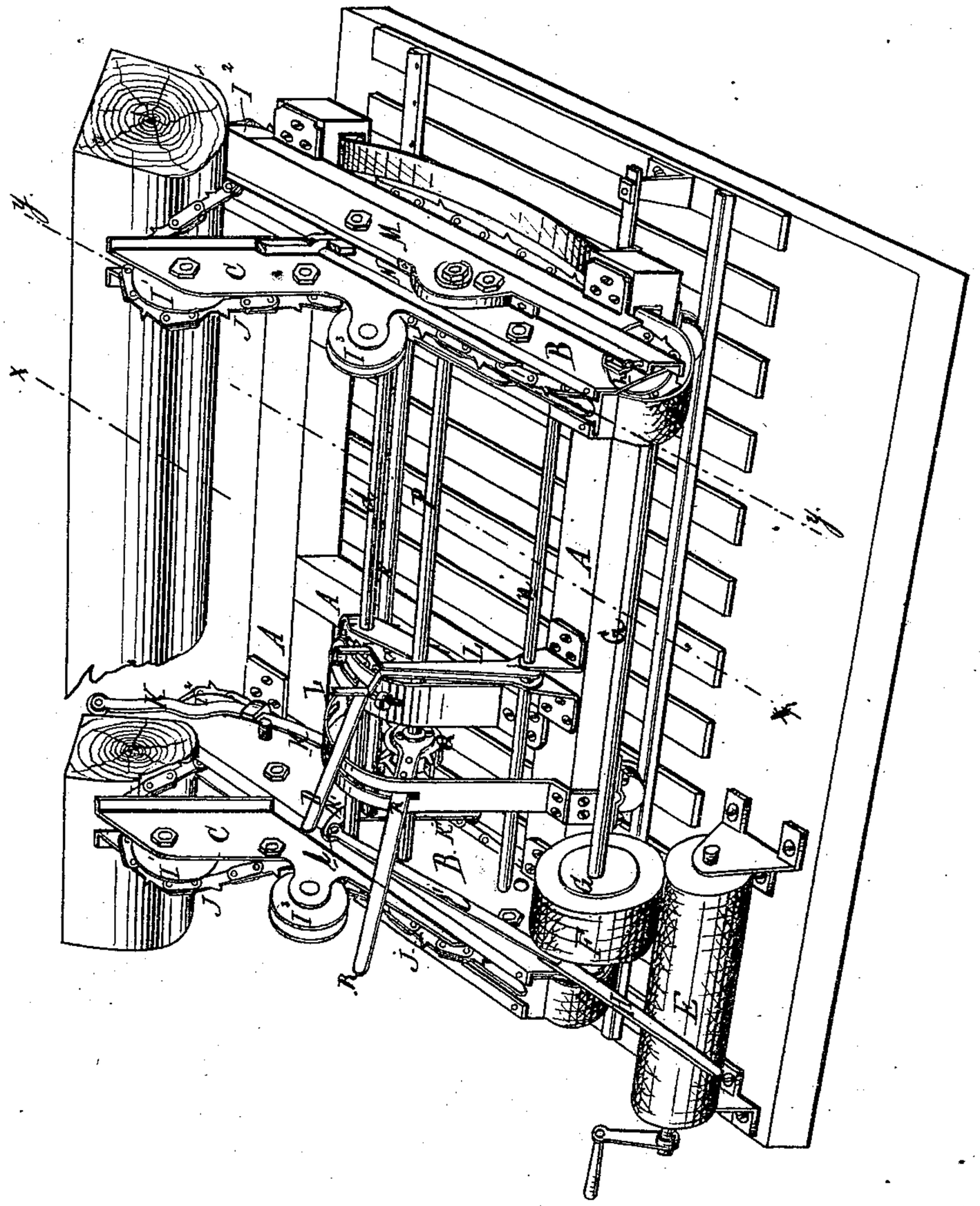
2 Sheets--Sheet 1.

