

R. DURKEE.

Set-Works for Saw-Mills.

No. 157,679.

Patented Dec. 15, 1874.

Fig. 1

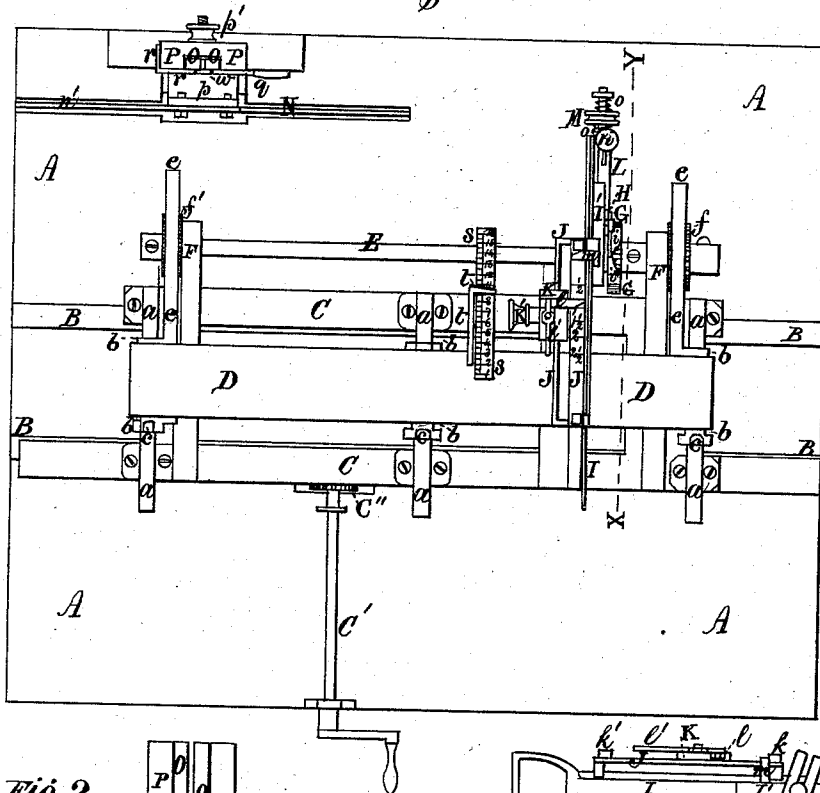


Fig. 2

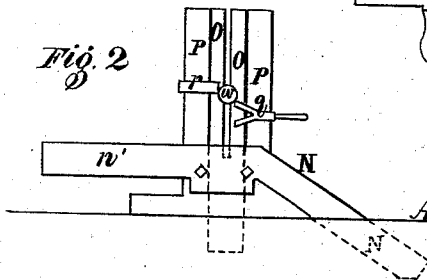


Fig. 3

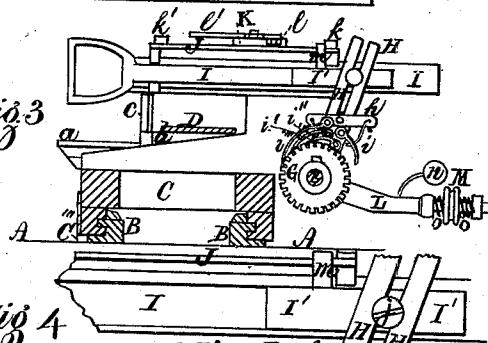


Fig. 4

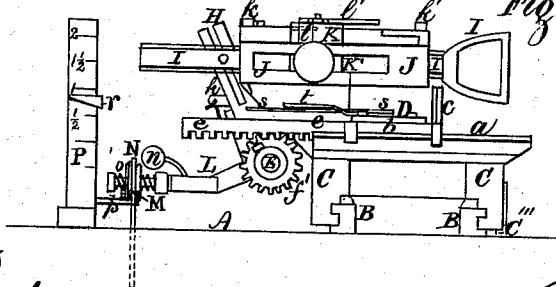
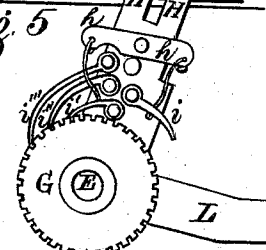


Fig. 5



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RAY DURKEE, OF STOCKBRIDGE, VERMONT.

IMPROVEMENT IN SET-WORKS FOR SAW-MILLS.

Specification forming part of Letters Patent No. **157,679**, dated December 15, 1874; application filed July 7, 1874.

To all whom it may concern:

Be it known that I, RAY DURKEE, of Stockbridge, in the county of Windsor and State of Vermont, have invented certain Improvements in Set-Works for Saw-Mill, of which the following is a specification:

Figure 1 of the accompanying drawings is a top view of a saw-mill with my improved set-works applied. Fig. 2 is a side view of a portion of my invention. Fig. 3 is a transverse vertical section, taken in line X Y. Fig. 4 is an end view of a saw-mill with my improvements applied. Fig. 5 is a side view of a part in detail of my invention.

