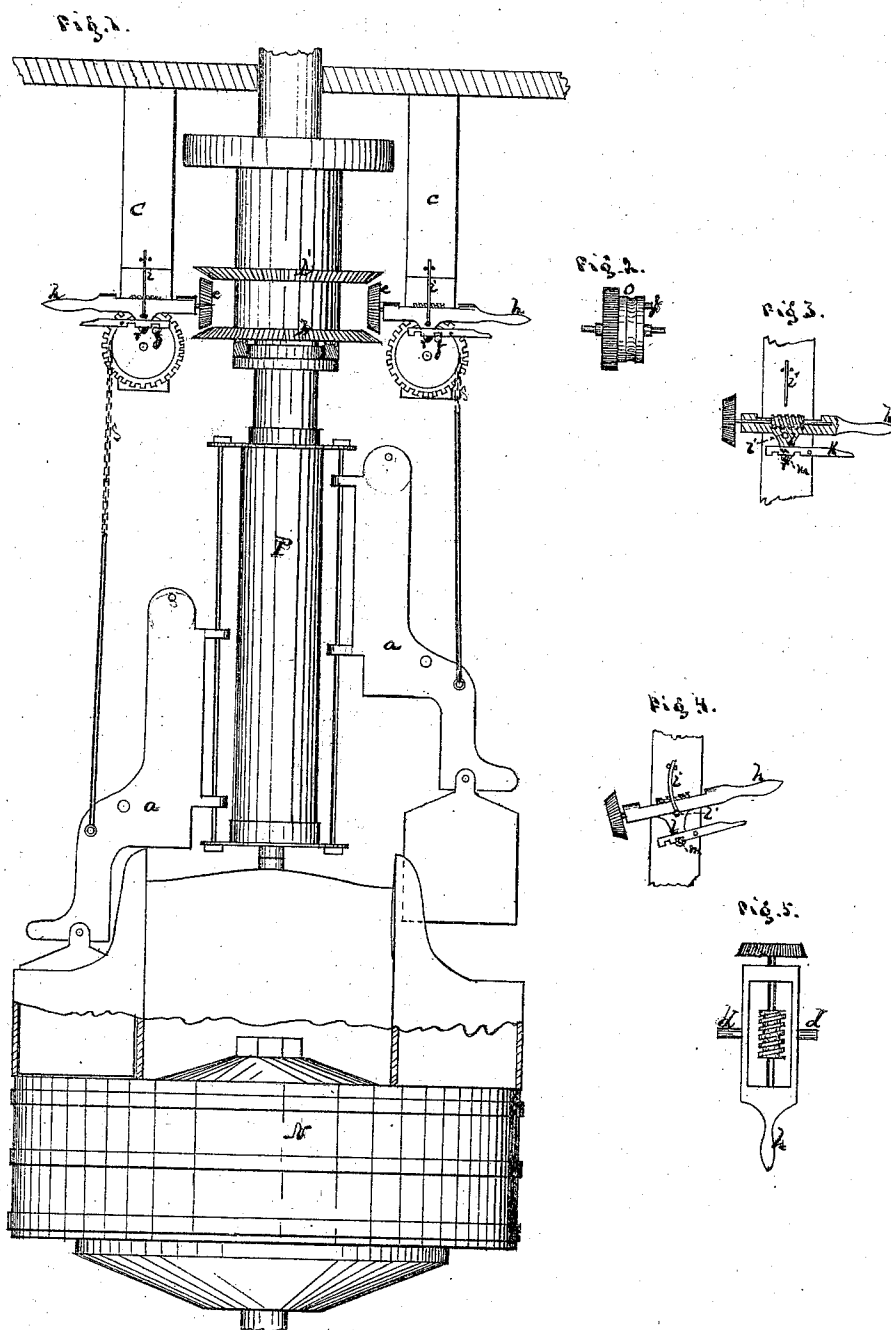


*W. M. Howland,
Wood Grinder.*

No. 113297.

Patented. Apr. 4. 1871.



*Witnesses:
J. G. Rogers
J. H. Pearson*

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UNITED STATES PATENT OFFICE.

WILLIAM M. HOWLAND, OF TOPSHAM, MAINE.

IMPROVEMENT IN WOOD-PULP MACHINES.

Specification forming part of Letters Patent No. **113,297**, dated April 4, 1871.

To all whom it may concern:

Be it known that I, WILLIAM M. HOWLAND, of Topsham, in the county of Sagadahoc and State of Maine, have invented a new and useful Improvement in Pulp-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

This invention relates to an improvement in a machine for automatically raising the weights from the blocks of wood in a wood-pulp-grinding machine of the general form and arrangement of stone known as the "Taft machine," for grinding wood-pulp; and the nature of this invention consists in the construction and arrangement of parts hereinafter more fully set forth and specified.

