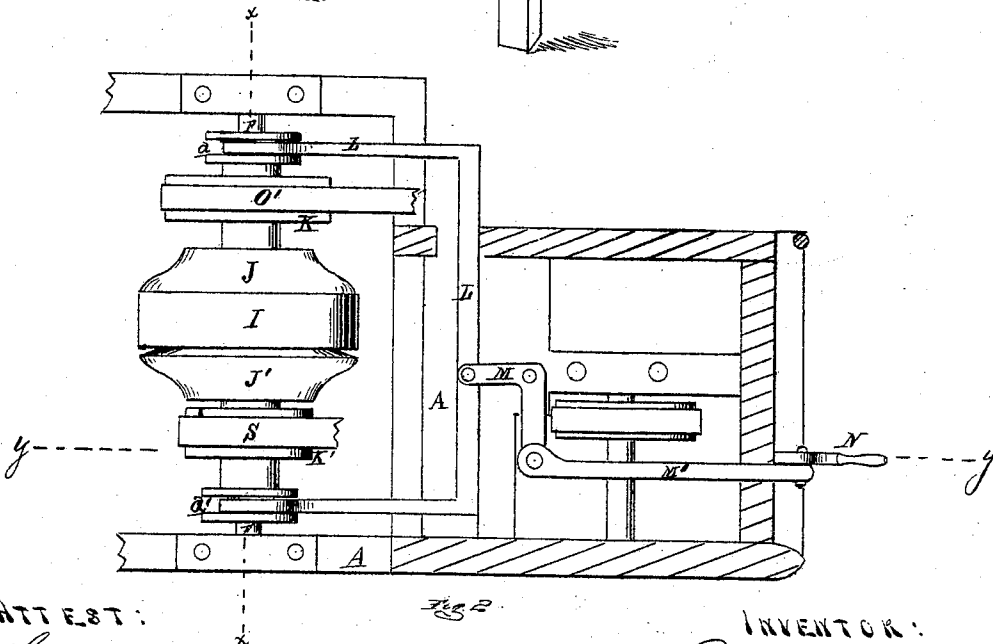
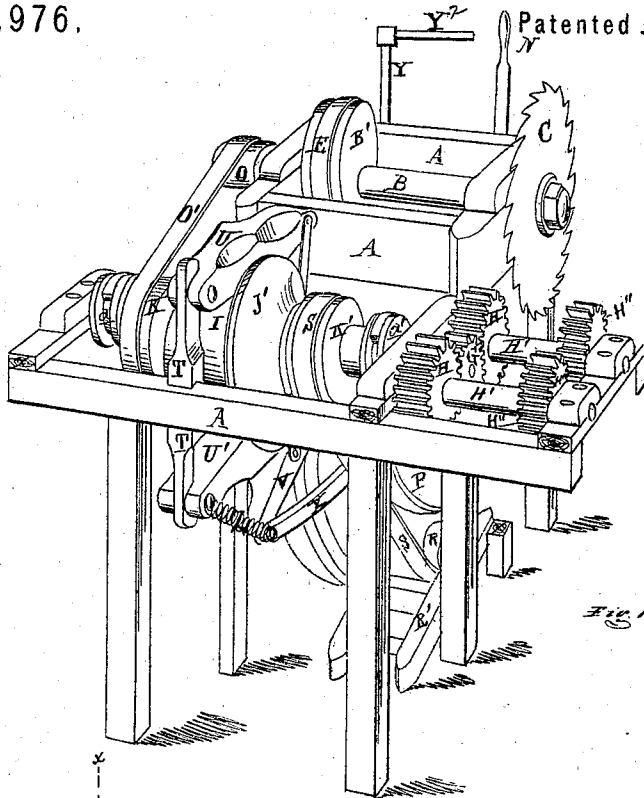


W. A. CAMPBELL.
Circular Saw Mills.

2 Sheets--Sheet 1.

No. 134,976.

Patented Jan. 21, 1873.



