No. 675,115. Patented May 28, 1901.

G. E. SMITH.

SAWMILL.

(No Model.) (Application filed Sept. 20, 1899.) 4 Sheets—Sheet 1.

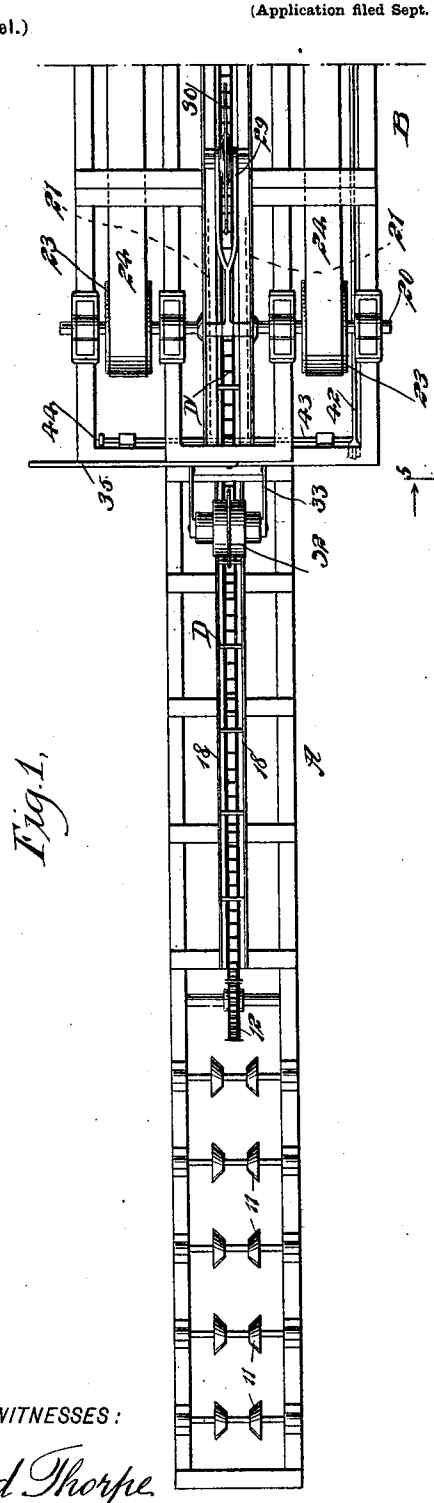


Fig. 1.

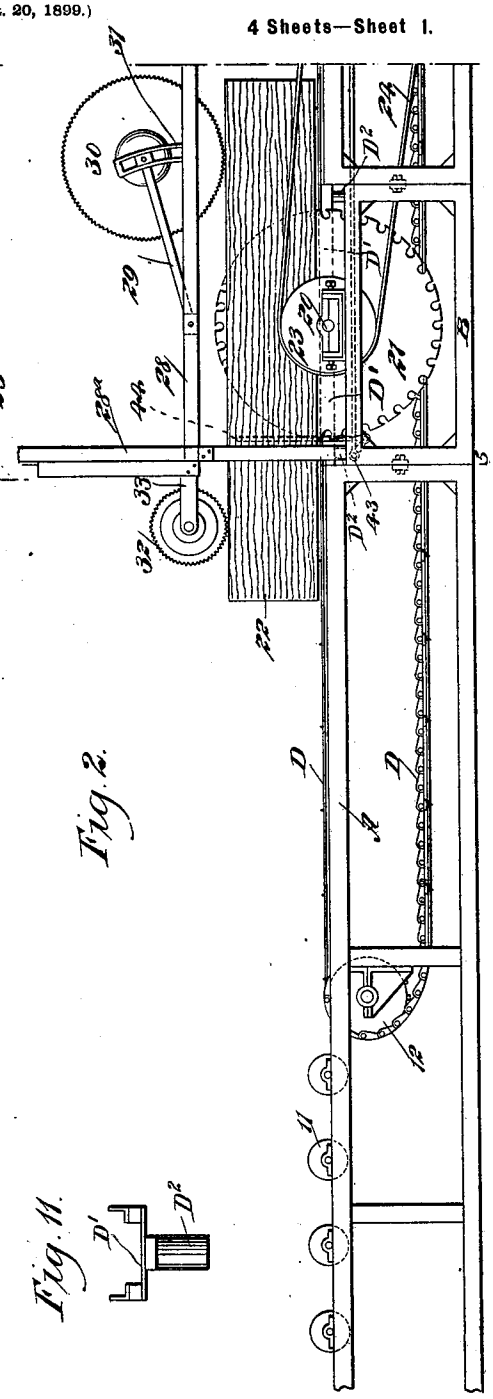


Fig. 2.

