(No Model.) 2 Sheets—Sheet 1.

G. M. HINKLEY.

FEED CARRIAGE FOR SAW MILLS.

No. 334,664. Patented Jan. 19, 1886.

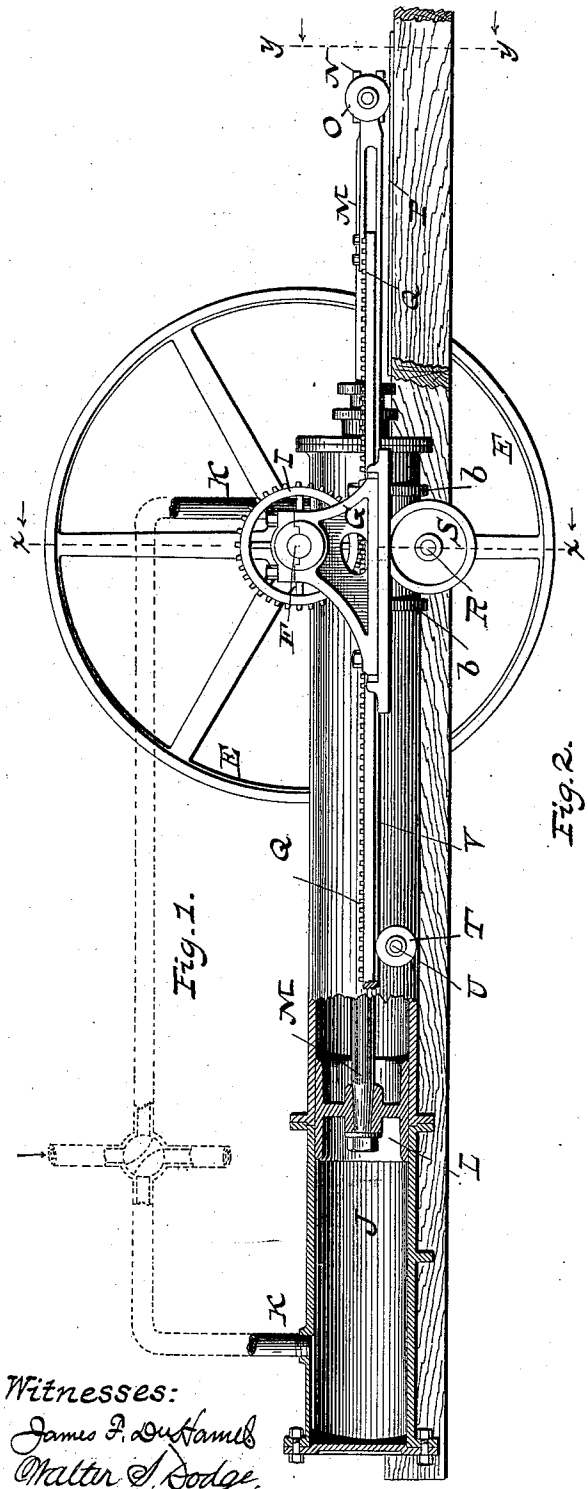


Fig. 1.

