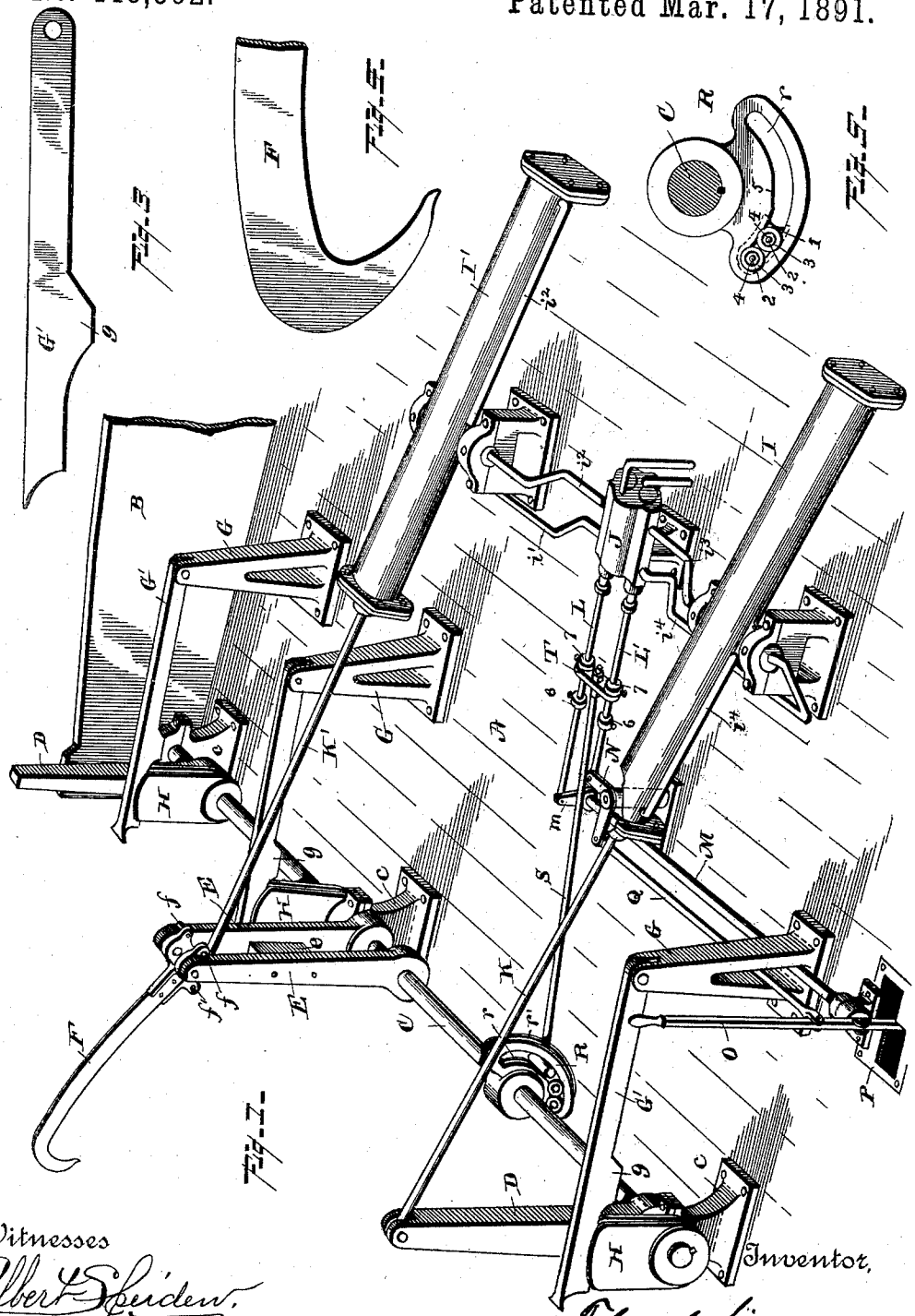
(No Model.)

2 Sheets—Sheet 1.

F. SIMONSON.

LOG LIFTER AND TURNER.

No. 448,592. Patented Mar. 17, 1891.



