

(No Model.)

3 Sheets—Sheet 1.

J. P. WILLIAMS
CIRCULAR SAW MILL.

No. 468,856.

Patented Feb. 16, 1892.

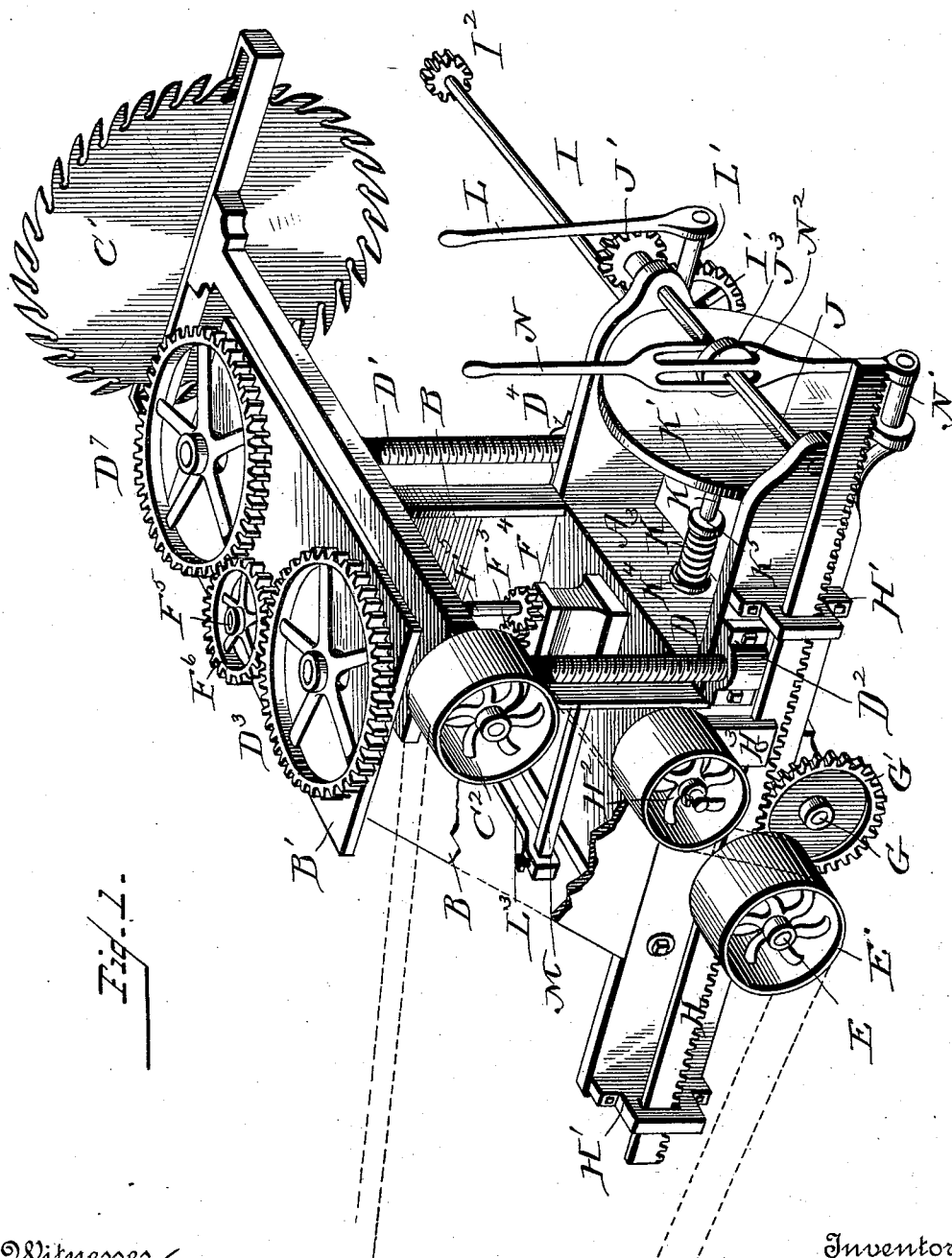


Fig. 1.

