

No. 679,551.

Patented July 30, 1901.

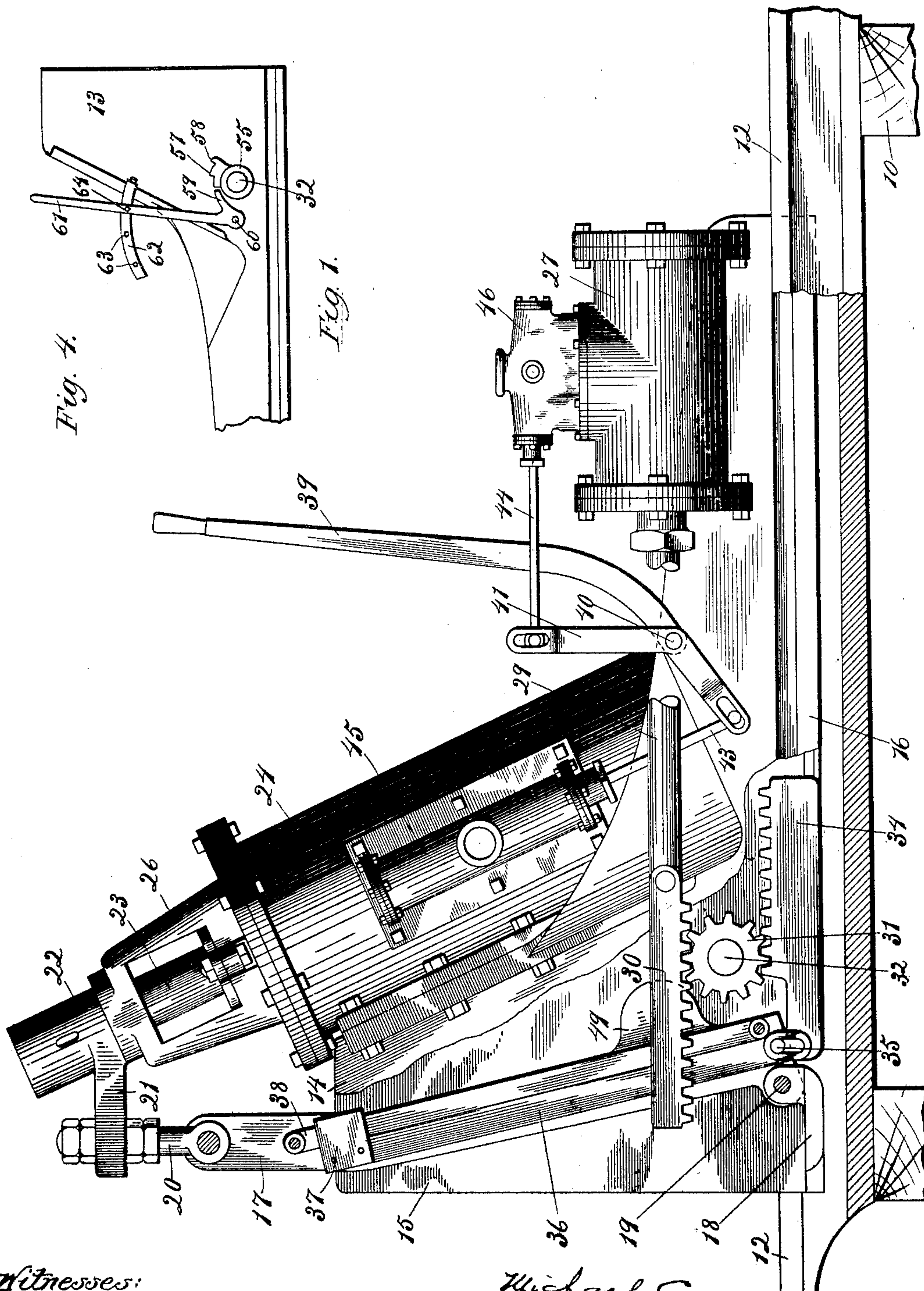
M. CORRY & R. F. BARKER.

