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PATENTED OCT. 27, 1903

M. DIXON.
BAND SAW MACHINE.
APPLICATION FILED MAY 19, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

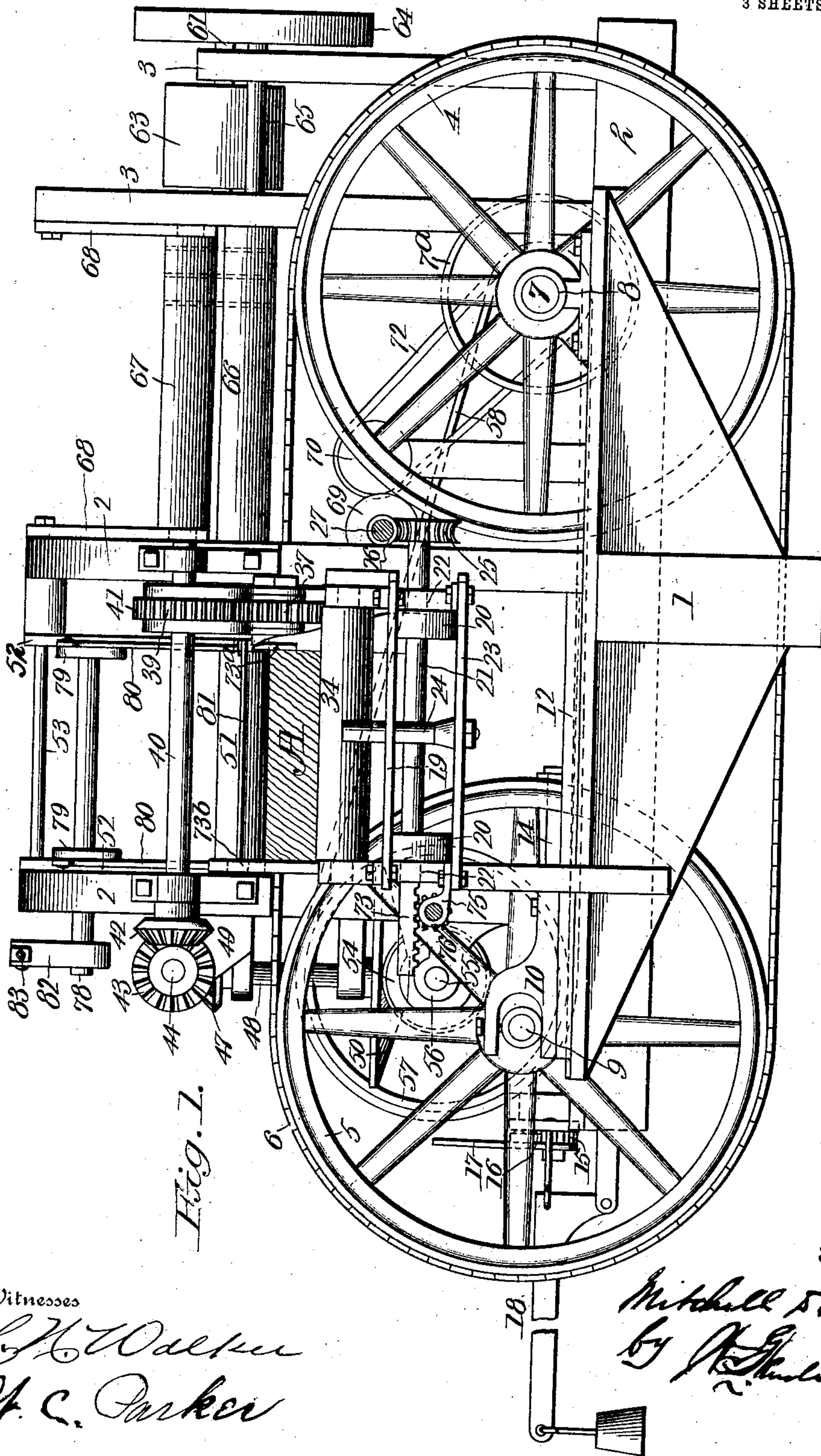


Fig. 1.