Witnesses

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G. W. Albright

Inventor

James P. Williams

By *Lis* Attorney

Franklin H. Hong

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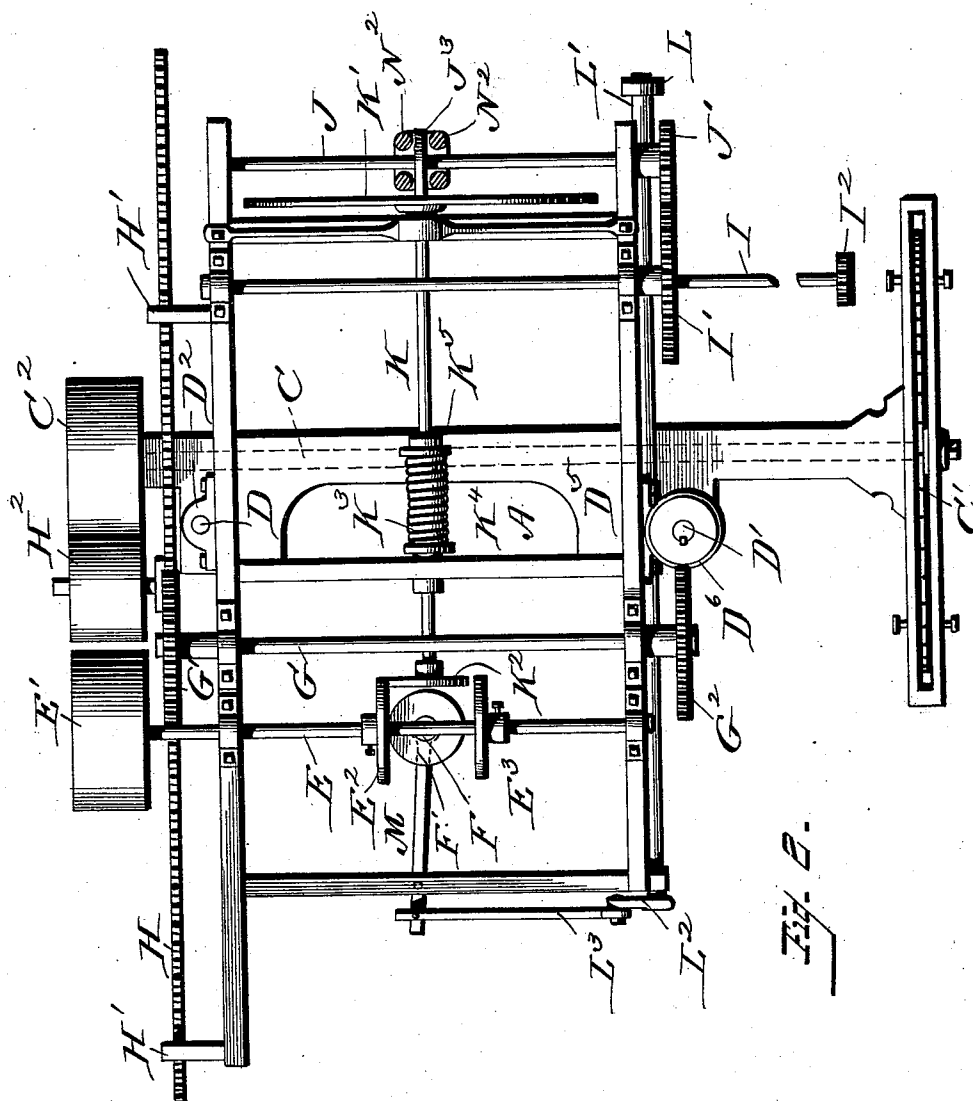


Fig. 2.

