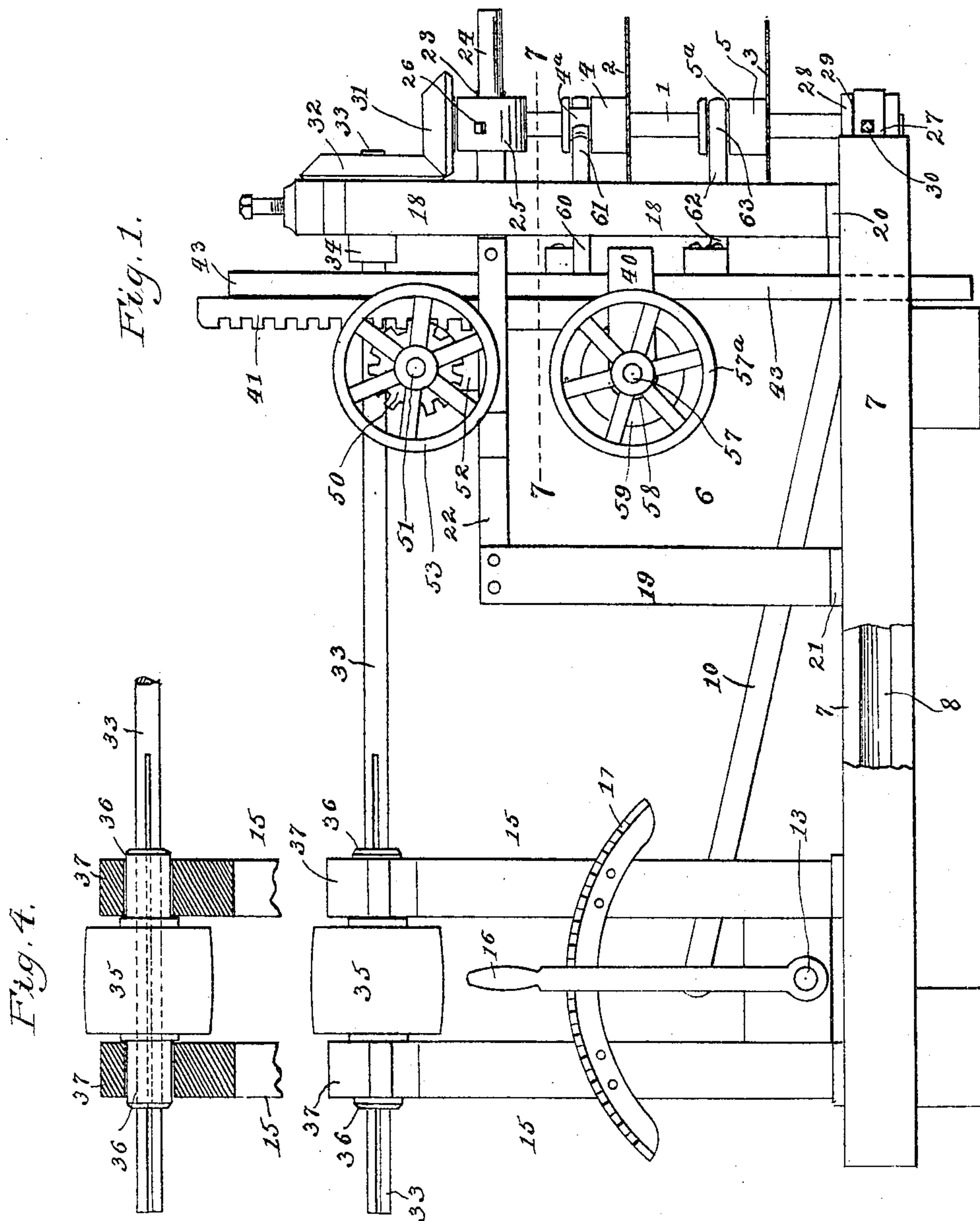


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SAWMILL.

APPLICATION FILED OCT. 19, 1904.