J. W. MILES.

Circular Saw-Mill.

No. 162,088. Patented April 13, 1875.

Fig. 1.



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2 Sheets--Sheet 2.

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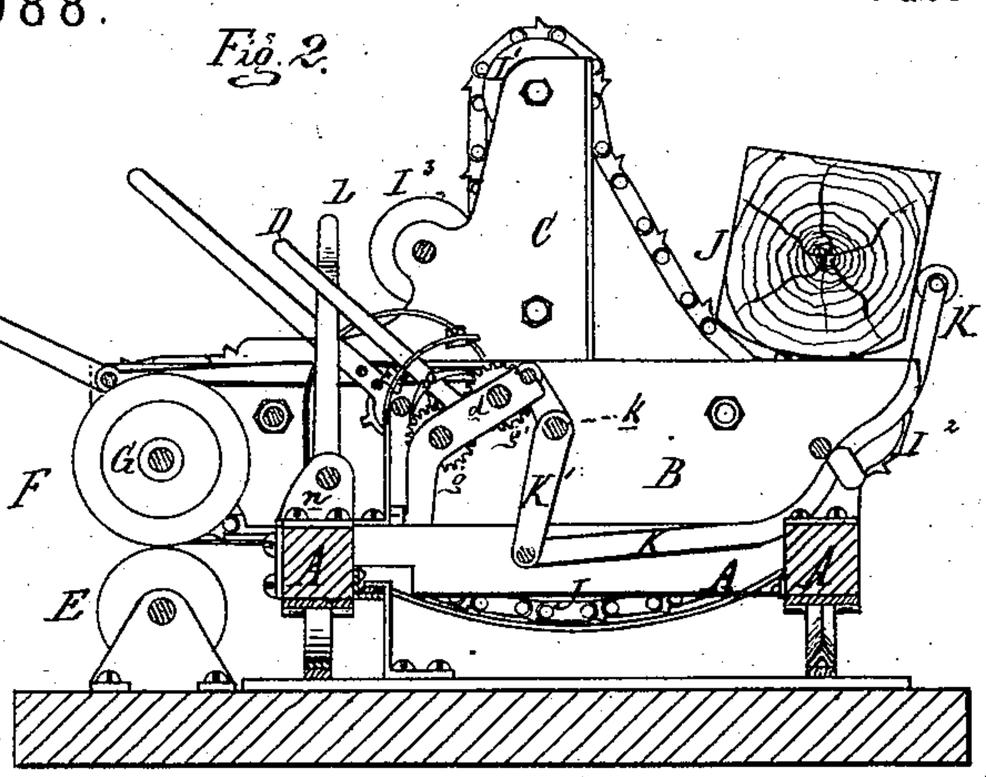
Fig. 2.



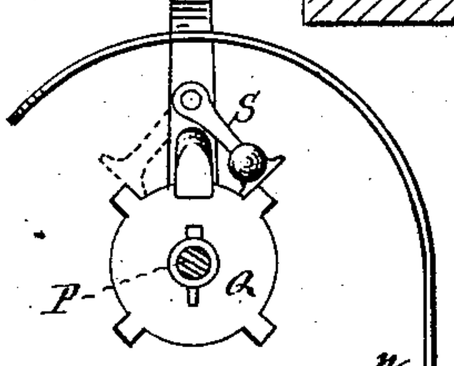


Fig. 5.

