(No Model.) 2 Sheets—Sheet 1.

J. ETTINGER.

DRIVING MECHANISM FOR MOLDING MACHINES.

No. 457,952. Patented Aug. 18, 1891.

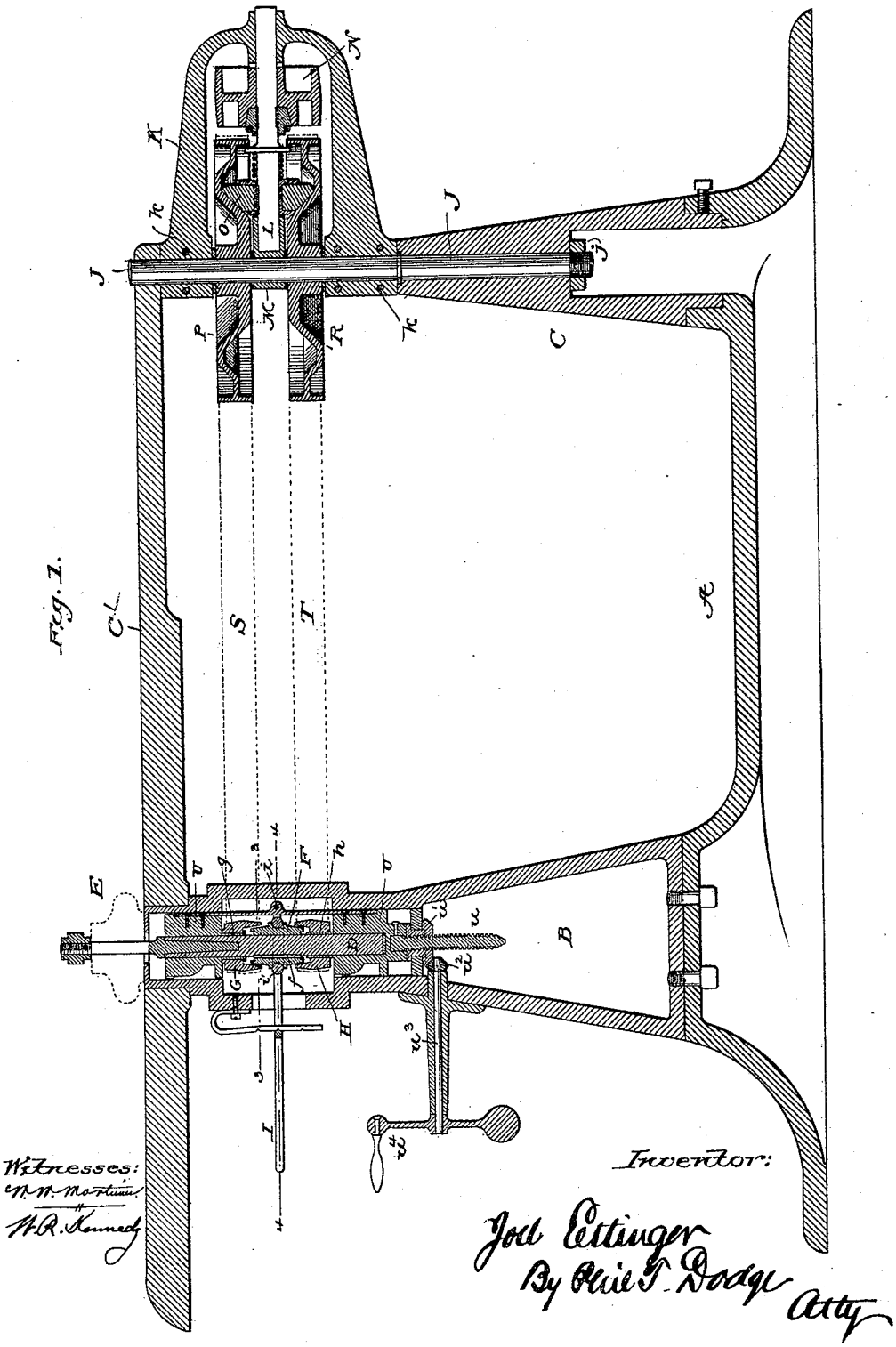

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

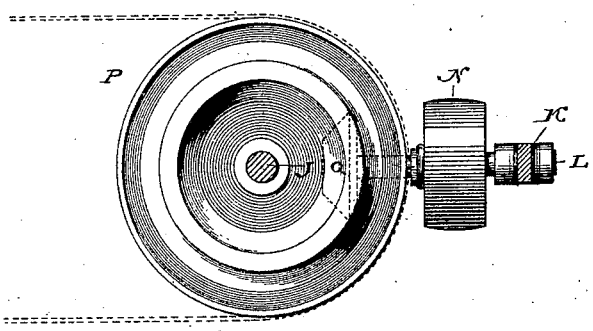


Fig. 3.
on line 3-3

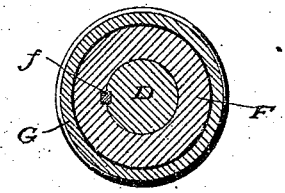
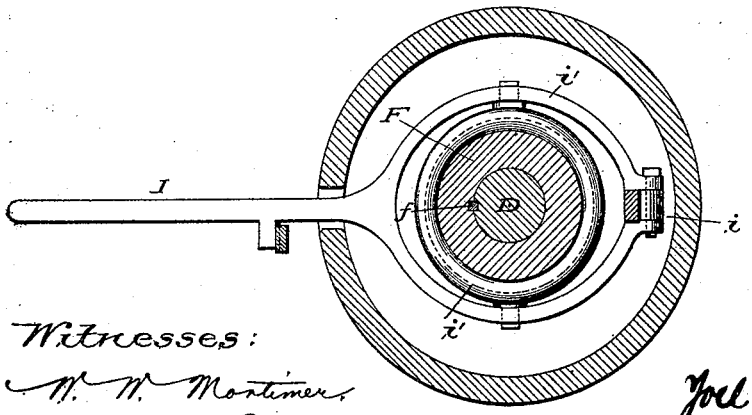


Fig. 4.
on line 4-4



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UNITED STATES PATENT OFFICE.

JOEL ETTINGER, OF MILTON, PENNSYLVANIA.

DRIVING MECHANISM FOR MOLDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 457,952, dated August 18, 1891.

Application filed January 23, 1891. Serial No. 378,833. (No model.)

To all whom it may concern:

Be it known that I, JOEL ETTINGER, of Milton, in the county of Northumberland and State of Pennsylvania, have invented certain Improvements in Driving Mechanism for Molding-Machines, of which the following is a specification.

This invention relates more particularly to that class of wood molding or shaping machines in which a rotary vertical spindle projecting through a table is provided with a cutter-head. In operating these machines it is necessary to frequently reverse the rotation of the spindle and cutter, which are revolved at very high speeds. The mechanisms generally employed for this purpose are of a complicated and expensive character, and in action the reversal of the motion is attended with a very objectionable shock or concussion and a corresponding strain and wear upon the parts.

The object of the present invention is to secure a simple mechanism for driving the spindle in reverse direction at will and for securing this reversal with a smooth and easy action.

Another object of the invention is to adapt the machine for adjustment, so that the driving-belt may be applied to its pulley at any desired angle to the machine, so that the machine may be placed in the most advantageous position upon the floor without reference to the location of the pulley to which it is belted.