4 SHEETS—SHEET 1.



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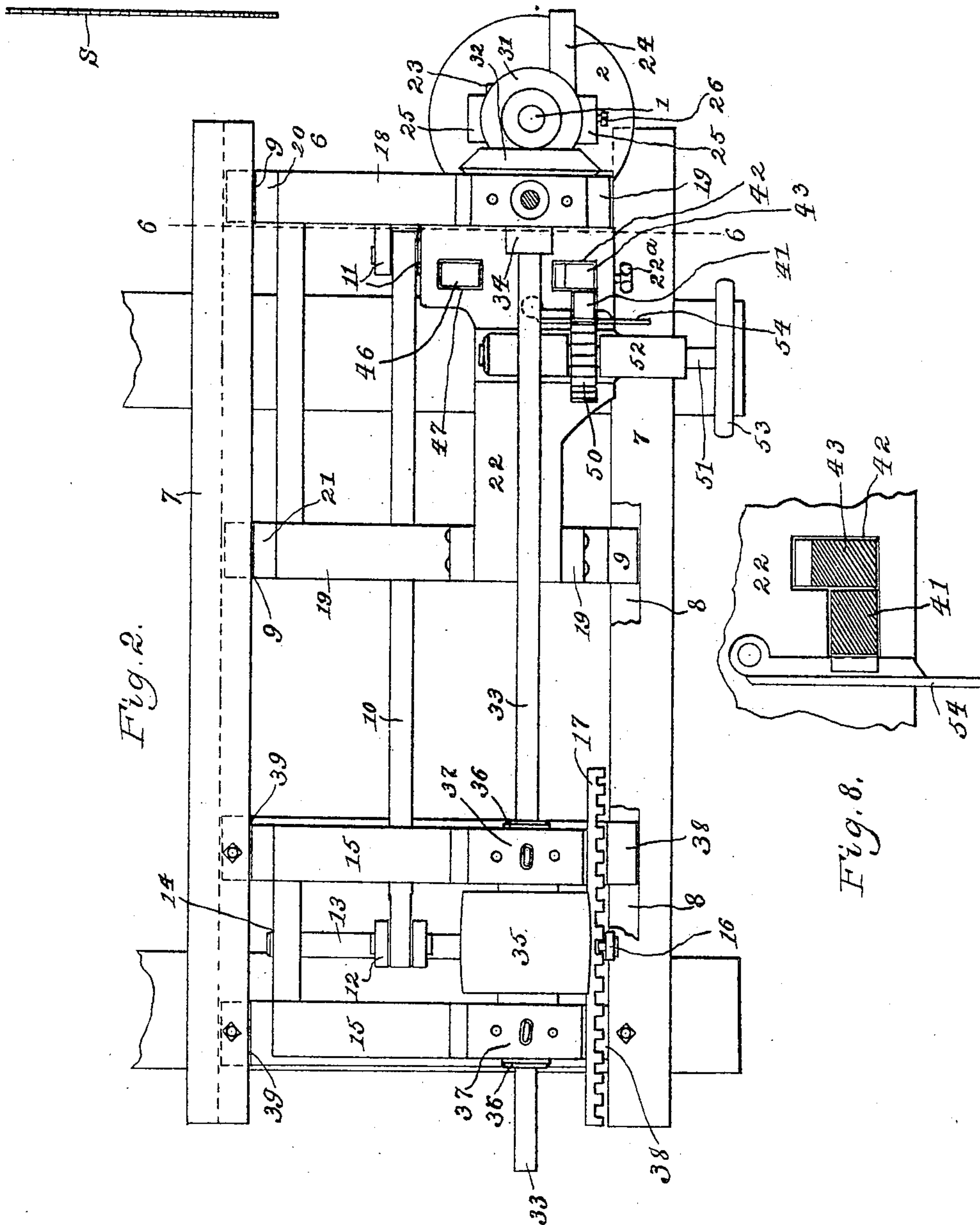
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4 SHEETS—SHEET 2.



