

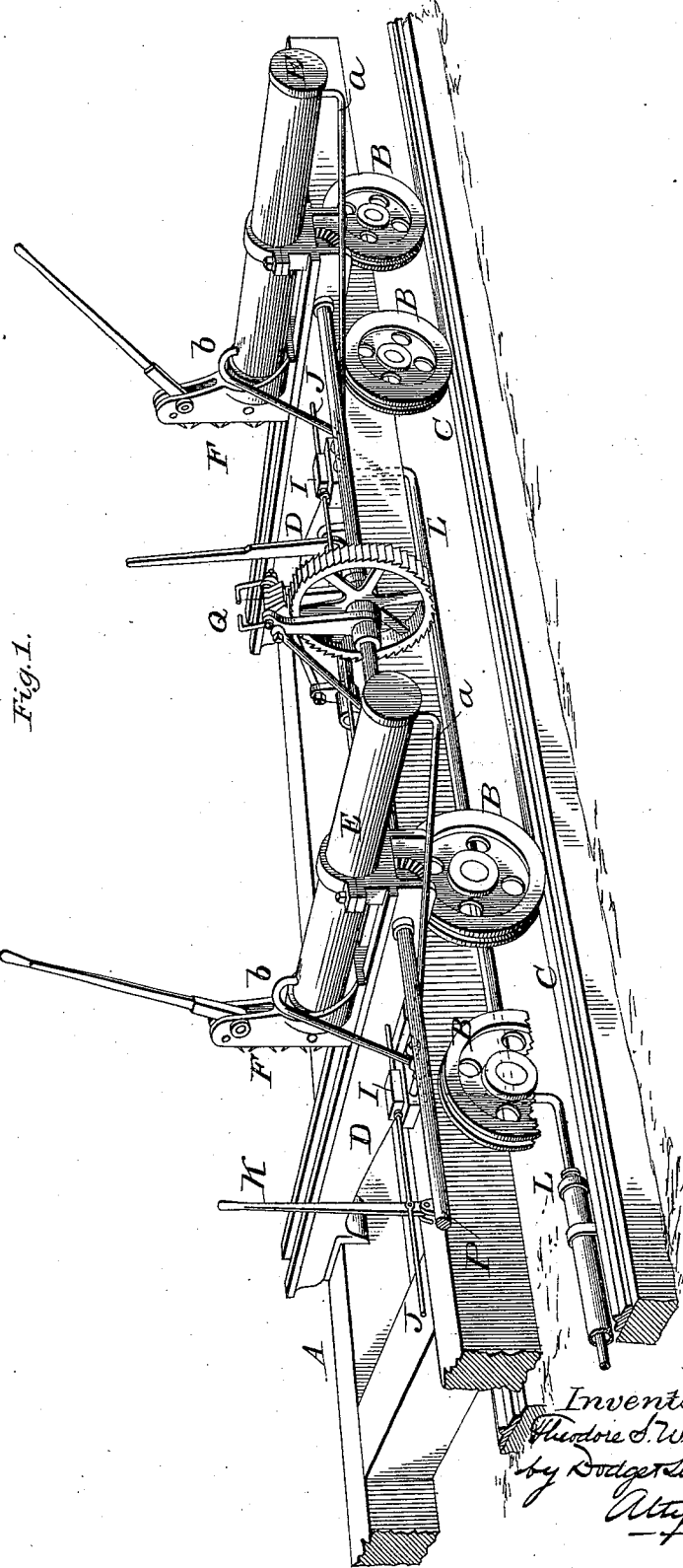
(No Model.)

3 Sheets—Sheet 1.

T. S. WILKIN.
SAW MILL SET WORKS.

No. 313,396.

Patented Mar. 3, 1885.



Witnesses:

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3 Sheets—Sheet 2.

No. 313,396.

Fig. 2.

Fig. 3. A side view of a mechanical device showing a long horizontal frame with various components labeled A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. The device appears to be a type of press or cutting machine.