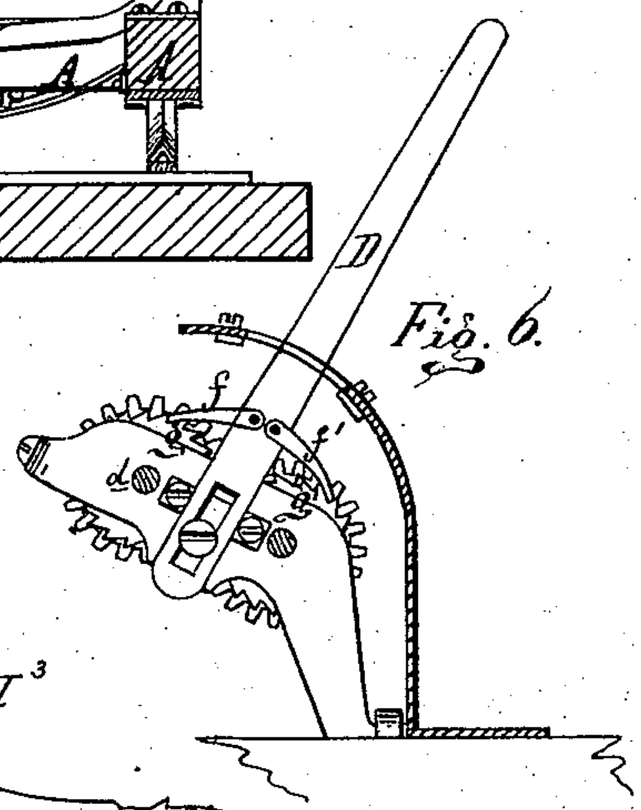


Fig. 6.

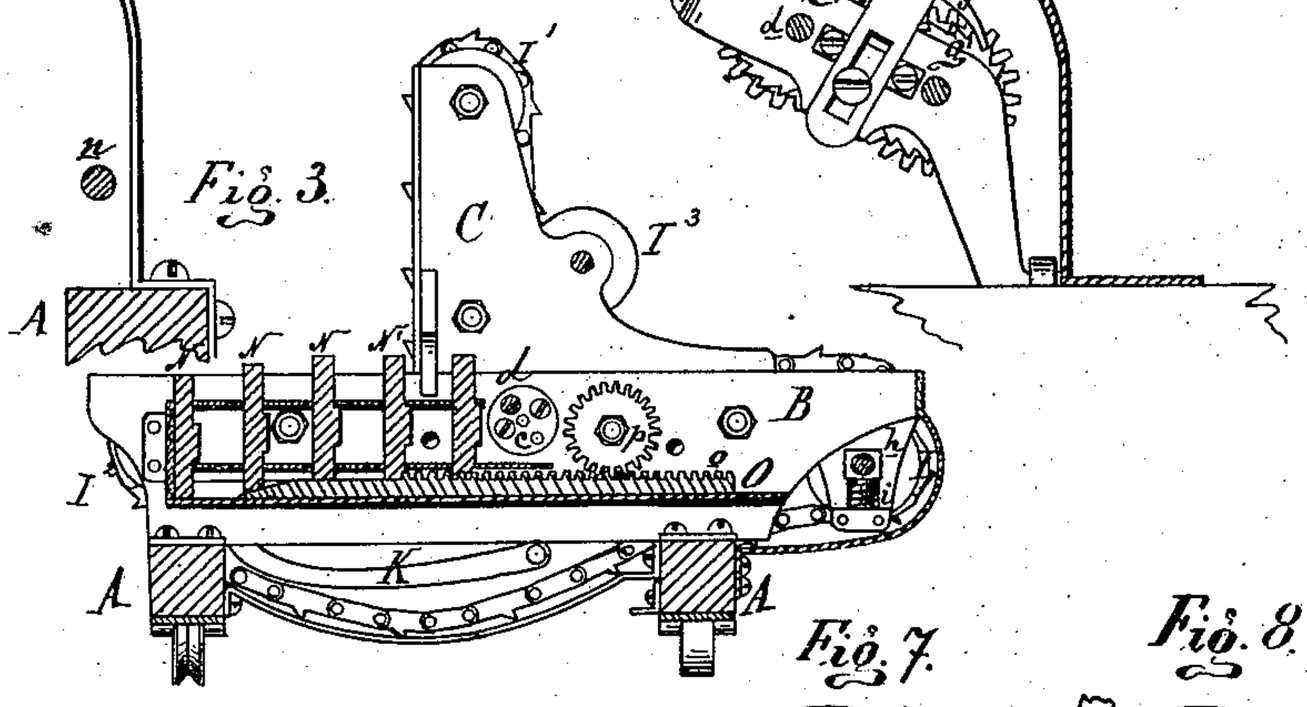


Fig. 3.