Witnesses

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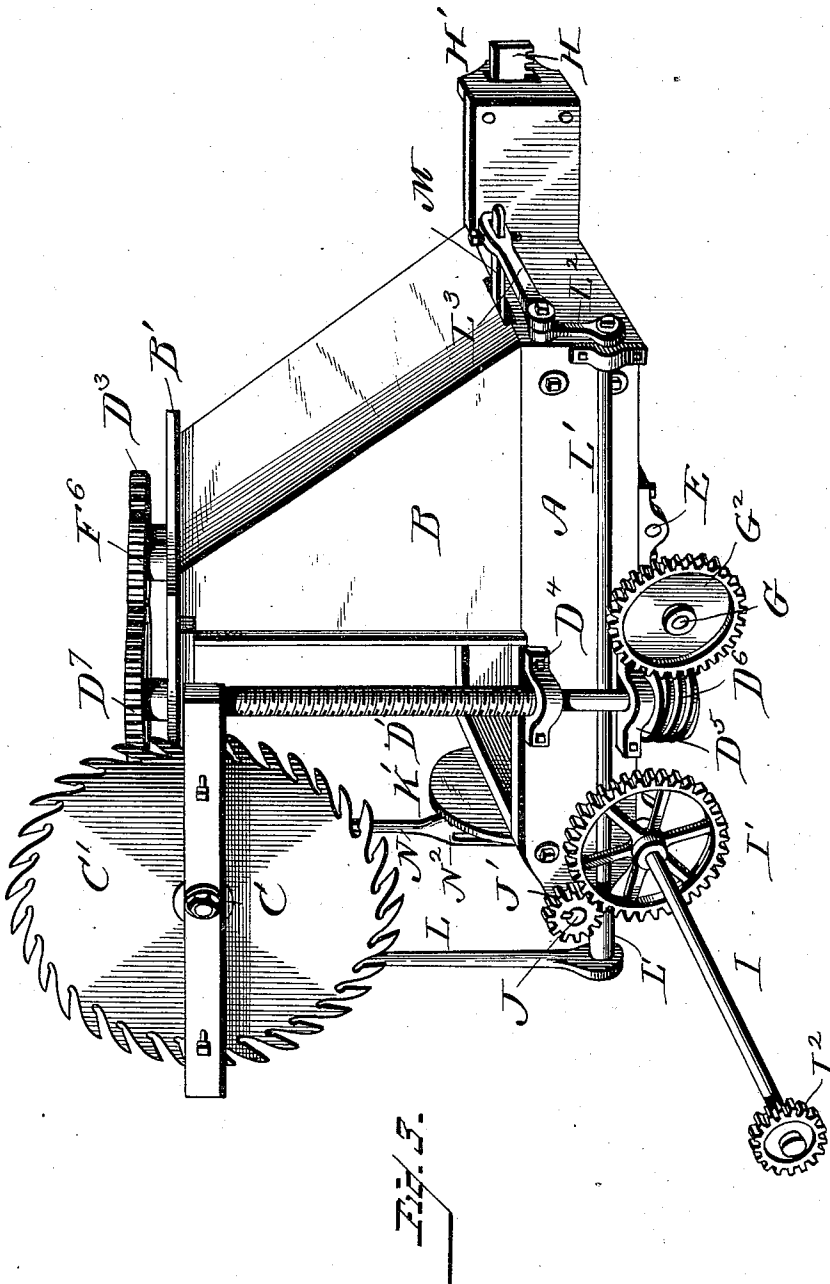


Fig. 3.

Witnesses
Wm. H. Hildner
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Inventor
James P. Williams
By his Attorney
Franklin H. Hong

UNITED STATES PATENT OFFICE.

JAMES POLK WILLIAMS, OF INDEPENDENCE, KENTUCKY, ASSIGNOR OF
ONE-HALF TO R. F. WILLIAMS, OF SAME PLACE.

CIRCULAR-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 468,856, dated February 16, 1892.

Application filed October 19, 1889. Serial No. 327,602. (No model.)

To all whom it may concern:

Be it known that I, JAMES POLK WILLIAMS, a citizen of the United States, residing at Independence, in the county of Kenton and State of Kentucky, have invented a new and useful Improved Circular-Saw Mill, reference being had to the accompanying drawings.