Witnesses

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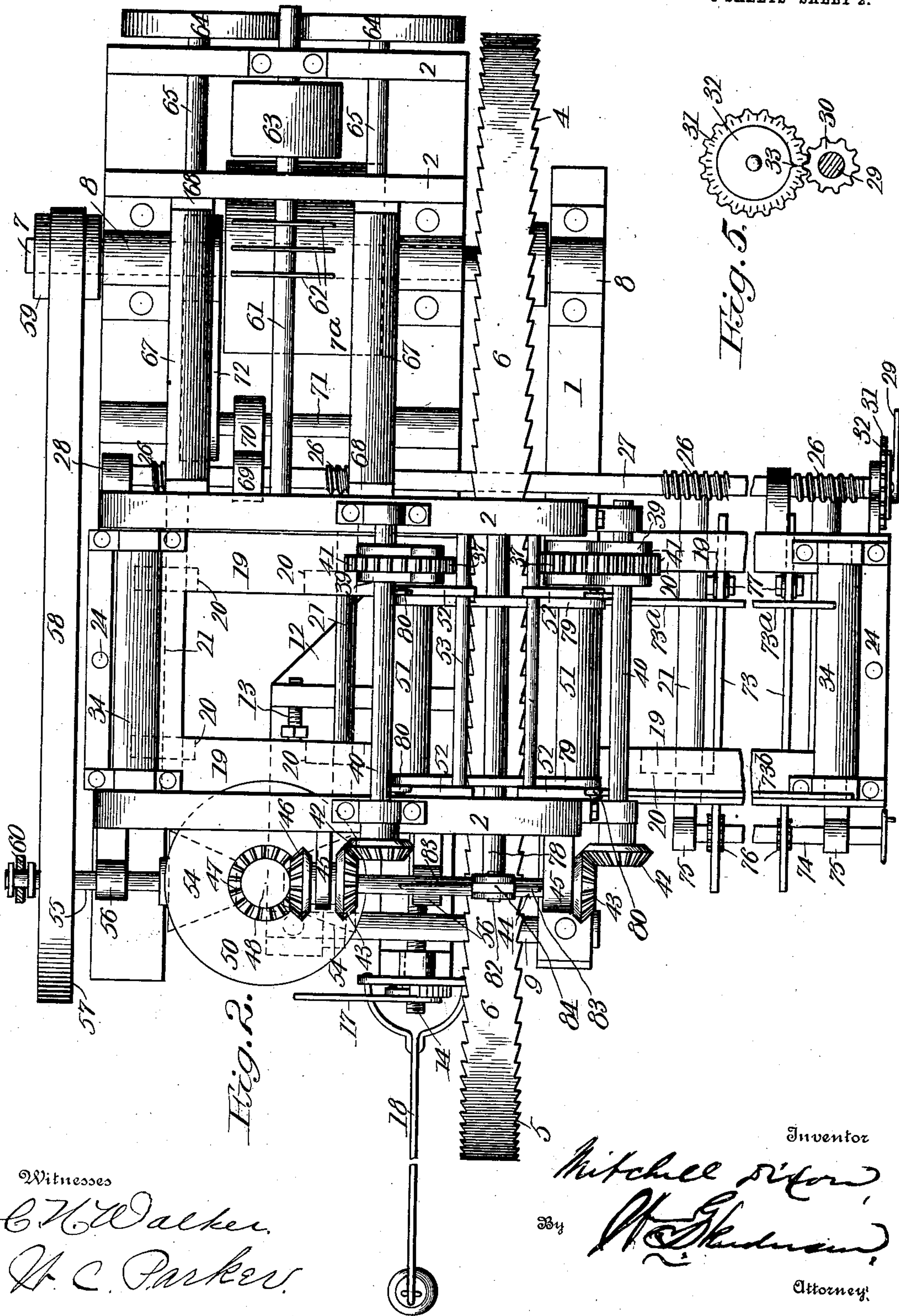
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Witnesses

