(No Model.)

3 Sheets—Sheet 1.

C. W. METCALFE.

SAW MILL SET WORKS.

No. 324,576. Patented Aug. 18, 1885.

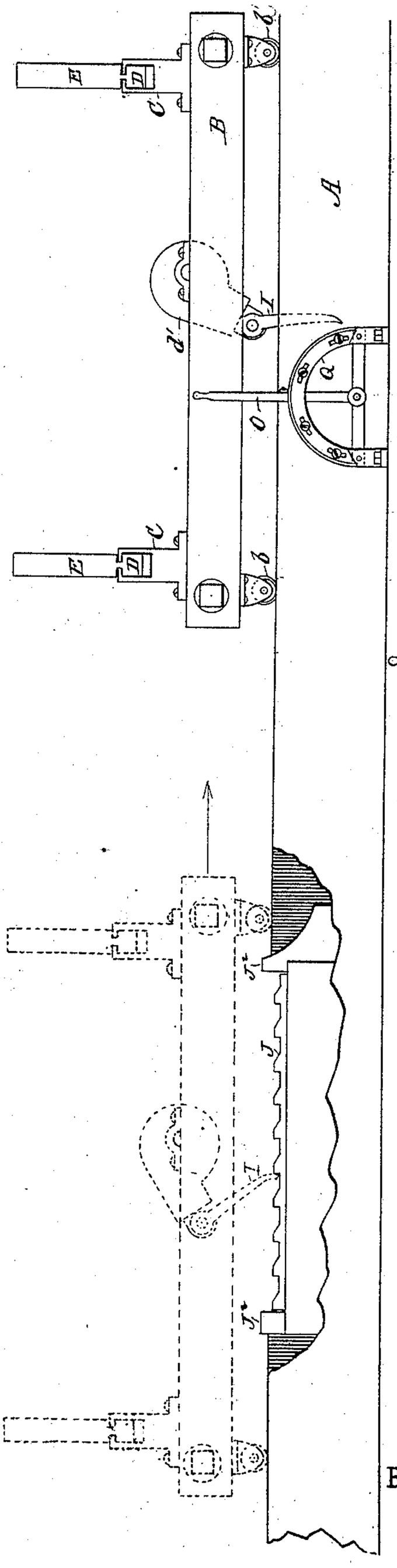

Fig. 1.

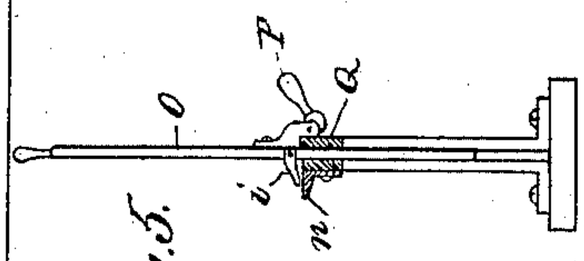

Fig. 5.