This invention relates to certain new and useful improvements in circular-saw mills; and it has for its object to improve upon the construction and render more efficient in operation that class of circular-saw mills in which a continuous cutting motion is imparted to the saw during both the forward and return movements of the carriage and in which by a peculiar arrangement of levers and mechanism to which they are connected the saw may be raised or lowered, so as to adapt it to cut from the top of the log downward or from the under side upward, as may be desired, thus rendering it possible to cut logs of greater diameter by the use of a single saw of small or medium size and dispensing with the use of a top or additional saw.

To the above ends and to such others as the invention may pertain the same consists in the peculiar construction and in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, like letters of reference indicating like parts throughout the several views, and in which—

Figure 1 is a perspective view of a saw-mill constructed in accordance with my invention. Fig. 2 is a bottom plan view of the same. Fig. 3 is a transverse horizontal section.

Reference now being had to the details of the drawings by letter, A designates the lower portion of the frame of the machine.

BB are uprights, which are preferably made of heavy planking bolted securely at their

lower ends to the base portion of the frame, and thus serve as supports for the platform.

C is the saw-arbor, carrying at one of its ends the saw C' and upon its opposite end is provided with a pulley C².

D and D' are screw-threaded shafts, which rise vertically from the base portion of the machine and are extended through openings formed in the platform B' adjacent to and to the rear of the saw-arbor. The shaft D is journaled at its lower end within suitable journal-boxes D², which is bolted securely to the outer face of the side timber of the base of the frame, while at its upper end it is provided with a gear-wheel D³. The shaft D' is passed through journal-boxes D⁴ and D⁵ and at its lower end extends a short distance below the lower edge of the frame of the machine. It is provided with a screw-threaded drum D⁶. The upper end of said shaft D' is provided with a gear-wheel D⁷, which is in all respects similar to the gear-wheel D³ upon the shaft D.

E is a shaft extending transversely through the base portion of the frame of the machine a short distance to the rear of the saw-arbor. This shaft is provided at its outer end with a pulley E'.

E² and E³ are friction-wheels, which are keyed to the body of the shaft E at points adjacent to and equidistant from the longitudinal center of the machine.

F is a vertical shaft carrying upon its lower end a horizontal friction-wheel F', adapted to be rotated by being brought into contact with either of the wheels E² or E³, as will presently appear. The shaft F is provided with suitable bearings and is provided at its upper end with a pinion F³, which pinion is adapted to mesh with the pinion F⁴ upon the lower end of the vertical shaft F⁵, the upper end of which shaft extends through an aperture formed in the platform B' and is provided with a gear-wheel F⁶, which meshes with the gear-wheel D³ and also D⁷, as is best shown in Fig. 1 of the drawings.

G is a transverse shaft carrying upon one

of its ends a gear-wheel G' and upon its opposite end a similar gear-wheel G^2 , which gear-wheel G^2 is adapted to mesh with the worm-gear upon the drum D^6 .

- 5 H is a rack-bar, which is adapted to move within suitable guides H' , secured to the base-timber of the frame. The cogs upon the lower edge of the rack-bar are adapted to mesh with the cogs upon the gear-wheel G' .
- 10 H^2 is a tightener-pulley, which is sleeved upon a stub-shaft carried by the upright H^3 , attached to the rack-bar H.

- I is a transverse shaft, which is journaled within the front end of the base portion of the machine. The shaft I is provided with a gear-wheel I' , and upon its extreme outer end is provided a pinion I^2 .

- J is a transverse shaft journaled within the lower portion of the frame and carrying upon one of its ends a pinion J' .

- K is a horizontal shaft, which is journaled within the lower portion of the frame of the machine and extends longitudinally through the center of the base portion of the machine from a point adjacent to the shaft J to a point between the friction-wheels E and E^2 upon the shaft E and is provided at its front end with the disk K' and at its rear end with the friction-wheel K^2 , which is adapted to be rotated by contact with the friction-wheel E^2 .

- K^3 is a spiral spring, which is sleeved upon the body of the shaft K, one end of said spring bearing against the journal-box K^4 and its opposite end bearing against the collar K^5 upon the shaft, thus insuring a constant pressure of the disk K' against the friction-wheel J^3 upon the shaft J.