Fig. 11.

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Fig. 3.

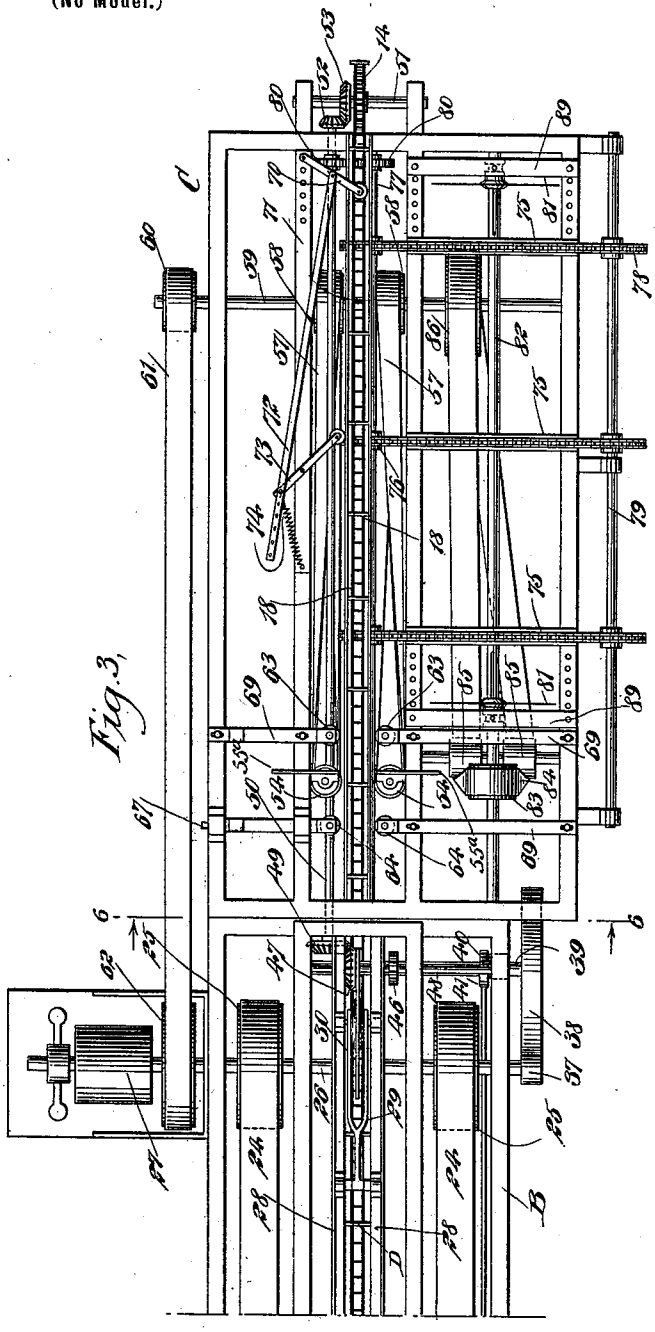
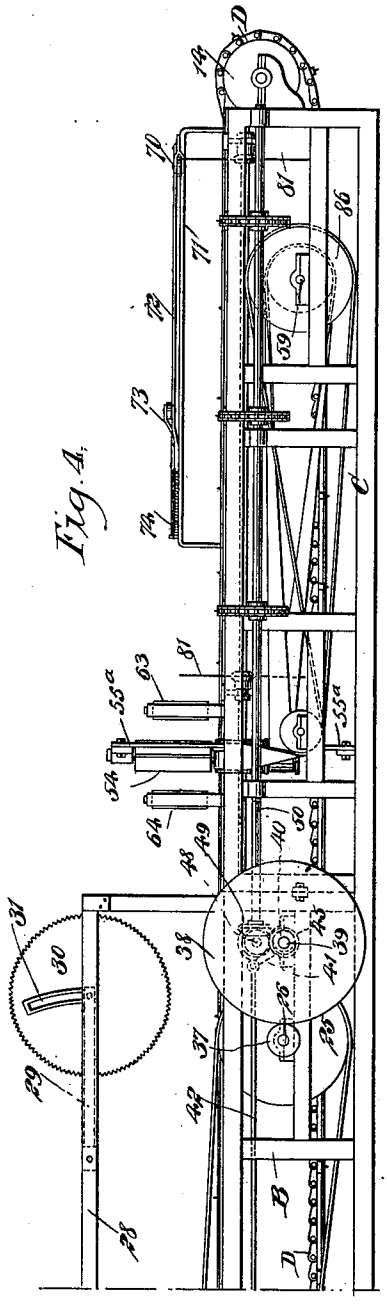


Fig. 4.