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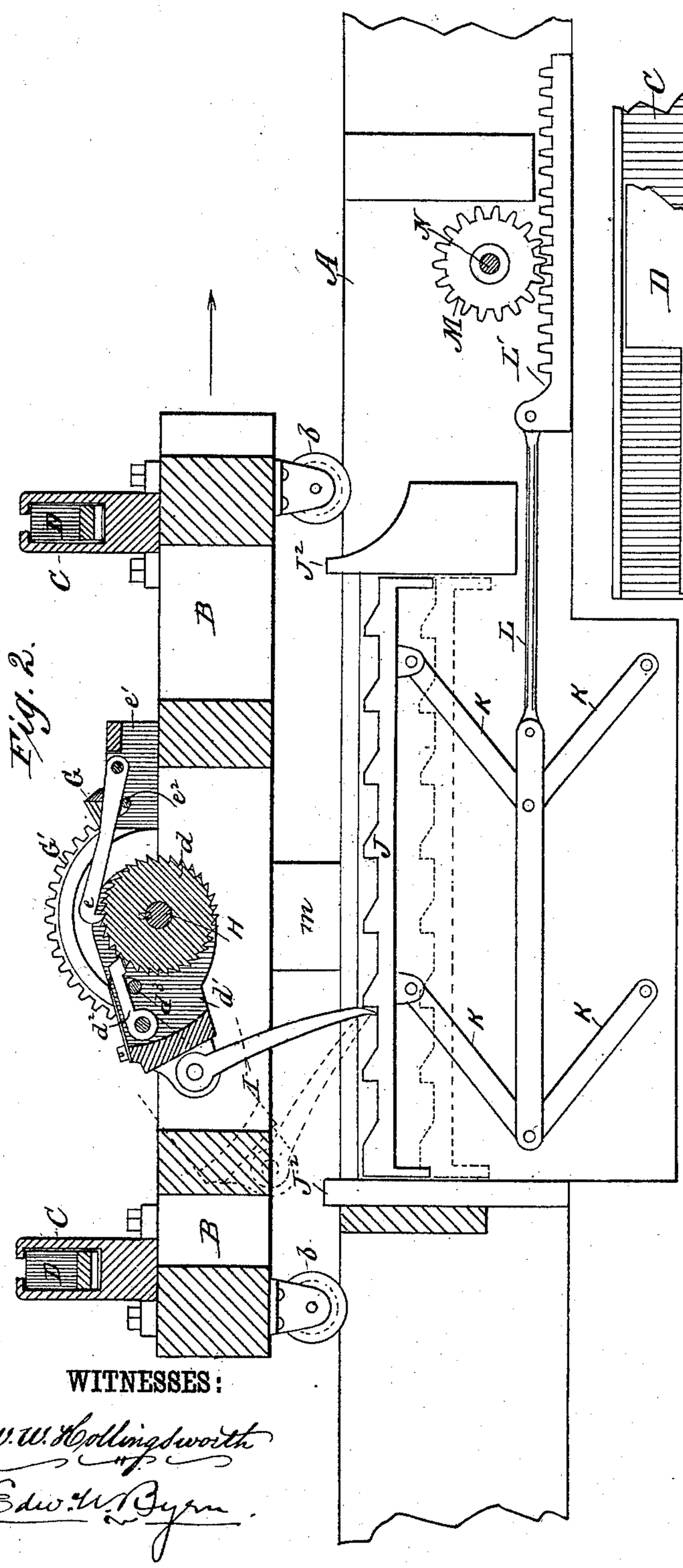