In the drawing, Figure 1 represents a section of the machine with all its parts in place, the section being taken vertically through the center of the machine, and showing two of the automatically-acting pulleys. Fig. 2 is a transverse section of the cog-wheel, with its shaft-pin D and pulley in place. Fig. 3 shows the oscillating bearing carrying the bevel-pinion on its proper shaft, the arm, latch, and spring. Fig. 4 is the same in another position; and Fig. 5 is a top view of the bearing or carriage for the shaft of the bevel-wheel, showing the worm-gear.

The position of the stone is shown at N, revolving horizontally. Over its upper surface are suitable boxes for the reception of the blocks and weights fitted to slide therein, these weights being held in position by arms *a a*, or in any suitable manner, which slide on guide-rods on the fixed central shaft, in the manner shown. To all this I lay no claim, my invention being the improvements now to be described for raising these weights.

On the central shaft, P, I place a sleeve, resting below on a suitable bearing, and on its upper end carrying a wheel fitted to receive motion from a band, or in any of the usual modes. This sleeve carries two bevel-gears, *b b'*, arranged as shown, with the bevels facing inward. Around this central shaft and its bevel-gears I arrange suitable supports *c c*, only two of which are shown, but of which any convenient number may be used,

corresponding to the number of the boxes. These supports are divided on their lower ends, the two arms inclosing the oscillating block shown in Fig. 5, the trunnions *d d* of which have bearings in the arms. Between these arms, also, and underneath the oscillating block or carriage, is the cog-wheel and drum or pulley. This is shown in Fig. 1, the section being between the arms, leaving a view, in elevation, of the wheel, carriage or block, worm-pin, &c.

The pinion *e* is made slightly less in diameter than the space between the bevel-gears, and has its bearings arranged in the oscillating carriage, as shown in Fig. 5, to bring the worm which is fixed in its shaft in the open space of the carriage. This worm is in gear with the cog-wheel.

The carriage is pivoted a little below the line of the bearings of the shaft which carries the worm, so that as the carriage tips to throw the pinion in and out of gear with the bevel-wheels the worm shall still remain in gear with the wheel below. This carriage has also an arm, *r*, projecting downward, and arranged to be struck by the pin *f* on the wheel or its attached drum. On the end of the carriage is a handle, *h*, by which it may be tipped. The carriage has also a spring, *i*, fixed vertically thereto, and held between two pins, or in other suitable manner, on the support. This spring is so arranged as to hold the carriage horizontal and the pinion out of gear, and at the same time to return the carriage to this position after it has been tipped in either direction. This is shown more clearly in Fig. 3. This figure also shows the latch *k*, which is pivoted to the support, one end projecting, so that it may be moved by hand, and the other passing over a horizontal pin in the downward-projecting arm of the carriage. This latch has two notches so arranged in its under edge that when the carriage is tipped down to bring the pinion into gear with the lower wheel, the pin shall fall into the outer notch. When in gear with the upper, this pin shall be in the inner notch. When out of gear with both, the carriage is held by the spring, the pin being between the notches. This downward-projecting arm of the carriage is marked *l*, Fig. 3. It is pivoted at *l'*.

The pin which holds the latch is shown at *m*, and the latch resting on it at *n*. The arrangement is such that the pin *f* on the cog-wheel shall lift the latch as the wheel revolves, and immediately thereafter move the arm *r*.

Over the drum is a chain or rope, *s*, which is connected to the weight, as shown.

The operation of my improvements is as follows: The central sleeve, with its wheels, revolving from right to left, the pinion, which in its normal position is held by the spring out of gear on each side, is thrown, by means of the handle, into gear with the upper wheel. This, through the worm-screw, turns the cog-wheel and drum or pulley attached thereto, winds up the chain, and lifts the weight. The size of the drum being proportioned to the distance which the weight is to be raised, the pin *f* on the drum strikes and raises first the latch and then the downward-projecting arm of the carriage, and, by tipping this, moves the pinion out of gear with the upper wheel. The spring holds the carriage horizontal, and the whole movement stops.

To reverse it, the carriage is to be tipped in the opposite direction, and the pinion thrown into gear below, the stop operating on latch and arm in the same manner as before, thus leaving the rope or chain loose and the weight to sink as the block is ground away.

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

1. The bevel-wheels arranged on the sleeve and shaft, in combination with the pinions and suitable intermediate devices for raising the weights, as set forth.

2. In combination with the pinion and bevel-wheels, the shaft, with its worm-screw, cog-wheel, and drum or pulley, and chain, all as described.

3. The tipping-carriage, carrying the shaft of the pinion and worm, and operating in connection with the other parts, as set forth.

4. The downward-projecting arm of the carriage, in combination with the pin *f*, as shown and described.

5. In combination with the arm of the carriage and the pin *f*, the latch.

6. The spring, combined with the carriage, and operating in connection with other parts, as set forth.

This specification signed and witnessed this 13th day of February, 1871.

WILLIAM M. HOWLAND.

Witnesses:

CHAS. W. WILSON,
JOHN KNIGHT.