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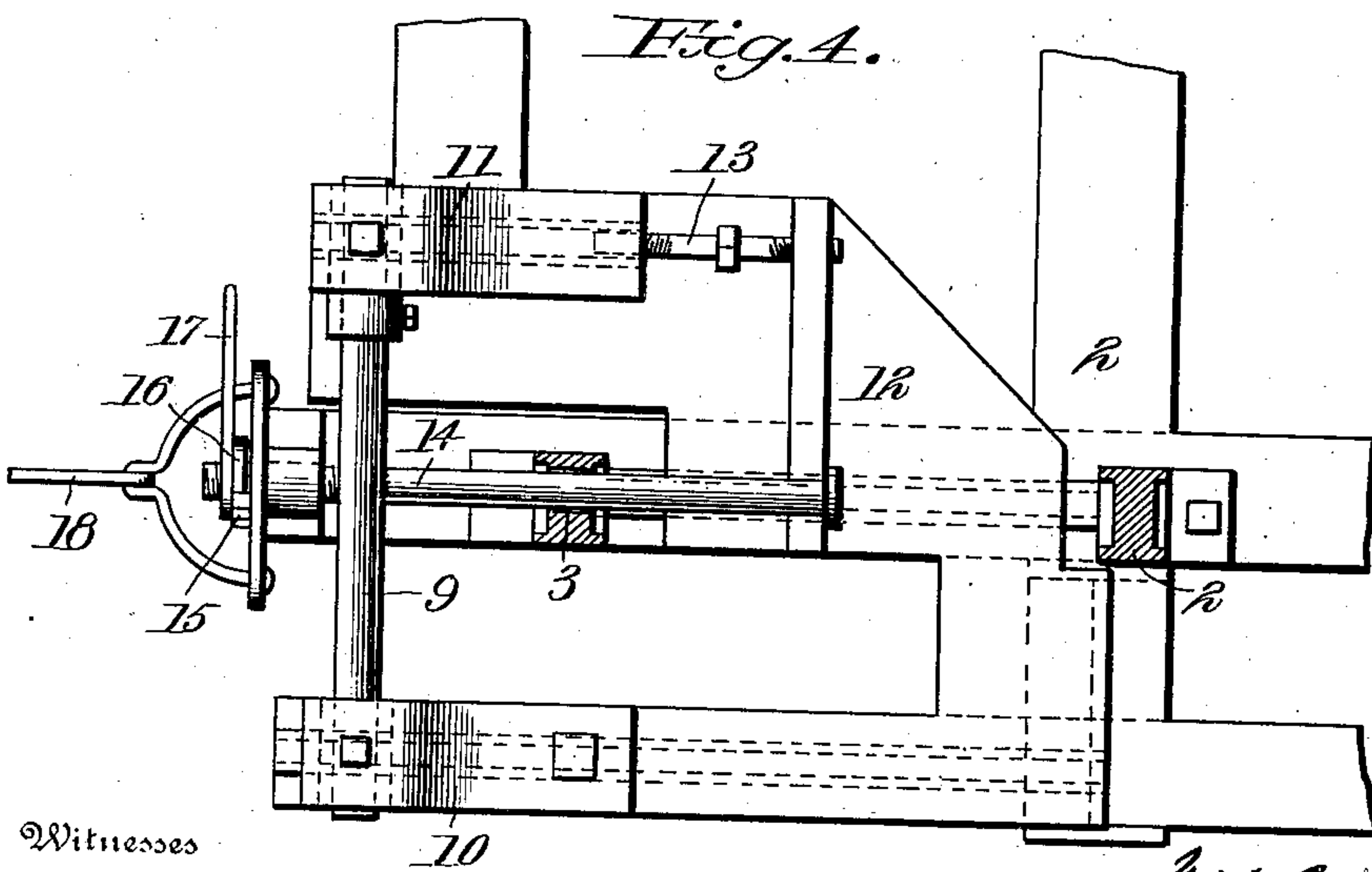
