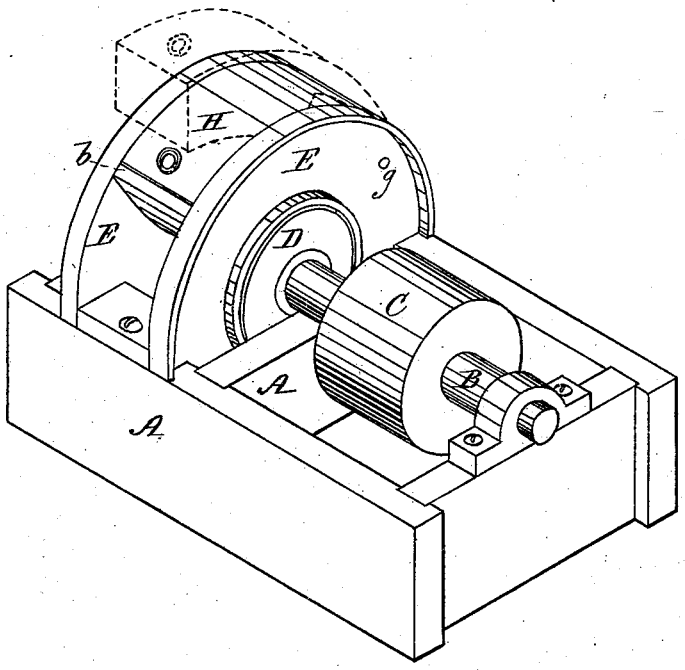


Fig. 2

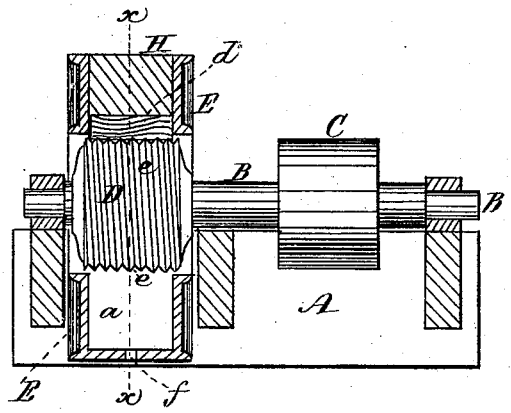
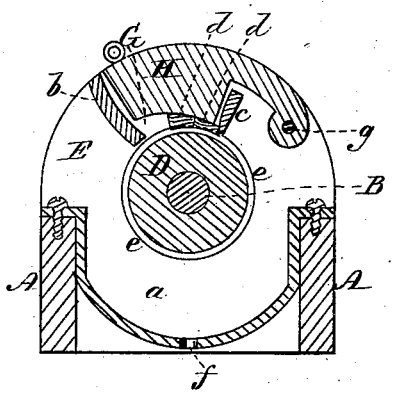


Fig. 3



Witnesses,
W. J. Cambridge
Chas. E. Griffin

Inventor,
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per R. Eickemeyer
Atty.

UNITED STATES PATENT OFFICE.

AUGUSTINE CROSBY, OF BENTON, MAINE.

MACHINE FOR REDUCING WOOD TO PULP FOR PAPER.

SPECIFICATION forming part of Letters Patent No. 261,536, dated July 25, 1882.

Application filed July 6, 1880. (Model.)

To all whom it may concern:

Be it known that I, AUGUSTINE CROSBY, a citizen of the United States, residing at Benton, in the county of Kennebec and State of Maine, have invented an Improved Machine for Reducing Wood to Pulp for Paper, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved machine for reducing wood to paper-pulp. Fig. 2 is a longitudinal vertical section through the center of the same. Fig. 3 is a transverse vertical section on the line *x x* of Fig. 2.

My invention consists in hinging or pivoting at or near one end the weight or pressure-block which holds the wood in contact with the grinding-surface, whereby the space between the two is gradually contracted in the direction of the motion, so that if the weight is thrown up with a sudden impulse the wood is forced forward into the wedge-shaped space, and again brought into contact with the grinding-surface sooner than would otherwise be the case, while the leverage produced by pivoting the pressure-block enables a given pressure upon the wood to be produced with a much lighter weight than has heretofore been found necessary.

