

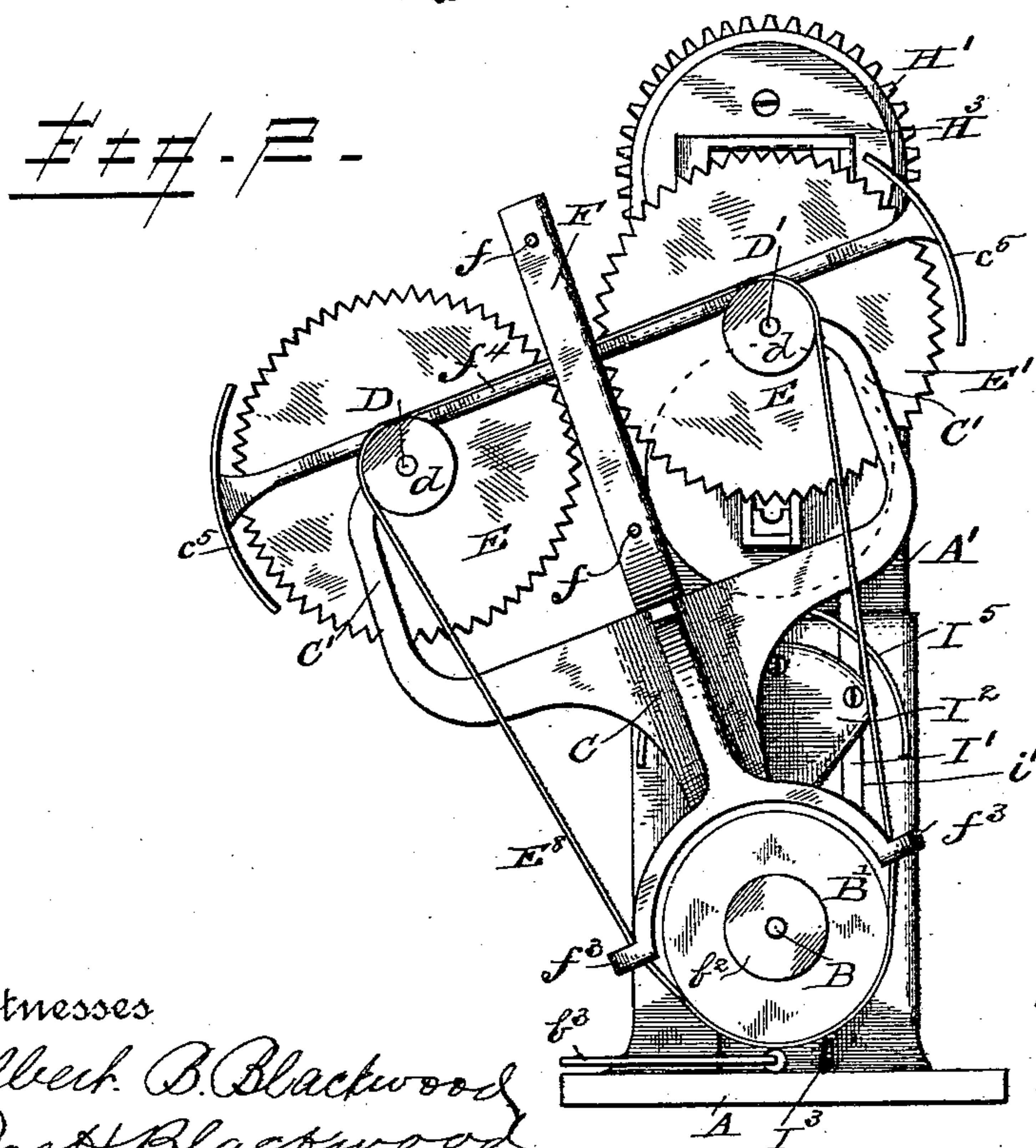