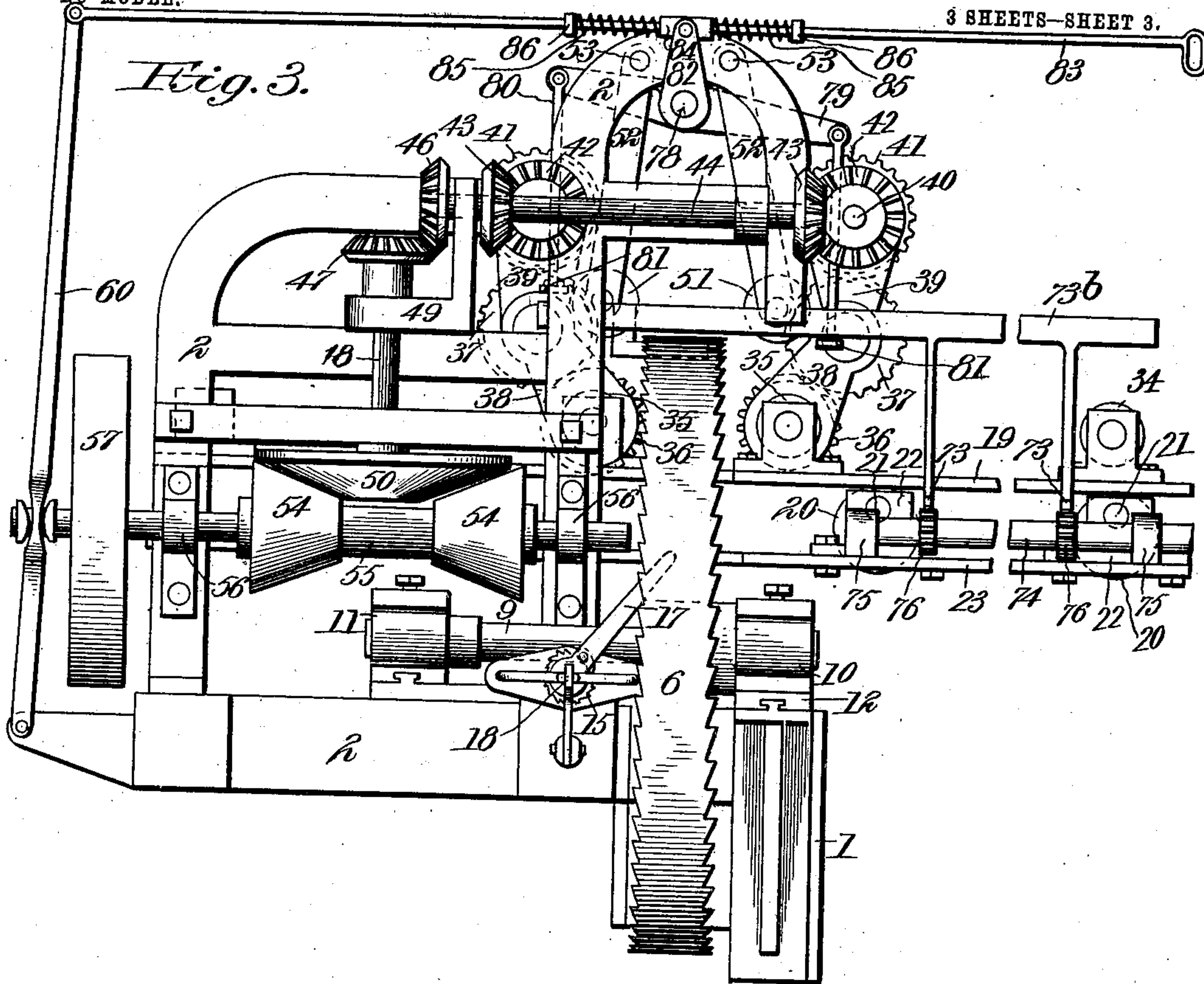
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

