

(No Model.)

5 Sheets—Sheet 1.

G. S. FRY & S. L. WALKER.
SPOKE SAWING MACHINE.

No. 526,699.

Patented Oct. 2, 1894.

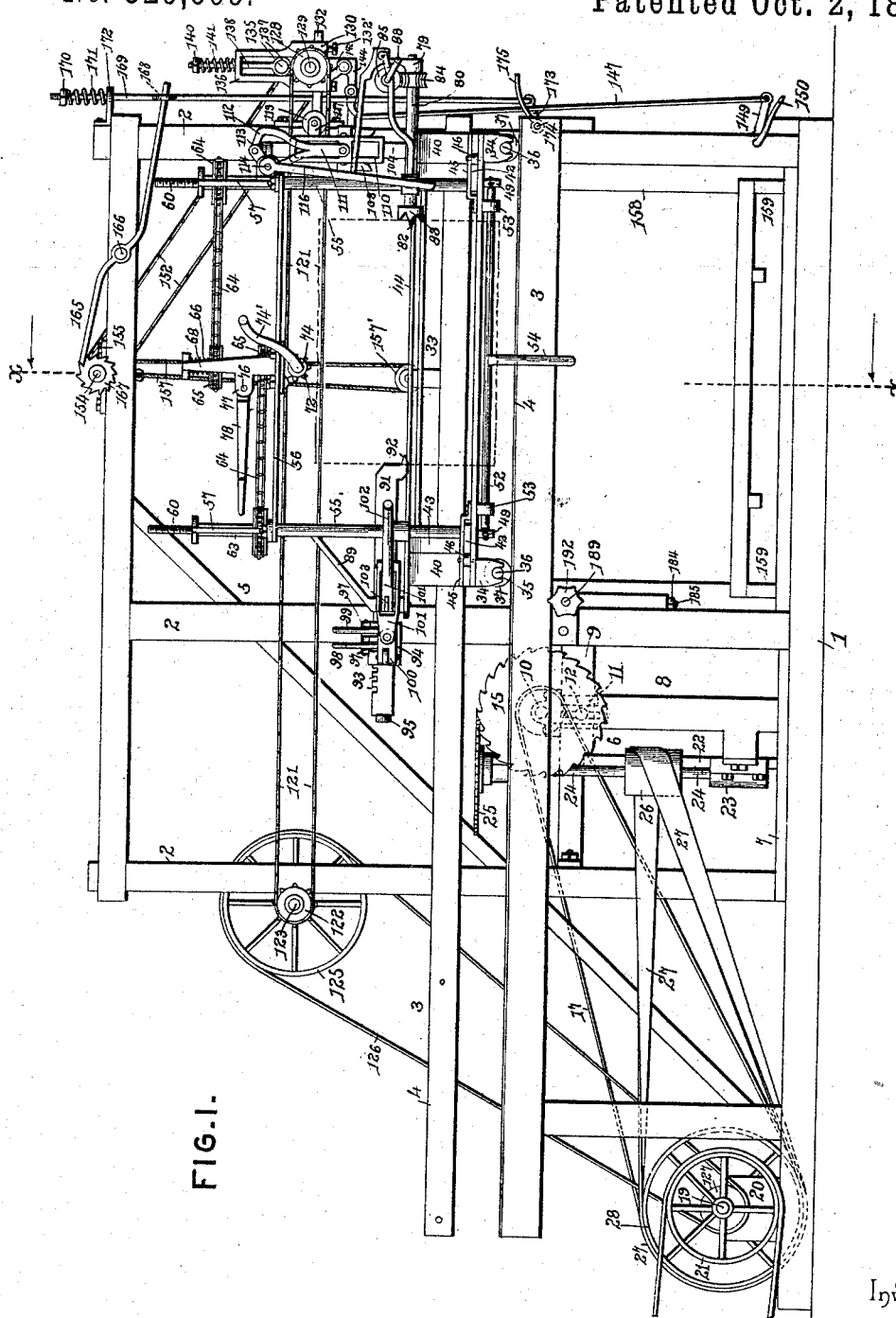


FIG. 1.

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Witnesses

Jas. K. McLaughlin
D. P. McLaughlin

(No Model.)

