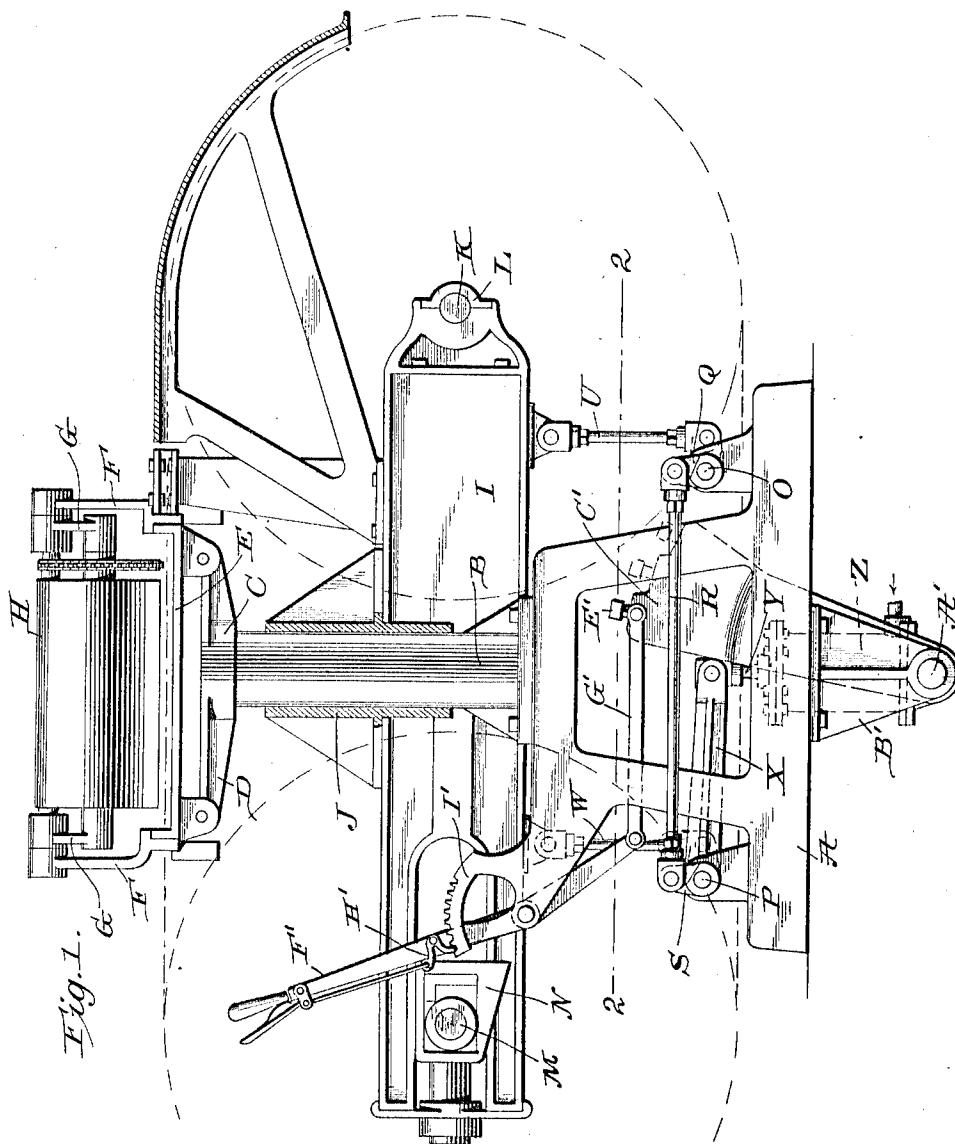


C. E. CLEVELAND.
SAWMILL.
APPLICATION FILED MAY 31, 1910.

1,040,622.

Patented Oct. 8, 1912.