MITCHELL DIXON, OF BRUNSWICK, GEORGIA.

BAND-SAW MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,607, dated October 27, 1903.

Application filed May 19, 1903. Serial No. 157,854. (No model.)

To all whom it may concern:

Be it known that I, MITCHELL DIXON, a citizen of the United States, residing at Brunswick, in the county of Glynn and State of Georgia, have invented certain new and useful Improvements in Band-Saw Resawing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to band-saw machines; and it has for its object primarily to construct a machine in which the log or timber will be sawed in its travel from one end to the other of the machine and be caused to travel in the opposite direction and in the same path, but a different plane, so as to have another board sawed from the timber in the return travel of the timber, and so on in alternation until the sawing is finished.

It has further for its object to provide improved features of construction and arrangement of parts for accomplishing the first-named object.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construction and in the combination of parts hereinafter particularly described, and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is an elevation of the machine. Fig. 2 is a plan of the machine. Fig. 3 is an end elevation. Fig. 4 is a detail plan of the slide-frame which carries one of the band-wheels, and Fig. 5 a detail showing a scale for indicating the extent of vertical movement of the carriage which supports the log.

In the drawings, the numeral 1 designates the bed of the machine and 2 the frame, while 4 and 5 are the band-wheels around which passes the band-saw 6, having teeth on its opposite edges, the shaft 7 of the wheel 4 being journaled in suitable boxes 8 and deriving power from a suitable source in the usual way. The wheel 5 has its shaft 9 suitably journaled in boxes 10 and 11, supported upon

a slide-frame 12, the box 11 being capable of independent adjustment by a screw 13, so as to adjust the shaft 9 laterally if for any reason it becomes necessary in order to preserve proper alinement or for other reasons. Any slack in the band-saw can be taken up by means of the rod 14, which coöperates with the ratchet 15, pawl 16, and hand-lever 17, and an automatic tension consisting of the weighted arm 18, connected, as usual, with the slide-frame 12, is provided, these parts not being more in detail described because they are in general use and no claim of novelty is made therein.

The log or timber A in its travel through the machine is supported upon a vertically-movable table 19, which is supported on cams 20, secured to shafts 21, journaled in boxes 22, supported by a frame 23 of any suitable construction, the table 19 being guided in its vertical movement by rods 24, one of which extends upward from each end cross-bar of the frame 23 and passes through an opening in the end cross-bars of the table 19, as illustrated in Figs. 1 and 2 of the drawings. The cams 20 will be disposed at suitable intervals along the frame 23, and preferably two of them will be secured to each shaft 21, and each shaft at one end will be provided with a worm-wheel 25, with which will mesh a worm 26 on a worm-shaft 27, there being a worm for each worm-wheel, and the worm-shaft will be journaled in suitable boxes 28, located at appropriate points, and will be provided with a hand-lever 29, by which the shaft may be turned so as to rotate the shafts which carry the cams, and thus elevate the table 19 to the extent desired in the operation of sawing the successive boards from the log or timber. For the purpose of determining the extent of the vertical movement of the table in the sawing of each board from the log or timber a suitable index or scale may be provided, and, as an illustration of one form of index, there may be employed a pinion 30, which will be secured to the worm-shaft 27 and which will mesh with a toothed ring 31, formed with a scale and mounted to rotate on a disk 32, provided with an index-finger 33 and supported in any suitable way from the frame of the machine, such parts being illustrated in Fig. 5 of

the drawings and not being illustrated more in detail, because any suitable form of index may be applied in any suitable way for the purpose.