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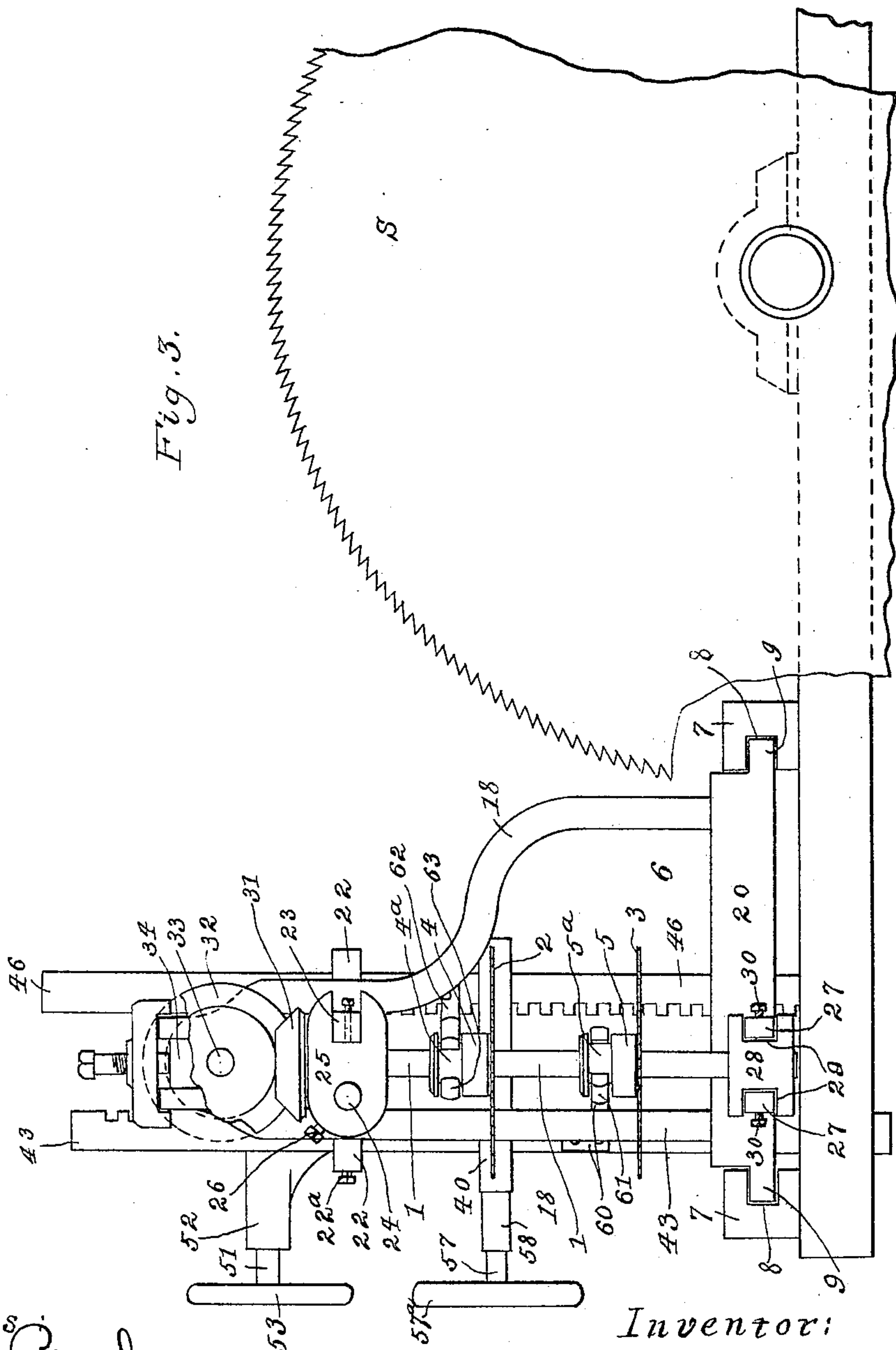
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4 SHEETS—SHEET 3.

Fig. 3.