Fig. 7.

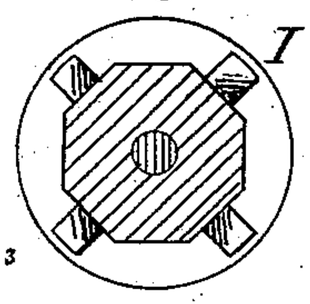


Fig. 8.

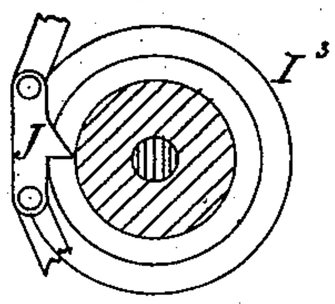


Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES W. MILES, OF HUBBARDSTON, MICHIGAN.

IMPROVEMENT IN CIRCULAR-SAW MILLS.

Specification forming part of Letters Patent No. **162,088**, dated April 13, 1875; application filed January 22, 1875.

To all whom it may concern:

Be it known that I, JAMES W. MILES, of Hubbardston, in the county of Ionia and State of Michigan, have invented an Improvement in Circular-Saw Mills, of which the following is a specification:

The first part of my invention relates to the employment of a toothed endless chain, with each head-block and knee of a circular-saw mill for turning the log or cant thereon, the said chains being put in motion simultaneously by a friction-drum continuously rotated near the rear side of the carriage.

The second part of my invention relates to the combination with said chains of certain devices for receding the knees to any required distance from the saw, the retrogade movement of said knees being arrested by separate or independent stops, and in the mechanism for actuating the same.

Figure 1, Sheet 1, is a perspective view of a saw-mill having my improved head-blocks and log-turners combined. Fig. 2, Sheet 2, is a cross-section at *x x*, in Fig. 1, looking toward the set-works. Fig. 3 is a side elevation of one head-block, with the covering-plate removed, to show the stops and their actuating mechanism. Fig. 4 is a longitudinal vertical section through the center of a head-block and knee at *y y*, in Fig. 1, showing the chain in the act of turning a cant. Fig. 5 is a detail elevation of the ratchet and pawl used for actuating the stop-wedge shaft. Fig. 6 is a detail side elevation of the set-works. Fig. 7 is an enlarged section of a chain-wheel. Fig. 8 is a similar detail of a guide-pulley, grooved to receive the teeth of the chain.