LOG TURNER.

(Application filed Dec. 29, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

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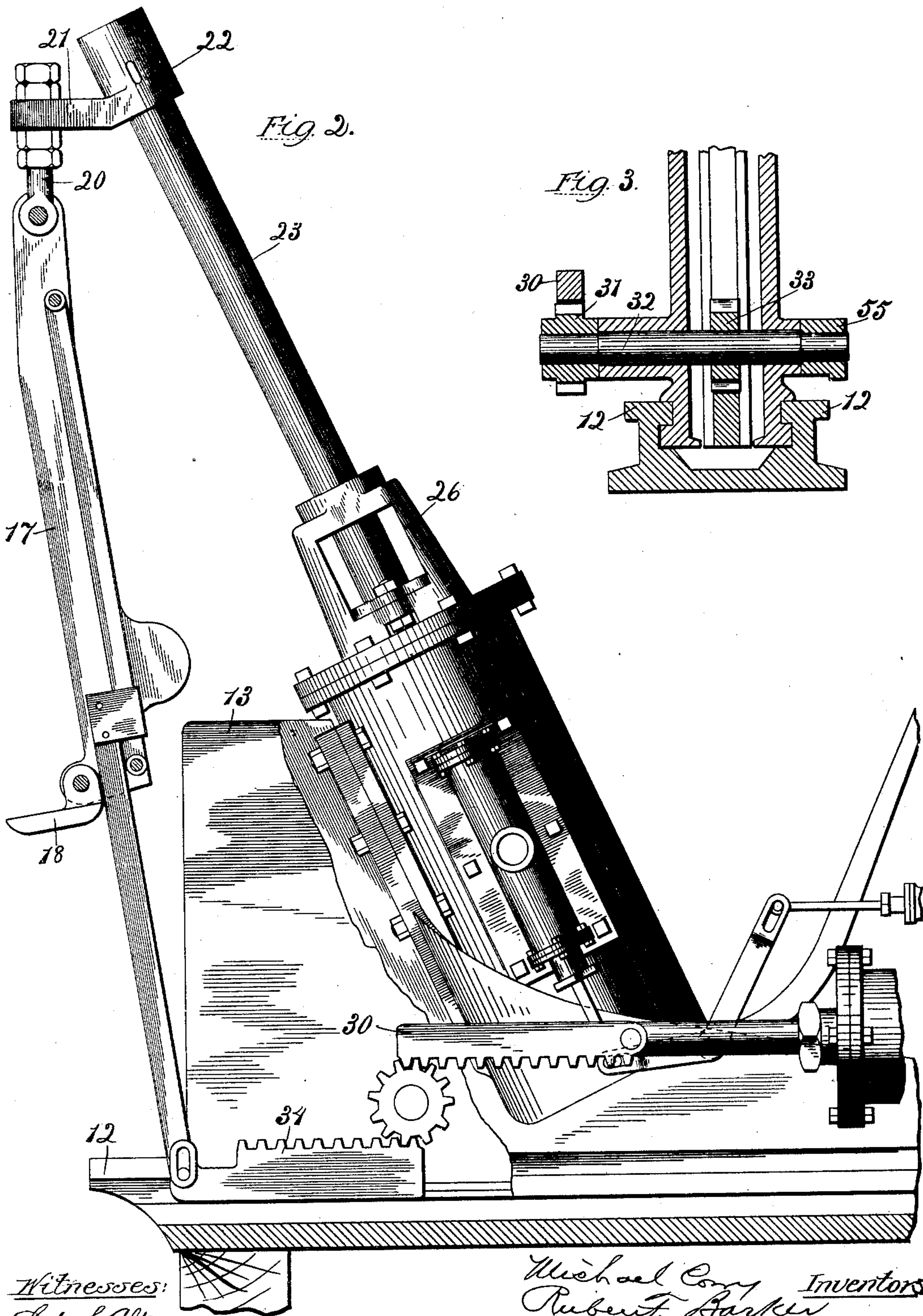
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(No Model.)