In the said drawings, A represents the bed or frame of the machine in suitable bearings, in which runs a horizontal shaft, B, which carries the driving-pulley C and the grinding-wheel D, the latter revolving within a casing, E, the lower half of which forms a chamber, *a*, for the reception of the pulp. Across the upper portion of the casing E extend two partitions, *b c*, which thus inclose a space which forms a feed box or cell, G, for the reception of the pieces of wood *d* to be ground into pulp by the wheel D. This wheel D, which may be formed of sandstone, emery, or other suitable abrading substance, is provided on its periphery with a screw-thread or V-shaped spiral groove, *e*, extending from one side to the other, which, in acting upon the piece of wood *d*, held down thereon by the weight or pressure-block H, serves, as the wheel revolves, to force or strip off the fibers in the direction of their length, as the piece of wood is held stationary by the contact of its end with the side of the casing E against the tendency of the threaded grinding-wheel to move it laterally in the direction of its length, and in this manner the wood is rapidly reduced at a single operation to pulp of the proper degree of fineness, and having its fibers unbroken and of a much greater length than can be produced with the comparatively smooth or flat grinding-surface hitherto in use, thus greatly improving the quality and strength of the paper, while the slime necessarily produced when the pulp is ground into fine particles or dust, and which is a serious objection to the methods now in general use, is entirely avoided. The groove *e* is made of sufficient depth to receive the pulp as it is ground off, after which it is washed out by water running, as usual, over the grinding-surface into the chamber *a*, from which it escapes through an aperture, *f*, into a tank or receptacle adapted to receive it.

The curve of the inner surface of the weighted pressure-block H approximates to that of the periphery of the grinding-wheel D, and this block H, which is of the form shown, has its rear end pivoted at *g* between the sides of the casing E, its front end being provided with a knob or handle to enable it to be easily raised to allow of the introduction into the cell G of the pieces of wood to be ground into pulp, and by thus pivoting or hinging the pressure-block, instead of constructing it to move toward or from the grinding-surface in a straight line, as heretofore, the space between the pressure-block and the grinding-surface is gradually narrowed or contracted in the direction of the motion of the latter, and thus, in the event of the pressure-block being suddenly thrown up by the contact of the grinding-wheel with some inequality in the surface of the wood, the latter will be instantly forced forward into this wedge-shaped space, and thus again brought into contact with the grinding-surface, as required, sooner than would otherwise be the case, thus avoiding loss of time, while the wood as it is ground down is being continually forced toward the narrower portion of the space by the motion of the grinding-wheel, leaving room for the introduction of a new and thicker piece of wood, which can thus be acted upon at the same time as the thinner piece. Moreover, by

pivoting the pressure-block it is caused to act as a lever, and the necessary pressure upon the wood can thus be produced by the employment of a much lighter weight or block than has heretofore been required for the purpose.

The feed box or cell G for containing the wood may be made of any suitable size or shape, and any desired number may be used in connection with a single grinding-wheel.

If preferred, the side of the wheel D may be used as a grinding-surface, in which case a spiral groove would be formed therein, instead of a screw-thread on the periphery, as shown, the feed box or cell for containing the wood to be ground being properly constructed and applied to meet the requirements of the case.

I do not confine myself to the use of a V-shaped spiral groove or screw-thread, *e*, as it may be made square, rounded, or of other suitable form without departing from the spirit of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a machine for reducing wood to paper-pulp, the combination, with a grinding-surface and a feed box or cell for holding the wood to be ground, of a weight or pressure-block, H, hinged or pivoted at or near one end, so as to exert a leverage and form a wedge-shaped piece between its under side and the grinding-surface, and constructed to operate substantially in the manner and for the purpose described.

Witness my hand this 18th day of June, A. D. 1880.

AUGUSTINE CROSBY.

In presence of—
ATWOOD CROSBY,
F. REDINGTON.