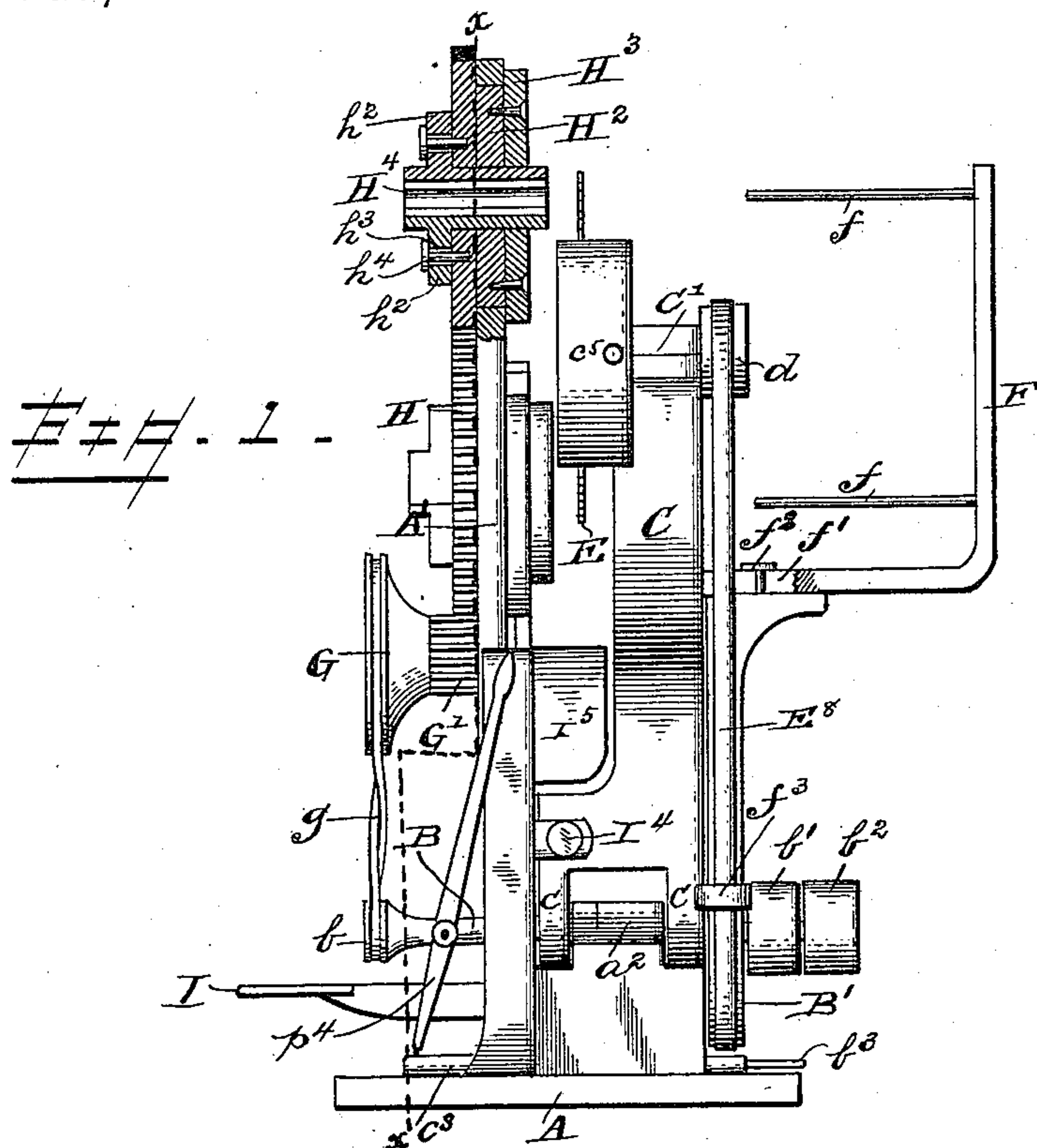
(No Model.)