5 SHEETS-SHEET 1.



WITNESSES
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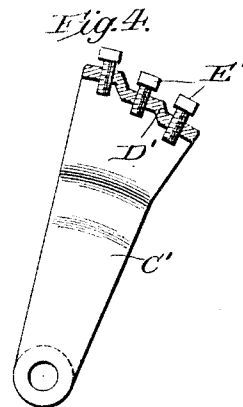
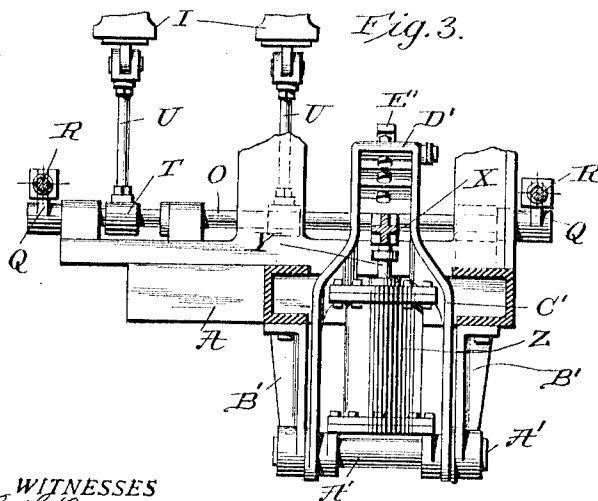
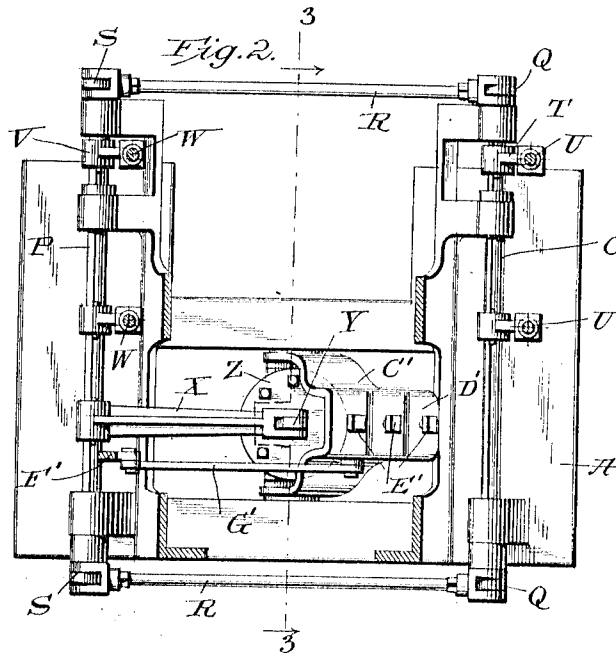
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5 SHEETS-SHEET 2.