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Fig. 5,

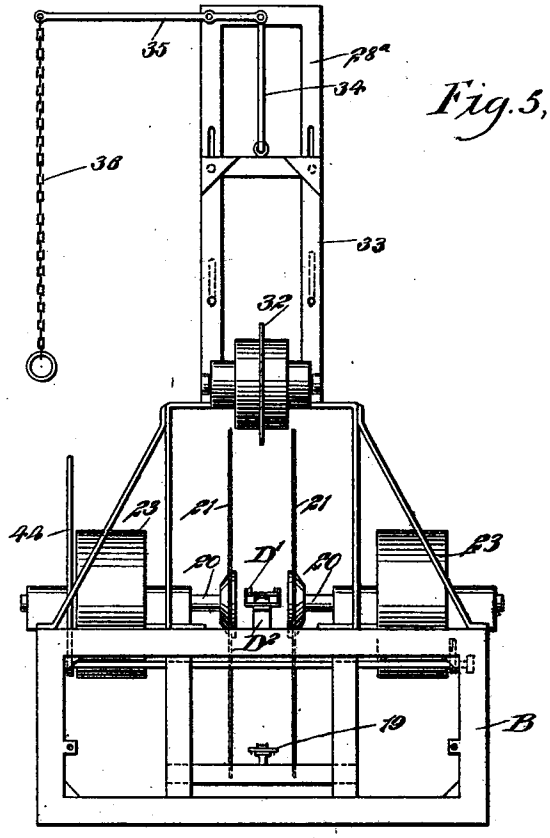
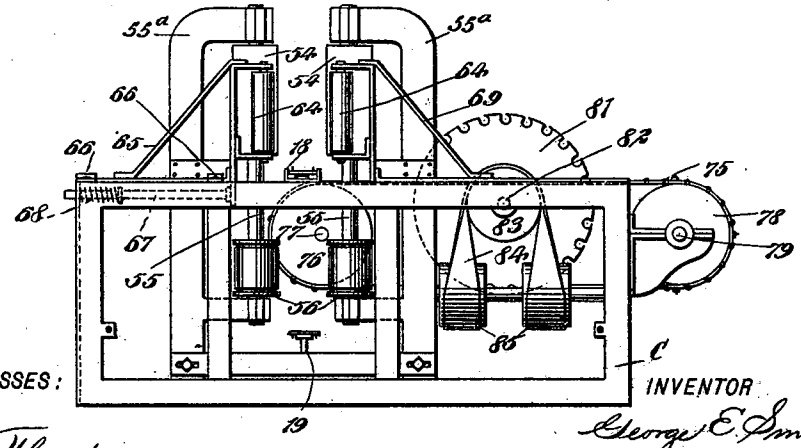


Fig. 6,



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(No Model.) (Application filed Sept. 20, 1899.) 4 Sheets—Sheet 4.

Fig. 7.

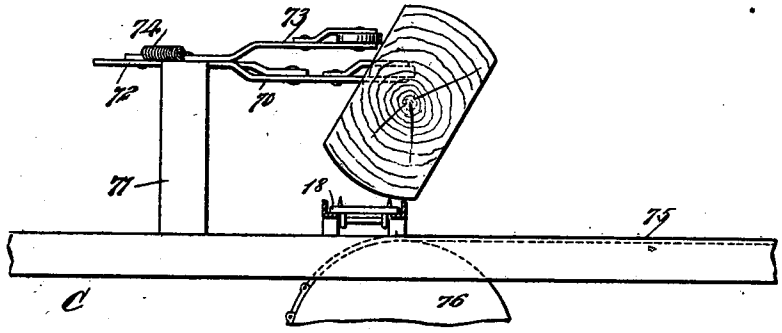


Fig. 8.