2 Sheets—Sheet 1.

B. A. HAINES.  
TENON CUTTING MACHINE.

No. 447,772.

Patented Mar. 10, 1891.



Witnesses

Albert B. Blackwood  
Josh Blackwood

Inventor  
Burr A. Haines  
by J. B. Lawry  
his Attorney

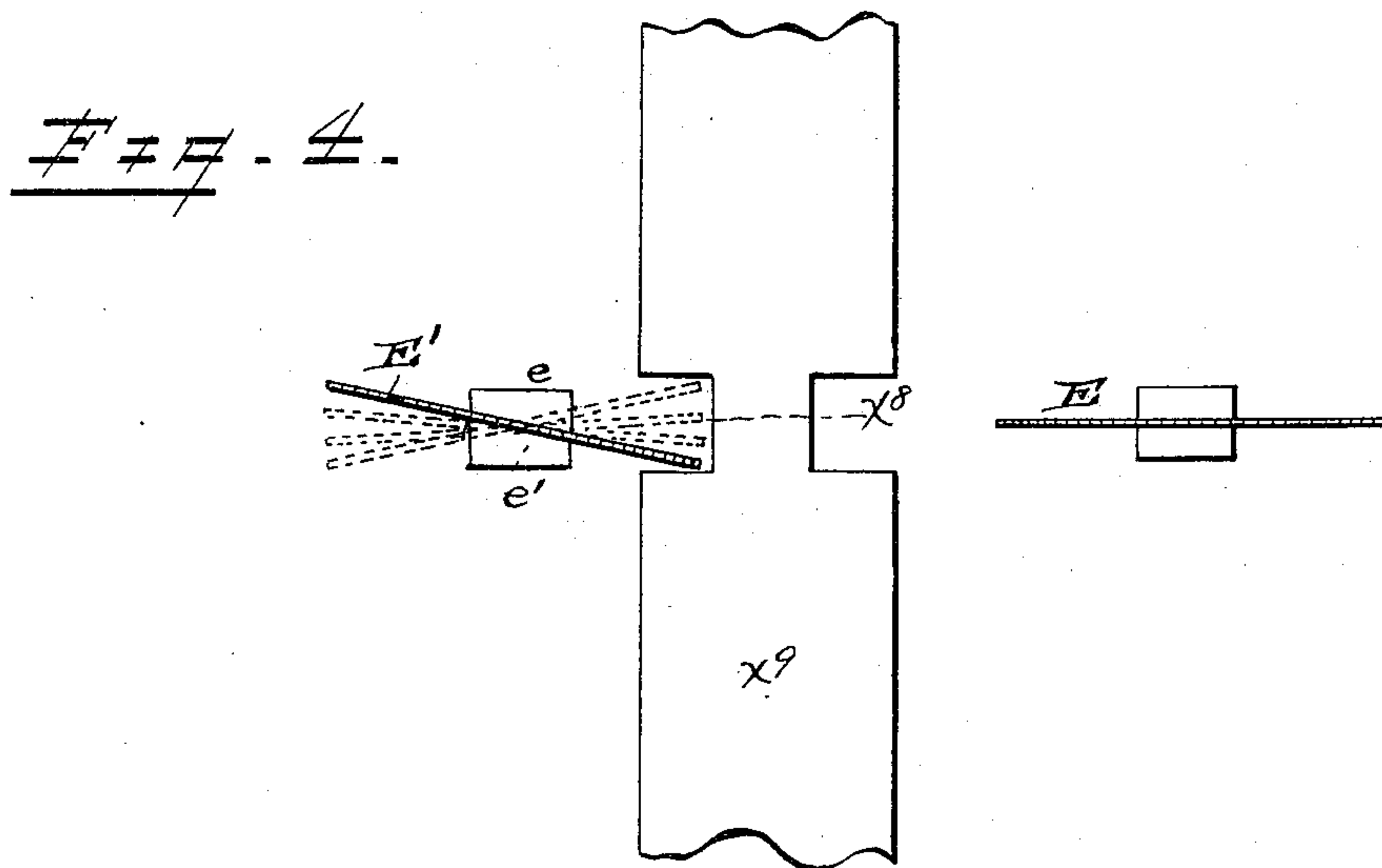
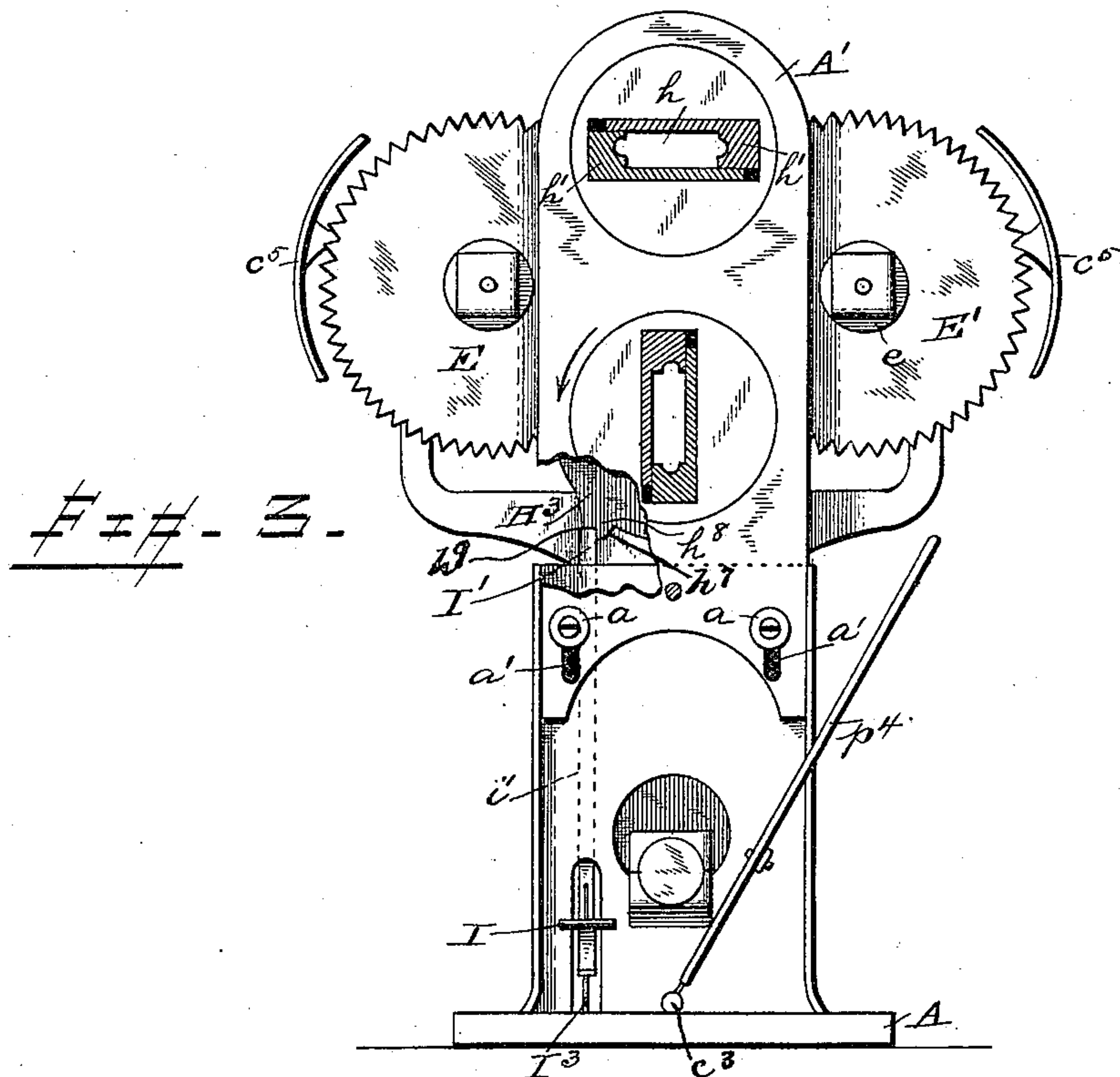
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# UNITED STATES PATENT OFFICE.