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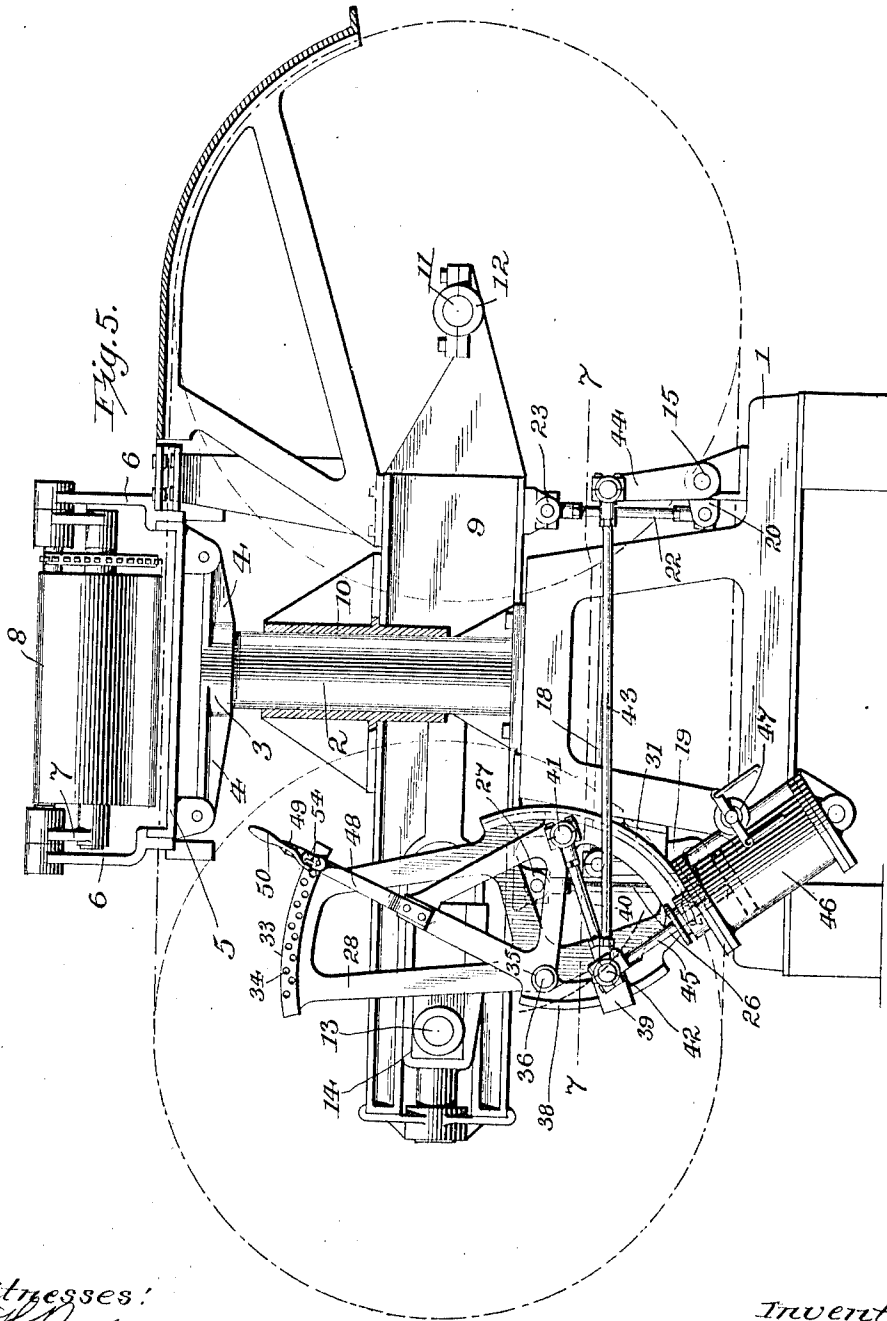
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5 SHEETS—SHEET 3.



