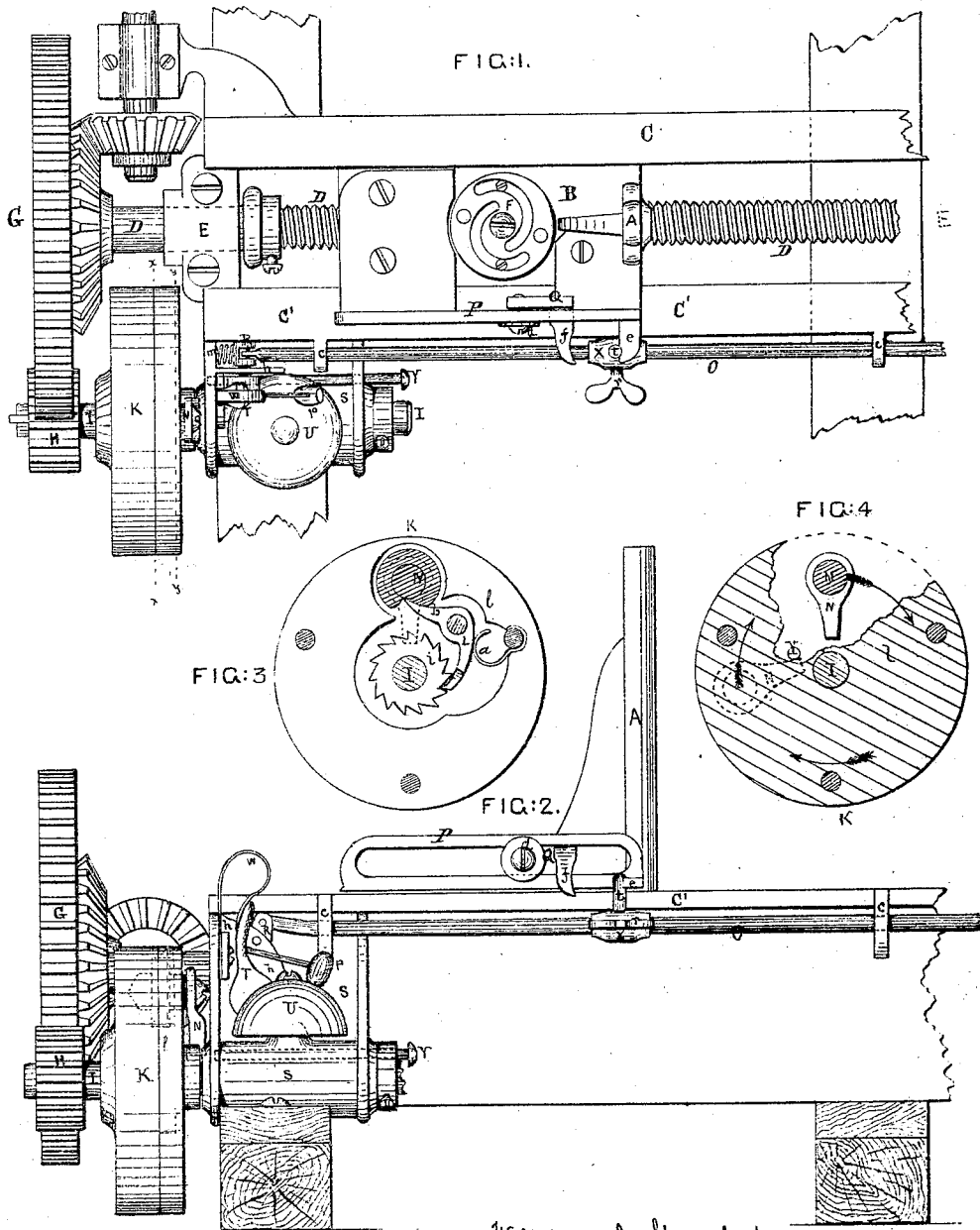


W. A. GREENLEAF

Impd. Head-Block for Saw-Mill.

No. 118,801.

Patented Sep. 12, 1871.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM A. GREENLEAF, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF,
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IMPROVEMENT IN HEAD-BLOCKS FOR SAW-MILLS.

Specification forming part of Letters Patent No. 118,801, dated September 12, 1871.

