(No Model.) 4 Sheets—Sheet 1

L. S. PROCTOR & F. NEUDORFF.

WOOD SAWING MACHINE.

No. 589,793. Patented Sept. 7, 1897.

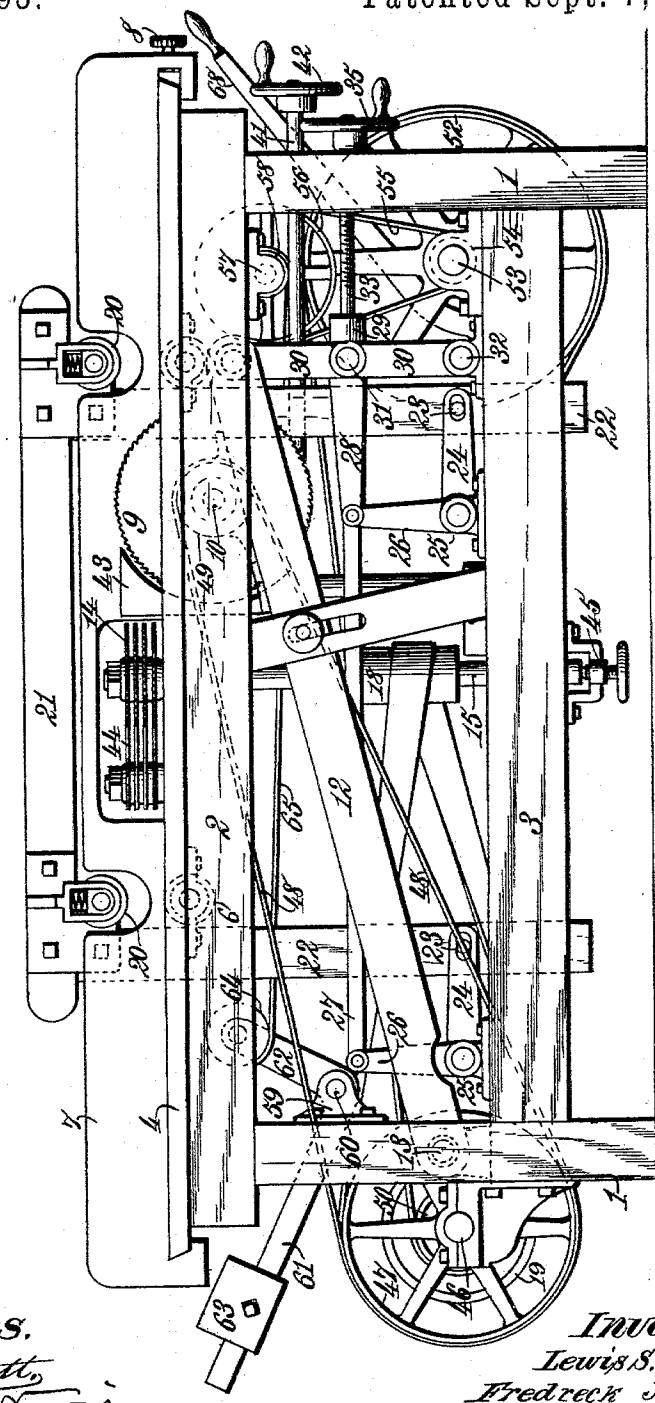


Fig. 1.

Witnesses.
Robert Everett,
Albert H. Norris.

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Lewis S. Proctor.
Fredreck Neudorff.
By James L. Norris.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 2.

