

(No Model.)

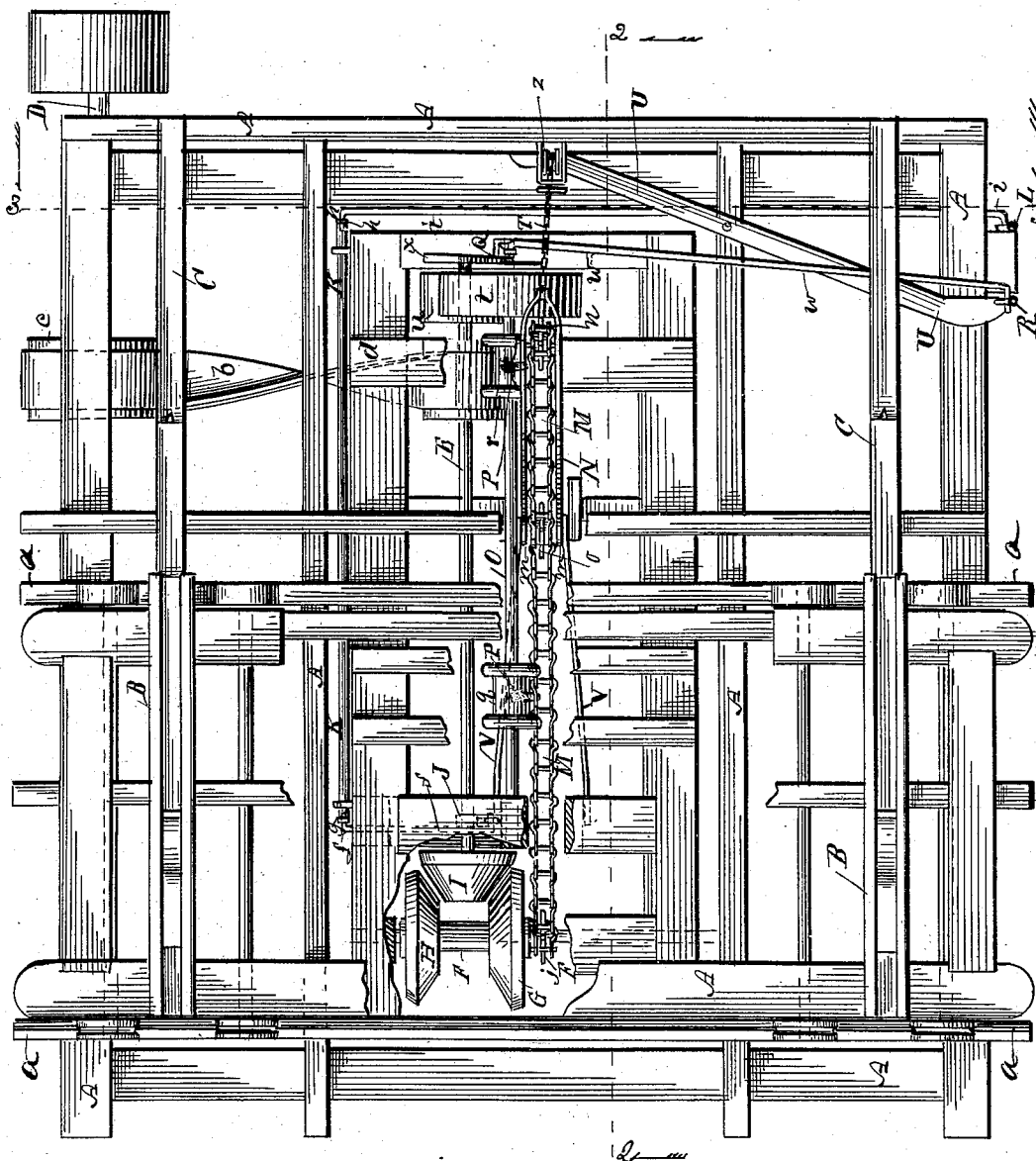
3 Sheets—Sheet 1.

W. A. DURRIN.

LOG TURNER AND LOADER.

No. 389,743.

Patented Sept. 18, 1888.



WITNESSES

Louis L. Clark.

Walter A. Brown.