In the accompanying drawings, Figure 1 is a vertical central section through my machine. Fig. 2 is a top plan view of the primary driving-pulleys. Figs. 3 and 4 are cross-sections, on a larger scale, on the lines 3 3 and 4 4, respectively.

Referring to the drawings, A represents the base-frame, B and C two standards or pedestals erected rigidly thereon, and C′ the horizontal table at the upper ends of the standards.

D represents the vertical spindle projecting upward through the table and carrying at its upper end the rotary cutter E, which may be constructed and attached to the spindle in any ordinary manner. I prefer to construct the upper end of the spindle D, to which the cutter is attached, in a separate piece from the lower or body portion, so that it may be removed and replaced at will; but this is not a necessary feature of my construction. The spindle is provided with and driven by a hub or sleeve F, having its upper and lower ends of conical form externally, the upper end being projected into a surrounding pulley G, which is driven constantly in one direction, while the lower end is projected into a similar pulley H, which is driven constantly in the opposite direction. The driving-hub F is connected to the spindle by a vertical spline *f* and is allowed a limited vertical motion, so that it may be thrown into frictional contact with one or the other of the driving-pulleys G H, according to the direction in which the spindle is to be rotated. This vertical adjustment of the hub F, to reverse the spindle or to stop the same, may be effected by a hand-lever I, mounted on a fulcrum *i* and pivoted to a collar *i′*, loosely seated in a peripheral groove in the hub, or it may be effected by any other suitable means.

