2 Sheets--Sheet 1.

ANNA M. ZIMMER.

Wood-Grinder for Paper Pulp.

No. 163,958. Patented June 1, 1875.

Fig. 1

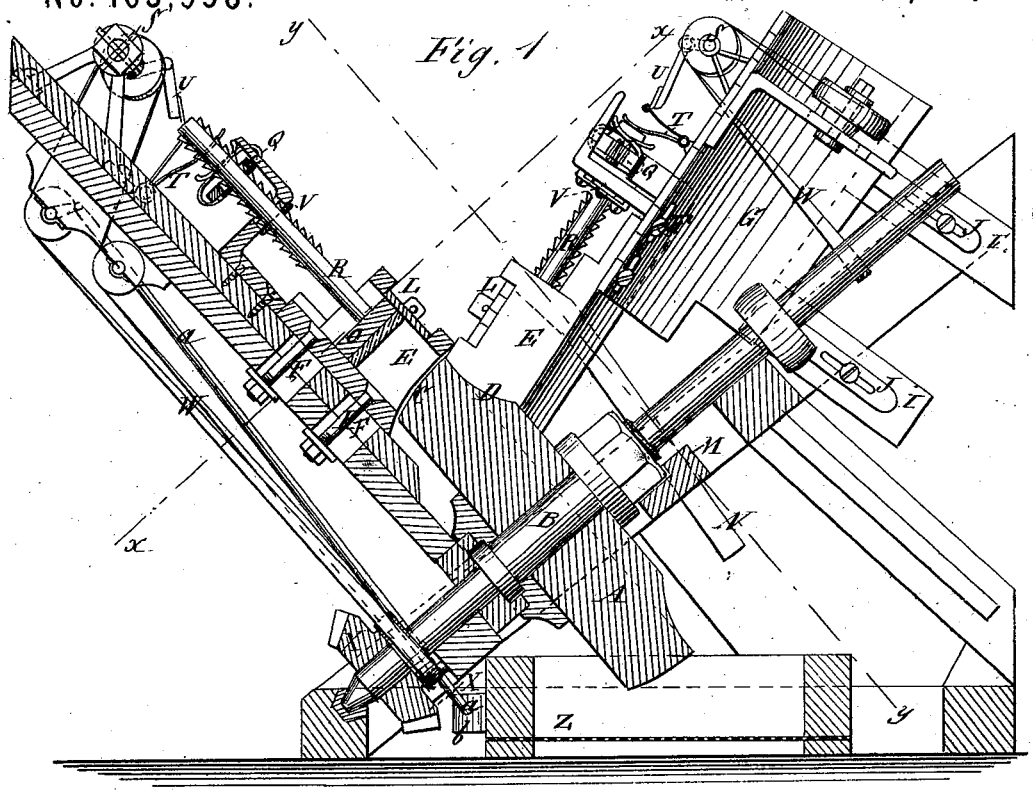

Fig. 2

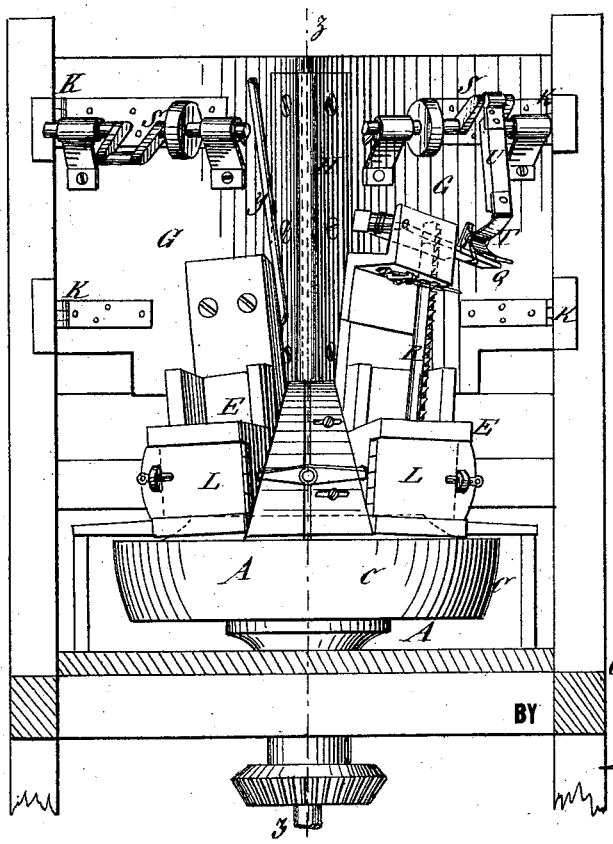

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Fig. 3