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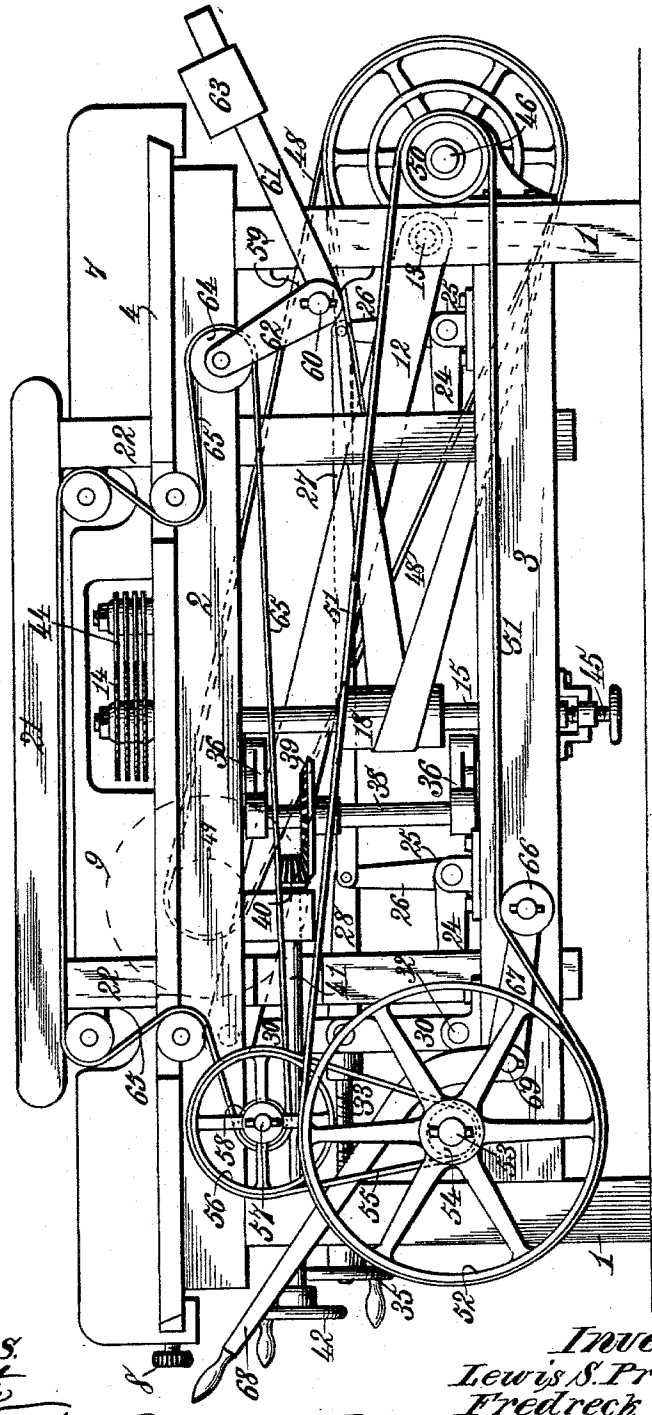


Fig. 2.

Witnesses.
Robt Ewett.
Albert H. Norris.

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(No Model.) 4 Sheets—Sheet 3.

L. S. PROCTOR & F. NEUDORFF.

WOOD SAWING MACHINE.