In the drawings, A represents the floor, B the ways, and C the longitudinal traveling frame or carriage, of a saw-mill, arranged as usual, and provided with a saw and usual necessary operating mechanism. (Not shown in the drawings, as they are not comprised in my improvements.) C' is a crank-shaft, provided with a cog-wheel, C'', meshing with a cog-rail, C''', on bottom of carriage C, to carry the latter forward and back. At the ends of the carriage C, and at proper distances between, are affixed on the top transverse tracks or rails a, on which are arranged to travel head-plates b, supporting at the front upright log-heads c, and on the top connected by a longitudinal beam, plate, or head-carriage, D. Formed on or connected to the inside of the end head-plates b, or attached to the bottom of the carriage D, or otherwise arranged to connect with and project laterally from it on one side, are cog-bars e, that mesh with cog-wheels f f', located one at each end of a longitudinal shaft, E, supported in beams F, extending laterally from the carriage C, or otherwise supported as desired, and provided near one end with a cog-wheel, G, at one side of which cog-wheel G is located, to turn on the shaft E, an upright arm, H, to whose side is pivoted centrally a horizontal arm, h, connected at each end by a wire or rod with a pawl, i, and a pawl, i', to lower and engage the pawl on one side with and raise and disengage the pawl on the other side from the cog-wheel G. The pawls i i' are pivoted to the arm H, and are properly shaped and of sufficient lengths to engage with and operate the wheel G, as desired. Pivoted to the arm

H, above the pawl i', are two pawls, i'' i''' , one above, and of greater length than the other, and both properly formed and of sufficient lengths to connect, when desired, with the wheel G beyond the shortest pawl i', so that in case one pawl fails to catch and move the wheel, one of the other pawls will be sure to engage with and carry the wheel the required distance, and thereby prevent any unevenness in the sawing of the board, which unevenness often results from the slipping by of the dog where used singly, as ordinarily. The wheel G is held by a screw, or otherwise to, so as to carry, the shaft E and its wheels f f', which carry the bars e, and, consequently, the head-carriage D and log-heads c, back and forth laterally, as desired. The arm H is bifurcated or slotted in its upper part to straddle and engage with a stud, j, connected with a bar, I', formed on or attached to a plate or slide, I, arranged to slide on a bar or frame, J, suitably formed to receive and allow of its back-and-forth movement, and gaged on the top or other suitable position in inches and fractions thereof, or marked as desired, and provided at each end with stop-blocks k k' and slotted in the top and side, or otherwise arranged, to receive and allow the forward and backward movement of an adjustable gage-block, K, formed to slide on the bar or frame J, to which it is held or released by a set-screw, K', and formed on the top to receive a stop-piece, l, pivoted and provided with a bottom spring to rise and allow the free passage of an index, m, connected with the sliding bar or plate, and extending up and over the top of the frame J, or to be lowered and held in place by a pivoted holder, l', or otherwise, to stop the index m at any point to which the gage or stop-piece l may have been set to regulate the distance which the log shall be carried to cut the desired thickness of board or plank.

The plate or slide I is formed at one end with a handle for operating it by hand, when desired so to do; or, if preferred, instead of the plate or slide I, a rod may be connected with the plate or bar I' to operate the same.

Connected with or formed to project from the lower portion of the arm H in a lateral direction to the carriage is an arm, L, having a weight, n, or otherwise arranged to carry

back the arm H, and to bear down a grooved or other suitable wheel, M, located to turn on the end of the arm L, and provided on either side with a coiled spring, *o*, or otherwise arranged, as preferred, to regulate its position on a track or rail, N, whose rear portion inclines downward from a forward horizontal portion, *n'*, connected by a plate, *p*, or otherwise, with the bottom or lower portion of upright supports or frame, O, bifurcated or slotted to straddle, so as to be raised and lowered on or be held by a stud, *w*, extending through an upright standard, P, formed to receive and allow the up-and-down adjustment of the support O. The said stud *w* has its stem formed with screw-threads to receive on the opposite side of the standard P a thumb-screw, *p'*, by which the stud *w* is released to allow the elevation or depression of the support O to adjust the track or rail N, or is held to sustain the frame O, and, consequently, the track or rail N in position; or the track or rail N may be arranged in any other way that may be preferred to be adjusted and held in the position required. A suitable handle, *q*, is attached to (for the purpose of adjusting) the frame or support O. Connected with the frame O, so as to be raised and lowered by it, is an index, *r*, bent to extend around a gaged end of the frame, or otherwise formed to be adjusted over a gage, marked in inches and fractions thereof, or, as desired, on the front end or other desired portion of the standard P, which standard is flanged at the bottom or otherwise formed or arranged to be securely held.

The floor A is formed with suitable openings to allow the rise and fall of the frame O and track N.

Attached to a block or standard extending upward from the top of the carriage C, or otherwise supported on the carriage C, so as to extend transversely above the plate or frame D, and partly over the top over the carriage C at the other end, is a gage-plate, *s*, marked in integrals and fractions, to denote the number of boards or planks, and verify their thickness, as sawed from the log, and over which gage *s* an index-bar, *t*, suitably formed and connected with the frame or carriage D, is arranged to travel as the said carriage is carried laterally forward or backward.