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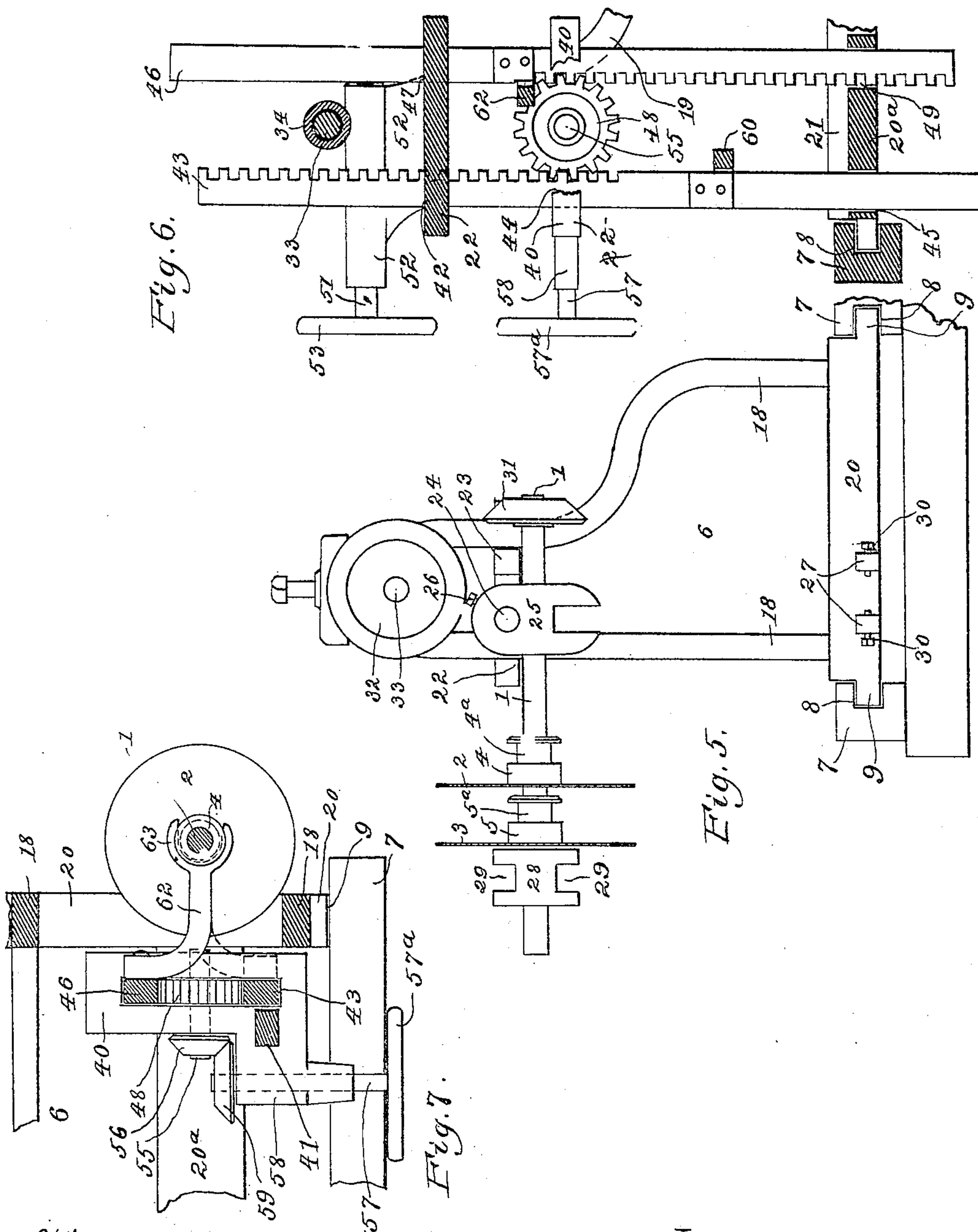
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# UNITED STATES PATENT OFFICE.

RICHARD L. NEUBERT, OF KNOXVILLE, TENNESSEE.

## SAWMILL.

No. 800,871.

Specification of Letters Patent.

Patented Oct. 3, 1905.

Application filed October 19, 1904. Serial No. 229,066.

*To all whom it may concern:*

Be it known that I, RICHARD L. NEUBERT, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Sawmills, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates particularly to sawmills in which provision is made for simultaneously making cuts in planes which are perpendicular to each other and parallel to the length of the log whereby a section may be cut the full width of a log by one saw and said section may be cut lengthwise into pieces of any desired width by one or more saws set in planes intersecting the plane of the first saw.

The object of the invention is chiefly to provide mechanism comprising saws which are readily and easily adjustable for "edging" boards as they are being sawed from a log. Inasmuch as each board cut from the log varies in width from the board preceding or following it, it is necessary to closely readjust the edging-saws with each shift of the log for the cutting of a new board.

In addition to the mechanism for the prompt and accurate setting of the edging-saws toward and from each other the machine comprises mechanism for simultaneously raising or lowering all the edging-saws and also mechanism for simultaneously shifting the saws bodily out of the range of the log.

The machine also embodies special mechanism for the ready removal and support of the edging-saws in suitable position for sharpening.

This invention is an improvement upon the apparatus described in my application for Letters Patent of the United States, Serial No. 160,185, filed June 5, 1903.