Witnesses
Albert Speiden.
D. P. Coul

Inventor,
Flavel Simonson.
By his Attorneys,
Myers & Webster.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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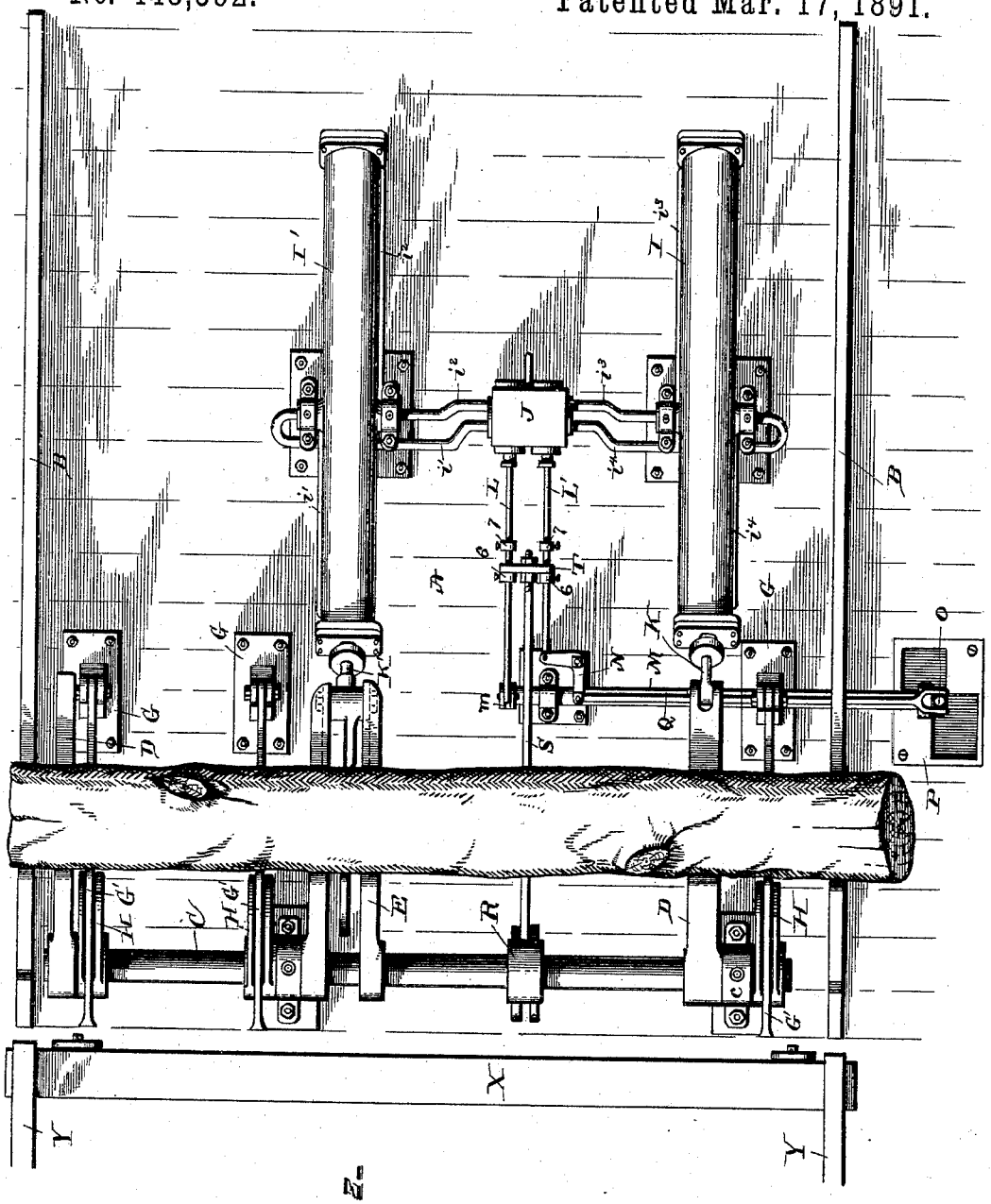


Fig. 2.

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UNITED STATES PATENT OFFICE.

FLAVEL SIMONSON, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO GEORGE H. CHAMBERLAIN, OF SAME PLACE.

LOG LIFTER AND TURNER.

SPECIFICATION forming part of Letters Patent No. 448,592, dated March 17, 1891.

Application filed February 13, 1890. Renewed November 22, 1890. Serial No. 372,294. (No model.)

To all whom it may concern:

Be it known that I, FLAVEL SIMONSON, a citizen of the United States of America, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and Improved Log Lifter and Turner, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in log lifting and turning machines of the class in which the log is lifted from the logways, pushed onto the carriage, and drawn clear of the carriage in the operation of turning it.

The principal object of my present invention is to provide means whereby the piston-rods of two steam-cylinders may be utilized in operating the rock-shaft and the hook, in this manner rendering the movements of the operative parts of the machine very rapid.

Another object of this invention is to provide means whereby all the various movements of the operative parts of the machine may be controlled by a single lever.

A still further object of my invention is the improvement of certain detail parts of the machine.

The invention will first be described in connection with the accompanying drawings, and then pointed out in the claims.

Figure 1 is a perspective view of the machine in position to turn the log, the carriage and log being omitted. Fig. 2 of the drawings is a plan view of the machine at rest with a log on the lifting-bars, and also showing the log-carriage. Fig. 3 is a side elevation of one of the lifting-bars. Fig. 4 is a side elevation of a portion of the hook. Fig. 5 is a side elevation of the quadrant.