At the rear end of the machine in the standard C, I fix a non-rotating vertical shaft J, to which I secure a C-shaped casting K. The driving-shaft L is seated at one end in the casting K and at the other end in a box or bearing M on the vertical shaft J. A pulley N, fixed on the shaft L, receives a driving-belt from any suitable source and communicates a constant rotation to the shaft. It may of course be connected with the shaft by a clutch, if preferred. On its inner end the shaft L carries a beveled vertical friction-wheel O, seated between and communicating motion in reverse directions to pulleys P and R, both of which revolve around the vertical shaft J. These constantly and reversely driven pulleys P and R are connected, respectively, by belts S and T to the pulleys G and H of the spindle before referred to, thus communicating to said pulleys the reverse rotations before mentioned.

From the foregoing description it will be seen that the main driving-pulleys, the belts, and the driving-pulleys of the spindle are each driven constantly in one direction, so that in reversing the rotation of the spindle it is only necessary to overcome the momentum of inertia of the spindle-cutter and hub. As these parts are comparatively light, the re-

versal is effected instantly and without objectionable shock or strain.

In order to relieve the spindle from the wear of the pulleys G and H they are mounted, respectively, on stationary sleeves g and h, encircling the spindle.

As it is frequently necessary to raise and lower the spindle in order to secure the desired vertical adjustment of the cutter-head, I propose to mount the entire spindle in a supporting-block U, arranged to slide upward and downward in the frame and having the spindle-supporting necks g and h formed thereon. This slide may be cast complete in one piece or made in separate parts fastened together. At its lower end this vertical block is provided with a screw u, passing through a threaded opening in a pinion u', seated in the frame, so that it can rotate but not move vertically. This pinion-nut is in turn operated by a pinion u^2, on a shaft u^3, seated in the frame and provided with a hand-crank u^4 or some operating device. By turning the crank the slide u, the spindle and its operating-pulleys, may all be raised and lowered without changing their relations to each other.

The inner end of the shaft-support K is divided and clamped rigidly by bolts k to the vertical shaft J. By loosening the bolts k the frame may be set free, so that it may be turned horizontally in order to present the pulley N in position to receive a driving-belt from any required direction. After being thus adjusted the frame is again fastened by tightening the bolts. The essence of my invention in this regard consists in mounting the driving-shaft in a support, which may be turned horizontally and fixed in different positions, and it is manifest that the details of this vertical axis and of the fastening devices may be modified. Instead of loosening the bolts K the same result could be accomplished by loosening the nut j on the lower end of the vertical shaft, allowing the shaft to turn with the frame K to the required point, and then securing the parts in their new positions by again tightening the nut.

Having thus described my invention, what I claim is—

1. In a molding-machine, the cutter-spindle, its conical hub, and the independent loose pulleys thereon, in combination with their driving-belts, the belt-driving pulleys, and the friction-wheel located between the said belt-driving pulleys, whereby said driving-pulleys are turned in reverse directions.

2. In a molding-machine, and in combination with a supporting-frame, the cutter-spindle, its vertically-sliding support, means for adjusting said support, the conical sliding hub on the spindle, the reversely-rotating pulleys to engage said hub, and means for adjusting the hub at will.

3. In a molding-machine, and in combination with a horizontal pulley from which the cutter is driven, a vertical pulley engaging the same, a horizontal shaft carrying the vertical friction-wheel, a driving-pulley on the shaft, a shaft-support adapted to turn horizontally, and means for fixing said support in different positions.

In testimony whereof I hereunto set my hand, this 9th day of January, 1891, in the presence of two attesting witnesses.

JOEL ETTINGER.

Witnesses:
W. R. KENNEDY,
FABIUS STANLY ELMORE.