2 Sheets—Sheet 1.

C. M. HALL.

SET-WORKS FOR CIRCULAR SAW-MILLS.

No. 187,622. Patented Feb. 20, 1877.

Fig. 1.

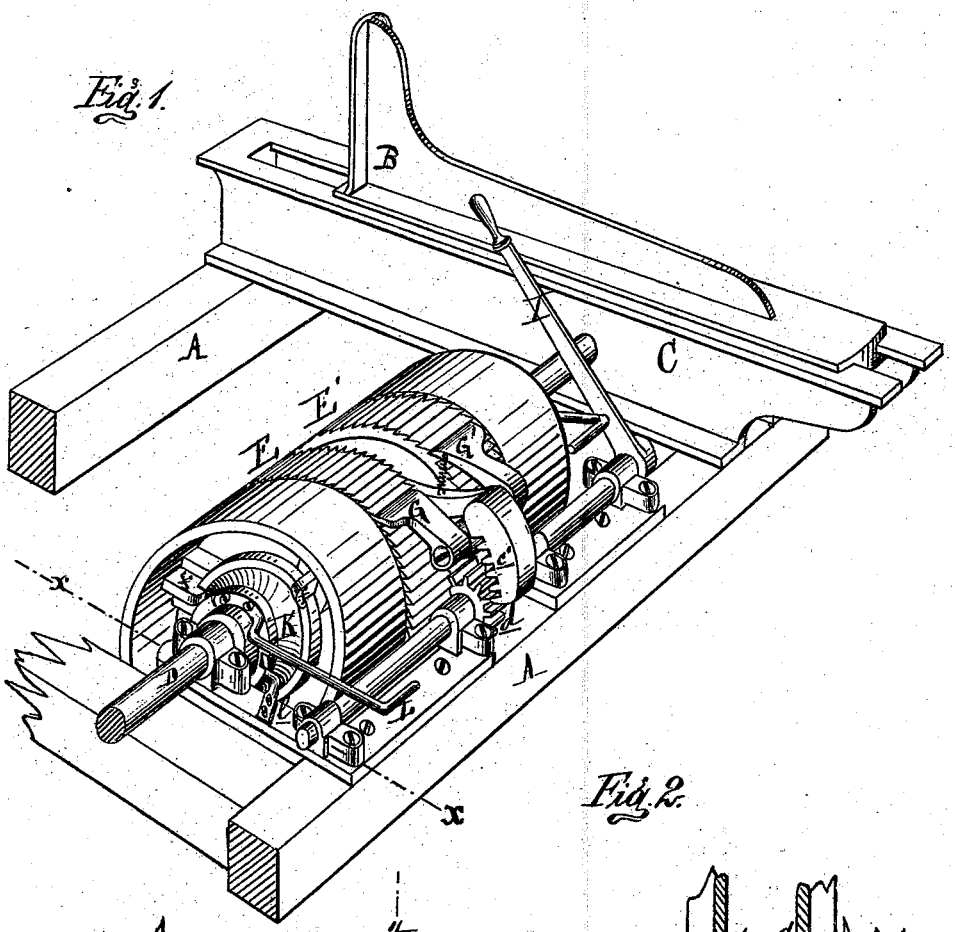
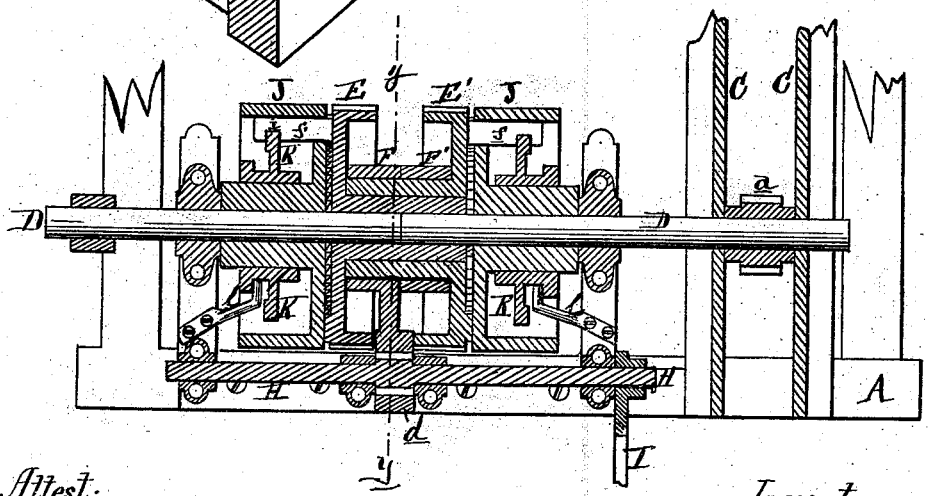


Fig. 2.



Attest:
Edward Barthel.
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Inventor:
C. M. Hall
By Atty
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2 Sheets—Sheet 2.