5 The movable table 19 is provided at suitable points with idle supporting-rolls 34 and at proper intervals with positively-driven feed-rolls 35, provided at one end with toothed wheels 36, with which mesh toothed wheels 37, mounted loosely in the adjacent ends of swinging arms 38 and 39, the arms 38 being loosely journaled on the axles of the positively-driven rolls and the arms 39 being loosely mounted on shafts 40, which carry at one end toothed wheels 41, which mesh with the toothed wheels 37, said shafts 40 at their other ends being provided with bevel-gears 42, which derive motion from bevel-gears 43 on a shaft 44, which is supported by brackets 45 and is provided with a bevel-gear 46, meshing with a bevel-gear 47, whose shaft 48 passes through an extension 49 of one of the brackets 45 and is provided at its lower end with a cone-disk 50. The object of mounting the toothed wheels 37 in the loosely-swinging hangers or arms 38 and 39 is to allow for the elevation and depression of the table 19 in the adjustment of the log or timber when sawing boards therefrom. At suitable points idle rolls 51 are journaled in arms 52, suspended loosely from rods 53, so that said idle rolls will rest on top of the log or timber being sawed and will yield in the vertical movement of the table 19.

35 Motion is transmitted to the positively-driven feed-rolls through the bevel-gears and toothed wheel described, said motion being derived from one or the other of two cone friction-rolls 54, mounted on a shaft 55, supported so as to slide in boxes 56 and having at its end a belt-wheel 57, which is connected by a belt 58 with a pulley 59 on the shaft 7 of the saw band-wheel 4. The shaft 55 is moved longitudinally by a suitable lever 60, so as to throw one or the other of the cone-rolls 54 into frictional contact with the cone-disk 50, according to the direction it is desired to rotate the disk 50 for the purpose of moving the log or timber in one direction or the other through the machine. When it is desired to move the log or timber in one direction, the proper cone-roll is thrown into frictional contact with the cone-disk. When the log has reached the end of its feed and one board 55 sawed by the band-saw, the table 19 is raised by the worm-shaft the distance necessary for the thickness of the board to be sawed and the other cone-roll is brought into frictional contact with the cone-disk, whereupon the 60 direction of rotation of the parts is reversed and the log is carried in the opposite direction and in the same path, but higher plane than before, and thus a second board is sawed from the log, and so the operation continues 65 in alternation until all the boards have been sawed.

As each board is sawed it is removed and lift-

ed over to the edger mechanism. (Illustrated at the right of Figs. 1 and 2 of the drawings.) This mechanism consists of the shaft 61, provided with the edge-saws 62 and provided with the drive-pulley 63, the projecting end of the shaft 61 bearing down upon a belt 64, which passes around pulleys on the shafts 65 of the drive feed-rolls 66, which carry the board through the edger. This mechanism is provided with the idle rolls 67, journaled to turn in the swinging arms 68. A further description of these parts is not necessary, as no novelty is claimed therein.

The numeral 69 designates a friction-wheel on the worm-shaft 27, which is in frictional contact with a friction-wheel 70 on a shaft 71, which may be driven by a belt 72, leading to a loose pulley (not shown) on the shaft 7, so that when the loose pulley is clutched to the shaft power may be transmitted by the belt 72 to the friction-wheels 69 and 70, so as to quickly return the vertically-movable table 19 to its normal position after it has reached the limit of its upward movement.

The operation of the several parts will be obvious from the foregoing description.

I have illustrated and described with particularity the preferred construction of parts; but it is to be understood that changes can be made and essential features of my invention still be retained.

In Figs. 1, 2, and 3 of the drawings the numeral 73 designates sliding rack-bars having at one end guide-plates or head-blocks 73^a, which may be moved up against the side of the log or timber by turning the rod 74, journaled in suitable boxes 75 and provided with toothed wheels 76, which engage the racks of the bars 73, said racks at one end resting on supporting-rolls 77. This will enable the log or timber to have a suitable guide whatever its width may be.