INVENTOR,

Warren Alonzo Durrin,

By his Attorneys

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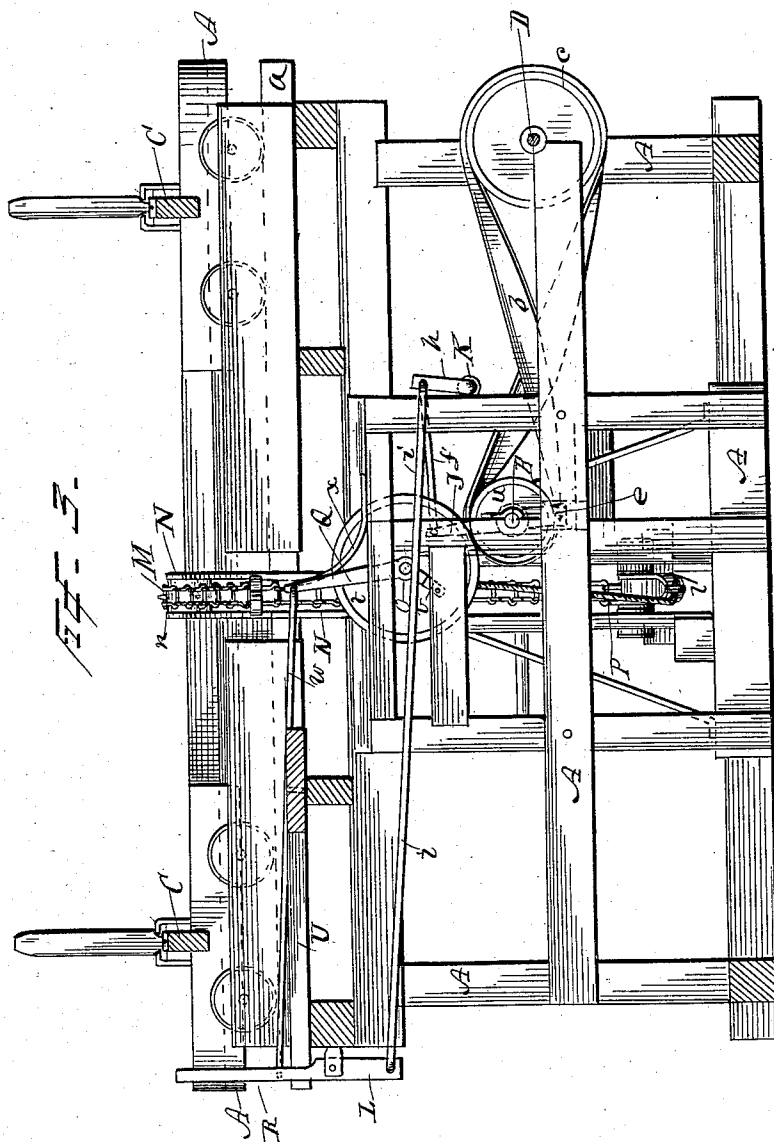
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Louis A. Clark

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INVENTOR,

Warren Alonzo Durrin,

By this Attorney,

Louis F. Leach & Co.

# UNITED STATES PATENT OFFICE.

WARREN ALONZO DURRIN, OF HERSEY, WISCONSIN.

## LOG TURNER AND LOADER.

SPECIFICATION forming part of Letters Patent No. 389,743, dated September 18, 1888.

Application filed December 30, 1887. Serial No. 259,401. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN ALONZO DURRIN, a citizen of the United States, residing at Hersey, in the county of St. Croix and State of Wisconsin, have invented an Improved Log Turner and Loader; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

My invention consists in devices, substantially as herein set forth, for the purpose of turning logs on their ways or skids in either direction, and for loading them upon ways or carriages from other places.

The machine may be applied and used wherever desired; but I shall represent and describe it as applied to the carriage of a saw-mill.

In the accompanying drawings, Figure 1 represents a top view of the devices which compose my machine as applied to the carriage of a saw-mill; Fig. 2, a vertical section of the same in a plane indicated by the line 2 2 of Fig. 1; Fig. 3, a vertical section of the same in a plane indicated by the line 3 3, Fig. 1, looking in the direction indicated by the arrow, Fig. 1.

Like letters designate corresponding parts in all of the figures.

I have represented in the drawings a frame-work, A, adapted to support the organization or devices constituting my invention, and a saw-mill carriage, B, traveling on ways *a a* mounted on the frame-work, as well as a pair of skids, C C, for holding logs previously to placing them on the saw-mill carriage. It is, however, to be understood that the improved log lifting and turning machinery may be applied in any saw-mill or building by mounting the parts on any suitable frame-work therein, either before provided or applied for this special purpose.