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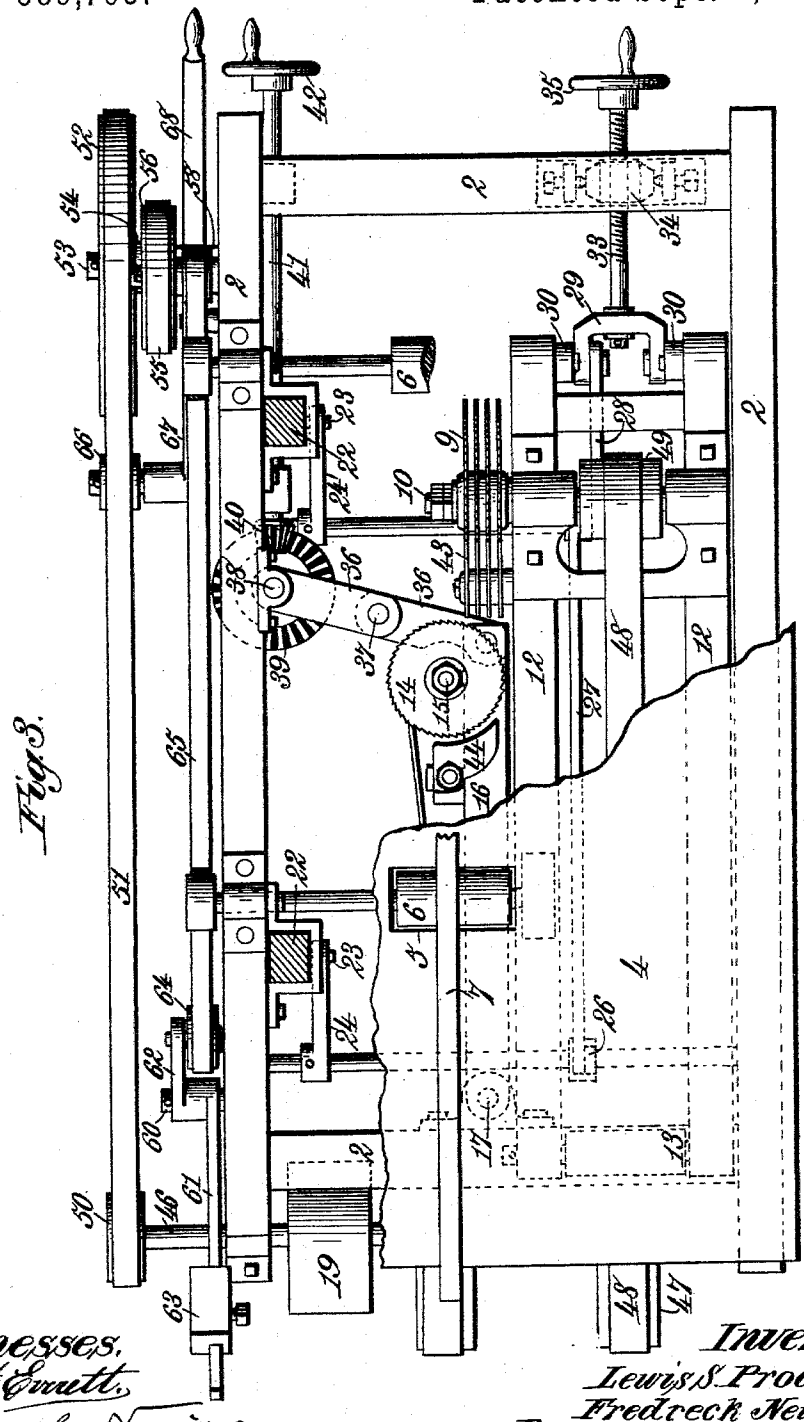


Fig 3.

Witnesses.
Robt Ewett.
Albert H. Norris.

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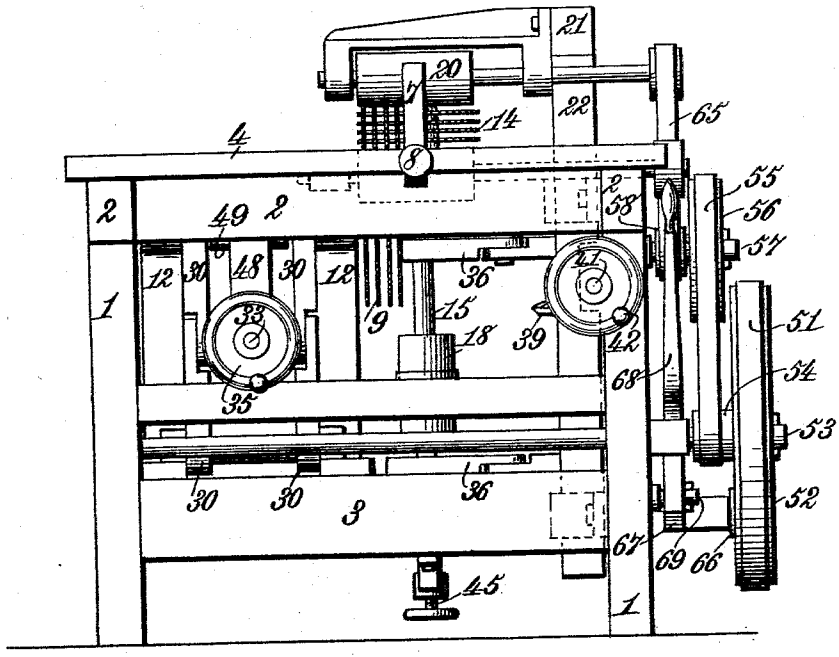
(No Model.) 4 Sheets—Sheet 4.

L. S. PROCTOR & F. NEUDORFF.

WOOD SAWING MACHINE.

No. 589,793. Patented Sept. 7, 1897.

Fig. 4.



Witnesses.
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Albert H. Norris.