For the purpose of preventing pinching or binding of the saw by the log at the kerf cut by the saw I provide a separating-blade, one on each side of the saw, to enter the kerf, so as to separate or spread the log or cant at the kerf, and thus prevent the pinching. The preferred construction consists of a shaft 78, supported on the frame 2 and carrying a rocking beam 79, from the opposite ends of which extend the swinging arms 80, carrying at their lower ends spacing blocks or blades 81, one of which is designed to be lowered to the plane of the saw-kerf, so as to enter the same and prevent pinching or binding of the cant on the saw, the other blade at such time being raised so as to be out of line with the path of travel of the log through the machine. When the direction of movement of the log is reversed, the spacing-blade which was down is raised and the one that was up is lowered, so that it will enter the kerf and spread the same to prevent pinching on the saw. The arms carrying the spacing-blades are raised and lowered alternately, and to do this the shaft 78 is provided with a crank 82,

to which is connected a rod or feed-lever 83, one end of which is connected to the feed-lever 60, so that as the lever 60 is moved to shift one or the other cone 54 into engagement with the cone-disk 50 to reverse the direction of travel of the cant or log the crank 82 will be turned, so as to raise one spacing-blade and lower the other. The feed-lever 83 is preferably connected to the crank 82 by a sleeve or collar 84, to which the end of the crank has a pivotal connection and through which sleeve the feed-lever 83 will pass, and springs 85 encircle the lever and have one end bearing against the collar and the other ends against adjustable collars 86. These springs serve as cushions and enable the pressure for making operative contact between the driving cones and disk and for changing position of the spacing-blades to be applied, so that the spacing-blades will be brought into position at the proper time.

Having described my invention and set forth its merits, what I claim is—

1. In a band-saw machine, the combination with the saw, of mechanism for feeding the log or timber past the saw for cutting a board, and means for reversing the travel of the feed mechanism to cause the timber to travel in the same vertical plane and opposite direction and in a different horizontal plane for cutting another board from the log, substantially as described.

2. In a band-saw machine, the combination with the saw, of a vertically-movable table for supporting the timber, mechanism for feeding the log or timber past the saw to cut a board, means for elevating the table, and means for reversing the feed mechanism to cause the timber to travel in the same vertical plane and in a higher horizontal plane and opposite direction for cutting another board from the timber, substantially as described.

3. In a band-saw machine, the combination with the saw, of a vertically-movable table supporting the log or timber, feed mechanism

for moving the log or timber past the saw to cut a board therefrom, means for reversing the direction of feed to move the log or timber in the opposite direction and in the same vertical plane for cutting another board, and means for elevating the table at one end of the travel of the log or timber, substantially as described.

4. In a band-saw machine, the combination with the saw, of a vertically-movable table to support the log or timber, feed-rolls for moving the log or timber carried by the table, a train of gears for driving the feed-rolls, a friction cone-disk connected with the train of gears, cone-rolls to contact with the cone-disk, and means for throwing one cone-roll out of contact and another into contact with the cone-disk for reversing the feed-rolls, substantially as described.

5. In a band-saw machine, the combination with the saw, of a vertically-movable table, a feed-roll carried by the table and provided with a toothed wheel, a driven shaft provided with a toothed wheel, a toothed wheel intermediate of the other two and meshing with both of said wheels, said intermediate wheel being journaled in the adjacent ends of swinging hangers, and means transmitting power to the feed-roll through said wheels, substantially as described.

6. In a band-saw machine, the combination with the saw, of mechanism for feeding the log or timber past the saw, first in one direction and then in an opposite direction, a pair of spacing-blades, one on each side of the saw, and means for raising and lowering said blades in alternation to bring one and then the other into line with the saw-kerf so as to enter the kerf and prevent pinching of the saw, substantially as described.

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

MITCHELL DIXON.

Witnesses:

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L. E. MARSHALL.