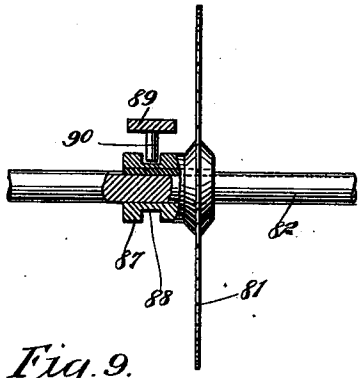


Fig. 9.

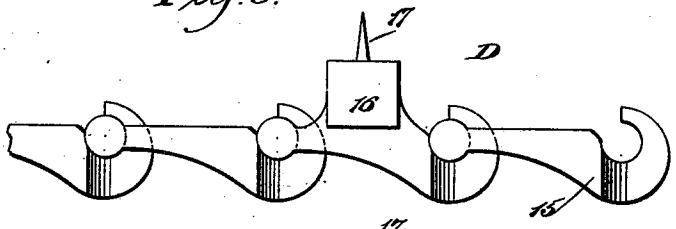
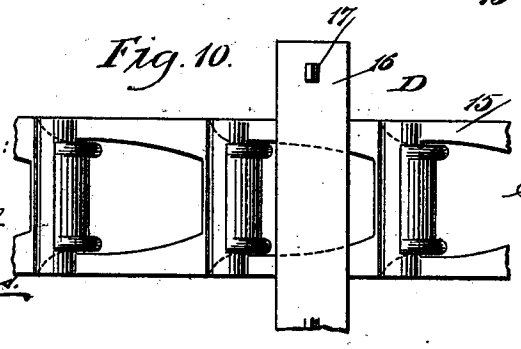


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE E. SMITH, OF SHERBROOKE, CANADA.

SAWMILL.

SPECIFICATION forming part of Letters Patent No. 675,115, dated May 28, 1901.

Application filed September 20, 1899. Serial No. 731,112. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. SMITH, of Sherbrooke, in the Province of Quebec and Dominion of Canada, have invented a new and Improved Sawmill, of which the following is a full, clear, and exact description.

This invention relates to a sawmill designed especially for forming railroad-ties, to which end it embodies saws for taking off slabs at the sides of a log, the log being advanced to the saw by an endless carrier, which continues the movement of the log, passing it between planer-heads for smoothing the top and bottom surfaces of the tie, the log being subsequently canted off of the carrier onto an auxiliary carrier, which advances it to additional saws by which the ends of the tie are cut off at the proper length.

This specification is the disclosure of one form of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the front end of the machine. Fig. 2 is a side elevation of the front end of the machine. Fig. 3 is a plan view of the rear end of the machine, Fig. 3 being an extension of Fig. 1. Fig. 4 is a side elevation of the rear end of the machine, Fig. 4 being an extension of Fig. 2. Fig. 5 is a sectional view on the line 5 5 of Fig. 2. Fig. 6 is a sectional view on the line 6 6 in Fig. 3. Fig. 7 is a detail view of the automatic canting mechanism. Fig. 8 is a sectional view showing the manner of mounting the butting-saw. Figs. 9 and 10 are detail views illustrating different constructions of the carrier-chains, and Fig. 11 is a detail view of the bridge-track to be hereinafter described.

The various operative parts of my apparatus are mounted on a suitable framing, which may be constructed as shown in the drawings—that is to say, of sections A, B, and C, fastened together by any suitable means, as desired. In this connection it may be explained that Figs. 5 and 6 represent, essentially, sectional views taken at the junctures of these sections A, B, and C. By making the frame in sections it readily may be taken apart and its transportation thus be facilitated. The logs are placed on the front end of the machine, rollers 11 being provided for receiving and centering the logs, which are passed from these rollers upon the main carrier-chain D, which is endless in form and passes over an idler-wheel 12 at the front end of the machine and over a drive-wheel 14 at the rear end of the machine. This chain is formed of a number of links 15, (see Figs. 9 and 10,) certain of which are provided with cross-bars 16, having spurs 17 to engage the logs. Angle-iron rails 18 are provided for the upper run of the chain over the frame-sections A and C. Over the frame-section B the upper run of the carrier D is supported on a bridge-track comprising a track proper, D′, and legs D^2. (See Fig. 11.) A supporting rail or track 19 is provided for the lower run of the chain, (see Figs. 5 and 6,) such supporting-track also extending from the wheels 12 and 14, as will be understood. The chain proper—that is, the links 15—runs between the rails 18, while the bars 16 bear on the rails, as shown in Figs. 1, 3, 5, and 6, and the logs bearing on the spurs 17 are thus advanced continuously throughout the length of the machine.