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Lewis S. Proctor.
Fredreck Neudorff.
By James L. Norris.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEWIS S. PROCTOR AND FREDRECK NEUDORFF, OF SHEFFIELD, ALABAMA.

WOOD-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,793, dated September 7, 1897.

Application filed April 22, 1897. Serial No. 633,383. (No model.)

To all whom it may concern:

Be it known that we, LEWIS S. PROCTOR and FREDRECK NEUDORFF, citizens of the United States, residing at Sheffield, in the county of Colbert and State of Alabama, have invented new and useful Improvements in Wood-Sawing Machines, of which the following is a specification.

This invention relates to wood-sawing machines having two gangs of saws which rotate, respectively, in horizontal and vertical planes; and the chief objects of our invention are to provide a new and improved wood-sawing machine of the character referred to wherein the gangs of saws are conveniently adjusted and perfect control is obtained of the feed-rollers which feed the lumber or timber to the saws for the purpose of sawing it horizontally and vertically at one operation in the manufacture of butchers' skewers, blind-slats, laths, chair-rounds, and other articles of woodwork where comparatively small pieces of predetermined dimensions are desired.

The object of our invention is accomplished in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is an elevation looking at what may be termed the "left-hand" side of our improved wood-sawing machine. Fig. 2 is a similar view looking at the right-hand side of the machine. Fig. 3 is a broken or sectional top plan view of the same, and Fig. 4 is a front end elevation.

In order to enable those skilled in the art to make and use our invention, we will now describe the same in detail, referring to the drawings, wherein it will be observed that the main frame of the machine, as here shown, comprises posts or uprights 1, horizontal beams 2, connecting the upper ends of the posts or uprights, and similar beams 3, connecting the lower end portions of the same. The horizontal beams 2 support a work-table 4, having suitable openings 5, in which lower feed-rollers 6 are journaled in any suitable manner. The work-table 4 is provided with a vertical work-guide 7, adapted to be adjusted laterally and to be secured in its adjusted position through the medium of set-bolts 8 or any other devices suitable for the purpose. The gang of saws 9, which rotate in a vertical plane, are suitably spaced apart upon an arbor 10, which is journaled in the upper end portion of an inclined yoke-shaped frame 12, having its lower end portion pivoted to the main frame, as at 13, in such manner that the frame can be raised or lowered to vertically adjust the gang of saws 9. The gang of saws 14, which rotate in a horizontal plane, are suitably spaced apart upon a perpendicular arbor 15, mounted in suitable bearings upon a laterally-movable frame 16, having its rear end pivoted to the main frame, as at 17, in such manner that the frame can be swung laterally in the arc of a circle in much the same way that the yoke-shaped frame is swung vertically in the arc of a circle. The vertical arbor 15 is provided with a pulley 18, adapted to be driven by a belt connection with the shafting, which serves to impart motion to the main driving-pulley 19. (Best seen in Fig. 3.)

The lower feed-rollers 6 coöperate with upper feed-rollers 20, which are journaled in suitable bearings upon a vertically-adjustable frame composed of a horizontal member or portion 21 and perpendicular limbs 22, which extend down through the main frame of the machine and are provided near their lower ends with lateral pins 23, entering slots in the horizontal arms 24 of bell-crank levers 25. The bell-crank levers are composed in the present instance of rock-shafts provided with the lever-arms 24 and 26, as will be clearly understood by reference to Fig. 3. The vertical arms 26 of the rear bell-crank levers are pivotally connected with the vertical arms of the front bell-crank levers through the medium of horizontal rod 27, and the front bell-crank levers 26 are pivotally connected by a link 28 with a yoke 29, the arms or members of which are pivotally engaged with toggle-levers 30, jointed together, as at 31, and pivoted, respectively, to the frame of the machine, as at 32, and to the upper front end portion of the pivoted yoke-shaped frame 12. The yoke 29 has a swiveled connection with one end of a horizontal screw-shaft 33, working in a rocking screw-nut 34, journaled in suitable bearings on the main frame, as best seen in Fig. 3. The outer end of the screw-shaft 33 is provided with a hand-wheel or handle 35, by which the shaft

can be rotated in either direction for the purpose of operating the toggle-levers 30 to raise or lower the yoke-shaped frame 12 and the frame 21, whereby the saws 9 and feed-rollers 20 are simultaneously raised or lowered.