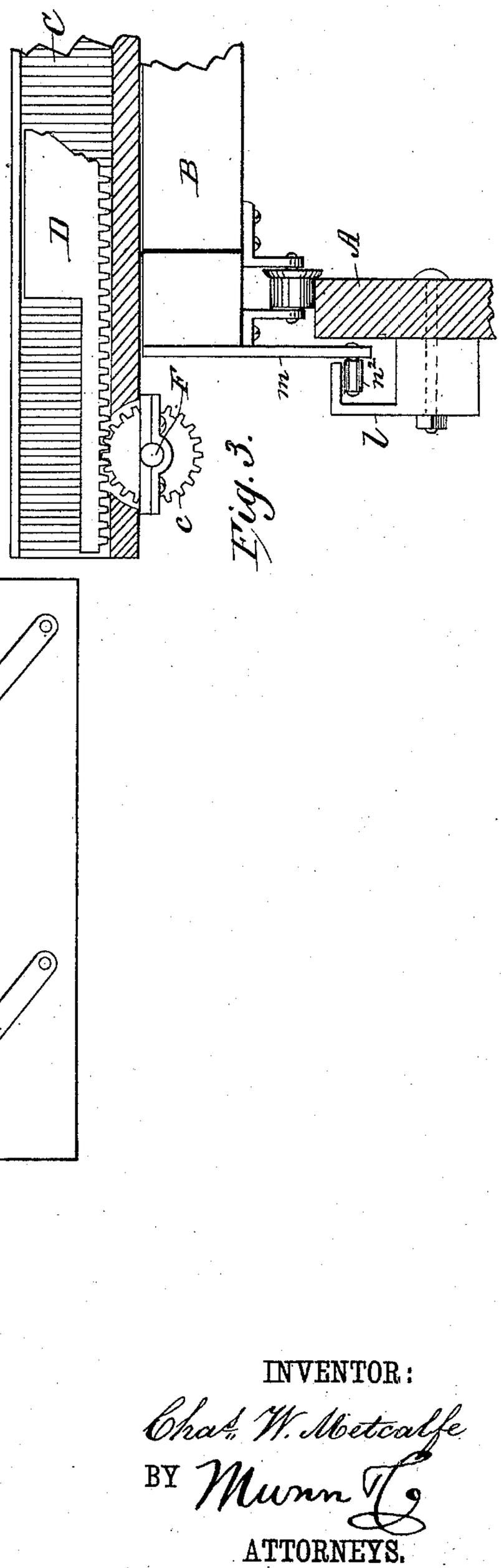

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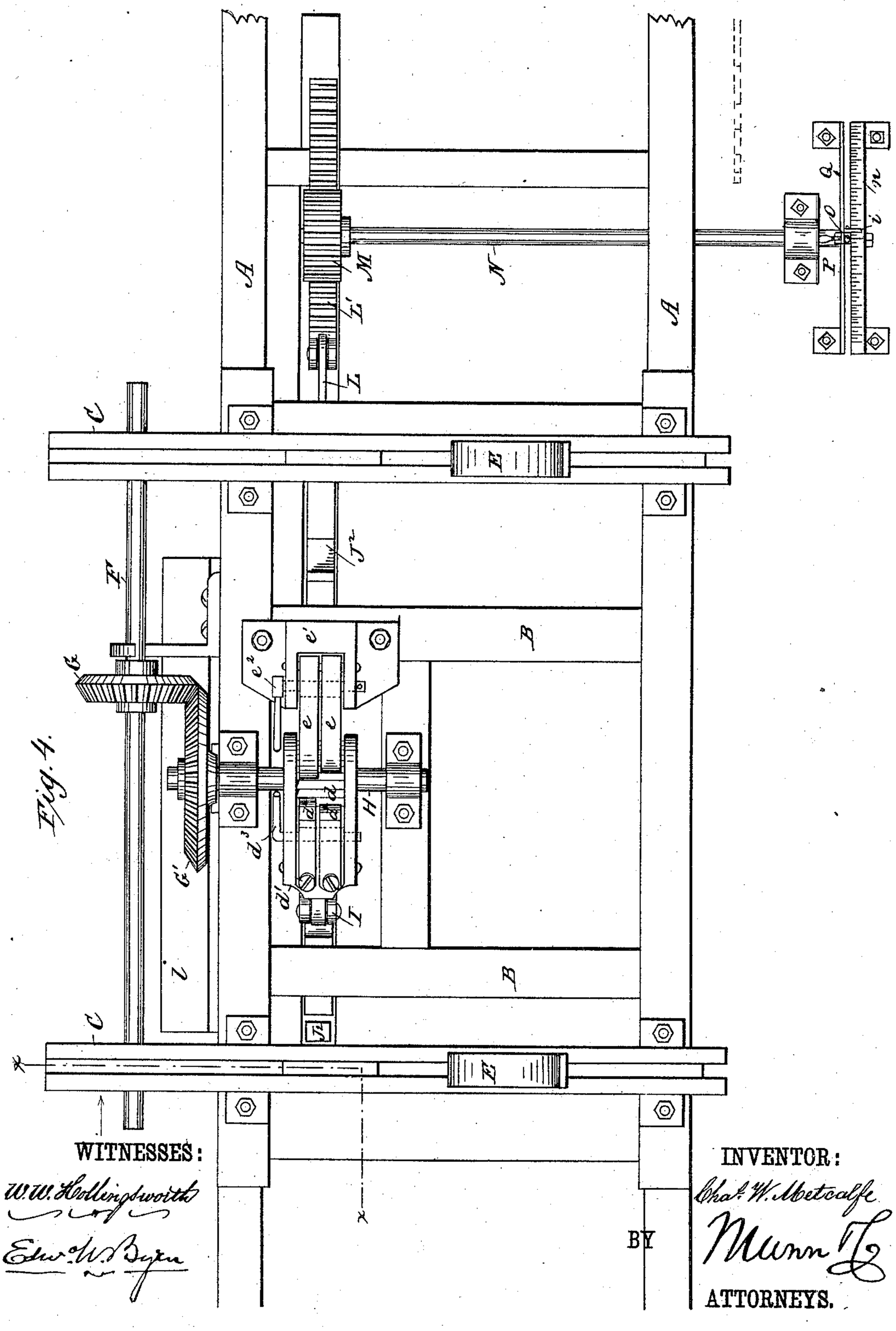

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UNITED STATES PATENT OFFICE.

CHARLES W. METCALFE, OF HOPKINSVILLE, KENTUCKY.

SAW-MILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 324,576, dated August 18, 1885.

Application filed February 16, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. METCALFE, a citizen of the United States, residing at Hopkinsville, in the county of Christian and State of Kentucky, have invented certain new and useful Improvements in Saw-Mill Set-Works, of which the following is a description.