witnesses:
C. E. Cleveland
Parker Dodge

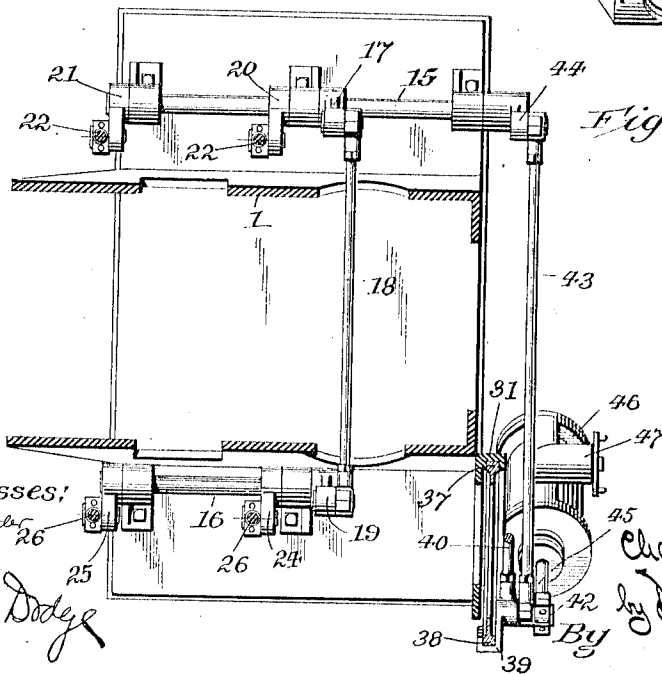
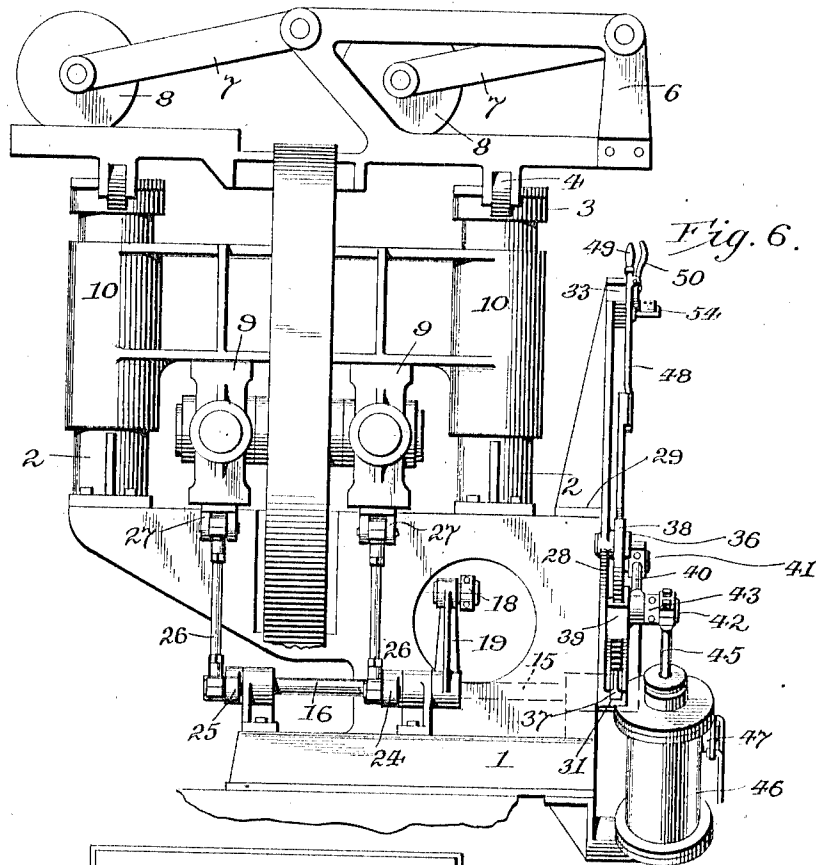
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6 SHEETS-SHEET 4.



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6 SHEETS—SHEET 5.

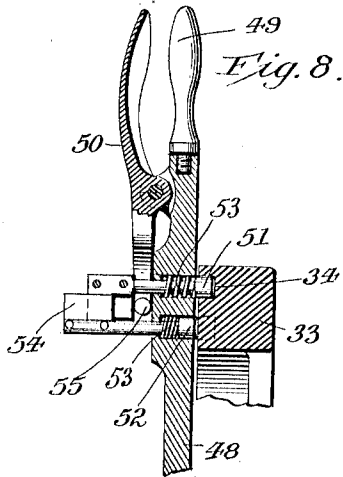


Fig. 8.

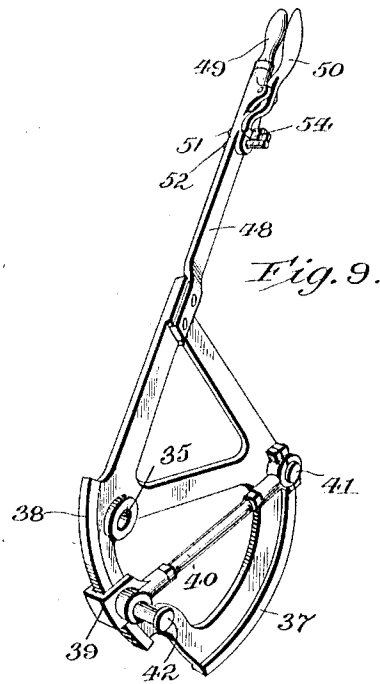


Fig. 9.