BURR. A. HAINES, OF SMITHVILLE, NEW JERSEY.

## TENON-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 447,772, dated March 10, 1891.

Application filed August 12, 1890. Serial No. 361,798. (No model.)

*To all whom it may concern:*

Be it known that I, BURR. A. HAINES, a citizen of the United States, residing at Smithville, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Tenon-Cutting Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in tenon-cutting machines; and it is especially adapted for use in tenoning and cutting the slats of window-shutters, and for this purpose it consists of mechanism for revolving the strip from which the slats are to be cut, and of a drunken and a true saw mounted upon an oscillating frame; and it also consists of the construction, arrangement, and combination of the parts of which it is composed, as it will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, in which corresponding parts are designated by similar letters, Figure 1 is a side view of my invention, a portion of the upper portions thereof being broken away for the better illustration of the remaining parts. Fig. 2 is a rear view thereof, the oscillating frame being thrown to one side. Fig. 3 is a transverse vertical section, taken on lines  $xx$  of Fig. 1, the oscillating frame being upright. Fig. 4 is a detail plan view of the saws.

The base A has the front plate A' adjustably held thereon by the screws  $a$ , working in the slots  $a'$  of the plate, whereby the chucks may be varied vertically in relation to the saws, and has extending through its lower portion from front to rear the shaft B, carrying the forward pulley  $b$  and the rear pulley B'. To the rear end of the shaft is also secured the idler-pulley  $b'$  and the driving-pulley  $b^2$ , over which a belt may pass, it being shifted from the one to the other by the shifter  $b^3$ , actuated by the lever  $p^4$  on the front of the machine, the sliding rod  $c^3$  connecting the parts passing through the base. The oscillating frame C terminates at its

lower end in the forks  $c$ , which lie in the front and the rear of the upper central portion  $a^2$  of the base and are journaled upon the shaft B, around which as a center the frame oscillates. The upper end of the frame terminates in the forks C', the upper end of each of which carries a shaft D or D', upon each of which is a pulley  $d$ , over which and over the pulley B' upon the shaft B the belt E<sup>8</sup> passes. The shaft D carries the saw E, which is true—i. e., set upon the shaft at right angles thereto—while the shaft D' carries the drunken saw E'. This saw is secured upon the shaft by means of two cams  $e$  and  $e'$  clamped upon its opposite sides. From this construction it results that the saw E' will in its rotation cut a path X<sup>9</sup> of a certain width, as will be seen by an inspection of Fig. 4, in which X<sup>9</sup> indicates a slat. The true saw E is so arranged in relation to the drunken saw that its cut will be in the center of the cut of the latter, as shown in dotted lines, thereby severing the slat-slip, leaving a tenon upon each portion thereof. Stop-arms  $f$  are secured upon the elbow F opposite to each of the chucks, the elbow having a longitudinal slot  $f'$  therein, in which slides the screw  $f^2$  upon the frame, whereby the stop may be moved nearer or farther from the chucks, varying the length of the slat cut and the distance of the tenons from each other. Upon the rear of the frame near its base is the forked belt-guide  $f^3$ , while the cross-bar  $f^4$ , mounted upon the top of the forks  $c'$ , has upon its opposite ends the saw-shields  $c^5$ . The front plate A' has the pulley G journaled therein, over which and over the front pulley  $b$  the belt  $g$  passes, the gear-wheel G' being formed upon the rear of the pulley G. Above the wheel G' and gearing therewith is the cog-wheel H of the lower chuck, while the cog-wheel H of the upper chuck is located above the wheel H and gears therewith, the distance of the two chucks being such that one is above and the other below the saw-shafts D and D'. As the construction of the two chucks is the same, I will describe but one of them, and for this purpose will select the upper chuck. The cog-wheel H' thereof has secured upon its rear face the disk H<sup>2</sup>, which, being mounted in the plate A', serves as a bearing therefor, it being held in such plate by the rear plate H<sup>3</sup>.