ATTEST:

H. F. Elbert.
W. L. Sprague

INVENTOR:

Wm A. Campbell
per attorney
Mr. L. Sprague

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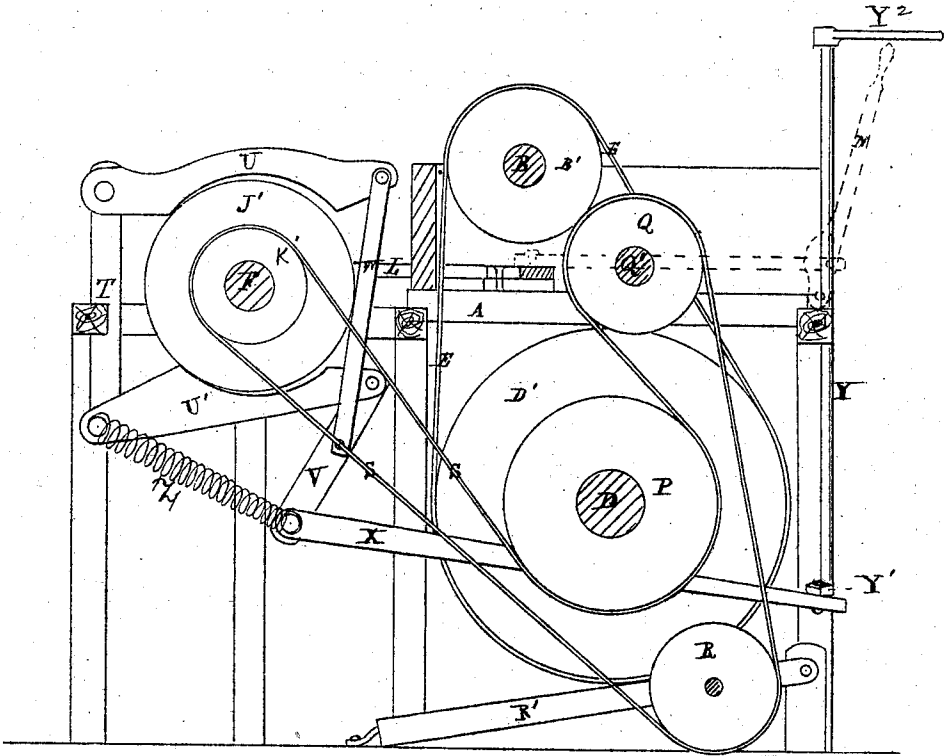


Fig. 3.

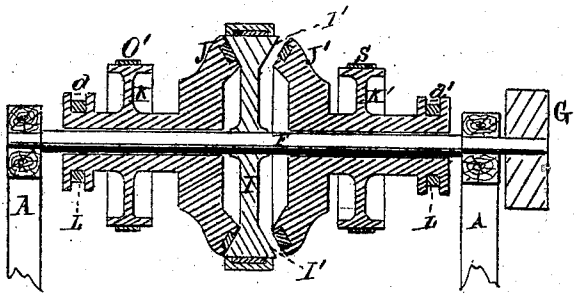


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM A. CAMPBELL, OF MANISTEE, MICHIGAN.

IMPROVEMENT IN CIRCULAR-SAW MILLS.

Specification forming part of Letters Patent No. 134,976, dated January 21, 1873.

To all whom it may concern:

Be it known that I, WILLIAM A. CAMPBELL, of Manistee, in the county of Manistee and State of Michigan, have invented a new and useful Improvement in Circular-Saw Mills; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1, Sheet 1, is a perspective view of my improved saw-mill. Fig. 2 is a plan of the feed-shaft and its feeding and reversing mechanisms. Fig. 3, Sheet 2, is a longitudinal vertical section of the mill taken on the line *x x* in Fig. 2; and Fig. 4 is a longitudinal section of the back and forward feed mechanisms on the feed-shaft at *y y*, Fig. 2.

Like letters refer to like parts in each figure.

The nature of this invention relates to certain improvements in circular-saw mills, and has for its object to simplify and render more certain in operation the mechanism which actuates the feed-shaft which moves the log-carriage toward and away from the saw in the process of sawing lumber. The invention consists in two friction gears or wheels sleeved on the feed-shaft, one at each side of a friction-wheel keyed fast to the shaft, with clutch-levers so arranged that the sawyer brings one gear into contact with the friction-wheel while the other gear is withdrawn, and in connection therewith a belt from a pulley on the saw-arbor, which rotates the "forward" feed-gear sleeve, and another belt from a pulley on the driving-shaft so arranged as to rotate the "back" or "gigging" feed-gear sleeve without being crossed, both feed-gear sleeves being continuously rotated in opposite directions, either being brought into contact with the friction-wheel of the feed-shaft by a movement of the clutch-lever; also, in a brake acting on the friction feed-wheel for arresting the saw-carriage in "gigging" back, its momentum continuing after the impelling motor has ceased to act on the feed-shaft, all as hereinafter more fully set forth.