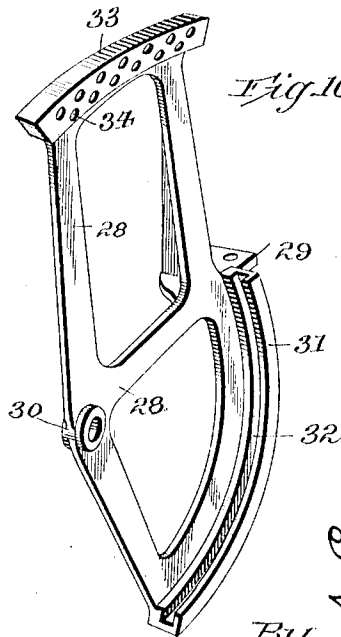


Fig. 10.

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UNITED STATES PATENT OFFICE.

CHARLES E. CLEVELAND, OF FOND DU LAC, WISCONSIN.

SAWMILL.

1,040,622.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed May 31, 1910. Serial No. 564,095.

To all whom it may concern:

Be it known that I, CHARLES E. CLEVELAND, a citizen of the United States, residing at Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Sawmills, of which the following is a specification.

My present invention pertains to saw-mills, and more particularly to an improved mechanism for adjusting the saw with reference to the table or support upon or against which the lumber is held.

The set-works or mechanism is illustrated in conjunction with a horizontal band-saw resawing machine, although it may be used in connection with a vertical resaw as well.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is an end elevation of a mill embodying one form of the invention; Fig. 2 a horizontal sectional view taken on the line 2—2 of Fig. 1; Fig. 3 a vertical sectional view taken on the line 3—3 of Fig. 2, looking in the direction of the arrow; Fig. 4 a detail sectional view of the stop-yoke; Fig. 5 an end elevation of a mill, partly in section, showing a modification of the invention; Fig. 6 a side elevation of the same; Fig. 7 a horizontal sectional view, taken on the line 7—7 of Fig. 5; Fig. 8 a vertical sectional view showing a detail of the setting lever and the means for locking it to the set-stand; Fig. 9 a perspective view of the set quadrant and the coöperating radius bar; and Fig. 10 a perspective view of the set stand.

The object of the invention is to provide a simple and efficient mechanism whereby the saw may be set with reference to the table or support at any desired distance therefrom, the mechanism being such that both of the wheels over which the band-saw runs are moved in unison toward or from the bed or support against or upon which the lumber is held or rests.

Referring to the construction shown in Figs. 1 to 4 inclusive, A denotes the base of the mill, surmounted by two fixed columns B, both of which are shown in Fig. 6, this portion of the structure being the same in both forms of the invention herein illustrated, and said columns being designated in said Fig. 6 by the reference numeral 2. The upper end of each column carries a cap piece