In the accompanying drawings, Figure 1 is a side elevation of an apparatus embodying my improvement. Fig. 2 is a plan of the same apparatus. Fig. 3 is an elevation of the end of the machine adjacent the log. Fig. 4 is a section on the line 4 4 of Fig. 2. Fig. 5 is a detail elevation showing the edging-saw arbor removed from its normal position and set in position for sharpening the saws. Fig. 6 is a vertical section on the line 6 6 of Figs. 1 and 2 looking toward the left. Fig. 7 is a horizontal section on the line 7 7 of Fig. 1. Fig. 8 is a detail of locking mechanism.

For convenience in description the end of

the machine shown by the right-hand portion of Fig. 2 is herein called the "right-hand" end of the machine, while the opposite end is called the "left-hand" end, and the portions of the machine at the front and rear of said figure are called, respectively, the "front" and the "rear" of the machine.

Referring to said drawings, 1 is a vertical arbor which is surrounded by circular saws 2 and 3, secured, respectively, by key-seated hubs 4 and 5, surrounding and adapted to slide vertically upon said arbor. Said arbor and mechanism for manually raising and lowering said saws to any chosen positions within the limit of the length of said arbor are supported upon a carriage 6, which is in turn slidably supported upon the parallel horizontal carriage ways or rails 7. Said ways or rails form a base for the seating of my improvement upon the frame F of the sawmill. Said carriage ways or rails are preferably provided with a horizontal longitudinal groove 8, opening toward the other of said rails. Said carriage has at its base the laterally-directed feet 9, extending into said grooves 8, the height and transverse length of said feet being such as to adapt them to closely fit into said grooves without binding therein, to the end that said carriage may be firmly held in any chosen position upon said ways and yet permit said carriage to slide upon said ways without the application of large power. Any suitable mechanism may be employed for the shifting of said carriage and securing it in the desired position. The drawings show a connecting-rod 10, hinged by one end to the ears 11 of the carriage and by the other end to the arm 12 of a rock-shaft 13, which extends horizontally and transversely across the carriage-track and is secured in bearings 14 in the upright stationary frame 15. By means of a lever 16, secured to said rock-shaft, the rock-shaft may be rotated and the connecting-rod and the carriage reciprocated. By engaging said lever on the rack 17 the carriage may be secured in the positions determined by the notches in said rack.

The carriage comprises two right-hand uprights 18, two left-hand uprights 19, the horizontal member 20, connecting the lower ends of the uprights 18, a horizontal member 21, connecting the lower ends of the uprights 19, and a horizontal member 22, joining the upper ends of the uprights 19 and extending thence to and joining the upper ends of the uprights 18. A horizontal connecting member 20<sup>a</sup> joins



the connecting members 20 and 21. From the right-hand end of the member 22, adjacent the plane of the large upright saw S, project two parallel horizontal arms 23 and 24, the arm 23 being preferably rectangular and the arm 24 being preferably cylindric. Said arms support a bearing-block 25, through which the upper end of the arbor 1 extends. Said bearing-block is provided with horizontal apertures which conform approximately to the arms 23 and 24, and set-bolts 26 extend through said block and bind the latter to said arms. From the right-hand portion of the horizontal member 20 adjacent the plane of the saw S two arms 27 extend horizontally and parallel to each other toward the right and support a bearing-block 28, having the lateral grooves 29 for receiving the arms 27. Set-bolts 30 secure said block to said arms. The lower end of the arbor 1 is journaled in said bearing-block. On the upper end of the arbor 1 is fixed a horizontal bevel-gear 31, which engages with an upright bevel-gear 32. Said gear 32 is fixed upon a horizontal rotary shaft 33, secured in suitable bearings on the carriage 6 and in a stationary part at the opposite end of the machine. The drawings show the right-hand end of said shaft supported in a bearing-block 34, which is located between the upper ends of the uprights 18 of the carriage, while the opposite or left-hand end of said shaft is key-seated through a pulley 35, which pulley is seated in bearings 37 by means of journals 36. Said bearings are supported by the upper portion of the frame 15. This construction permits said shaft to slide lengthwise in said pulley when the carriage 6 is shifted backward or forward on the rails 7. By providing the pulley with such journals seated in the bearings 37 the lateral strain of the belt applied to the pulley is wholly upon said journals and not upon said shaft. Hence said strain does not tend to bind the shaft and increase the frictional resistance to be overcome in effecting longitudinal movement of the shaft. In other words, this construction at all times leaves the shaft free to slide lengthwise through the pulley.