In Fig. 1 the yoke-shaped frame 12 is at the limit of its upward motion and the vertical saws are in their highest position, while the upper and lower feed-rollers 6 and 20 are in position to operate upon the lumber or timber to feed the same through the machine. As shown in Fig. 1, the toggle-levers 30 are in alinement perpendicularly, and obviously if the hand-wheel 35 be turned in the proper direction or to the right the toggle-levers will be thrown out of alinement, the joint 31 will move toward the hand-wheel, and the vertical saws 9 and feed-rollers 20 will be lowered. Conversely, if the hand-wheel 35 be turned in the opposite direction or to the left the yoke 29 will be moved rearward, the ends of the toggle-levers which are jointed together will partake of the motion of the yoke, and the saws 9 and feed-rollers 20 will be raised. The vertical motion of the feed-rollers is effected by the link connection 28 with the front bell-crank lever 26, the rod connection 27 between the bell-crank levers, and the loose connection of the bell-crank levers with the limbs 22 of the frame 21, in which the feed-rollers 20 are journaled.

The front end of the laterally-swinging frame 16, which carries the horizontal saws 14, is pivotally connected with one of two toggle-levers 36, jointed together, as at 37, the other toggle-lever being rigidly secured to a vertical shaft 38, Fig. 3, on which is mounted a bevel-gear 39, meshing into a pinion 40 on the inner end of a horizontal shaft 41. This shaft 41 is provided at its outer end with a hand-wheel or other suitable handle 42, by which the shaft can be rotated in either direction. As shown in Fig. 3, the toggle-levers 36 are in alinement and the gang of saws 14 is at the limit of its inward motion toward the yoke-shaped frame 12. If the hand-wheel 42 be turned in the proper direction, the beveled gear 39 and shaft 38 are turned and cause the toggle-levers 36 to be thrown out of alinement, thereby drawing or pulling the front end of the pivoted frame 16 laterally toward the right-hand side of the machine for the purpose of adjusting the horizontal saws relatively to the vertical saws. The horizontal saws are located immediately in rear of the vertical saws and the saws of each gang are spaced at any required distance apart through the medium of spacing blocks or washers in such manner that the saws of each gang may be adjusted relatively to one another to suit the conditions required. The frame 12, which carries the vertical saws, is provided with a series of attached splitters 43, which serve to separate the pieces which are severed by the vertical saws. The frame 16, which carries the horizontal saws, is also provided with a series of splitters 44, between which the strips divided by the horizontal saws pass and by which the strips are held separated. The splitters 43 and 44 move, respectively, in unison with the pivoted frames 12 and 16, so that they are adjusted in harmony with the adjustment of the gangs of saws.

The lower end of the vertical saw-arbor 15 is preferably supported by an adjustable step-bearing 45.

The rear end of the main frame is provided with bearings in which a shaft 46 is journaled, which shaft is provided with an attached belt-pulley 47, having a belt connection 48 with a pulley 49 on the arbor 10 of the vertical saws. The shaft 46 carries the main driving-pulley 19 and is provided at one end with a pulley 50, connected by a belt 51 with a pulley 52 on a shaft 53, journaled in suitable bearings at the front end portion of the machine. The shaft 53 also carries a pulley 54, which is connected by a belt 55 with a pulley 56, secured to a stud-shaft 57, provided with a comparatively small pulley 58. The rear end of the main frame is provided with a bearing 59, in which is pivoted, as at 60, a bell-crank lever comprising a long arm 61 and a short arm 62. The long arm 61 is provided with an adjustable weight 63 and the short arm is provided with a belt-tightening pulley 64, engaging an endless belt 65, which passes around pulleys on the lower feed-rollers 6, pulleys on the upper feed-rollers 20, and around the pulley 58. The rocking bell-crank lever 61 serves to hold the endless belt 65 under tension, but at the same time permits the frame which carries the upper feed-rollers 20 to be raised or lowered, as occasion may demand.

The belt 51, which serves to impart motion to the feed-rollers of the machine, can be tightened and loosened through the medium of a belt-tightener 66, mounted on the short arm 67 of a hand-lever 68, pivoted intermediate its extremities, as at 69, to the right-hand side of the main frame. By operating the hand-lever 68 the belt 51 can be tightened or loosened and the operation of the feed-rollers be thereby regulated for the purpose of controlling the feed of the lumber or timber.