In the drawing, A represents the carriage of a circular-saw mill, mounted on rollers, which run on rails laid on the mill-floor. B is the head-block at each end of the carriage, having ways in its top, in which slide the flanges along the base of a knee, C, constructed of two plates bolted and stayed together, so as to leave a space between the sides. A toothed rack, *a*, is secured to the bottom of each knee, projecting down into or between the sides of the head-block, where a pinion, *b*, at the end of a shaft, *d*, meshes with it. The shaft *d* is journaled through both head-blocks, and is actuated by the set-lever D through two pawls, *f f*^{1}, and ratchets *g g*^{1} geared together, the ratchet *g* being keyed on said set-shaft. E is a friction-drum on a shaft, journaled in brackets on the mill-floor, and is continuously driven from any convenient source of power. F is a friction-pulley, mounted on a shaft, G, one end of which is journaled in a box at the back end of one head-block, while the other end is journaled in a box, *h*, having a vertical movement in a pedestal at the back end of the head-block, with a spring, *i*, Fig. 3, under the box to raise it and keep the pulley F out of contact with the friction-drum, except when forcibly depressed by a cam on the lower end of a lever, H, pivoted on the back end of said head-block, which cam bears upon the shaft G when the lever is thrown down, as in Fig. 4, when it will be rotated in the direction of the arrow. A toothed chain-wheel, I, is mounted on each end of the shaft G, between the sides of the head-block. A similar wheel, I^1, is journaled between the sides of each knee, at the top thereof. A guide-pulley, I^3, is journaled between a pair of ears projecting back from the angle of each knee, and is deeply grooved in the middle to receive the teeth of the chain which passes under it. I^2 is a plain flanged chain-wheel, journaled in a stirrup, *j*, sliding in inclined guides *j'*, between the front ends of each head-block, motion being given thereto by an arm, *k*^{1}, on a shaft, *k*, journaled through both head-blocks and a connecting-rod, *k*^{2}. An endless chain, J, passes around the pulleys I I^1 I^2 and under the pulley I^3. Each single link or bar of the chain is formed with a projecting tooth. These teeth, when the chain is set in motion by its driving-wheel I, receiving motion from the friction-gear, catch in the inner lower corner of a log or cant lying on the carriage and roll it over. For this purpose it is necessary to take up the slack of the chains, which is done by moving out the wheels I^2 in their bearings, and for this purpose an arm, *l*, is keyed on the shaft *k*, and connected with the lever H by a rod, *l*^{1}, which throws forward the wheels I^2 when the said lever H is thrown down. To prevent the log or cant from rolling off the head-blocks in turning thereon, a curved lever, K, is pivoted at its inner end to an arm, K^1, keyed on the shaft *k* on the inner

side of each head-block. The outer end of the lever K runs between guides, near the outer end of each knee, so that when the chain is in gear the end of the arm is thrown up to catch the outer side of the log, as seen in Fig. 4. There is a roller journaled in the end of each lever K to allow the log to turn freely on its axis. The set-shaft *d* has its ends journaled in an eccentric, *c*, in each head-block, which may be partially rotated by a toggle-lever, *m*, connected to the inner end of the rock-shaft *n*, extending along the top of the back sill of the carriage, and provided at the inner end with a hand-lever, L. There is a similar shaft and connections for the other eccentric, and their levers are brought close together, so that they can be operated separately or together; by throwing them forward the pinions *b* are thrown up into mesh with the racks *a* of the knees; by throwing them back, one or both, the pinions *b* are, one or both, thrown out of gear. The knees may then be moved back, by setting the friction-shaft in motion, when the friction of the chains in their wheels I^1 and I^3 will draw back the said knees until they are arrested by one of five stops, N, coming up through a covering-plate, M, on the outside of the head-block. These stops play vertically in guides inside said plate, and are beveled on their lower ends, so that a bar, O, having its front end sloped, may be moved forward under them and successively lift them up. For this purpose the bar O has a toothed rack, *o*, on its upper inner edge, with which engages a pinion, *p*, on a shaft, P, journaled through both head-blocks, and having keyed on it a four-toothed ratchet, Q, actuated by a pawl-lever, R, sleeved at its lower end on the shaft, and carrying a reversible pawl, S. The shaft P being rotated in one direction, the bar O is pushed forward and raises the stops at the required point to arrest the receding knees. A reverse movement lowers the stops.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the toothed endless chains with the head-blocks and knees of a saw-mill carriage for turning a log or cant, substantially as decribed.

2. The combination, with the head-blocks and knees of a saw-carriage, of the toothed endless chains, and the chain-wheels, for receding the knees on the head-blocks, substantially as described.

3. The combination, with the head-blocks of a saw-carriage, of the independent stops, the wedge-ended bars for raising them, the racks, pinions, and independent shafts and levers for moving said bars, all combined and arranged to arrest the receding head-blocks, substantially as described.

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