3 Sheets—Sheet 2.



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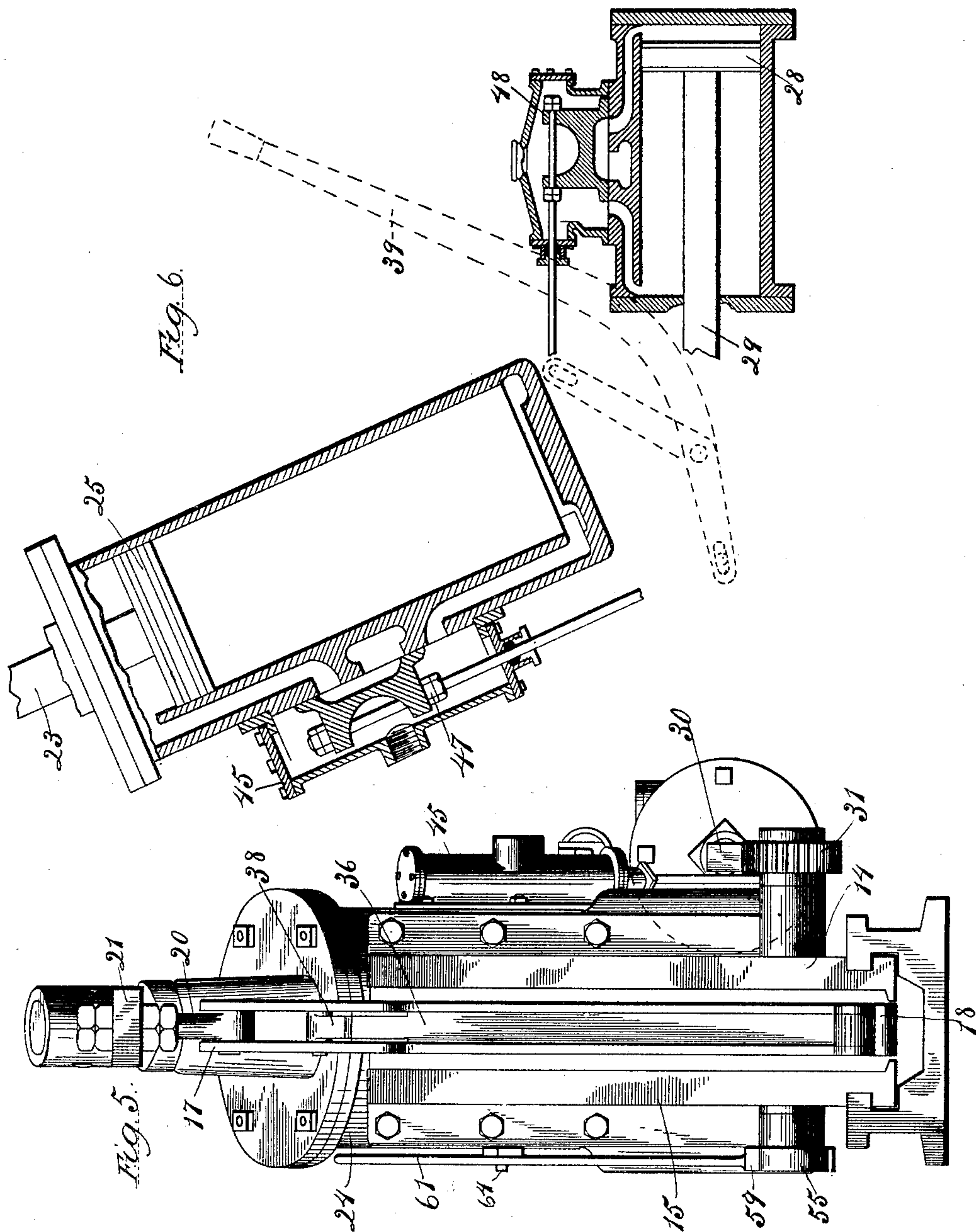
**M. CORRY & R. F. BARKER.**

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(Application filed Dec. 29, 1900.)