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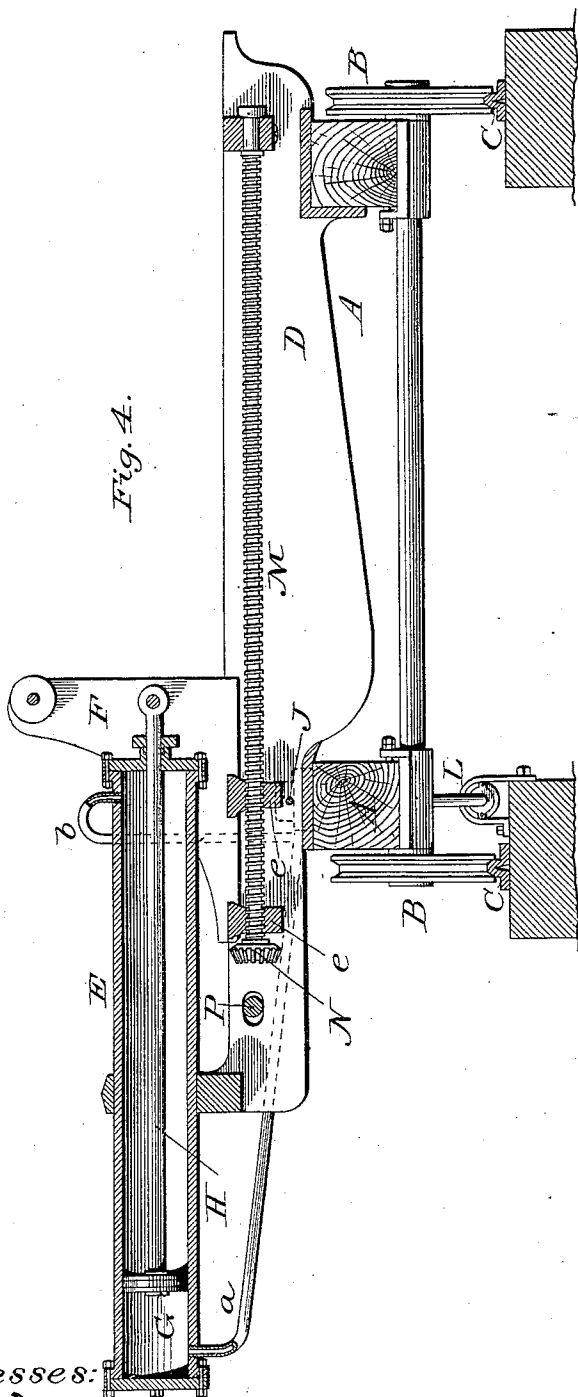
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UNITED STATES PATENT OFFICE.

THEODORE S. WILKIN, OF MILWAUKEE, WISCONSIN.

SAW-MILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 313,396, dated March 3, 1885.

Application filed November 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, THEODORE S. WILKIN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Saw-Mill Set-Works, of which the following is a specification.

My invention relates to saw-mill set-works, and particularly to the means for setting up and receding the knees, the invention consisting in a novel construction, whereby the movement is effected by fluid-pressure instead of manual labor.

In the annexed drawings, Figure 1 is a perspective view of a saw-mill carriage, the knees provided with my improvements; Fig. 2, an end view of the carriage, showing the head-block, knee, and cylinder in side elevation; Fig. 3, an end elevation of the head-block, knee, and cylinder; and Fig. 4, a longitudinal central section of the head-block and cylinder.

Heretofore it has been customary to move the knee of a saw-mill carriage by means of a series of pinions secured upon a common set-shaft and meshing with racks formed upon or attached to the respective knees, the shaft being turned by a hand-lever through suitable ratchet mechanism. Whenever large logs are to be handled—such, for instance, as those of the far west—the log-carriage is made proportionately large, and, instead of carrying but two or three head-blocks and knees, is furnished commonly with five. The weight of the log is such that it is impracticable to actuate the knees by means of the ordinary set-shaft lever, and hence an attendant is required at each knee. Even then the labor is very considerable, and it is impracticable to secure a simultaneous and equal movement of all the knees.

The present invention is designed to secure perfect uniformity and synchronism of action, and to render the services of a number of attendants unnecessary. These results I attain by the following described construction:

A indicates a saw-mill carriage, mounted upon wheels B, which travel upon rails C, as usual, to guide the carriage and its log past the saw. At suitable intervals are placed

head-blocks D, of substantially common construction, running transversely across the carriage, and each bearing a cylinder, E, of a length slightly greater than the required travel of the knees F, which are mounted upon the head-block, as shown, the cylinders being preferably made separate, and clamped down to a seat or bearing formed upon the head-block, as plainly shown in the several figures. The forward end of each cylinder is set far enough back to permit the knee to be receded the full required distance.

Within each cylinder E is a close-fitting piston, G, and a piston-rod, H, extends from each piston, through a suitable packing-gland or stuffing-box, to its corresponding knee E, to which its outer end is firmly connected by bolt or otherwise. Thus it will be seen any movement of the piston will cause a corresponding movement of the knee to which it is connected. Steam, compressed air, or other fluid is delivered to each cylinder at opposite ends alternately in the same manner precisely as in an ordinary steam-engine cylinder; but at such times only as it may be necessary to move the knees.