In the drawings, D represents a driving-shaft from which the required operative movement is communicated to a working-shaft, E, by a belt, *b*, passing around pulleys *c d* on the respective shafts. As it is required that the constant motion in one direction of the working-shaft E shall be communicated to a third shaft, F, so as to turn the latter shaft either in one direction or in the opposite direction, or not at all, at will, I employ as a simple and

suitable means for these purposes two friction-wheels, G H, on the motion-receiving shaft F, and a friction-wheel, I, on the motion-imparting shaft E, located between the wheels G H, and in an intermediate space between the same of proper width to allow the wheel I to be out of contact with both of the wheels G H, so as not to impart motion to either, or by a lateral movement in either direction, so that it can be brought into contact with either of them, as required. By transferring the contact-wheel I from one to the other of the wheels G H the motion of their shaft F will of course be reversed in direction. I have represented the shaft F as being placed at right angles to the shaft E, which is the preferable arrangement, and consequently the friction-wheels G, H, and I are of bevel form.

For the purpose of shifting the positions of the wheel I, as above specified, the end of the shaft E, on which the said wheel is mounted in a bearing, J, is adapted to have an adjusting movement transverse to the shaft, and this adjusting movement of the bearing is connected with a suitable lever or handle by which the attendant can control the position of the shaft E and the movement of the shaft F. For this purpose I show the following construction: The shaft-bearing J is made in the form of a swinging arm pivoted at its lower end, *e*, to the frame-work or support, and from the upper end of the said bearing a connecting-rod, *f*, extends to an arm, *g*, on a rock-shaft, K, and from another arm, *h*, on the said rock-shaft a connecting-rod, *i*, extends to a hand vibrating lever, L, under the control of the attendant or operator of the machine. The shaft E is thus arranged and adapted to be rotated in either direction for the purpose of moving a log-turning endless chain, M, which forms a principal element of my invention, and the chain is to be moved in one direction or the opposite for the purpose of turning logs either in one direction or the other, and since the chain is not to be moved in either direction, except at the moment of turning a log, and is to be at rest the remainder of the time, the reason is obvious for turning its driving-shaft F in either direction, or not at all, as above set forth. For the purpose of moving the chain a sprocket-wheel, *j*, is secured on the shaft F, around which the chain

M passes. This chain is used in connection with a jack or log-lifter, N, for lifting or supporting the weight of the log previous to turning or rolling it, or for lifting and moving along the same. This jack or log-lifter is a strong frame or stock formed generally with an upright part, *k*, a foot, *l*, extending at nearly right angles to one side from its lower end, and a laterally-projecting arm, *m*, at its upper end concavely curved on its upper side, substantially as shown in Fig. 2. The endless chain M traverses this upper arm of the log-lifter, so as to pass over the concave side. For this purpose it passes around sprocket-wheels *n o* at the two ends of the arm, and the different parts of the chain traversing the log-lifter in opposite directions properly pass around guide-pulleys *p p* to keep the chain in the proper position.

The log-lifter is raised and lowered by any suitable and known means. The device shown in the drawings consists of a revolving winding-shaft, O, having winding-pulleys *q r* thereon, around which, as the shaft is turned, is wound or unwound two ropes, chains, or bands, P P, the lower ends of which are attached to the log-lifter at different points, as at *s s*, so as to simultaneously lift the two ends or extremities of the log-lifter. Thus when the shaft O is turned in one direction, so as to wind the ropes, chains, or bands P P upon the pulleys *q r*, the log-lifter is raised, and when the said shaft is turned in the opposite direction, so as to unwind the ropes, chains, or bands from the pulleys, the log-lifter is lowered.

In order to turn the shaft O in one direction for raising the log-lifter, it is provided with a friction gear-wheel, *t*, which may be pressed into contact with a gear-wheel, *u*, on the shaft E, and as the latter shaft is turned the revolving motion is communicated to the said shaft O. In order to bring the wheel *t* into contact with the wheel *u*, one end of the shaft O is mounted in a bearing, Q, which is pivoted at *v* to the frame, so that the shaft has a lateral movement, as required. A rod, *w*, extends from the bearing to a controlling hand-lever, R, suitably pivoted to the frame, as shown, or otherwise. A spring, *x*, may be employed to keep the shaft O swung away and the wheels *t u* out of contact when not required to be employed. The log-lifter may descend by its own weight when the wheels *t u* are separated.