C, having oppositely-extending arms D radiating therefrom, which arms in turn are connected to a bed plate E which forms the support for the lumber. Frames F extend upwardly from the bed plate E and serve to support the hinged arms G, in the free ends of which are mounted feed rollers H. A rigid frame I, provided with elongated hubs or tubular bearing members J, serves to support the band-carrying wheels, shown in dotted lines in Fig. 1. The hubs, as will be seen upon reference to said figure, surround the columns B, making a close fit therewith, thus producing a comparatively stiff and rigid frame or support for the band-wheels. One of said wheels, or that on the right in Fig. 1, is mounted upon a shaft K carried in a fixed bearing L. The second wheel is mounted upon a shaft M, the box N for which is mounted in suitable ways or guides formed in the frame I, and in practice suitable mechanism is employed for adjusting this box and placing the desired tension upon the saw. Inasmuch as said tensioning device forms no part of the present invention, the same is not illustrated. Mounted upon the base at the right-hand end thereof, in suitable boxes or bearings, is a rocker-shaft O, while upon the opposite end of the base is mounted a second rocker-shaft P. An arm Q is mounted upon each end of the shaft O and suitable links R connect said arms with the corresponding arms S rigidly secured to the ends of the shaft P, so that when one shaft is rocked the other will move in unison therewith. The shaft O carries a second pair of arms T, to the outer ends of which are pivotally connected the lower ends of links or rods U, the upper ends of which are in turn pivotally connected to rigid brackets or lugs extending downwardly from the lower portion of the saw-carrying frame I. A similar pair of arms V are rigidly secured to the shaft P, and links W are pivotally connected to the outer ends of said arms and to brackets or lugs secured to and extending downwardly from the lower face of the saw-carrying frame. The shaft P has secured to it a long arm X which extends inwardly toward the center of the base, the outer end of the arm being pivotally connected to the upper end of a piston-rod Y which extends through the head of a cylinder Z, the lower end of which is pivotally mounted upon a shaft A' which

is supported by brackets or hangers B' bolted to the under face of the frame or otherwise rigidly positioned. Swiveled upon the shaft A' is a yoke-shaped frame or set-quadrant C', the side members of the frame converging or being drawn inwardly at the upper portion and having the cross-bar or member D' thereof preferably stepped, as in Fig. 4. Mounted in said cross member D' is a series of screws E', the lower ends of which extend downwardly below the cross-member and in a plane common with that of the upper end of the piston-rod Y. Said yoke-shaped member, which may be termed a stop device, is positioned with reference to the piston-rod by means of a lever F', the lower end of which is connected to the stop member by a link G'. The lever may be locked in any desired position by a latch H' which works in conjunction with a sector I'.

The length of the cylinder Z is such as to give the maximum and minimum thickness to the lumber, or in other words, to give the maximum and minimum adjustment to the saw-carrying frame, or any other thickness. By moving the lever F' and pulling over the stop member or quadrant C', one or another of the screws E' may be brought into position over the upper end of the piston-rod so that when steam is admitted to the lower end of the cylinder and the piston rises the end of the piston-rod will come in contact with the screws and thus arrest the upward movement of the piston and consequently the upward movement of the saw-carrying frame. The screws may be adjusted as desired, so that by bringing one or another into operative relation with the upper end of the piston-rod the operator will know at once to what thickness the saw is set.

It will be readily understood upon a mere inspection of the drawings, that as the piston-rod ascends the arm X will be elevated and consequently the rocker-shafts P and O will be turned and the links U and W will be moved upwardly and the saw-frame elevated to the desired position.

In Figs. 5 to 10 inclusive a modification of the underlying principle of the invention is illustrated, wherein a different form of mechanism is employed in conjunction with the oscillating steam cylinder for raising the saw frame. The construction of the bed, the saw-carrying frame and the like is similar to that shown in the figures already described, but for the sake of clearness it will be repeated in part. Referring to said figures, 1 denotes the base of the mill, surmounted by two fixed columns 2, the upper end of each of said columns carrying a cap piece 3, having oppositely-extending arms 4 radiating therefrom, which arms in turn are connected to a bed plate 5, which forms the support for the lumber. Frames 6 extend