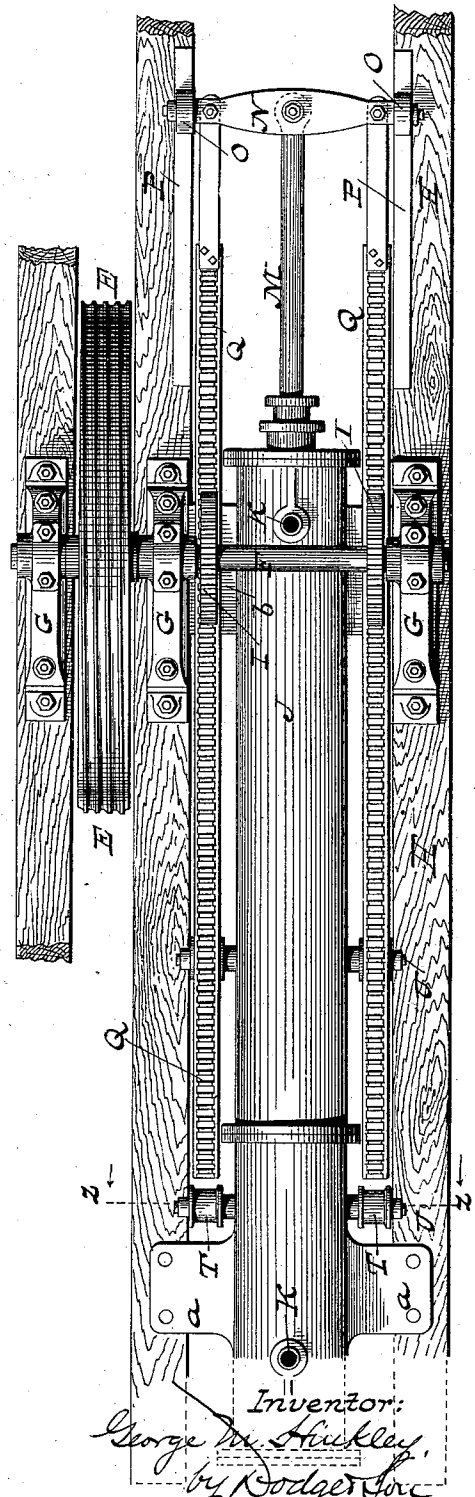


Fig. 2.

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Inventor:
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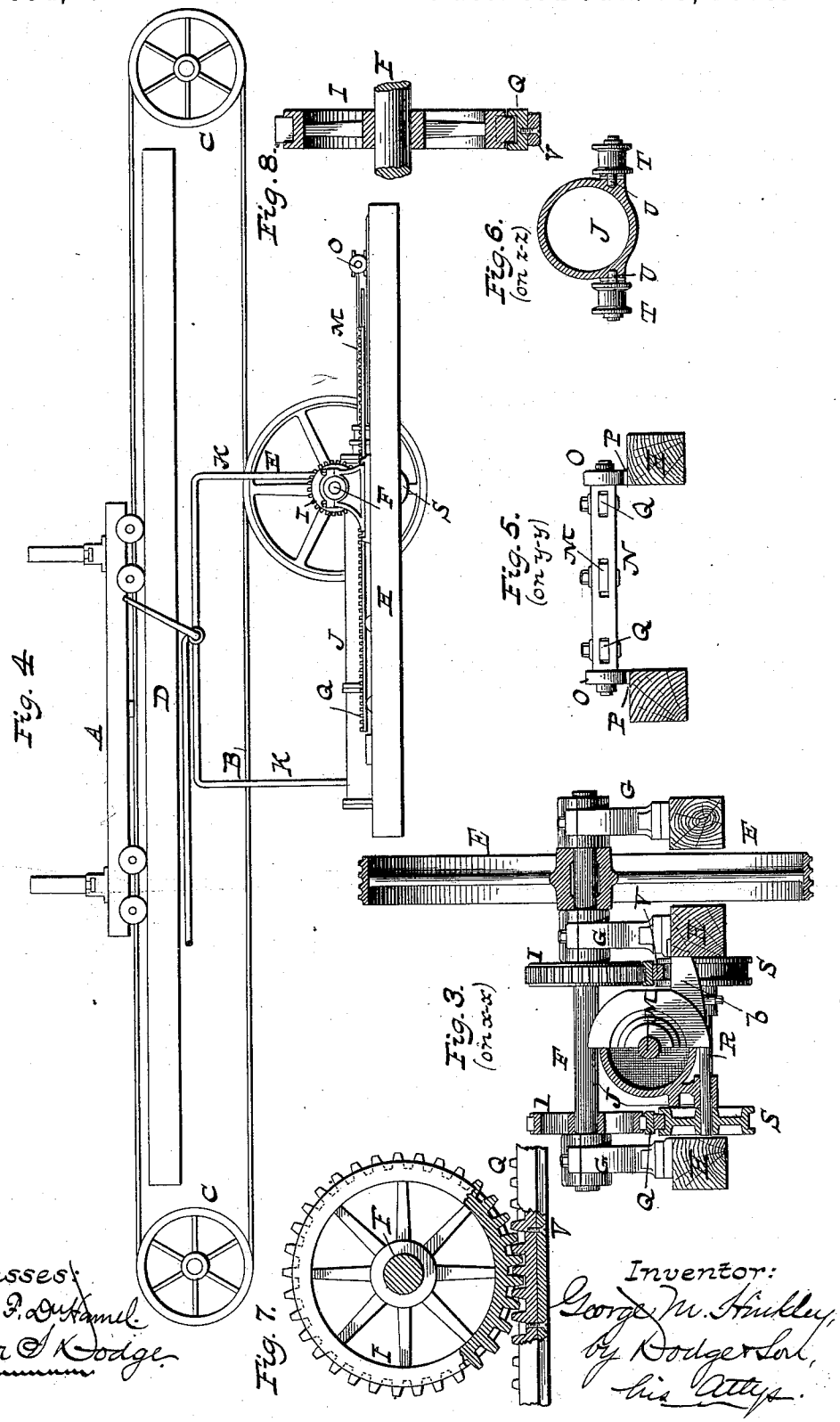
N. PETERS. Photo-Lithographer, Washington, D. C.