- L is an operating-lever, which is attached at its lower end to the shaft L' , which shaft is provided with suitable bearings upon the outer face of the side timber of the base portion of the frame upon the side adjacent to the saw-carriage and extends to the rear end of the frame, where it connects by means of the crank L^2 and link L^3 with the free end of the lever M, the opposite end of which lever is connected with the vertical shaft F, carrying at its lower end the friction-wheel F' .

- N is the lever which is used to control the movement of the saw-carriage. This lever is sleeved at its lower end upon the outer end of the arm or stub-shaft N' , and within the enlarged central portion N^2 of the lever is received the shaft J and friction-wheel J^3 , carried by said shaft, the said enlarged portion N^2 of the lever being provided with vertical slots, as shown in Fig. 1 of the drawings, for the accommodation of the shaft and wheel.

- The operation of the mechanism is as follows: Suppose that the saw-carriage has been moved and the log carried thereby has been cut from the under side upward by the upper portion of the saw and that it is now proposed to raise the saw, so as to cause the same to cut downward from the top of the

log. By pressing the lever L to the right it will be seen that the shaft L' will be given a partial revolution, and motion will thus be imparted through the crank L^2 and connecting-link L^3 to the lever M, and the friction-wheel F' will thus be forced into contact with the inner face of the wheel E^2 upon the shaft E, upon the outer end of which shaft is carried the pulley E' . This contact of the friction-wheel F' with the revolving wheel E^2 imparts motion to the vertical shaft, upon which the wheel E^3 is secured, and through the pinion F^3 upon its upper end motion is imparted to the pinion F^4 and shaft F^5 , causing the gear-wheel F^6 upon its upper end to rotate the vertical screw-threaded shafts D and D' by the engagement with the gear-wheels D^3 and D^7 with the wheel F^6 , thus raising the saw-arbor, as will be readily understood. It will also be seen that by reversing the motion of the operating-lever L the friction-wheel F' will be brought into contact with the wheel E^3 and the several shafts will be caused to rotate in an opposite direction, thus lowering the saw-arbor.

The movements of the saw-carriage are regulated by the manipulation of the lever N either to the right or left, which movement of the lever moves the wheel J^3 to the right or left, as the case may be, upon the shaft J, the said wheel J^3 being adapted to rotate with the shaft and yet is movable thereon in the direction of the length of the shaft. This movement of the wheel J^3 causes the same to bear upon the face of the revolving disk K' at such point as may be desired, (depending, of course, upon the distance the lever is moved,) and the shaft J may be thus caused to rotate slowly or rapidly, as desired, the rate of speed depending upon the point upon the wheel at which contact is had with the disk, and the direction of rotation of said shaft will depend upon the point of contact, as if the wheel contacts with the disk at a point to the right of the center of the disk the shaft will be caused to rotate to the right and if the contact be to the left of the center the rotation will be to the left. Motion is imparted through the medium of the gear-wheel J' to the gear-wheel I' , and thence by any suitable chain of gearing to the saw-carriage. As the saw is raised or lowered, the wheel G' , meshing with the rack H, moves the latter to tighten or loosen the pressure of the wheel H^2 on the belt, the said wheel H^2 serving as a belt-tightener.

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

1. The combination, with the devices for carrying the saw, of two oppositely-disposed screw-threaded shafts, gear-wheels upon said shafts, connections between the saw and gears and screw-threaded shafts, a gear-wheel arranged between and meshing with said gear-wheels, and a lever and connection, substan-

tially as described, for changing the direction of rotation of the central gear-wheel and the rack-bar and co-operating belt-tightener, as set forth.

5 2. The combination, with the rack-bar and its guides, of the gear-wheel, the saw-carriage, the transverse shaft E, its pulley E', the tightener-pulley H², carried by the rack-bar, the pulley C², means for vertically adjusting said

pulley C², and the belt passed over said pulleys, substantially as shown, and for the purpose specified.

Witness my hand this 3d day of September, 1889.

JAMES POLK WILLIAMS.

Witnesses:

J. G. STRATTON,

JEFF. BRADFORD.