The laterally-adjustable side gage 7 can be adjusted relatively to the saws, and it constitutes a guide for the lumber or timber passed through the machine. The vertical saws act to divide the lumber or timber vertically into pieces or strips, and the horizontal saws subdivide such pieces or strips into a plurality of strips—such, for example, as are useful in the manufacture of butchers' skewers, blind-slats, laths, chair-rounds, or any other pieces which require to be of predetermined dimensions.

The mechanism described for vertically adjusting the yoke-shaped frame 12 renders it possible to cause the vertical saws to cut at any required height, and the laterally-swinging frame 16 enables the horizontal saws

to be adjusted, so that they may be made to cut any desired distance into the lumber or timber. It is also possible to draw or pull the frame 16 laterally away from the vertical saws such distance that the gang of vertical saws may be used simply as ripping-saws. By spacing the vertical and horizontal saws the required distance apart the lumber or timber can be cut into any size required by one passage through the machine, whereby resawing is avoided. It is also possible to remove all except one saw and to use this saw for rabbeting purposes.

The splitters 43 and 44 keep the sawed pieces in proper position and preserve the mass of lumber or timber in proper form while passing through the machine. It will be observed that the splitters and the upper feed-rollers move in unison with the saws and thus simplify the practical use of the machine for cutting the lumber or timber into pieces of any desired dimensions at one operation.

The belt 65 for operating the feed-rollers is preferably in the form of a chain belt engaging chain-wheels on the shafts of the feed-rollers.

In our improved wood-sawing machine the vertical saws and the upper feed-rollers are adjustable in unison, and the positive rotation of the feed-rollers is under perfect control of the attendant through the medium of the hand-lever 68.

While the improved machine is useful for many purposes, it is particularly designed for sawing timber into comparatively small pieces of predetermined dimensions, as before stated.

Having thus described our invention, what we claim is—

1. The combination, in a wood-sawing machine, of a pivoted vertically-adjustable saw-carrying frame, a pivoted laterally-adjustable saw-carrying frame, the planes of the saws on said frames being substantially at right angles, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, connected mechanisms for adjusting the vertically-adjustable saw-carrying frame and the said upper feed-rollers, and means for adjusting the laterally-adjustable saw-carrying frame, substantially as described.

2. The combination, in a wood-sawing machine, of a pivoted vertically-swinging saw-carrying frame, a pivoted laterally-swinging saw-carrying frame, the planes of the saws on said frames being substantially at right angles, toggle-levers pivoted, respectively, to the main frame and to the vertically-swinging saw-carrying frame, means for operating the toggle-levers to adjust the vertically-swinging frame, toggle-levers connected with the laterally-swinging frame, and devices for operating the toggle-levers of the laterally-adjustable frame, substantially as described.

3. The combination, in a wood-sawing machine, of a pivoted vertically-swinging saw-carrying frame, a pivoted laterally-swinging saw-carrying frame, the planes of the saws on said frames being substantially at right angles, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, toggle-levers for adjusting the vertically-swinging saw-carrying frame, means for operating said toggle-levers, connections between said toggle-levers and the vertically-adjustable frame of the upper feed-rollers, and means for adjusting the laterally-adjustable saw-carrying frame, substantially as described.

4. The combination, in a wood-sawing machine, of a pivoted vertically-swinging saw-carrying frame, a laterally-adjustable saw-carrying frame, the planes of the saws on said frames being substantially at right angles, toggle-levers pivoted, respectively, to the main frame and to the vertically-adjustable saw-carrying frame, a screw-shaft for operating said toggle-levers to raise and lower the vertically-swinging frame, and means for adjusting the laterally-adjustable frame, substantially as described.

5. The combination, in a wood-sawing machine, of a vertically-adjustable saw-carrying frame, a laterally-adjustable saw-carrying frame, the planes of the saws on said frames being substantially at right angles, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, mechanism for simultaneously adjusting the vertically-adjustable saw-carrying frame and the frame carrying the upper set of feed-rollers, and means for adjusting the laterally-adjustable saw-carrying frame, substantially as described.