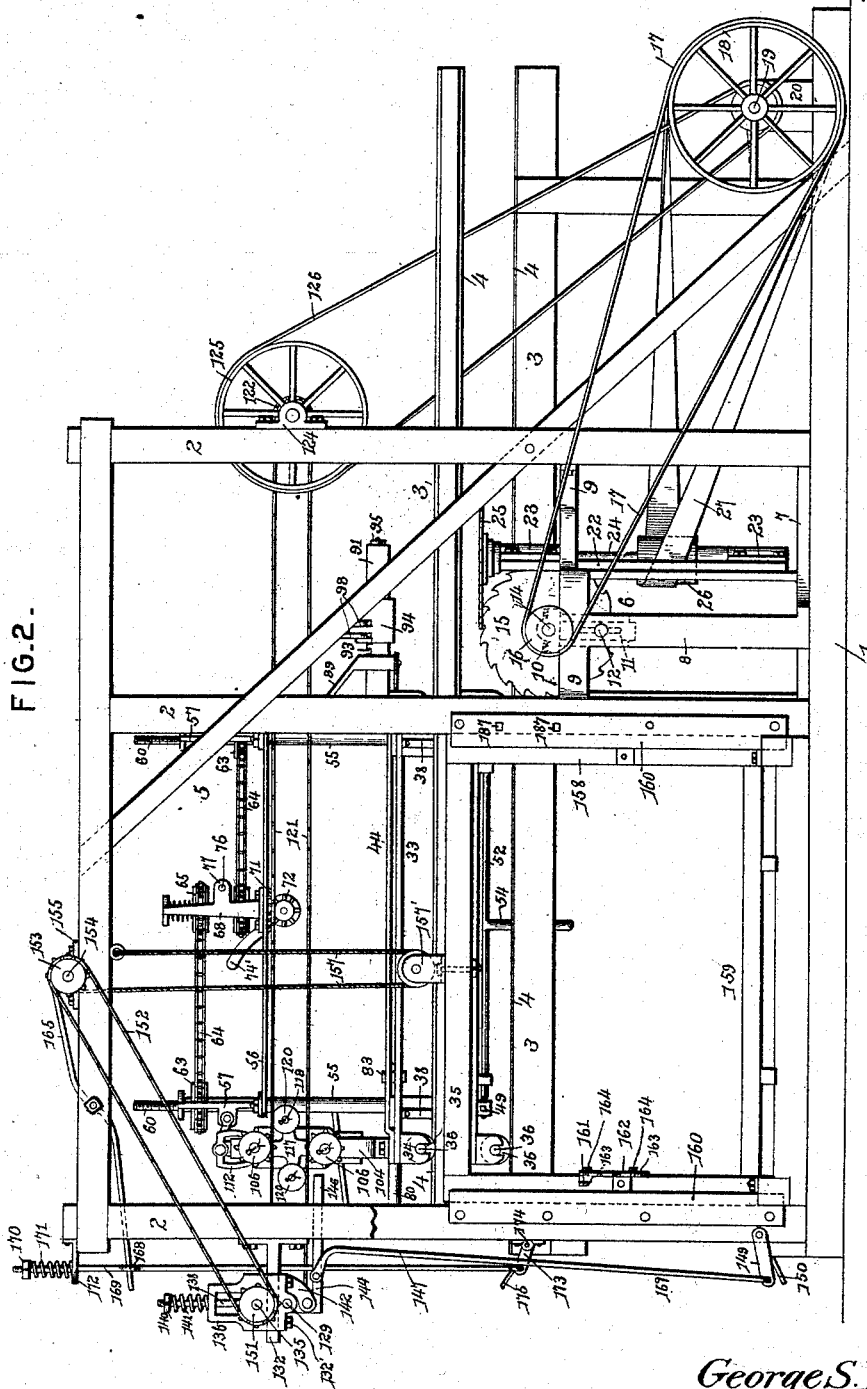
5 Sheets—Sheet 2.

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FIG. 3.