In the drawing, A represents the frame-work of the mill, in the upper part of which the arbor B carrying the saw C is journaled. In the frame below the saw-arbor the driving-shaft

D is journaled, carrying a driving-pulley, D', from which a belt, E, gives motion to the saw-arbor through the pulley B' keyed thereon. F is the feed-shaft, transversely journaled in the frame in advance of and parallel with the saw-arbor. On its end is keyed an intermediate pinion, G, meshing with and giving motion to the feed-pinions H on the shafts H', and by said shafts connected with secondary feed-pinions H''. These last feed-pinions H'' engage with the racks on the under side of the rack-rail of the log-carriage to move the latter to and from the saw in the usual way. I is a friction-wheel keyed fast on the middle of the feed-shaft. Both lateral perimeters of this wheel are beveled inward to afford a friction-bearing, I', for a friction-clutch at each side, one of which, J, is sleeved on the feed-shaft at one side of said wheel, and the other, J', at the other side. The sleeve of the clutch J has cast with it a pulley, K, the other sleeve having a similar pulley, K'. At the ends of the sleeves are formed clutch-grooves *a a'*, respectively, with which engage the forked ends of a sliding clutch-yoke, L, which is actuated by a bell-crank, M, link M', and lever N. By drawing back this lever the friction-clutch J is forced into contact with the wheel I while the clutch J' is withdrawn from the latter. By pushing in the lever N the clutch J' is forced into contact with the wheel I and the clutch J withdrawn. The lever may also be adjusted so that neither clutch will engage with the wheel I. On the back end of the saw-arbor a pulley, O, is keyed, from which a belt, O', is led around the pulley K on the sleeve J, and rotates the latter continuously. It is evident, therefore, that if the clutch J be forced into contact with the friction-wheel I the feed-shaft will rotate with said clutch, and in turn rotate the feed-gear pinions H and H'' in the proper direction to cause the log-carriage to advance toward the saw. The reverse movement of the log-carriage is effected by the clutch J' actuating the friction-wheel I in the opposite direction from which the clutch J moves it. The clutch J' is rotated through the following means: On the driving-shaft D is keyed a pulley, P. Above it a countershaft, Q', is journaled in the frame, carrying a pulley, Q. Below the driving-shaft an idler-pulley, R, or "tightener" is journaled in a "tightener-frame," R'. A belt, S, is led

under the pulley P; thence over the pulley Q; thence around under the tightener-pulley R; thence around the pulley K' on the clutch J'; thence back under the pulley P where it started from. The pulley P being of considerable diameter, the clutch J' is rotated with considerable speed for the purpose of gigging back the log-carriage with rapidity whenever said clutch is thrown into gear with the wheel I. As the momentum of the carriage in gigging back is liable to continual moving it after the clutch J' is withdrawn, a brake is provided to arrest it. A standard, T, is erected at the end of the frame. To its upper end is pivoted the rear end of a brake, U, which extends across the upper rim of the wheel I. To the lower end of this standard is pivoted a similar brake, U', extending across the lower periphery of said wheel I. To the outer end of the brake U' a lever, V, is pivoted, and to it a pair of links, W, whose upper ends are pivoted to the free end of the upper brake. A rod, X, connects the lower end of the lever V to a crank, Y', on an upright shaft, Y, journaled in the other end of the mill-frame, said shaft being also provided with a hand-crank, Y'', at the top, by turning which the brakes will be forc-

bly compressed against the wheel I, and thus arrest its further movement and that of the log-carriage. A spring, Z, acting on the lower end of the lever V, withdraws the brakes from the wheel I. The bearing-faces of the friction-clutches and brakes are recessed to receive a filling of compressed paper, leather, or other material to promote their adhesive power.

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

1. The feed-shaft F having the double-faced friction-wheel I secured thereon, and the friction-clutches J J' sleeved on said shaft and rotating in opposite directions, the clutch-yoke L and lever for moving the same, all arranged and operating substantially as and for the purpose set forth.

2. The arrangement, with relation to the friction-clutches J J', of the pulleys O P Q R and belts O' and S, as shown and set forth.

3. The brakes U U', lever V, links W, rod X, cranked shaft Y, and spring Z, as and for the purpose set forth.

WILLIAM A. CAMPBELL.

Witnesses:

GEO. W. BULLIS,
B. M. CUTCHEON.