The cog-wheel  $H'$ , disk  $H^2$ , and rear plate  $H^3$  have an elongated diametrical slot  $h$  therein, in which slides the chuck-sections  $H^4 H^4$ , each of which has an end piece  $h'$  and a wing  $h^2$ , sliding upon the face of the wheel  $H'$ , while through a slot  $h^3$ , in the latter of which parts of the chuck a screw  $h^4$ , secured in the wheel, passes, thereby permitting the end pieces, which are grooved to receive the slats, to be clamped nearer or farther apart, and in order to permit the necessary movements of the sections for this purpose they are made of a less length than the slots  $h$  in which they move, as shown in Fig. 3. A pedal I, pivoted at its rear end to the base A, projects forward, and is pivoted to the plunger  $I'$ , working in a groove  $i'$  in the base and connected with one side of the link  $I^2$ , the said link being connected at its top and bottom, respectively, with the base A and with the frame C, while the rod is normally thrown upward by the spring  $I^3$  under the pedal I, thus throwing the frame to the side, as indicated in Fig. 2, an adjustable stop  $I^4$  being provided to limit such motion, while upon depressing the pedal the frame will be thrown to its opposite side, the extent of such movements being so adjusted that the carriage being thrown as shown in Fig. 2 the drunken saw will not project past the center of apertures of the chucks, thus leaving a reduced portion upon the work contained therein, as is shown in Fig. 4, while the movement of the frame in the opposite direction is such that the true saw will project past the said aperture, thereby severing the reduction portion thus formed and forming a tenon upon the contiguous end of the main portion of the strip and of the severed portion thereof, as shown in dotted lines in Fig. 4. The shields  $I^5$  between the forward portion of the base A and the frame C protect the link and shaft B from sawdust.

Upon the periphery of the rear plate H of the lower chuck is a projection  $h^8$ , having a square forward face  $h^7$ , and a step  $h^9$ , which receives the upper end of the plunger when the machine is at rest, thus holding the frame vertical for the introduction of new strips into the chucks. The gearing between the shaft B and the saws E and E' and the shaft B and the chucks is such that for a given speed of revolution of the shaft the saws will be driven at a rapid rate, (which is necessary in order to permit them to cut effectively,) while the chucks will be driven comparatively slowly, thus gradually presenting every side of the strip to the action of the drunken saw.

In the use of my invention, the several parts being in the position shown in Fig. 3, the strips from which the slats are to be cut are inserted in the upper and lower chucks until they strike the stop  $f$ . The shaft B is now put in motion and the motion being communicated to the saw the pedal I is depressed, throwing

over the frame, thus bringing the drunken saw into the contact with the strip and releasing the chucks, which are revolved, presenting all sides of the work against the saw. The desired depressions having thus been made, the pedal is released and the spring throwing the frame over will cause the true saw to sever the reduced portion at its center, the plunger rising at the same time. Upon the completion of a revolution of the lower chuck the projection  $h^8$  thereon will strike the plunger, locking the chuck against rotation. The plunger is then sufficiently depressed to permit the rotation of the lower chuck (which will be caused by the friction of the moving belt  $g$ ) to carry the step  $h^9$  in a position to receive the plunger, when the parts will again assume the position shown in Fig. 3. The strips are now again shoved in until their ends touch the stops  $f$  and the frame being thrown over, as shown in Fig. 2, the operation is repeated.

It will be understood that by the use of two chucks, as shown, a greater quantity of work may be done in a given time; but it is evident that only one chuck may be used without departing from the value of my invention.

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

1. The combination, with a revolving chuck, of an oscillating frame having a drunken and true saw upon the opposite sides thereof, a plunger connected with the said frame and imparting motion thereto, and a plate carrying the said chuck, having a projection thereon adapted to engage the said plunger, as described.

2. The combination, with an oscillating frame having a drunken and a true saw mounted upon the opposite sides thereof, of two revolving chucks located above and below the centers of the said saws, respectively, a pedal, a plunger pivoted thereto, a link pivoted to the said plunger and to the oscillating frame, a plate carrying one of the said chucks and having a projection thereon engaging the said plunger, and a spring adapted to bring the said true saw in front of the chucks, as described.

3. The combination, with a driving-shaft, of a frame pivoted thereto having two forks upon its upper end, a drunken and a true saw upon the opposite forks, the true saw being aligned with the middle of the cut of the drunken saw, a revolving chuck, and a stop mounted upon the said frame, as described.

In testimony whereof I affix my signature in presence of two witnesses.

BURR. A. HAINES.

Witnesses:

ELLSWORTH H. BURTIS,  
JAMES K. PARKER.