(No Model.)

**3 Sheets—Sheet 3.**



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# UNITED STATES PATENT OFFICE.

MICHAEL CORRY AND RUBEN F. BARKER, OF MARINETTE, WISCONSIN.

## LOG-TURNER.

SPECIFICATION forming part of Letters Patent No. 679,551, dated July 30, 1901.

Application filed December 29, 1900. Serial No. 41,519. (No model.)

*To all whom it may concern:*

Be it known that we, MICHAEL CORRY and RUBEN F. BARKER, citizens of the United States, and residents of Marinette, county of Marinette, and State of Wisconsin, have invented certain new and useful Improvements in Log-Turners, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to that class of log-turners which are mounted upon a sawmill-carriage and are actuated by steam or other power; and its object is to simplify and increase the efficiency of devices of this kind.

The invention consists of the mechanism hereinafter fully described, and which is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the log-turner, partly in section. Fig. 2 is a detail side elevation, partly in section, the parts being shown in different position from that of Fig. 1. Fig. 3 is a detail section. Fig. 4 is a detail elevation of one of the parts of the machine. Fig. 5 is a front elevation of the device; and Fig. 6 is a longitudinal section through the power-cylinders, these cylinders being shown in their relative positions, but with the valve-chest of one of them shifted for the purpose of showing the relative positions of the valves of the two cylinders.

The longitudinal sills of a sawmill-carriage, with the platform mounted thereon, are shown at 10 10 10 and the head-block at 12. A hollow knee 13, comprising a pair of cheek-plates 14 15 and a knee-shank 16, is mounted in the usual manner upon the head-block 12, so as to reciprocate transversely as to the carriage. A lifting-bar 17, provided at its lower end with a hook 18, pivoted to the bar at 19, swings between the cheek-plates 14 and 15 and is normally housed within them, so that it allows the knee to receive the log in the usual manner. The bar 17 swings from an eyebolt 20, fixed to an arm 21, projecting laterally from a head 22, fixed upon a piston-rod 23, working in the power-cylinder 24 and carrying at its inner end a piston-head 25. A guide-frame 26 is fixed to the end of the cylinder 24 to suitably stay the piston-rod 23.

The power-cylinder 24 is bolted to the back of the knee 13 and occupies an inclined position, its upper end projecting forwardly, so that when the piston is moved to the upper end of the cylinder the lifting-bar 17 is not only carried up, but also carried forward beyond the face of the knee. The lower end of the lifting-bar 17 is guided by means of a power-cylinder 27, within which reciprocates a piston-head 28, provided with a piston-rod 29, to the forward end of which there is pivotally secured a rack-bar 30, which coöperates with a pinion 31, fixed upon a shaft 32, suitably journaled in the cheeks 14 and 15 of the knee 13. A pinion 33 is mounted upon the shaft 32 between the cheeks of the knee and coöperates with a rack-bar 34, pivotally attached, as shown at 35, to the lower end of a bar 36, engaging the bar 17 and secured thereto by means of a loop 37, running upon a guide-bar 38, secured at the ends to the lower and near the upper end of the bar 17. The cylinder 27, the pinion 31, and the intermediate mechanism are all located at the outer side of the knee, the cylinder being carried by and suitably secured to the rearward end of the knee-shank and being in horizontal position.