It is to be understood that when the log-lifter is raised up beneath a log it is raised high enough to lift the log from resting on its ways, as indicated by dotted lines in Fig. 2, and then the log lies heavily on the endless chain M. Then by causing the endless chain to move in the proper direction by the means above set forth the log is rolled or turned in either direction required. In order to use the same lifter N for lifting a log on the ways of the mill-carriage or on the skids C C, it ordinarily has an inclined position, as shown by full lines in Fig. 2, under the skids. When

it is desired to simply lift a log for turning it on the ways of the carriage, it is required to be swung first under the log and then raised up. To effect this swinging, the outer end of the foot *l* is provided with a friction-pulley, *y*, which traverses down an inclined guide, S, which thus swings the lower end of the log-lifter away from the driving-wheel E as the upper part of the lifter is brought toward it, so that the endless chain M is kept properly extended or stretched, assisted by a pivoted brace-arm, V, pivoted at one end to the frame and at the other end to the jack. Ordinarily this double movement takes place; but when the lifter is first to be raised directly upward from its inclined position under a log on the skids C C the upper part of the lifter is held by a chain or rope, T, extending therefrom, first nearly in a horizontal direction to a pulley, *z*, over which it hangs down assisted by a weight, if required. A lever, U, is arranged to bear at one end against the vertical part of this rope or chain and press it against the frame or some fixed part by pressing laterally against the other end of the lever with the hand-lever R. This pinching of the rope or chain causes it to draw upon the log-lifter with sufficient force to cause it to ascend directly upward under a log on the skids; but as soon as the log is sufficiently raised thereby the rope or chain T may be released and the log-lifter be allowed to swing toward the carriage-ways, so that by then causing the endless chain to run in the proper direction the log is readily transferred from the skids to the carriage.

It will thus be seen that the log-lifter has both a swinging and lifting movement for lifting the log and then transferring it from one position to another within certain limits, while the endless chain M serves to roll the log off from the lifter as soon as the latter has moved it to the proper position. The log-lifter has its swinging movement around the swinging brace-arm V, and its lower end is guided in its swinging movement by the inclined guide S.

I claim as my invention—

1. The combination of the log-lifter N, adapted to receive and support a log at its upper end, and having a lifting movement for raising a log from its support, an endless chain, M, having a traveling movement over the upper end of the said log-lifter under the log, and means, as a revolving shaft and sprocket-wheel thereon, for imparting a traveling movement to the said endless chain, substantially as and for the purpose herein set forth.

2. The combination of the log-lifter N, adapted to receive and support a log at its upper end, and having a lifting movement for raising a log from its support, an endless chain, M, having a traveling movement over the upper end of the said log-lifter under the log, a sprocket-shaft, F, adapted to impart a traveling movement to the endless chain, and provided with two friction-wheels, G H, and a lat-

erally-movable driving-shaft, E, provided with a friction-wheel, I, adapted to be brought into contact with either of the friction-wheels G H, substantially as herein described, whereby the  
5 said endless chain may have a traveling movement in either direction over the said log-lifter.

3. The combination of the log-lifter N, adapted to receive and support a log on its upper end, and having a lifting movement for  
10 raising a log from its support, lifting ropes or bands P P, attached to the said log-lifter, a winding-shaft, O, for winding up the said lifting ropes or bands, and means for imparting  
15 an intermittent rotary movement to the winding-shaft, substantially as and for the purpose herein set forth.

4. The combination, substantially as described, of the endless chain M, log-lifter N, provided with the friction-pulley y, and the  
20 inclined guide S, for the purpose herein set forth.

5. The combination of the log-lifter N, having a lifting and swinging movement for lifting and moving the log from one position to another, the endless chain M, having a trav- 25  
eling movement on the said log-lifter for moving the log from the same, rope or chain T, adapted to hold the log-lifter from moving horizontally when the said rope or chain is held by a resisting force, and the pinch-lever 30  
U, adapted to be pressed against the said rope or chain and hold it from moving, substantially as herein specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 35

WARREN ALONZO DURRIN.

Witnesses:

S. G. L. ROBERTS,  
LOUIS FEESER, Jr.