The grooves 8 preferably extend along the entire length of the rails 7, while the frame 15 is provided with front feet 38 and rear feet 39, extending into said grooves, as the feet 9 of the carriage 6 extend into said grooves. This permits the horizontal shifting of said frame upon said rails to attain a proper adjustment when the mill is first set up for operation. After such adjustment said frame may be secured to said rails in any suitable manner, as by means of set-bolts 15<sup>a</sup>, extending through a portion of the rail and engaging the feet of said frame.

A horizontal vertically-shiftable platform or support 40 is located within the frame of the carriage adjacent to the uprights 18. From said support a rack-bar 41 rises and extends

through a guide-opening 42 in the connecting member 22. Adjoining said rack-bar is another rack-bar 43, which extends through said guide-opening 42 and thence downward through a guide-opening 44 in said support 40 and thence through another guide-opening 45 in the connecting member 20<sup>a</sup> in the lower portion of the carriage, and at a short distance at the rear of said rack-bar 43 a similar rack-bar 46 extends through a guide-opening 47 in the connecting member 22 and through the guide-opening 44 in said support 40 and through a guide-opening 49 in said connecting member 20<sup>a</sup>. By this construction said platform or support 40 is guided in its vertical movement by said rack-bars 43 and 46, and said support or platform may be raised or lowered by raising or lowering the rack-bar 41, which, as already described, extends upward from said platform. The teeth of said rack-bar 41 are directed toward the left-hand end of the machine, and a spur gear-wheel 50 engages said teeth. Said spur gear-wheel is mounted upon a rotary shaft 51, which is journaled in a chair 52, and said chair is mounted upon the horizontal connecting member 22. A hand-wheel 53 is secured to the front end of said shaft as a means for rotating the latter. It will now be understood that the rotation of said wheel will result in the raising or lowering of said platform 40, according to the direction of said rotation. When brought to the desired elevation, said platform may be secured in any desired manner, as by a shiftable key 54, seated upon the upper face of the horizontal connecting member 22 between the rack 41 and the chair 52 in proper position to be moved manually between two teeth of said rack 41. (See Figs. 2 and 8.) The upper portion of the rear face of the rack-bar 43 and the lower portion of the front face of the rack-bar 46 are provided with teeth. The portion of the opening 44 between the rack-bars 43 and 46 is occupied by a spur gear-wheel 48, engaging said racks and supported immovably upon a horizontal rotary shaft 55. Upon the left-hand end of said shaft and outside of said support or platform 40 a bevel-gear 56 surrounds and is keyed to the shaft 55. At right angles to said shaft 55 is a shaft 57, secured in the bearing 58 on the platform 40. A bevel-gear 59 surrounds the rear end of said shaft 57 and intermeshes with the bevel-gear 56. On the front end of the shaft 57 is secured a hand-wheel 57<sup>a</sup>, by which said shaft may be rotated. The rotation of said shaft will result in the rotation of said bevel-gears, the shaft 55, the spur gear-wheel 48, and the lifting of one of the rack-bars 43 and 46 and the lowering of the other of said bars, according to the direction of rotation of said hand-wheel. It will be observed that this vertical adjustment of said rack-bars is independent of the vertical adjustment of said platform 40, that said platform may be set at any desired elevation with-



out moving said rack-bars 43 and 46 and said bars acting as vertical guides for said platform, and that when said platform has been so set (it being suspended from the rack-bar 41) the rack-bars 43 and 46 may be vertically adjusted. The said rack-bars 43 and 46 may be secured at any chosen elevation by any suitable means, as by a set-screw 22<sup>a</sup>, extending horizontally through the connecting member 22 and bearing against the rack-bar 43. It will be observed that binding one of said rack-bars will serve to secure the other, because if one is bound the spur gear-wheel 48 is rendered immovable and holds the other rack-bar.

Below the platform 40 an arm 60 extends from the rack-bar 43 to the hub of the saw 3, and said arm is provided with a horizontal fork 61, the fingers of which extend into an annular groove 5<sup>a</sup> on the hub 5. By this means said hub and saw are held in vertical position upon the arbor 1. Above the platform 40 a similar arm 62 extends from the rack-bar 46 to the hub 4 of the saw 2 and is provided with a fork 63, the arms of which enter an annular groove 4<sup>a</sup> on the hub 4. By this means said hub and the saw 2 are held in vertical position upon the arbor 1.