The two power-cylinders are controlled by a single hand-lever 39, pivoted at 40 to the frame of the knee and rigidly attached to a bell-crank lever 41, one arm of which is attached to the valve-stem 43 of the power-cylinder 24 and the other arm of which is attached to the valve-stem 44 of the cylinder 27. Each of the cylinders is provided with a suitable steam-chest, as shown at 45 46, each provided with suitable pressure and exhaust ports, and within each of which there is mounted a suitable valve for controlling the delivery of the pressure to the cylinder-chamber. There is shown in the drawings a simple form of D-valve 47 48, though it will be understood that any form of valve may be employed. The valves 47 48 are so placed relatively that when the pistons 25 28 are in such position that the lifting-bar 17 is retracted the movement of the hand-lever 39 opens the pressure-port leading to the front side of the piston 28 before the port leading to the front or lower face of the piston 25 is uncovered, so that the lifting-bar 17 is swung forwardly to bring its



hook 18 under a log resting upon the head-block 12 before the piston 25 begins to move, so as to raise the lifting-bar.

The office of the power-cylinder 27 being simply to swing the lifting-bar forwardly and hold it against the log, but not to move the latter, the cylinder is comparatively small, and its piston is checked in its movement as soon as the bar 17 comes into contact with the log. The log is turned outwardly or away from the knees, and for that reason it is necessary that the lifting-bar move laterally as it rises, so that it will remain in contact with the log, and this lateral movement is accomplished not only by the inclined position of the cylinder 24, but also by the continued steam-pressure against the piston 28, thereby holding the lower end of the bar firmly against the log. As soon as the log has been turned the position of the hand-lever 39 is shifted to apply pressure back of the two pistons, and the lifting-bar 17 is thereby retracted, being guided, if necessary, to its position between the cheek-plates of the knee by the rearwardly-projecting lug 49. By the use of the hollow knee 13 the lifting mechanism is not only protected from injury and suitably stayed against lateral movement, but the knee may be employed, if desired, in all other respects the same as any other knee mounted upon a sawmill-carriage. In order to avoid confusion, we have not shown the knee as being provided with the usual dogs for seizing the log to hold it while being sawed, but it is obvious that such dogs might be applied to this as to any other knee.

The steam-chest 45 is most conveniently located at one side of the cylinder 24 in order that it may be more easily controlled by the hand-lever 39 common to both cylinders. For the purpose of illustrating the relative position of both of the valves of the two cylinders Fig. 6 is so far distorted as to show this steam-chest located at the under side of the cylinder 24.

It will be understood that the knee 13 is advanced and receded in the same manner as any other carriage-knee, and we have not deemed it necessary to show mechanism for accomplishing these movements.

While we have shown the engines as being actuated in succession by reason of the relative positioning of their valves, any other means for throwing forwardly the hook of the lifting-bar in advance of the upward movement thereof will come within the scope of our invention.

In order to adapt the machine for use in connection with logs varying in size, it is important that means be provided for positively controlling the outward movement of the hook. When a large log is to be turned, the hook should pass well under it to secure a firm grip. If its outward movement were always the same, it is obvious that when adjusted to manipulate large logs it would be

thrown so far under a small log that the latter would be raised bodily without being turned. This result is secured by mounting upon the shaft 32 a stop-block 55, having a series of shoulders, as 57 58, at differing distances from its center of oscillation. A movable abutment, as 59, is pivoted at 60 to the side of the knee 13, so that its end may be thrown into the path of any of these shoulders, and the pivot-pin is so disposed that the pressure transmitted to the abutment is substantially in line therewith, and hence there is practically no tendency to turn the abutment on its pivot. The abutment 59 is manually controlled by a handle-bar 61, projecting upwardly in convenient reach of the operator and in sliding engagement with a plate 62, secured to the knee 13 or other convenient support. This plate is preferably elastic and is provided with as many apertures 63 as there are stop-shoulders on the block 55. The handle-bar 61 is provided with a short stud 64, adapted to engage the aperture 63. Pressure upon the hand-lever will easily disengage the stud from the aperture within which it is set and slide the handle-bar along the plate 62, this stud falling into the next aperture it encounters and offering sufficient resistance to further movement of the handle-bar to hold the abutment 59 in position.

The variable stop mechanism above described for controlling the throw of the hook is simple and efficient; but we do not desire to be limited to this form of construction, as any means for variably and positively controlling the outward movement of the hook will come within the scope of the invention.