In the drawings, A is the mill-floor upon which the machine is set; *x*, the log-carriage; Y, its head-blocks, and B a portion of one of the logways.

C is a rock-shaft mounted in pillow-blocks *c*, and D are push-arms secured on the shaft.

E E are two arms secured on the shaft C a short distance apart, and in the upper ends of these arms is pivoted the hook F, which when down rests on a block *e*, secured between arms E. The butt of the hook is bifurcated, and each branch is separately pivoted to its respective arm E. On each branch of the hook-butt there is formed an outwardly-projecting lug *f*, which rides freely over the upper rounded ends of arms E when the hook is canted forward to engage with the log, but which contact with the back of said arms when the hook is thrown up into the "reaching" position shown in Fig. 1, thereby preventing the hook from being tilted over backward by any sudden jar.

A very serious objection to hooks of the common form is that in withdrawing the hook from the log it is apt to gouge or split the timber, this being due to the fact that the bend of the hook is made on a true curve. To avoid this objection I change the curve near the point by giving that portion of the hook a slight outward bend, thereby making it concave on the outer side and convex on the inner side. By this construction, when the hook is being withdrawn from the log its point will not move in the arc of a circle, but will leave the log at nearly a right angle.

G are standards, in whose upper ends are pivoted the rear ends of the lifting-bars G', the forward ends of these bars resting on cams H, keyed on the rock-shaft C. As shown, the front ends of the bars are sharpened to prevent the log from slipping. While the log is lying on these bars prior to being raised, the push-arms, the hook-arms and hook, and the cams are in their lowest position, or below the level of the lifting-bars G, as seen in Fig. 2. Now, in order that the log may be fully raised before the push-arms come into contact with it, it is essential that the cams act on the lifting-bars in a hurried manner, and in order that they may be able to do this and still not raise the lifting-bars too high in moving up to their vertical position I form projections *g* on the under side of the bars, giving the forward ends of these projections a gradual curve, as clearly shown in Fig. 3.

In another application for United States Letters Patent filed by me October 16, 1889, and numbered 327,168, I have shown, described, and claimed the lifting-bars having sharpened ends and pivoted to standards, and therefore I lay no claim to those specific features in this specification, the only feature of

the lifting-bars herein claimed being that of the above-mentioned projections.

I I′ are two oscillating steam-cylinders connected with a steam-chest J by suitable pipes i' i^2 i^3 i^4 for conveying the steam in front of and in rear of the pistons. The piston-rod K of cylinder I is pivoted to one of the push-arms D, and the piston-rod K′ of cylinder I′ is pivoted to the hook at f', eccentric to the pivotal points of the hook to its arms.

L L′ are the valve-stems of the engine, one of which L is pivoted to a crank m on one end of a shaft M, the other valve-stem L′ being pivoted to one arm of a horizontal bell-crank N. The outer end of shaft M is pivoted to a lever O, whose lower end passes down through an opening in the floor covered by a stop-plate P, as shown.

Q is a link pivoted to a lever O above shaft M and also to an arm of the bell-crank N.

R is a quadrant fixed on the rock-shaft C. As will be seen, this quadrant is slotted annularly, as at r, and also radially, as at r'. Inside of the radial slot is placed a metal plate 1, as seen in dotted lines in Fig. 5, which is adjustably secured therein by means of bolts 2, passing through a washer 3, and provided with nuts 4.

S is a pitman provided with a T-head, which lies horizontal in the annular slot in the quadrant, the rear wall of that slot being cut on a straight line at 5 for the purpose of allowing the head to be turned in that position after having been inserted through the radial slot. The other end of the pitman is secured in a yoke T, which works loosely on the valve-stems between collars 6 and 7, adjustably secured on the stems.