upwardly from the bed and serve as a support for the hinged arms 7 in the free ends of which the feed and pressure rollers 8 are mounted. A rigid frame 9, provided with elongated sleeves or tubular members 10, serves to support the band-carrying wheels. The sleeves, as will be noted upon reference to Figs. 5 and 6, surround the columns 2, making a close fit therewith and thus producing a comparatively stiff and rigid frame or support for the band-wheels. One of said wheels, or that to the right in Fig. 5, is mounted upon a shaft 11, carried in a fixed bearing 12. The second wheel is mounted upon a shaft 13, the box 14 for said shaft being mounted in suitable ways or guides formed in the frame 9 and in practice suitable mechanism is employed for adjusting this box and placing the desired tension upon the saw. Inasmuch as said tensioning device forms no part of the present invention, the same is not illustrated. Mounted upon the base at the right-hand end thereof in suitable boxes or bearings is a rocker-shaft 15, while upon the opposite end of the base is mounted a second rocker-shaft 16. Shaft 15 is provided with an arm 17, the outer end of which is connected by a rod 18 to a similar arm 19 mounted on the shaft 16. The shaft 15 also carries a pair of arms 20, 21 the outer ends of said arms lying in a substantially horizontal plane (see Fig. 5). Each of said arms has pivotally connected to the outer end thereof a push-rod or link 22, the upper end of each rod being in turn connected to a bracket or bearing 23, secured to the under face of the saw-supporting frame 9. A similar pair of arms 24, 25, is connected to shaft 16, said arms likewise normally lying in a horizontal plane, and each of said arms being pivotally connected to the outer end of a link or push-rod 26, the upper ends of which rods in turn are pivotally connected to a bracket or bearing 27, secured to the saw-carrying frame 9. It will thus be seen that when the shaft 15 is rocked, shaft 16 must move in unison therewith, and that the arms 20, 21 and 24, 25 must likewise move in unison, and consequently the push-rods or links 22 and 26 will rise and fall alike. This will cause the raising and lowering of the saw-carrying frame 9 and move the saw toward or from the bed 5.

To actuate the shaft 15 the following mechanism is employed: Rigidly secured to the base 1 is a set-stand 28, best shown in Fig. 10. The set stand is provided with a bracket 29 which is bolted to the bed 1 and is thus held rigidly in place. The set stand is provided with a hub or opening 30 and with an upwardly-projecting lip 31, at one side of the lower portion thereof, in which is formed a groove or channel 32, concentric with the opening 30. The set-stand has at its upper end a segmental member 33, in one

side of which is formed a series of openings 34, said openings being in two rows or series, having staggered relation to each other.

The set-quadrant is shown in Fig. 9 and is provided with a hub or opening 35 through which and the hub or opening 30 there is passed a bolt 36 which secures the parts together and permits the set-quadrant to be swung or moved with reference to the set-stand. The quadrant is provided with an arc-shaped rib 37 which is concentric with the hub or opening 35 and is adapted to fit in the groove or channel 32. The set-quadrant is likewise provided with a second rib or bearing surface 38 upon which is mounted a block or casting 39, carried at the outer free end of a radius bar 40, the opposite end of the bar being pivoted upon a stud or stub-axle 41 secured to the set-quadrant. A pin 42 extends outwardly from the sliding block 39 and secured thereto is a draw-rod 43 which in turn is connected to the upper end of an arm or lever 44 secured to the outer end of the shaft 15. A piston-rod 45 is likewise connected to the pin 42, said piston-rod working through the head of a power cylinder 46, to the opposite end of which steam is admitted through the manipulation of a valve 47. Said cylinder, as will be seen upon reference to Fig. 5, is pivotally mounted upon a suitable support at its lower end.

Extending upwardly from the set quadrant is an arm 48 carrying a handle 49 and a locking lever 50, the lower end of said lever working in conjunction with two pins 51 and 52. Said pins, as will be seen upon reference to Fig. 8, are normally pressed inward toward the openings 34 by springs 53. When the locking lever 50 is thrown in toward the handle 49 both pins will be withdrawn, the wings 54 thereon contacting with the lower laterally-projecting end 55 of said lever and being withdrawn from contact with the segmental member 33. When the lever 50 is released and the handle or lever 48 is thrown in one or the other direction, one or the other of said pins will pass into the next adjacent opening 34. It will thus be seen that the lever may be locked in any desired position, and the set quadrant will be held in its adjusted position.