To all whom it may concern:

Be it known that I, WILLIAM A. GREENLEAF, of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Mechanism for Adjusting Automatically the Head-Blocks of Saw-Mills, of which the following is a specification:

The first part of my invention relates to the combination of an adjustable slide and stop, arranged upon a movable rod, with a gauge-slide and pin upon the knee or carriage of the head-block of a saw-mill, in such manner as that the rod may be moved by the traverse of the carriage sufficiently to cause it, by the operation of intermediate devices, to release a pawl engaging a ratchet-wheel, and serving thereby to connect the driving-power of the mill with the gearing which moves the carriage to and fro; the object of this part of my invention being to obtain an automatic adjustment of the knee after each cut, so as to produce continuously and automatically planks of equal width, said width being determined and fixed, by means of the adjustable gauge-slide, as the operator may desire. The second part of my invention relates to the combination of one or more levers with the movable rod actuated by the knee or carriage of the head-block, as described, and one or more pins arranged to trip a cam on the driving-pulley, and thereby lift a pawl engaging a ratchet-wheel inclosed in said pulley, to disengage said pawl and thus allow the pulley to revolve loosely upon its axis; the object of this part of my invention being to disconnect automatically the gearing moving the carriage to and fro from the driving-wheel, so as to promptly arrest the movement of the carriage at the desired point.

Figure 1 is a plan or top view of my improved head-block and its automatic adjusting mechanism; Fig. 2, a side elevation thereof. Fig. 3 is a section of the pulley or band-wheel, for communicating motion to the gearing operating the knee of the head-block, taken in the line *x x* of Fig. 1, illustrating the ratchet-wheel inclosed therein and secured to the shaft upon which it revolves. Fig. 4 is a section, partly broken out, in line *y y* of Fig. 2, illustrating the manner of operating the pawl engaging the inclosed ratchet-wheel.

A is the knee of my improved head-block. It is constructed of any approved form and secured,

as usual, to a carriage, B, moving in ways formed in the two parallel bars, rails, or beams, C C'. D is a revolving shaft, supported, between the rails C C', parallel thereto, in head-blocks E E, at each end thereof. It is threaded between its bearings at E E so as to form an endless screw. F is a circular cam-plate on the carriage B, provided with eccentric curves, through which project the ends of levers which are with heads or jaws grooved to embrace and fit the threads of the screw-shaft D when closed thereon. By turning the plate F in the proper direction the jaws of the levers close on the screw, and by a reverse movement they are released therefrom. When closed, a revolution of the screw-shaft D, in one direction or the other, will move the carriage B back or forth as desired. G is a toothed wheel secured to the end of the screw-shaft D and gearing into a smaller cog-wheel, H, or an arbor, I, upon which is placed the band-wheel or pulley K, to which the motive-power is applied in any suitable manner. This arbor I is supported in a hanger or bracket, S, projecting from the rail C', as illustrated in Fig. 1, and supported in like manner therewith. The pulley K turns loosely upon the arbor I, but it is divided at right angles to its axis, and recessed centrally by cutting away suitable spaces in the face of each division to inclose a ratchet-wheel, *i*, (see Fig. 3,) secured to the arbor I, and a pawl, L, pivoted to the inner division *l*, so as to engage said wheel. Hence, when the two divisions of the pulley are brought together the pulley incloses and conceals the ratchet-wheel *i* of the arbor I, and when the pawl is disengaged from the ratchet-wheel the latter will revolve loosely upon the arbor independently thereof; but when the pawl engages the ratchet it will, in its revolution, carry said wheel and arbor with it, and thus, by means of the cog-wheels H and G, cause the screw D to revolve and to move, if desired, the carriage B and its knee A. An automatic engagement of the pawl L with the ratchet-wheel K is maintained by a spring, *a*, properly disposed and arranged to insure this result. The pawl L is provided with a short arm, *b*, extending beyond its pivot-axis, to be operated upon by a cam, M, turning in a recess formed in the face of the inner division of the pulley, near its periphery, as illustrated in Fig. 3. The pivot or axis upon which this cam turns and to which it is firmly secured extends