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UNITED STATES PATENT OFFICE.

GEORGE M. HINKLEY, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF ONE-HALF TO EDWARD P. ALLIS & CO., OF SAME PLACE.

FEED-CARRIAGE FOR SAW-MILLS.

SPECIFICATION forming part of Letters Patent No. 334,664, dated January 19, 1886.

Application filed October 16, 1885. Serial No. 180,115. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. HINKLEY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Steam-Feeds for Saw-Mill Carriages, of which the following is a specification.

My invention consists in a novel construction and arrangement of mechanism for transmitting motion from a steam-propelled piston to a winding-drum in that class of machinery for moving saw-mill carriages commonly known as "rope-feeds."

In the drawings, Figure 1 is a side view of my improved machinery; Fig. 2, a top plan view of the same; Fig. 3, a transverse section on the line *x x* of Fig. 1; Fig. 4, a side view showing the device in use; Fig. 5, a vertical cross-section on the line *y y* of Fig. 1; Fig. 6, a similar view on the line *z z*, Fig. 1; Figs. 7 and 8, enlarged views of one of the racks and its pinion.

In the class of feeding or carriage traversing mechanism above referred to, the carriage is moved by a rope or band winding about a drum passing about guiding sheaves or pulleys and attached to the carriage, and the drum is rotated alternately in reverse directions through the movements of a piston working in a fluid-cylinder. Heretofore, however, the drum has been made to travel, and has been caused to rotate by reason of the meshing of a pinion upon its shaft with stationary racks. This construction I do not deem desirable, and I have therefore devised a different arrangement under which the drum is sustained in fixed bearings and rotated by movable rack-bars connected with the piston-rod. This construction I find highly advantageous and satisfactory.

For light carriages, or where deemed desirable for any reason, the rack-bar may be formed upon or attached directly to the piston-rod, and a single bar be used instead of two bars, as shown.

Referring now to the drawings, the construction and operation of the device will be fully explained, like letters indicating like parts throughout.

A, Fig. 4, indicates a saw-mill carriage; B, the propelling band or rope thereof; C C, the sheaves at each end over which said band passes, and D the floor of the mill supporting the carriage. The band or rope B is attached firmly to the carriage A, and, after passing about the guiding-pulleys C, has its ends attached to the drum E, (shown in Figs. 1, 2, 3, 4,) which drum is situated below the main or carriage floor D. The drum E is rigidly secured upon a shaft, F, carried in bearings or pillow-blocks G, which in turn are mounted upon a strong frame or foundation, H, as shown in Figs. 2 and 3, the shaft F being also provided with two gear-wheels or pinions, I. Between the longitudinal timbers of the framing H is a long cylinder, J, provided with suitable supply-pipes K, and with a piston, L, and piston-rod M, as shown in Figs. 1 and 2. This cylinder J is supported at its rear end by wings or flanges *a*, cast thereupon, and at its front end by a plate or cross-bar, *b*, secured to the timbers, as shown in Figs. 1, 2, and 3. The piston-rod M is provided at its forward end with a cross-head, N, (shown in Figs. 1, 2, and 5,) which is supported at its ends by rollers O, running on a track, P, on the framing of the machine. This prevents the forward end of the piston-rod from sagging and binding, prevents the cross-head from twisting or turning, and renders easy the reciprocation of the rod.

Attached to the cross-head N near each end is a long rack-bar, Q, which extends backward under the gear-wheel I of the drum-shaft F and meshes therewith, as shown in Figs. 1, 2, and 3, the rack-bars Q being of such length as not to pass out of engagement with the gear-wheel I during the movement of the piston.

The cylinder J, as shown clearly in Fig. 3, carries upon its under side a short shaft, R, which is directly in line and parallel with shaft F, and on said shaft R are flanged wheels S, directly under the gear-wheels I, as shown in Figs. 1 and 3. These wheels S are for the purpose of holding or supporting the rack-bars Q in engagement with the gears I, and to guide the former in their reciprocation.

It will be seen that the wheels S may be either fast or loose upon the shaft R, the latter being free to turn, or fixed, accordingly; and it will also be seen that instead of casting the bearings of said shaft upon the cylinder the shaft may be carried in bearings on the frame-work. To further support and guide the ends of the rack-bars Q, the cylinder J is provided at intervals on each side with guiding-wheels T, (shown in Figs. 1, 2, and 6,) said wheels being carried upon axles U, mounted in lugs cast upon the cylinder. This construction may be modified somewhat, as it is apparent that the wheels T can be mounted upon the frame H. I prefer, however, the construction shown in the drawings, as it renders the machine more compact and solid, and avoids separation of the parts through settling or otherwise.