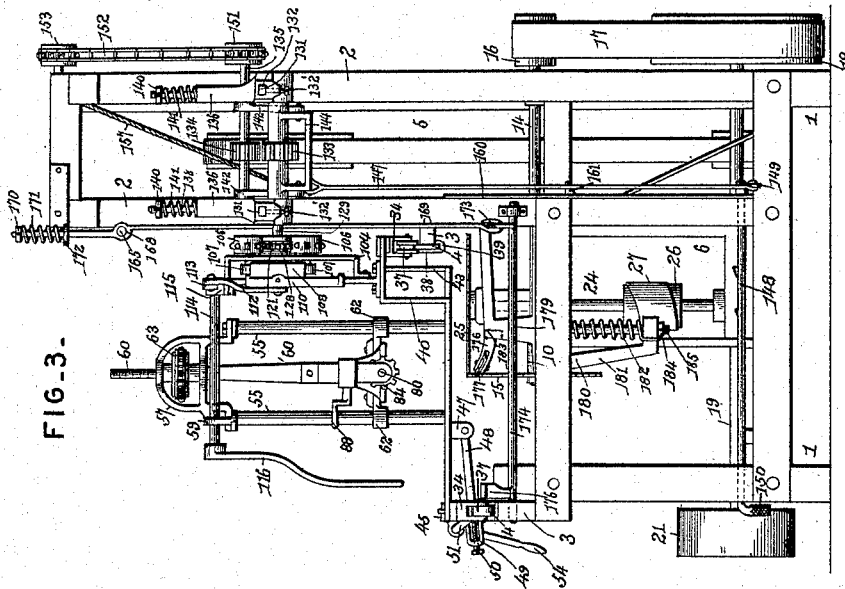
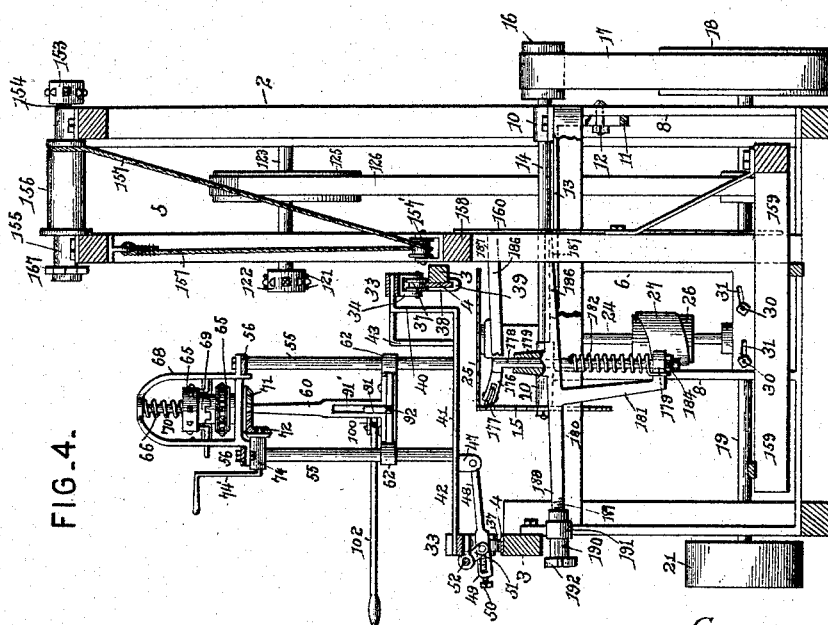


FIG. 4.