out through the pivot-aperture so as to project slightly beyond its outer face, and carries an arm or lever, N, (see Figs. 1 and 2,) which is firmly secured thereto. By moving this lever N the cam M may be turned so as to bear upon the arm *b* of the pawl sufficiently to trip its opposite end and disengage it from the ratchet. The ratchet *i*, when thus disengaged, will remain so until, by a reverse movement of the cam-lever N, the pressure of the cam M upon the pawl L is removed, allowing the spring *a* to force the pawl into an engagement with the ratchet-wheel. Thus the connection or engagement of the pulley K with the arbor I and with the gearing driving the screw D is made dependent upon the position of the lever N. P is a gauge-plate secured on edge upon one edge of the carriage B, parallel thereto. It is slotted longitudinally, as shown in Fig. 2, to receive a slide, Q, moving freely therein, but secured at pleasure by a set-screw, *d*. At the forward end of the plate a stop or pin, *e*, projects out beyond the rail C', forming one of the ways in which the carriage B moves, and a second stop or pin, *f*, projects in like manner from the gauge-slide Q. A scale of inches and fractions is marked upon the gauge-plate P, so that the distance between the two stop-pins *e* and *f* may be accurately determined in adjusting the gauge-slide Q. O is a rod, supported parallel to the rail C, in brackets *c c* projecting from said rail. This rod has free longitudinal play in the brackets, and at its forward end is pivoted to the arm of a catch-lever or tumbler, R, pivoted upon one side of a plate or bracket, *h*, which also serves as a support for a lever, J, on the opposite side thereof, turning upon a central pivot, which projects through the supporting-plate *h*, so as to be reached by the lower end of the catch-lever or tumbler R. The projecting end of the pivot is so notched as that when turned into a proper position the end of the tumbler or catch-lever R may engage therewith. A spring, *m*, bears against the upper end of the tumbler or catch-lever and operates to facilitate its disengagement from the pivot. A spring, W, bears against the upper end of the lever T to force it outward, and the lower end of said lever engages a pin, Y, placed in the bracket L supporting the arbor I, so as to lie parallel to said arbor in a plane coincident with that in which the lever T swings. The pin Y has sufficient longitudinal play to permit its forward end to be pushed out far enough to come into contact with the arm N of the cam M, as illustrated in Figs. 2 and 4, or be withdrawn to avoid such contact. X is a slide moving freely upon the rod O, but provided with a set-screw, *r*, by means whereof it may be rigidly secured to said rod. An arm or pin, *t*, projects from said slide far enough to come into contact with the pins *e* and *f* projecting from the gauge-plate P of the carriage and its gauge-slide Q.

The operation of my apparatus is as follows: The log to be sawed is properly secured to the head-block and against the knee A and the gauge-slide Q moved and secured at a distance from the stop *e* equal to the thickness required

in the plank or timber to be sawn. The catch-lever R is then set upon the notch in the axis of the lever T, which is thrown back for the purpose, compressing the spring W and withdrawing the pin Y from possibility of contact with the cam-lever N, as illustrated in Fig. 1. The stop-slide X on the rod O is then moved against the stop *e* of the gauge-plate P. The several parts of the apparatus being thus set, the cam-lever N on the pulley K is turned inward whenever it is desired to move the log sidewise to make a new cut, so as to permit the spring *a* to force the pawl L in against the ratchet-wheel *i* and engage the same. The train of gearing H G will thus be set in motion to turn the screw D, whereby the carriage B will be moved forward in the direction indicated by the arrow, Fig. 1. So soon, however, as it has moved the proper distance, (a distance equal to the width of the plank,) as indicated by the scale on the gauge-plate, the gauge-stop *f* will strike the pin *t* of the stop-slide X, which is secured to the rod O by the set-screw *r*, and will carry forward the rod O sufficiently to withdraw the end of the catch-lever R from its seat in the axis of the lever T. The lever T, thus released, will be thrown forward by the resilient power of the spring W, and its lower end, swinging back, will carry with it the pin Y and cause its outer end to project so as to strike and turn the cam-lever N and cam M. This movement of the cam M will disengage the pawl from the ratchet-wheel I and thus leave the pulley K free to revolve independently on the arbor I, so that the revolution of the wheels H G, actuating the screw D, and consequently the motion of the carriage B, will cease. These various movements are so quickly made as to be practically instantaneous. By attaching a hammer, *p*, to the upper end of the lever T, and placing a bell, U, within its reach, the movement of the lever will strike the bell and thus indicate the fact that the movement of the log is completed. To insure a more prompt action of the cam-lever N in liberating the pulley two or more pins may be arranged to project simultaneously at various points in the circle described by said lever in the revolutions of the pulley K.

Although I have described a movement of the carriage B as obtained by means of a screw-shaft, D, I contemplate the use of any form of devices for moving the same, my invention relating simply to an improved method of arresting the movement by disconnecting the driving-pulley from the gearing, of whatever nature, by means whereof the movement is produced. Although I prefer to employ the interposed trip-lever T to move the pin Y, I contemplate so placing the pin Y, in combination with a suitable spring under the lower end of the catch-lever R, as that said pin shall be thrown out by the direct action of said lever, thus dispensing entirely with the auxiliary trip-lever T.

I claim as my invention—

1. An adjustable slide, X, and stop-pin T, moving upon and secured to a movable rod, O, in combination with a gauge-slide, Q, upon the knee A or carriage B, for the purpose of moving said

rod by the traverse of the carriage, substantially as and for the purpose herein set forth.

2. In combination with the subject-matter of said first claim, one or more levers, R T, arranged to operate one or more pins, Y, and thereby move a cam-lever, N, on the driving-pulley K, for the purpose of liberating the said pulley from the gearing operating the carriage B and arrest the movement of the carriage, all substantially as herein described.

3. In combination with the lever T, arranged and operated substantially as herein described, a hammer, P, and bell, U, to announce the movements of said lever T, substantially as herein set forth.

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Witnesses:

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