Shafts 20 are mounted in the frame-section B and carry two circular saws 21, the saws being arranged on opposite sides of the bridge-track D′ D^2 and being spaced apart the proper distance so as to cut off the slabs at the sides of the logs to form parallel top and bottom sides of the tie, as indicated at 22 in Fig. 2. The shafts 20 are driven by band-wheels 23, which carry belts 24, in turn driven from band-wheels 25, fixed to the primary-movement shaft 26. This shaft is mounted in the frame-section B and provided with a band-wheel 27, by which it may be driven. A superstructure 28 is mounted on the frame-section B and carries two swinging forks 29, the forks carrying at their free ends serrated guide-wheels 30, the boxes supporting the axes of said wheels running in segmental guides 31, fastened rigidly in the superstructure 28. These guide-wheels bear by gravity on the log (see Fig. 2) to guide the same and hold it steady during the action of the saws thereon. A third serrated guide-wheel 32 is provided and is mounted on a frame 33, which is held to slide on a vertical extension 28^a

of the superstructure 28, the frame 33 being raised by a link 34, connected with a lever 35, in turn provided with a chain 36. By these means the wheel 32 may be raised to permit the log to pass under it, and then the frame may be lowered, causing the wheel 32 to bear by gravity on the log.

The shaft 26 is provided with a friction-wheel 37, which engages with a large friction-wheel 38, carried on a counter-shaft 39, mounted in the frame-section B, at the rear end thereof. The shaft 39 is controlled to move the friction-wheel 38 into and out of engagement with the wheel 37 by means of an eccentric 40, mounted to roll in the frame-section B, and to which is connected a crank-arm 41. This crank-arm 41 is connected with a link 42, which passes forwardly and is connected by a crank with a rock-shaft 43, the rock-shaft 43 being provided with a hand-lever 44, by which to throw the rock-shaft, thus throwing the eccentric 40 and regulating the engagement between the wheels 37 and 38. The shaft 39 is provided with a spur-wheel 45, meshing with a similar wheel 46 on a shaft 48, arranged directly above the shaft 39 and provided with a miter-gear 47, which meshes with a miter-gear 49 on a shaft 50. This shaft 50 runs longitudinally with the frame and is carried in the frame-section C, the shaft 50 driving the shaft 51, on which is carried the sprocket-wheel 14, such driving being effected by means of bevel-gears 52 and 53. By means of this gearing the chain D is kept continuously in motion.

When the log has passed the saws 21, it is advanced by the chain D so that it passes between the two opposing planer-heads 54. The planer-heads 54 are mounted on vertical axes 55, which carry at their lower portions band-pulleys 56. These axes 55 are mounted in frames 55^a, which are mounted to be transversely adjustable in the general framing of the apparatus, thus to adjust the planers and regulate the thickness of the tie. Over the pulleys 56 belts 57 pass. The belts 57 are driven from pulleys 58, carried on a shaft 59, mounted in the rear portion of the frame-section C and provided with a drive-pulley 60, over which passes a belt 61, extending forwardly to a band-wheel 62 on the primary-movement shaft 26. Guide-rollers 63 and 64 are provided at the front and rear of the planer-heads, by which to steady the tie during the action of the planer-heads thereon. The left-hand guide-roller 64 is mounted in a frame 65, which is held to slide in bearings 66, attached to the frame-section C. This left-hand guide-roller 64 is pressed inward toward the right-hand guide-roller 64 by means of a bar 67, which engages an extension on the lower portion of the frame 65, the bar 67 being pressed by a spring 68. (See Fig. 6.) The other guide-roller 64 and the guide-rollers 63 are stationary, they being mounted in frames 69, which are secured adjustably to the frame-section C. By making the left-hand guide-roller 64 yielding the unplaned log is permitted to pass into engagement with the planer-heads, notwithstanding that these logs may vary in thickness; but the logs when passing from the heads will be of uniform thickness, and consequently the rollers 63 need not be yielding. The purpose of planing the tie is to give it smooth faces, thus preventing it from taking water, and consequently from rotting.