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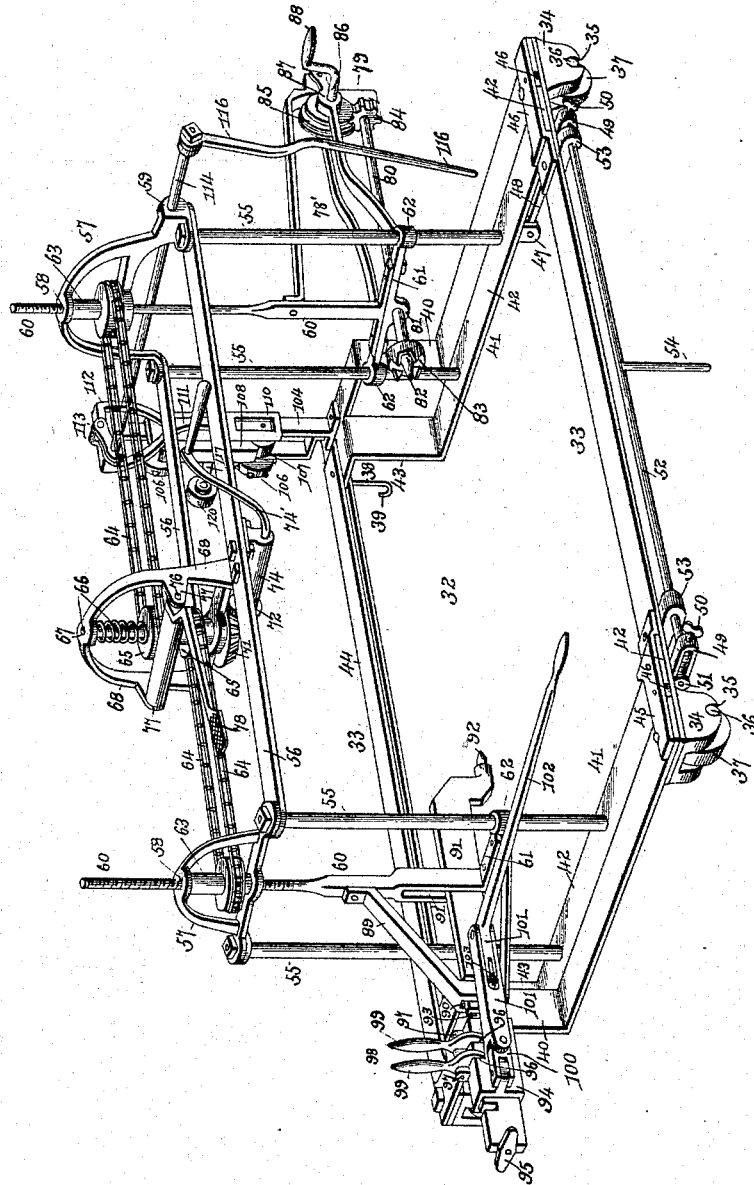
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FIG. 5.



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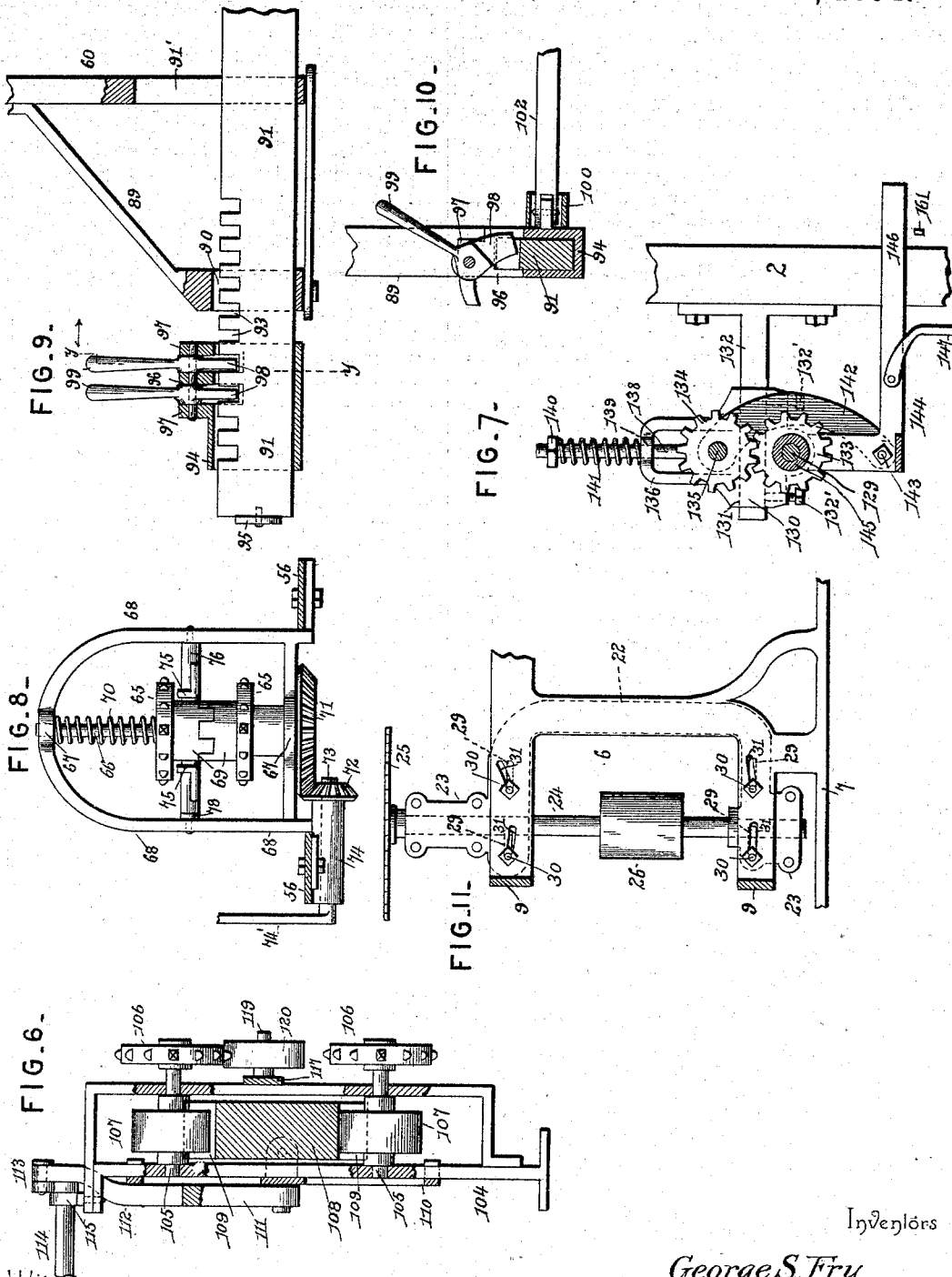
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UNITED STATES PATENT OFFICE.