Figure 1 is a side elevation, partly in section, and showing in dotted lines the position of the carriage when about to start on its forward movement. Fig. 2 is a vertical longitudinal sectional view on a larger scale, taken through the carriage and its ratchet mechanism when standing above the toothed abutment-bar. Fig. 3 is a vertical section through the line *x x* of Fig. 4, looking in the direction of the arrow. Fig. 4 is a plan view of the entire device, and Fig. 5 is a vertical section through the arch-bar carrying the adjusting-lever.

My invention relates to saw-mill set-works of that class in which the movement of the knees of the head-blocks is automatically effected to set the log up to the saw for each slice sawed off, and in which this automatic set is effected by the progressive movement of the carriage, on which a ratchet mechanism is carried and made to strike against a relatively stationary abutment on the track, which by deflecting the ratchet mechanism causes an intermittent motion to a shaft and gears, which transmits the motion to the head-block knees and advances the log toward the saw.

Saw-mill set-works operating on the foregoing general principle have heretofore been employed, but are more or less complicated and subject to certain defects, which it is the object of my invention to remedy.

In the drawings, A A represent the track-rails and B the carriage of a saw-mill, which carriage is supported upon the track by means of wheels or trucks *b b*. Transversely on this carriage are arranged the hollow head-blocks C C, in which are contained rack-bars D D, connected to the knees E E. These rack-bars engage on the under side with pinions *c c*, Fig. 3, on longitudinal shaft F, Fig. 6, which bears a bevel gear-wheel, G, meshing with another, G′, on a shaft, H, at right angles to the shaft F. This shaft H carries ratchet mechanism, which as the carriage moves on its track strikes an abutment on the track and gives a set to the knees of the head-blocks. As so far described the construction embodies no novelty.

The ratchet mechanism consists of a ratchet-wheel, *d*, Figs. 2 and 4, rigid on shaft H, a frame, *d′*, hung upon said shaft and carrying spring-pawls d^2 d^2, and a jointed thrust-bar, I, and hook-shaped detents *e e*, which are jointed to a stationary plate, *e′*, on the carriage. Both the pawls d^2 and detents *e* are provided with lift-cranks d^3 and e^2, respectively, which have flattened axial parts, that permit the said detents or pawls to be dropped to contact with the ratchet-wheel or removed therefrom, according as said lift-cranks are turned to one position or the other. When the frame *d′*, with pawls d^2, rises, the latter engage the ratchet-wheel and turn the shaft H and connecting mechanism, which sets up the head-block knees. When the frame *d′* falls, the pawls d^2 pass freely over the ratchet-wheel for a new hold, and the hook-shaped detents *e* catch and hold the teeth of the ratchet-wheel to keep it from turning back again.

Now, to give the necessary movement to the ratchet mechanism to set the knees, the thrust-bar I is made at the first part of the forward movement of the carriage to strike against a relative stationary ratchet-bar, J, Figs. 1 and 2, arranged longitudinally in the track and in the same plane with the thrust-bar I, which ratchet-bar acts passively to thrust the bar I upward with the pawl-frame as the carriage moves forward, the said thrust-bar, after passing over the vertical line in its thrust action, then trailing after the carriage, and after passing over the end of ratchet-bar J dropping to a pendent position, as shown on the right hand of Fig. 1. On the return of the carriage this thrust bar drags backward over the ratchet-bar, ready to exert its thrust again on the ratchet-frame of the setting mechanism as soon as the carriage moves forward again.

The construction and arrangement of this abutment ratchet-bar J constitute an important part of my invention. Instead of a single tooth, incline, or projection on the track, against which the ratchet mechanism of the

carriage strikes to effect the setting, as heretofore, I make this abutment in the shape of an elongated ratchet-bar having a series of teeth. The object of this is as follows: In running the carriage back after sawing a slice, the distance to which it is run back depends upon the length of the log being sawed. A short log requires the carriage to be run back only a short distance, and a long log a longer distance, and if there were but a single tooth, abutment, or projection against which the ratchet mechanism on the carriage is arranged to strike, it is obvious that this abutment, tooth, or projection would have to be at a point at the extreme limit of the rear movement of the carriage in order always to effect the proper engagement with said ratchet devices on the carriage to produce the automatic setting, and then in sawing short logs the carriage would have to be run back the full limit of its movement to effect said automatic setting, which would carry the short log a long distance from the saw, and would involve much unnecessary wear and tear on the machinery, and would also waste a great deal of time. By making this passive abutment, against which the thrust-bar acts, in the form of a long ratchet-bar, whose length would be about equal to the variation in the length of logs, it will be seen that the short log can be returned to the saw immediately after its end has passed it, and also for long logs the carriage can be run back its full distance without in either case affecting the engagement or co-operation of the automatic setting mechanism with the abutment-bar J, for it will be seen that it matters not where the carriage stops, so long as the thrust-bar I is over the ratcheted abutment, the forward movement of the carriage always gives the same thrust and a uniform set to the knees of the head-blocks.