The operation of my invention is as follows: When desired to operate the works to adjust a log automatically, the log being placed and properly secured by any ordinary method on the ways *a* against the heads *c*, and the frame or support O being raised so that its index *r* is at the mark of the gage on the standard P, indicating the thickness to which it is desired to saw the boards or planks, and the set-screw *p'* turned to hold the frame O, the track or rail N is thereby raised to such an elevation that, when the carriage C is advanced, the wheel M at the proper time reaches and travels up the inclined portion of the track or rail, thereby elevating the arm L, and, conse-

quently, tipping forward the arm H, and causing the pawls *i' i'' i'''*, which have been adjusted by means of the pivoted arm *h*, to engage, singly or collectively, with and turn forward the wheel G, and partially rotate the shaft E and its wheels *f f'* meshing with the cog-bars *e*, so as to advance laterally the carriage D and log-heads *c*, whose plates *b* travel on the ways *a* a certain distance, determined by the height to which the inclined way N is raised and set, the wheel M ceasing to operate the arm L and its connections as soon as the horizontal or level portion of the track or rail N is reached.

Thus, if desired to cut boards to the thickness of one inch, the frame O, and, consequently the track or rail N, is raised, so that the index *r* is brought in line with the inch-mark on the gage of the standard P, thus adjusting the inclined track or rail to admit the advance of the wheel M the exact distance required to operate the log-heads to carry the log laterally one inch, the three pawls *i' i'' i'''* serving to insure the required movement of the wheel G to carry the works dependent on its operation the exact distance required, and preventing any unevenness or irregularity in the sawing of the boards that is often liable to occur where the movement of the log is dependent on the operation of a single pawl or dog, as ordinarily. The arm H straddling the stud *j* or otherwise engaging with, so as to carry or be carried by, a sliding index bar or plate, when tipped forward, as above described, advances the sliding bar or plate I and the index *m*, so as to carry and stop the latter against the stop or gage piece *l*, which is set against the inch or other desired line marked on the frame J to indicate the thickness of the board by means of the adjustable gage-block K released or held by the set-screw K'. As each board is sawed the carriage C and wheel M are carried back, and the weight *n* bears down the arm L, which brings the arm H and, consequently, the sliding plate and index *m* back to their original position. The carriage C is again advanced, carrying the wheel up the inclined rail or track N, and the operation repeated to carry the log laterally the required distance, as before.

If desired to operate the works by hand, independently of the automatic action of the wheel M and inclined rail or track N, &c., the gage-piece *l* is set to the desired mark of the gage on the frame or bar J, and the sliding index-plate is advanced by means of the handle of the slide I, or by a rod provided with a suitable handle, or otherwise, until the index *m* is stopped against the gage-piece *l*. The advance of the index-plate carries the stud *j*, so as to bring forward the arm H and engage the pawls *i' i'' i'''* with the wheel G, which rotates the shaft E and wheels *f f'*, and advances the log-heads *c* by means of the cog-bars *e*, as hereinabove described. The stop-block *k* prevents the backward movement of the index *m* beyond the point required. Each advance of the index *m* between the stop-block *k* and gage piece or stop

l carries the log laterally one inch or other distance to which the gage piece or stop *l* is set for the required thickness of the boards. When the log is wholly sawed or the heads *c* advanced laterally to their limit, from which they are prevented going beyond by the stop-block *h'*, the pawl *i* is raised and elevates the pawls *i'' i'''* by means of the arm *h*, which is turned so as to bring the pawl *i* to engage with the wheel *G*, which, by the action of the sliding plate and arm *H*, is reversed in its movement, and rotates the shaft *E* and wheels *f f'* in an opposite direction, to carry back the cog-bars *e*, carriage *D*, and log-head *c*. As the carriage *D* is advanced laterally it carries at each movement the index *t* over the gage-plate *s*, so as to indicate the number and verify the thickness of boards or planks sawed from the log. To allow the free passage of the index *m* without disturbing the gage-block *K*, the holder *l'* is turned so as to release the pressure on the gage-piece *l*, which springs or is raised up to be out of the way of the index *m*. When desired to stop the index *m* the piece *l* is pressed down in position and held therein by turning the holder *l'* over its top, as shown.

By the above description, reference being had to the accompanying drawings, it will be readily seen, without further explanation, that

by my improvements a log may be readily, conveniently, and evenly feed along laterally, to be accurately sawed into boards or planks of any desired uniform thickness.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The combination of graduated standard *P* and adjustable index *r*, with the adjustable slide *O* and rail *N*, substantially as and for the purpose set forth.

2. The combination of sliding bar *I*, guide-frame *J*, adjustable stop-piece *l*, index-pointer *m*, bar *H*, and arm *L*, substantially as and for the purpose set forth.

3. In combination with a frame or bar, *J*, and a sliding index, an adjustable gage-block, *K*, provided with a thumb set-screw, and having a stop or gage piece, *l*, held or released by a pivoted holder, *l'*, substantially as and for the purposes specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RAY DURKEE.

Witnesses:

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SAML. M. BARTON.