For the purpose of thus delivering steam to the cylinder at either end and simultaneously permitting the escape of steam from the opposite end, as is of course necessary in order to effect a movement of the piston, I provide two pipes, *a* and *b*, extending from a chest, I, to opposite ends of the cylinder, and within said chest I locate a slide or rotary valve of any common construction adapted to connect either pipe with the steam-space, and at the same time connect the other pipe with an outlet for exhaust. Each head-block and knee is thus furnished with a cylinder, piston, piston-rod, steam-chest, pipes, and valve; and, in order that all may be operated simultaneously, I connect the several valves by means of a rod, J, which is connected with a hand-lever, K, placed within easy reach of the operator, as shown in Fig. 1. Steam, air, or other fluid is brought to the chest I by a telescopic pipe, L, which is not a part of the present invention, but enters into another application filed by me.

For the purpose of controlling the move-

ments of the knees with accuracy and certainty, and to render such movement sufficiently gradual to prevent displacement of the log or injury to the machinery, I place directly beneath each sliding knee and within its head-block a heavy screw, M, the forward end of which is swiveled in the forward end of the head-block, and the body of which passes through a heavy depending lug or lugs, e, formed on the under side of the knee, and threaded to receive and fit the screw, so that as the latter is rotated in one or the other direction the knee will be permitted to move forward or backward under the force exerted upon the piston G. So long, however, as the screws remain at rest the knees will be held against movement in either direction.

In order to insure synchronism and uniformity of movement of all the knees, each screw is furnished with a bevel-pinion, N, which meshes with a corresponding pinion, O, made fast upon a common shaft, P, extending from the head-block at one end of the carriage to that at the other end, and rotated, as required, by a ratchet mechanism, Q, of any approved construction, or in any other convenient way. By this construction the entire operation of the knees is placed under the control of one attendant or operator, the expense of various attendants is saved, the work is performed with the utmost certainty and uniformity, and the lever for controlling the knees, being placed close to those for actuating the dogs reversing the travel of the carriage, &c., the whole apparatus may be controlled from one and the same point by a single operator.

I do not in this application claim, broadly, the telescopic pipes for conveying fluid under pressure to a saw-mill carriage and to the mechanism thereon, as that constitutes the subject-matter of another application, filed by me November 26, 1884, Serial No. 148,932.

It is obvious that the cylinder may be cast with or attached to the knee and made to travel therewith, the piston-rod in that case extending through the rear end of the cylinder, and being rigidly attached to a bracket or support. Such arrangement would, however, necessitate the use of flexible or telescopic pipes from the chest I to the cylinder, for which reason the plan shown and described is preferred.

Having thus described my invention, what I claim is—

1. In combination with a saw-mill head-block, a sliding knee mounted thereon, a stationary fluid-cylinder, a piston movable within said cylinder and connected by a piston-rod to the sliding knee, a valve adapted to ad-

mit fluid to one end of the cylinder and permit the escape of fluid from the other alternately in reverse directions, whereby the fluid-pressure is caused to move the knee both forward and backward, and a mechanically-operated feed mechanism independent of the motor, for controlling the movements of the knee, substantially as set forth.

2. In combination with a saw-mill head-block, a sliding knee mounted thereon and provided with a projecting arm or lug, a screw journaled in the head-block and passing through a threaded opening in said arm or lug, a stationary fluid-cylinder, a piston within said cylinder, and a rod connecting the piston and the sliding knee, substantially as described and shown.

3. In combination with a saw-mill carriage, a head-block mounted thereon, a sliding knee mounted upon the head-block, a fluid-cylinder, and a piston connected with the sliding knee, substantially as described, a fixed rotary screw passing through a threaded opening in a lug on the sliding knee, and a valve for controlling the supply and exhaust of fluid to and from the cylinder, all substantially as described and shown.

4. The combination of a series of head-blocks, a sliding knee mounted upon said head-blocks, a stationary cylinder for each knee, a piston within each cylinder connected with its sliding knee, a screw journaled in each head-block and passing through a threaded opening in a lug or arm of the sliding knee thereon, a bevel-pinion secured upon each screw, a set-shaft extending past all the screws, and provided with a bevel-pinion to mesh with the pinion of each screw, and mechanism, substantially such as described and shown, for imparting rotary motion to the pinion-shaft, whereby all the screws may be rotated synchronously and equally and the knees caused to move in unison.

5. In combination with a series of head-blocks and knees, each provided with a fluid-cylinder and piston for advancing and receding said knees, and with a controlling-screw for each knee and a common shaft for rotating all the screws, a series of valves for controlling the induction and eduction of fluid to and from the respective cylinders, a connecting-rod extending from one valve to another throughout the series, and a lever connected with said rod, whereby all the valves may be moved simultaneously, and a simultaneous movement of the knees be secured.

THEODORE S. WILKIN.

Witnesses:

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