From the foregoing description it is obvious that the distance between the saws 2 and 3 may be varied by the rotation of the hand-wheel 59, for the rotation of said hand-wheel results in opposite movements of the rack-bars 43 and 46, which results in opposite movement of the arms 60 and 62, and it will now be obvious that my machine embodies provision for the simultaneous raising or lowering of both of said saws and also for the separate movement of said saws toward and from each other. This permits the preliminary adjustment of the saws to a log of small diameter or large diameter and the subsequent adjustment of the saws to the varying width of the boards while the log is being sawed.

It will be observed that the construction whereby the arbor 1 is secured makes possible the easy removal of the arbor and the saws. After loosening the set-bolts by which the bearing-blocks 25 and 28 are secured said blocks may be moved to the right until they are free from their supporting-arms. Then the bearing-block 28 and the saws and their hubs may be slipped from the lower portion of the arbor 1 and the saws handled in any desired way for sharpening. Furthermore, said bearing-blocks and arbor may be slipped to the left until the lower of said blocks is entirely disengaged and the upper of said blocks is only engaged by the arm 24 (which is longer than the arm 23) and the lower portion of the arbor then turned forward and upward until the upper bearing-block can be moved to the left in front of the arm 23. Then the arbor can be released and said arbor allowed to bear against said arm, whereby the arbor is sup-

ported approximately in the horizontal position, as shown in Fig. 7. While the arbor is in such position the saws are held in convenient position for sharpening.

The arms 27 are preferably sufficiently separated or the grooves 29 in the bearing-block 28 are made deep enough to leave space between the upright walls of said grooves and said arms to permit lateral adjustment of said block and the binding of said block within said range of adjustment by the set-bolts 30. This adjustment of said block results in the adjustment of the arbor 1 and the saws 2 and 3 in order that the planes of said saws may be accurately parallel to the course traversed by the log.

I claim as my invention—

1. In a sawmill, the combination with an upright saw, of an upright arbor, a plurality of saws slidably surrounding said arbor and normally extending into the plane of said upright saw, upright shiftable bars carrying arms engaging said saws to slide the same and a shiftable support through which the bars may individually slide and carrying means for causing both bars to slide with said support, said bars guiding the support, substantially as described.

2. In a sawmill, the combination with an upright saw, of a plurality of circular saws arranged in horizontal planes and extending normally into the plane of said upright saw, a vertically-shiftable support, a pair of upright rack-bars constituting guides for said support, mechanism for securing said support at different elevations, mechanism for supporting said horizontal saws upon said rack-bars, and mechanism for raising and lowering said rack-bars, substantially as described.

3. In a sawmill, the combination with an upright saw, of an upright arbor, a plurality of horizontal saws slidably surrounding said arbor and extending normally into the plane of said upright saw, upright bars, an arm extending from each of said bars to one of said horizontal saws, a gear-wheel located between and in engagement with said bars, and mechanism for rotating said gear-wheel, substantially as described.

4. In a sawmill, the combination with an upright arbor, of a detachable bearing for the lower end of said arbor, a bearing-block for the upper end of said arbor, two horizontal, parallel arms for supporting said block, the block being journaled on one of said arms and mounted to be slidably disengaged from the other so that said block may be suspended from one of said arms while the arbor extends approximately horizontally beneath said arms, substantially as described.

5. In a sawmill, the combination with an upright arbor, of a detachable bearing for the lower end of said arbor, a bearing-block for the upper end of said arbor, two horizontal, parallel arms for supporting said block, one



of said arms being longer than the other, and the block being journaled on the longer of said arms and mounted to be slidably disengaged from the other so that said block may be suspended from one of said arms while the other extends approximately horizontally beneath said arms, substantially as described.

6. In a sawmill, the combination with the parallel rails, 7, of a saw-arbor-supporting carriage having a slidable tongue-and-groove engagement with said rails, a frame, 15, similarly engaging said rails, mechanism for se-

curing said frame to said rails, and mechanism connecting said frame and said carriage for manually shifting the latter, the frame, 15, supporting a driving-shaft for the saw-arbor, substantially as described.

In testimony whereof I have signed my name, in presence of two witnesses, this 15th day of October, in the year 1904.

RICHARD L. NEUBERT.

Witnesses:

EDWARD HACKER,  
CYRUS KEHR.