The operation of my machine is as follows: The first thing to be done is to adjust the cut-off of the steam. To do this I first turn the rock-shaft so that the quadrant will be down and the T-head of the pitman at the end of the slot. I then set the valves on the center and set the collars 6 against the yoke. I next open the valves and set collars 7 against the yoke. Now I turn the rock-shaft so as to bring the quadrant up, as shown in Fig. 1, close the valves, place the yoke against collars 7, and finally adjust the quadrant-plate 1 against the T-head of the pitman. Now assume that the parts of the machine are in the position shown in Fig. 2. The operator pulls lever O sidewise away from the machine, which movement through link Q and bell-crank N opens the port communicating with pipe i^3 and admits steam into the rear end of cylinder I, driving its piston-rod forward, and thereby rocking shaft C forward. The cams H now come into contact with the projections g on the lifting-bars, raising the bars quickly, and then pass off these projections into the curves in front of the projections, which curves compensate for the arc of the circle described by the cams, preventing the bars from being raised too high. By this time the push-arms have come into contact with the log, and in the continued forward rocking of shaft C they push the log off onto the head-blocks of the carriage, the hook meanwhile remaining down on the block e. The pitman, through the quadrant and the yoke, has now centered the valves and also drawn lever O back into a perpendicular position. The operator now draws the lever to the rear, which movement, through shaft M and its crank m, opens the port communicating with pipe i', leading steam into the forward end of the cylinder I′, driving its piston-rod backward, and thereby rocking shaft C and its connected ports back into their normal positions of rest and lowering the lifting-bars. Now, when it is desired to turn the log, the operator pushes the lever forward, rocking shaft M and its crank m so as to open the port communicating with pipe i^2 and leading steam into the rear end of cylinder I′. As the piston-rod is pushed forward, rocking shaft C forward, the hook is raised to the position shown in Fig. 1, ready to be engaged with the log, by which time the quadrant has acted on the pitman to close the valves. The operator now pulls lever O backward, opening the port communicating with pipe i', leading steam into the forward end of cylinder I′. As the piston-rod K′ is moved backward the hook is drawn down into engagement with the log, and in its backward movement pulls the log with it until the latter strikes against the ends of the lifting-bars, which stand in a plane below the axis of the log. Now, as the hook continues to draw upon the log the latter makes a quarter-turn, and in so doing is drawn up onto the lifting-bars, entirely clear of the head-blocks. The log is now to be pushed back onto the head-blocks, and for this purpose the operator moves lever O forward to admit steam into the rear end of cylinder I′, which results, as before stated, in rocking shaft C forward, releasing the hook from the log and raising it to the position shown in Fig. 1. It is now desired to bring all the parts to positions of rest without the hook coming into contact with the log, and to do this the operator pushes lever O sidewise toward the machine, admitting steam through pipe i^4 into the forward end of cylinder I, thereby rocking shaft C backward. As piston-rod K′ is not now in action, it offers some resistance in being pushed backward by the hook, and this resistance, at the pivotal point f', which is eccentric to the points of pivotal attachment of the hook to its arms, tends to hold the hook elevated until about the time all the parts have arrived at rest, when it will drop down by gravity onto the block e.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a log lifting and turning machine, the combination, with pivoted lifting-bars, a rock-shaft carrying push-arms, hook-arms, and cams for raising the lifting-bars, and a hook

pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively; a steam-supply for the cylinders, and mechanism for governing the admission of steam to either cylinder at will, for the purposes set forth.

2. The combination, with pivoted lifting-bars, a rock-shaft carrying push-arms, hook-arms, and cams for raising the lifting-bars, and a hook pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, a steam-chest common to both cylinders, and mechanism controlled by a single lever for admitting steam to either cylinder at will, for the purposes set forth.

3. The combination, with the rock-shaft carrying the push-arms and the hook-arms, and a hook pivoted to the hook-arms, of two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, a steam-chest common to both cylinders and having two valve-stems, a yoke having limited movement on said stems, a quadrant having an adjustable plate, and a pitman connecting the yoke and the quadrant, for the purposes set forth.

4. In a log lifting and turning machine of the class described, the combination, with two steam-cylinders whose piston-rods are pivoted to one of the push-arms and to the hook, respectively, and a steam-chest having two valve-stems, of a cranked shaft pivotally connected to one of the valve-stems, a lever to which the other end of said shaft is pivoted, a bell-crank to one arm of which the other valve-stem is pivoted, and a link pivotally connecting the lever and the bell-crank, for the purposes set forth.

5. In a log lifting and turning machine, the combination, with a rock-shaft carrying push-arms and cams, of lifting-bars whose rear ends are pivoted to fixed supports, their free ends resting on the cams, each of said bars having a projection upon its under side, the front end of which recedes to a level with the bar in a curve coincident with the arc described by the cam, for the purposes stated.

6. In a log lifting and turning machine of the class described, the combination, with the rock-shaft and means for operating it, of a hook-support secured on said shaft, a hook concave on its outer side near the point and convex on its inner side opposite said concavity, pivoted to said support, and a reciprocatory rod or bar pivoted to the hook, for the purposes stated.

7. In a log lifting and turning machine of the class described, the combination, with the rock-shaft and means for operating it, of the hook-arms secured on said shaft, a hook having a bifurcated butt pivoted between the upper ends of the hook-arms, each branch of the butt having an outwardly-projecting lug, and a reciprocatory rod or bar pivoted to the hook, for the purposes stated.

In testimony whereof I affix my signature in presence of two witnesses.

FLAVEL SIMONSON.

Witnesses:
WM. HUNTER MYERS,
G. W. BALLOCH.