The chain D carries the log from the planer-heads, and soon after the log clears the guide-rollers 63 it will engage the free end of a lever 70, mounted on a superstructure 71 of the frame-section C. This lever 70 is connected with a link 72, which is also connected with a lever 73, mounted on the superstructure 71 and held at an acute inclination to the longitudinal line of the machine by means of a retractile spring 74. The connection of the link 72 with the levers 70 and 73 is such that the lever 70 is normally held at an inclination opposite to that of the lever 73, and the lever 70 is also projected farther to the right, (see Fig. 3,) so that as the log advances it moves past the lever 73, but the end of the log engages with the free end of the lever 70, thus throwing the lever 70 rearward and drawing on the link 72, which in turn throws the free end of the lever 73 forward and also to the right, so as to engage the log and cant it off of the carrier-chain D, as indicated in Fig. 7. The log or tie being thus canted from the chain D falls upon three auxiliary carrier-chains 75, which pass over sprocket-wheels 76, carried on a shaft 77, and sprocket-wheels 78, carried on a shaft 79, the shafts 77 and 79 running parallel with each other and longitudinally with the frame-section C, in which section the shafts are mounted. The chains 75 are of the same construction as the chain D. The shaft 77 is driven from the shaft 50 by means of pinions 80, attached, respectively, to the shafts 50 and 77 and meshing with each other. The tie being supported on the chains 75 and the chains being driven so that their upper runs move rightward, the tie is carried between the butting-saws 81 and the ends of the tie cut off, after which the chains 75 roll the log off of the machine, thus finishing the operation of the machine thereon. The butting-saws 81 are carried on a shaft 82, which is driven by a pulley 83, fixed thereto, over which pulley passes a belt 84, the belt running downward and around idler-pulleys 85 and thence around a pulley 86, attached to the shaft 59. As shown in Fig. 8, the saws 81 are mounted loosely on the shaft 82, the hubs 87 of the saws being provided with annular grooves 88 and being splined on the shaft 82. Bars 89 are attached to the frame-section C and provided with pins 90, which bear loosely in the grooves 88, so as to prevent the sliding of the butting-saws on the shafts 82. The bars 89 are adjustably mounted on the frame, and consequently by moving these bars longitudinally on the machine

the saws may be adjusted toward and from each other to regulate the length of the tie.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a mill, the combination with two carriers running at angles to each other and with tools for working the timber, of a lever mounted over one of the carriers and adapted to be struck by the end of the timber when carried thereon, a link connected with the lever, to be moved thereby, and a second lever connected with the link, the second lever being arranged to strike the side of the timber upon the movement of the first lever, whereby to throw the timber from one carrier to the other.

2. The combination in a mill, with the main frame thereof and with two carriers running in different directions, of a superstructure mounted on the main frame of the mill adjacent to the juncture of the carriers, a lever fulcrumed on the superstructure and arranged to be struck by the end of the timber when on said carrier, a link connected with the lever, a second lever fulcrumed on the superstructure and connected with the link to be moved by the first lever, the second lever being arranged to strike the side of the timber upon the movement of the first lever, whereby to throw the timber from one carrier to the other, and a spring having connection with the levers, to hold them in position for operation.

3. In a mill, the combination with a frame, of two carriers mounted thereon and running in different directions, means for throwing the timber from one carrier to the other, a drive-shaft in the frame, a counter-shaft driven thereby, a shaft geared to the counter-shaft and having connection with one of the carriers to drive it, and an additional shaft geared to and driven from the shaft which is geared to the counter-shaft, such additional shaft having connection with the other carrier, to drive the same.

4. In a mill, the combination with a frame, of a circular saw mounted therein, a superstructure mounted on the frame above the saw, a segmental guide mounted on the superstructure, a fork mounted to swing on the superstructure, and a guide-wheel mounted in the fork and adapted to bear down on the top of the timber, the fork having a part at its free portion, which part runs in the segmental guide.

5. In a mill, the combination with a frame having means for working the timber, of a carrier-chain mounted on the frame to engage the timber and take it to the said means for working the timber, and a number of centering-rollers mounted on the frame in line with the carrier and serving primarily to receive the timber and center the same as it is pushed onto the carrier.

6. In a mill, the combination with a frame, of two driven carriers mounted therein, the carriers extending at right angles to each other, means for throwing the timber from one carrier to the other, two facing-saws mounted respectively on the sides of the main carrier, a drive-shaft, gearing for independently driving the facing-saws from the drive-shaft, butting-saws located at the sides of the second or auxiliary carrier, a shaft on which the butting-saws are fixed, an additional shaft extending transversely to the shaft on which the butting-saws are mounted, gearing for driving the butting-saw shaft from said additional shaft, and gearing extending between the drive-shaft and the said additional shaft, to drive the latter.

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