C. M. HALL.

SET-WORKS FOR CIRCULAR SAW-MILLS.

No. 187,622. Patented Feb. 20, 1877.

Fig. 3.

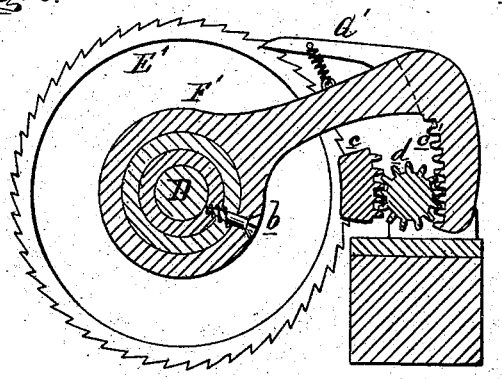


Fig. 4.

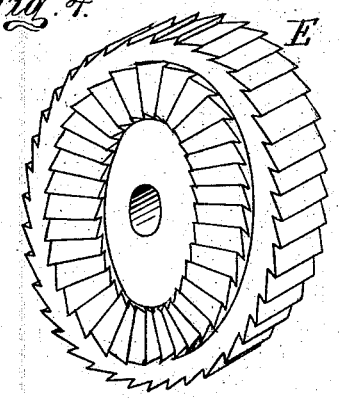


Fig. 5.

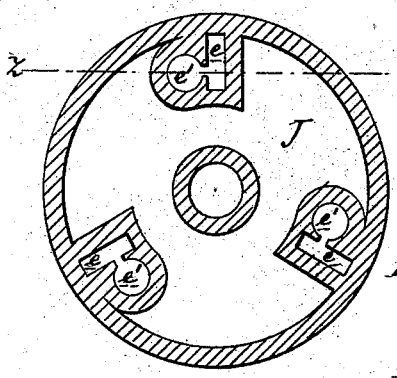


Fig. 6.

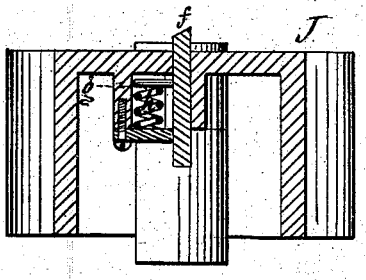


Fig. 10.

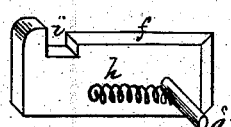


Fig. 7.

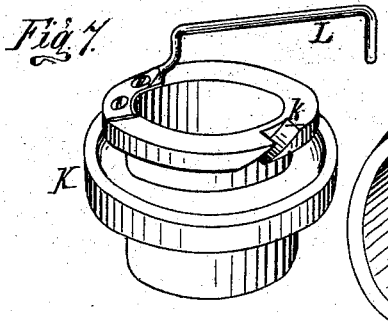


Fig. 8.

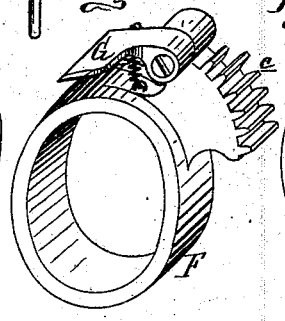
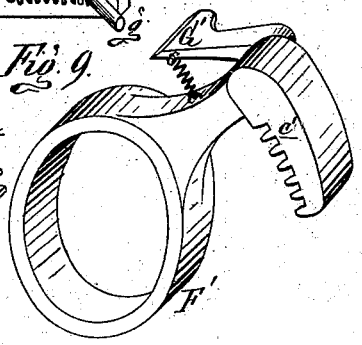


Fig. 9.



Attest:
Edward Barthel.
Wm J. Baldwin

Inventor:
C. M. Hall
By Atty
Thos S. Sprague

UNITED STATES PATENT OFFICE.

CHANCEY M. HALL, OF BAY CITY, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO BAY CITY IRON COMPANY, OF SAME PLACE.

IMPROVEMENT IN SET-WORKS FOR CIRCULAR-SAW MILLS.

Specification forming part of Letters Patent No. **187,622**, dated February 20, 1877; application filed September 5, 1876.

To all whom it may concern:

Be it known that I, CHANCEY M. HALL, of Bay City, in the county of Bay and State of Michigan, have invented an Improvement in Set-Works for Circular-Saw Mills, of which the following is a specification:

The nature of my invention relates to an improvement in set-works for circular-saw mills of that class in which the set-shaft is divided, so that either knee may be advanced or receded independently of the other, or both knees actuated synchronously.

The object I have in view is to enable the operator to set the knees one-sixteenth of an inch or more at a single movement of the set-lever. To this end my invention consists, mainly, in the peculiar construction and combination of the various parts, as more fully hereinafter set forth.