I have spoken of the ratchet-bar J as a passive abutment against which the thrust-bar of the carriage strikes in the progressive movement of the latter. This is true for normal automatic setting. In some cases, however, it is desirable to set the head-blocks by hand, and for this purpose I give to the passive abutment-bar (when the thrust-bar I of the carriage is over it) a vertical up and down movement, which vibrates the ratchet mechanism and sets the knees at the will of the operator. In this case the ratchet-bar changes its function from a passive abutment to an active setting device. For working it in this capacity the said ratchet-bar is arranged in vertical guides J^2 J^2, Figs. 1 and 2, and is mounted upon toggle-arms K K, to the middle joint of which is attached a connecting-bar, L, and rack-bar L′, which latter meshes with a pinion, M, on a transverse shaft, N, Figs. 2 and 4, arranged in bearings in the bed of the saw-mill, and provided with a hand-lever, O. By oscillating this hand-lever when the thrust-bar is over the ratchet-bar J, it will be seen that the latter is reciprocated vertically and the desired set given to the log by the operator at will.

As the thrust-bar in automatic setting moves against and over the ratchet-bar J, it will be obvious that the height at which the ratchet-bar is held will determine the thrust of bar I and the extent of set given to the log. For varying and adjusting this to any desired amount the hand-lever O is provided with a locking-cam, P, adapted (see Fig. 5) to bind against the side of a curved bar, Q, and hold the lever and also the ratchet-bar J to any desired position, while an index-finger, *i*, registers with graduations on an arched scale, *n*, to indicate the amount of set. When the log is on the head-blocks, it will be seen that its weight is on one side of the carriage, and this makes the other side light and liable to rise up from the thrust of bar I. To obviate this I arrange on the side of one of the rails, or on the track-bed, an overhanging lip, *l*, Figs. 3 and 4, and on the carriage I fix a pendent bar, *m*, with an anti-friction roller, n^2, at its lower end, which takes under the overhanging lip when the carriage is over the thrust-bar, and prevents the light side of the carriage from tipping up from the combined influence of the weight of the log and the thrust of the automatic setting devices.

In making use of my invention I do not limit myself to any particular form or location of the ratchet mechanism and pawls, nor to any particular form of gearing for connecting it to the head-block knees.

Having thus described my invention, what I claim as new is—

1. The combination, with the head-block knees in a saw-carriage and automatic setting mechanism for the same, of an abutment-bar arranged relatively stationary to the carriage, and engaging with the setting mechanism with a passive resistance for automatic setting when the carriage is in motion, and provided with mechanism for actively working it to set the head-blocks at will when the carriage is stationary, substantially as set forth.

2. The combination, in a saw-mill, with the traveling carriage, its head-block knees, and automatic ratchet mechanism for setting the same, of a pivoted thrust-bar and an elongated abutment-bar made relatively stationary to the carriage and thrust-bar, and arranged longitudinally in the path of the latter, and having a series of teeth or notches for engagement with and automatic operation of the thrust-bar and ratchet mechanism, whereby the travel of the carriage may be reversed at different points to suit the varying lengths of logs without interfering with the automatic setting mechanism, substantially as described.

3. The combination, with the saw-carriage and the ratchet mechanism located thereon, of a vertically-adjustable abutment-bar, J, having a series of teeth for engagement with the thrust-bar and arranged in the path of the

ratchet mechanism, as and for the purpose described.

4. The combination, with the ratchet mechanism, the pendent thrust-bar, and the adjustable abutment-bar J, moving in guides, of the toggle-arms K, pivoted to the lower side of the abutment-bar and pivotally connected to and operated by the rod L, and the rack-bar L′, connecting the said rod to the pinion M, shaft N, and lever O, substantially as described.

CHARLES W. METCALFE.

Witnesses:

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R. C. TEVIS.