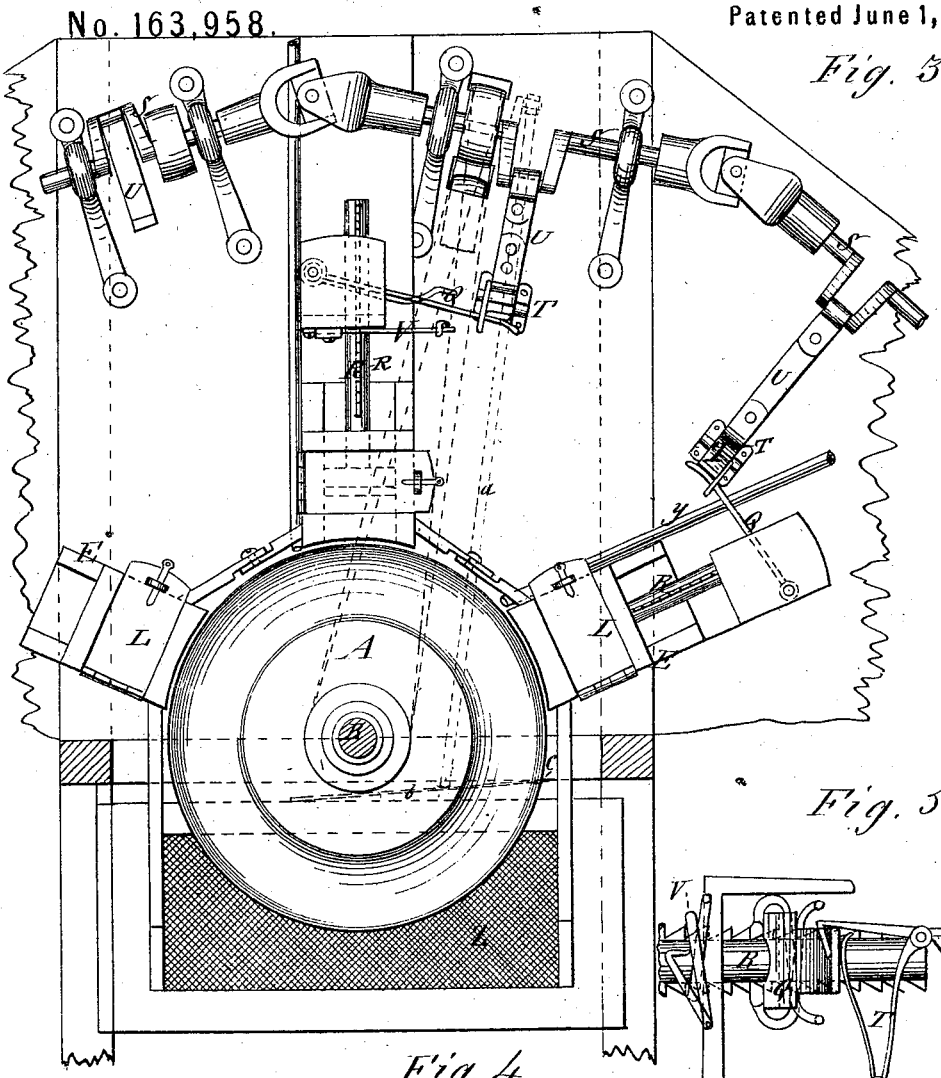
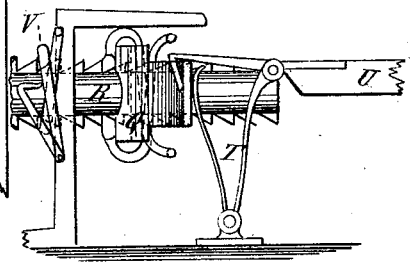
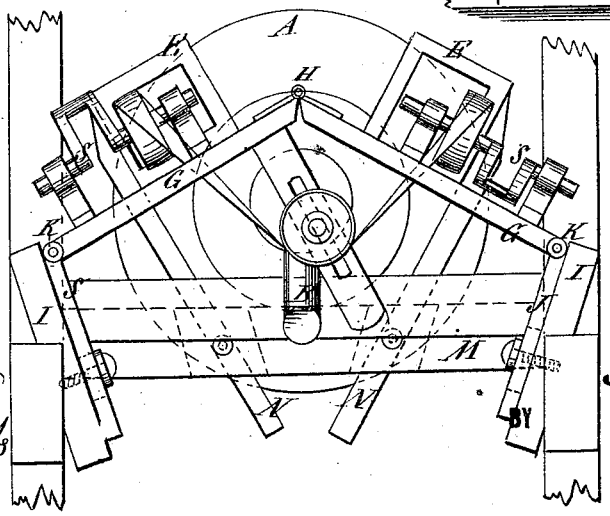


Fig. 4

Fig. 5





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UNITED STATES PATENT OFFICE.