In order that the rack-bars Q may be guided accurately and that side play shall be prevented, a guiding-strip, V, is attached to the under side of said racks Q, said strip fitting closely the grooved wheels S T, as shown in Fig. 3. This construction is adopted for the further reason that it enables me to cast the toothed bars and to give them the necessary tensile strength by the use of a wrought-iron or steel bar or strip, V.

Steam or other fluid is introduced from any convenient source to the cylinder J through the pipes K alternately at opposite ends of the cylinder, thus causing the piston to move in either direction required.

The movement of the piston is controlled through the medium of a four-way cock and hand-lever, or in any other convenient and well-known manner.

As the piston-rod M moves outward, the cross-head N, to which are attached the rack-bars Q, also moves forward, and as the rack-bars Q are always in mesh with the gears I on the shaft F, motion is imparted to the latter and the drum E, thus causing the rope or band B to wind on in one direction and unwind in the other, as is usual. By employing the cross-head N and the rack-bars Q the strain on the shaft F is evenly distributed, and the machine is found to work smoothly and steadily in practice.

It is obvious that, instead of using the rollers T to guide the rack-bars, a grooved rail may be used, or a ribbed rail and grooved guides; but I prefer the construction shown.

The wheels O, supporting the ends of the cross-head N, or their track P, will preferably be grooved, in order to more perfectly guide the piston-rod.

Upon reference to Figs. 7 and 8 it will be observed that the rack-bars Q are flanged, so as to overlap the teeth of wheel I, and thereby further insure their proper position; or the wheels I may be flanged to project over the vertical sides of the teeth of the rack-bar, this plan being simply a reversal of that shown.

Having thus described my invention, what I claim is—

1. In combination with a saw-mill carriage and its propelling band or rope, a drum about which said band is wound, as shown, a shaft carrying said drum and mounted in a fixed frame, gear-wheels secured to said shaft, a fluid-cylinder, a reciprocating piston within said cylinder, a cross-head attached to said piston, and rack-bars connected to said cross-head and meshing with said gear-wheels.

2. In combination with a saw-mill carriage and its propelling band or rope, a shaft fixed relatively to said carriage, a drum and gear-wheels mounted upon said shaft, a fluid-cylinder, a piston and piston-rod therefor, rack-bars carried by said piston-rod and meshing with the gear-wheels, and a valve adapted to admit fluid to opposite ends of said cylinder alternately.

3. In combination with a saw-mill carriage and its propelling-band, a shaft mounted in a stationary frame, a drum and gear-wheels mounted upon said shaft, a fluid-cylinder provided at each side with wheels immediately below the gear-wheels, a piston and piston-rod for said cylinder, rack-bars carried by said piston-rod and meshing with the gear-wheels, and a valve admitting fluid to opposite ends of the cylinder alternately.

4. In combination with a saw-mill carriage and its propelling-band, a shaft mounted in a stationary frame, a drum and gear-wheels carried by said shaft, a fluid-cylinder provided at each side with grooved guiding-wheels, as S T, a piston and piston-rod for said cylinder, rack-bars carried by said piston-rod and meshing with the gear-wheels, a guiding strip or rib, as V, secured to said rack-bar, and a valve for admitting fluid to opposite ends of the cylinder alternately.

5. In combination with a saw-mill carriage and its propelling-band, a shaft mounted in a stationary frame, a winding-drum and gear-wheels carried by said shaft, a fluid-cylinder, a piston and piston-rod therefor, a cross-head secured to said piston-rod and provided with supporting-wheels O, rack-bars secured to said cross-head and meshing with the gear-wheels, and a valve adapted to admit fluid to opposite ends of the cylinder alternately.

6. In combination with a saw-mill carriage and its propelling-band, a shaft mounted in a stationary frame, a winding-drum and a gear-wheel secured to said shaft, a fluid-cylinder, a piston and piston-rod therefor, a rack-bar attached to said piston-rod and meshing with the gear-wheel, and a valve for admitting fluid to opposite ends of said cylinder alternately.

7. In a feed mechanism for saw-mill carriages, the combination, with a rack-bar com-

posed of a cast-metal toothed portion and a wrought-metal guiding and strengthening strip, of supporting-wheels beneath the same, a gear-wheel meshing with the rack, and devices for reciprocating said rack-bar.

8. In a feed mechanism for saw-mill carriages, the combination, with a rack-bar, supporting-pulleys beneath said bar, and a gear-wheel meshing with the latter, the gear-wheel or the bar being flanged, as shown, of devices for reciprocating said rack-bar and causing the travel of the carriage.

GEORGE M. HINKLEY.

Witnesses:
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EDWD. P. ALLIS, Jr.