While we have shown a simple form of slide-valve for both engines, it will be understood that in these engines, as in all other situations in which a reciprocating piston is used without connection with a crank or the equivalent, it is advisable to employ a so-called "cushioning-valve" or some other cushioning agent which will prevent violent contacts of the piston with the cylinder-heads.

We are aware that it is not broadly new to mount log-turning mechanism upon a sawmill-carriage; but so far as we are aware all earlier machines have been limited to a vertical movement of the turning-bar, except as in one instance its hook might be thrown forward by a counterweight. This movement alone is not sufficient. As the log turns it necessarily moves away from the knees, and it is important, therefore, that the lifting-bar follow it as it rolls. To this end the bar should not only move up, but forward. This movement we secure by the inclined position of the lifting-cylinder; but any other mechanism which will secure it will come within the scope of our invention.

We claim as our invention—

1. In a log-turner, in combination, a hollow knee, a lifting-bar housed within the knee,



power mechanism for drawing the bar into the knee and for advancing it therefrom, and means for raising and lowering the bar.

2. In a log-turner, in combination, a lifting-bar mounted on the knee of a sawmill-carriage, means for raising the bar, and power mechanism for advancing and retracting the bar relatively to the knee.

3. In a log-turner, a carriage, a power-cylinder mounted thereon and being inclined upwardly and forwardly, a piston and its rod reciprocating in such cylinder, a lifting-bar swinging from the upper end of the piston-rod and having a hook at its lower end, and means for throwing the lower end of the bar forward as it is raised.

4. In a log-turner, a carriage, a power-cylinder mounted thereon and being inclined upwardly and forwardly, a piston and its rod reciprocating in such cylinder, a lifting-bar swinging from the upper end of the piston-rod and having a hook at its lower end, and a second engine for advancing the lower end of the lifting-bar.

5. In a log-turner, in combination, a lifting-bar, a motor mounted upon a sawmill-carriage for raising the bar, a second motor mounted upon a sawmill-carriage for throwing the lower end of the bar forward, and means for manually controlling both motors and being adapted to start the second motor in advance of the one first named.

6. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a reciprocating member, as 34, a bar pivoted to such member and in sliding engagement with the lifting-bar, and an engine for causing the reciprocation of the member 34.

7. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a rack-bar 34, a bar 36 pivoted thereto and in sliding engagement with the lifting-bar, a pinion for actuating the rack-bar, 34, a rack-bar, 30, for actuating the pinion, and a steam-engine for reciprocating the rack-bar 30, substantially as shown and described.

8. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a rack-bar, 34, a bar 36 pivoted thereto and in sliding engagement with the lifting-bar, a pinion for actuating the rack-bar, 34, a rack-bar, 30, for actuating the pinion, a steam-engine for reciprocating the rack-bar 30, controlling valves for both engines, a lever for controlling both valves, such valves being so posi-

tioned relatively that the second-named engine is started in advance of the first-named engine.

9. In a log-turner, a lifting-bar mounted upon a sawmill-carriage, means for raising the bar, means for advancing the bar as raised, and a variable positive stop for limiting the outward movement of the bar.

10. In a log-turner, a power-cylinder adapted to be mounted upon a carriage and being inclined upwardly and forwardly, a piston and its rod reciprocating in such cylinder, a lifting-bar swinging from the upper end of the piston-rod and having a hook at its lower end, means for throwing the lower end of the bar forward as it is raised, and a variable positive stop for limiting the outward movement of the bar.

11. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a rack-bar 34, a bar 36 pivoted thereto and in sliding engagement with the lifting-bar, a pinion for actuating the rack-bar, 34, a rack-bar, 30, for actuating the pinion, a steam-engine for reciprocating the rack-bar 30, an eccentric stop-block mounted with the pinion and having a plurality of stop-shoulders at different distances from its center of oscillation, and a movable abutment for engaging these shoulders.

12. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a rack-bar 34, a bar 36 pivoted thereto and in sliding engagement with the lifting-bar, a pinion for actuating the rack-bar, 34, a rack-bar, 30, for actuating the pinion, a steam-engine for reciprocating the rack-bar 30, an eccentric stop-block mounted with the pinion and having a plurality of stop-shoulders at different distances from its center of oscillation, a movable abutment for engaging these shoulders, and means for manually shifting the abutment.

13. In a log-turner, in combination, a knee and its shank, a reciprocating steam-engine secured to the back of the knee and being inclined upwardly and forwardly, a lifting-bar swung from the outer end of the engine piston-rod, a hook secured to the bar, a rack-bar, 34, a bar 36 pivoted thereto and in sliding engagement with the lifting-bar, a pinion for actuating the rack-bar, 34, a rack-bar, 30, for actuating the pinion, a steam-engine for reciprocating the rack-bar 30, an eccentric stop-block mounted with the pinion and having a plurality of stop-shoulders at different distances from its center of oscillation, a movable abutment for engaging these shoulders, a handle-bar fixed to the abutment, and a



stop-plate over which the bar may oscillate and having notches for engaging the bar.

14. In a log-turner, in combination, a power-cylinder fixed upon the knee of a sawmill-carriage, a piston and its rod reciprocating in the cylinder, and a lifting-bar carried by the piston-rod, the said parts being so disposed that the lifting-bar is simultaneously raised and advanced on the forward stroke of the piston.

15. In a log-turner, in combination, a movable support mounted upon a sawmill-carriage, a lifting-bar carried by the support, means for raising the bar, and power mechanism for advancing and retracting the bar relatively to the support.

16. In a log-turner, in combination, a sawmill-carriage, an inclined power-cylinder fixed to the carriage, a piston and its rod reciprocating in the cylinder, and a lifting-bar carried by the piston-rod.

17. In a log-turner, in combination, a sawmill-carriage, an inclined power-cylinder fixed to the sawmill-carriage, a piston and its rod reciprocating in the cylinder, a lifting-bar pivoted at one end to the piston-rod, and means for advancing and retracting the opposite end of the lifting-bar.

18. In a log-turner, in combination, a movable support carried by a sawmill-carriage, turning means carried by the support, and means for moving such turning means upwardly and thereby forwardly relatively to the support.

19. In a log-turner, in combination, turning means, an inclined support carried by a sawmill-carriage and supporting the turning means and adapted to impart thereto movement on an incline, and means for operating the turning means.

20. In a log-turner, in combination, a turning-bar, mechanism mounted upon a sawmill-carriage and to which the turning-bar is pivoted for raising the bar, means for guiding

the turning-bar, and means operating the guiding means for advancing and retracting the turning-bar.

21. In a log-turner, in combination, a turning-bar, mechanism mounted upon a sawmill-carriage and to which the turning-bar is pivoted for raising the said bar, a guide-bar in sliding engagement with the turning-bar, and means operating the guide-bar for advancing and retracting the turning-bar.

22. In a log-turner, in combination, a turning-bar mounted upon a sawmill-carriage, means for raising the bar, means for advancing the bar, a stop-block, and a movable abutment adapted to engage the stop-block to vary the advance movement of the bar.

23. In a log-turner, in combination, a turning-bar mounted upon a sawmill-carriage, means for raising the bar, means for advancing the bar, a movable abutment, and an eccentric stop-block adapted to engage the abutment to vary the movement of the means for advancing the turning-bar.

24. In a log-turner, in combination, a turning-bar mounted upon a sawmill-carriage, means for raising the bar, means for advancing the bar, a movable abutment, and a graduated stop-block adapted to engage the abutment to vary the movement of the means for advancing the turning-bar.

25. In a log-turner, in combination, a turning-bar mounted upon a sawmill-carriage, means for raising the bar, means for advancing the bar, a stop-block having a series of graduated shoulders, and a movable abutment adapted to be thrown at will into the path of any of the shoulders to vary the advance movement of the turning-bar.

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