ANNA M. ZIMMER, OF ELKHART, INDIANA.

IMPROVEMENT IN WOOD-GRINDERS FOR PAPER-PULP.

Specification forming part of Letters Patent No. **163,958**, dated June 1, 1875; application filed March 29, 1875.

To all whom it may concern:

Be it known that I, ANNA M. ZIMMER, of Elkhart, in the county of Elkhart and State of Indiana, have invented a new and Improved Wood-Grinding Machine, of which the following is a specification:

The invention consists essentially of a grindstone arranged to run in an oblique plane of about forty-five degrees to the horizon, with two grinding-faces and two sets of feed boxes and feed-pressers, both arranged obliquely to the horizon, so that the gravity of the wood will assist in feeding it, and the water for lubricating the stone will apply to both faces better than it will to one if the stone is arranged horizontally. The invention also consists of certain details of the apparatus for working the feed-pressers, and in the contrivances of the feed-boxes and their supports.

Figure 1 is a sectional elevation of the invention, taken on the line *z z* of Fig. 2. Fig. 2 is a section on the line *x x* of Fig. 1. Fig. 3 is a section on line *y y* of Fig. 1. Fig. 4 is a top view of Fig. 1, and Fig. 5 is a detail of the apparatus for working the feed-presser.

Similar letters of reference indicate corresponding parts.

A represents the grindstone, arranged to run in a plane of forty-five degrees, or thereabout, to the horizon on the inclined shaft B, and having the two grinding-faces C and D, with each of which there is a set of feed-boxes, E, for grinding on both faces at the same time, thus increasing the capacity of the machine. The boxes are bolted to the frames, by which they are supported, by bolts F passing through slots, to allow of shifting them up to the stone as it wears away, and those which feed the wood to the side of the stone are mounted on supports G, which are hinged together at H, and they are connected to supports I by arms J, hinged to them at K, and attached so as to shift along the supports and draw the feed-boxes back toward the axis of the stone, and into smaller circles as the stone diminishes in size. Besides these supports G and J, these boxes are connected to other supports M by an adjustable arm, N. Each box has a door, L, to open for putting in the wood, and contains a presser, O, having an elastic face for feeding the wood up to the stone, and pressing it thereon with the requisite force to enable the stone to grind off the fibers. The pressers are pushed forward by a spring-pawl, Q, acting on a ratchet-stem, R, the pawl being connected to a crank-shaft, S, to be operated, and the connection is made by another spring, T, in connection with the connecting-rod U, in order to have a large range of elasticity to compensate for the motions of the cranks in case they run too fast for the wood when it grinds hard, and too slow to keep it up to the stones when soft pieces, which grind fast, come to them. The spring T, by which the pawl is connected, is pivoted to the platform at one end, to rock with the lever and the connecting-rod. A holding-pawl, V, will be combined with the stem of each presser, to keep it up to the work when the pawl-lever goes back.

Two or more of these crank-shafts for working the pawls may be coupled together, to be worked by one belt, W, if preferred, the coupling being flexible, like a universal joint, to connect shafts in different lines; or each shaft may be geared separately. Power will be applied to the shaft of the stone by a gear-wheel, X, or other approved means. Y represents the pipes for conducting water to the stone. Below the grindstone is a reciprocating screen, Z, into which the ground fiber falls. To separate the coarse from the fine particles it is worked by a push-rod, *a*, and a spring, *b*.

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

1. A stone for grinding wood, arranged to run in a plane oblique to the horizontal plane, in combination with feed-boxes for the face and for one side, substantially as specified.

2. The combination of feed-pawl lever Q and a crank-shaft with the feed-presser, having a ratchet-stem, substantially as specified.

3. The combination of a spring, T, with the feed-pawl and its connecting-rod and crank-shaft, substantially as specified.

ANNA M. ZIMMER.

Witnesses:

CHAS. W. FISH,

A. POPE.