Figure 1, Sheet 1, is a perspective view of my improved set-works as applied to the carriage, and showing one knee thereof. Fig. 2 is a horizontal section of the same at *x x*. Fig. 3, Sheet 2, is a cross-section at *y y*. Fig. 4 is a detached perspective view of one of the ratchet-collars, showing the ratchets on the edge and side thereof. Fig. 5 is a sectional side elevation of a pawl-drum, looking at it from the outer side. Fig. 6 is a sectional plan of the same at *z z*, showing the pawl or dog and its spring in position. Fig. 7 is a detached perspective view of a cam-collar removed from the drum. Figs. 8 and 9 are similar views of the main pawls, each mounted on its geared collar. Fig. 10 is a similar view of one of the side pawls or dogs, and its spring detached from its drum.

In the drawing, A represents a portion of the carriage of a circular-saw mill. B is a knee, geared on the under side, sliding in ways C, and actuated by the pinion *a* at the end of the set-shaft D, which is journaled through the inner web of the ways C. E E′ are two ratchet-wheels, the former having a long, laterally-extended hub, which is sleeved over the set-shaft ends, the set-shaft being divided into two independent parts at that point. The wheel E′ has also a laterally-extended hub, which is sleeved over that of the wheel E. This is done to admit of two pawl-collars, F F′, being sleeved upon the hub of the wheel E′. A set-screw, *b*, is tapped through collar F′, and through the hubs of both wheels, to key them together. Each ratchet-wheel, it will be noticed, carries a ratchet on its periphery, and another on its outer face, pitched in the opposite direction, as seen in Fig. 4. With the peripheral ratchets engage, respectively, the pawls G G′, pivoted to the sides of arms extended back from said collars F F′, respectively. The end of the arm of the collar F is a geared segment, *c*, while that of the collar F′ has a pendent internally-geared segment, *c′*. The pitches of these gears differ, that of the gear *c′* being the greatest. Between the geared segments *c c′*, and meshing with both, is a differentially-geared pinion, *d*, keyed on a rock-shaft, H, journaled along the outer sill of the carriage, and provided with a set-lever, I. The pitch of one-half the teeth of the said pinion (those that engage with the outer segment *c′*) is greater than those of the other half of said pinion, so as to give the arms of the pawl-collars an equal throw. At the side of each ratchet-wheel a drum, J, is keyed on each section of the set-shaft, with three radial slots, *e*, cut in its head, at the side of which is a round spring-socket, *e′*, connecting therewith by a longitudinal slot, as seen in Figs. 5 and 6. *f*, Fig. 10, is a wedge-ended dog, inserted in the slot *e*, with a lateral pin, *g*, on one side, which projects into the spring-socket through the slot. A spiral spring, *h*, is then inserted in the socket, resting on the pin *g*, and the socket is then capped, to compress the spring and cause it to bear upon the pin, to project the dog and have it engage with the ratchet at the side of the ratchet-wheel in the forward or "setting" movement of the latter. In receding the knee the open edge of the drum is used as a hand-wheel, when these dogs do not engage with the ratchet-wheel; but in the setting movement of the ratchets one or more of them will be constantly engaged with it, and thus rotate the set-shaft.

When it is desired to saw wedge-shaped lumber or strips, either end of the set-shaft may be thrown out of gear by the following means: At the inner edge of each dog *f* there is cut a recess, *i*, just under the head, which re-

ceives the periphery of a pulley or collar, K, sleeved on the internal hub of the drum. The outer end of the hub of this collar carries a smaller collar, in which there is cut a diagonal or cam slot, *k*, into which projects the end of an arm, *l*, permanently secured to the main frame, or to a bracket thereon. The cam-collar carries a lever, L, by which it can be rotated on the drum-hub, and in raising said lever the cam-slot, running on the end of the arm *l*, causes the said cam-collar to slide laterally upon the drum-hub, and thus retract into the drum the ends of the dogs. In this way either end of the set-shaft may be thrown out of gear; or both ends may be rotated simultaneously to set the knees. The main ratchets are proportioned to set the knees one-sixteenth of an inch for each ratchet-tooth.

What I claim as my invention is—

1. The differentially-pitched segments *c c'*, in combination with the pinion *d* of the rock-shaft, having corresponding pitches, for imparting an equal throw to the pawl-collars F F', substantially as described.

2. The combination, with the drums J J and their dogs *f*, the diagonally-slotted cam-collars K, levers L, and the stationary arms *l*, for retracting said dogs from the main ratchet-wheels, substantially as described.

3. In combination with a divided set-shaft, the double ratchet-wheels, the pawl-carrying drum on each section of said set-shaft, the differentially-pitched pawl-carrying segments, and a correspondingly-pitched pinion on an intermediate rock-shaft, all combined and arranged to impart an equal movement to both parts of said set-shaft, substantially as described.

CHANCEY M. HALL.

Witnesses:

LAURENCE MCHUGH,

JUSTIN POND.