6. The combination, in a wood-sawing machine, of a vertically-adjustable saw-carrying frame, a laterally-adjustable saw-carrying frame, the planes of the saws on said frames being substantially at right angles, a lower set of feed-rollers, a vertically-movable frame carrying an upper set of feed-rollers and having vertical limbs, toggle-levers connected with the vertically-adjustable saw-carrying frame, means for operating the toggle-levers, connected bell-crank levers pivotally engaged with the vertical limbs of the frame which carries the upper set of feed-rollers, and connections between said bell-crank levers and said toggle-levers, substantially as described.

7. The combination, in a wood-sawing machine, of a pivoted vertically-swinging saw-carrying frame, a lower set of feed-rollers, a vertically-movable frame carrying an upper set of feed-rollers, and provided with vertical limbs, toggle-levers connected with the vertically-swinging saw-carrying frame, a screw-shaft for operating the toggle-levers, connected bell-crank levers engaged with the vertical limbs of the frame which carries the upper set of feed-rollers, and means connecting the bell-crank levers with the said toggle-levers, for simultaneously adjusting the saw-

carrying frame and the upper set of feed-rollers vertically, substantially as described.

8. The combination, in a wood-sawing machine, of a vertically-adjustable saw-carrying frame, means for adjusting said frame vertically, a pivoted laterally-swinging saw-carrying frame, the planes of the saws on said frames being substantially at right angles, a gear having a vertical shaft, toggle-levers connected, respectively, with the laterally-adjustable frame and with the shaft of said gear, and a shaft having a pinion engaging said gear for rotating the same to adjust the laterally-swinging frame, substantially as described.

9. The combination, in a wood-sawing machine, of a vertically-adjustable saw-carrying frame, a lower set of feed-rollers, a vertically-movable frame carrying an upper set of feed-rollers, an endless belt passing around the upper and lower feed-rollers, means for imparting motion to said belt, a belt-tightener engaging said belt and serving to hold the belt under tension while permitting the frame which carries the upper set of feed-rollers to be raised and lowered, and mechanism for raising and lowering the vertically-adjustable saw-carrying frame and said feed-roller frame, substantially as described.

10. The combination, in a wood-sawing machine, of a pivoted vertically-swinging saw-carrying frame, toggle-levers pivoted to the main frame and to the said saw-carrying frame, a horizontal screw-shaft having a swivel connection with the toggle-levers, a pivoted screw-nut with which said screw-shaft engages, for operating the toggle-levers to raise and lower the saw-carrying frame, a movable frame carrying feed-rollers, and devices connected with said feed-roller frame and operated by said toggle-levers, substantially as described.

11. The combination, in a wood-sawing machine, of a pivoted vertically-swinging frame carrying a gang of saws and a gang of splitters, a pivoted laterally-swinging frame carrying a gang of saws and a gang of splitters, the planes of the saws on said frames being substantially at right angles, two sets of toggle-levers connected, respectively, with the vertically-adjustable and the laterally-adjustable saw and splitter carrying frames, and independent devices for operating the two sets of toggle-levers, substantially as described.

12. The combination, in a wood-sawing machine, of a pivoted vertically-swinging frame carrying a gang of vertical saws, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, and mechanism for simultaneously raising and lowering the said saw-carrying frame and the said feed-roller frame, substantially as described.

13. The combination, in a wood-sawing machine, of a vertically-adjustable frame carrying a gang of vertical saws, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, an endless belt passing around all of said feed-rollers, a belt-tightener engaging said belt and holding it under tension while permitting the frame which carries the upper set of feed-rollers to be raised and lowered, a belt mechanism for imparting motion to said endless belt, and a hand-lever having a tightener-pulley coöperating with said belt mechanism for the purpose of regulating the motion of the endless belt which actuates the upper and lower feed-rollers, substantially as described.

14. The combination, in a wood-sawing machine, of an adjustable frame carrying vertical saws, a laterally-adjustable frame carrying saws, the planes of the saws carried by said frames being substantially at right angles, a lower set of feed-rollers, a vertically-adjustable frame carrying an upper set of feed-rollers, and means for simultaneously raising and lowering the said vertically-adjustable frames to raise and lower the vertical saws and the upper feed-rollers in unison, substantially as set forth.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

LEWIS S. PROCTOR.
FREDRECK NEUDORFF.

Witnesses:
C. B. ASHE,
J. D. MONTAGUE.