The ends or heads of the cylinder form stops for the travel of the piston within the cylinder, and thus limit the movement of the piston-rod, and consequently the block 39, in one or the other direction.

As will be readily appreciated from an inspection of Fig. 5, the upward or outward movement of the piston-rod 45 will tend to throw the arm 48 to the left and, consequently, through the connections before described, to lower the saw. The downward movement of the piston-rod will force the rod 43 to the right and thus raise the saw.

To vary the degree of movement, it is only necessary that the operator shift the lever 48 and consequently the set-quadrant, and lock the same in the desired position. The movement of said set-quadrant will raise or lower the pin 42 and thus vary the angularity between the radius bar 40 and the rod 43, thereby causing the rod 43 to be moved to a greater or less extent according to the adjustment of the parts. The path of movement of the pin 42, which is the common connection between the radius bar 40 and the rod 43, when the lever 48 is thrown to the extreme left, is indicated by the heavy dotted line in Fig. 5.

Having thus described my invention, what I claim is:

1. In a resawing band sawmill, the combination of a support for the lumber to be cut; a pair of fixed guides arranged in parallel relation to each other; a saw-carrying frame mounted and movable upon said guides; means for applying power to the opposite ends of said frame and upon opposite sides of the guides to cause an even movement of the frame; a power cylinder for operating said means; and an adjustable set-quadrant for limiting the movement of said cylinder.

2. In a band-saw resawing machine, the combination of a support for the lumber to be cut; a pair of fixed guides arranged in parallel relation to each other; a frame mounted and movable upon said guides; band-wheels carried by said frame; a pair of rocker-shafts located beneath the frame; connections between said shafts and the frame to raise and lower the frame as the shafts are oscillated; connections between said shafts to cause them to move in unison; an oscillating power cylinder; an arm rigidly secured to one of the rocker-shafts aforesaid, the opposite end of the arm being pivotally connected to the outer end of the piston-rod of the power cylinder; a yoke-shaped frame swiveled upon the support upon which the cylinder is mounted; a series of stops carried by said frame; and means for swinging the frame to bring one or another of said stops into operative relation with the piston-rod, whereby the outward movement of the piston-rod may be limited and the upward movement of the saw-carrying frame arrested.

3. In a band saw resawing machine, the combination of a support for the lumber to be cut; fixed guides; a frame mounted and movable upon said guides; band wheels carried by said frame; a pair of rocker-shafts; connections between said shafts and the frame to raise and lower the frame as the shafts are oscillated; connections between the shafts to cause them to move in unison; a fixed support; a power cylinder fulcrumed at its lower end upon said support;

an arm rigidly secured to one of the rocker-shafts and pivotally connected at its opposite end to the piston-rod of the power cylinder; a yoke-shaped frame likewise swiveled at its lower end upon the fixed support; a series of adjustable screws mounted in the upper end of said yoke-shaped frame; and means for swinging said yoke-shaped frame to bring one or another of said screws into operative position with reference to the upper end of the piston-rod.

4. In a band saw resawing machine, the combination of a pair of fixed guides arranged in parallel relation to each other; a fixed support mounted upon and secured to the upper ends of said guides and over which the lumber to be sawed is passed; a frame mounted between and movable upon said guides; band wheels carried by said frame; a pair of rocker shafts; connections between said shafts and the frame to raise and lower the frame as the shafts are

rocked; connections between the shafts to cause them to move in unison; a fixed support; a power cylinder fulcrumed at its lower end upon said support; an arm rigidly secured to one of the rocker shafts and pivotally connected at its opposite end to the piston-rod of the power cylinder; a yoke-shaped frame likewise swiveled at its lower end upon the fixed support; a series of adjustable stop members mounted in the upper end of said yoke-shaped frame; and means for swinging said yoke-shaped frame to bring one or another of said stop members into operative position with relation to the upper end of the piston-rod.

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

CHARLES E. CLEVELAND.

Witnesses:

FRANK J. WOLFF,
CARL R. WOLFF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."