GEORGE SPENCER FRY AND SAMUEL LEWIS WALKER, OF LOOGOOTEE,
INDIANA.

SPOKE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 526,699, dated October 2, 1894.

Application filed March 15, 1894. Serial No. 503,765. (No model.)

To all whom it may concern:

Be it known that we, GEORGE SPENCER FRY and SAMUEL LEWIS WALKER, citizens of the United States, residing at Loogootee, in the county of Martin and State of Indiana, have
5 invented a new and useful Spoke-Sawing Machine, of which the following is a specification.

This invention relates to spoke sawing machines; and it has for its object to effect certain improvements in sawing machines of
10 this character whereby the greatest possible amount of stock may be cut out of a single log.

To this end the main and primary object of the present invention is to construct a machine of the character noted with a variety of
15 different adjustments to secure accurate work, while at the same time with the least possible amount of labor to the operator, and with this in view the machine contemplates the cutting
20 of blank spokes in any desired sizes or lengths.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination
25 and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a front elevation of a spoke sawing machine constructed in accordance with this invention. Fig. 2 is a rear elevation of the same.
30 Fig. 3 is an end view of the machine. Fig. 4 is a vertical transverse sectional view on the line $x-x$ of Fig. 1. Fig. 5 is a detail in perspective view of the log carriage. Fig. 6 is
35 an enlarged detail sectional view of the feed clutch on the carriage. Fig. 7 is a detail sectional view at one end of the machine, the section including the gearing for the elevator. Fig. 8 is an enlarged detail view of the clutch
40 gearing at the center and top of the log carriage. Fig. 9 is an enlarged detail sectional view at one end of the log-carriage. Fig. 10 is a detail sectional view on the line $y-y$ of Fig. 9. Fig. 11 is a detail sectional view at
45 one side of the vertical saw arbor.

Referring to the accompanying drawings, the numeral 1, designates the sill frame of the machine comprising opposite connected side
50 pieces, and supported on the sill frame 1 are the frame uprights 2, to the upper ends of

which are connected the longitudinal parallel track stringers 3, the inner of which is higher than the outer and to both of these stringers are secured the metal track rails 4, the inner of which is secured in a vertical position to
55 one side of the track stringer, and projects slightly above and below the same for the purpose to be hereinafter described. The frame uprights to which the inner of the track stringers 3, is secured at one side, are extended above this track stringer to form an
60 elevator frame 5, extending nearly the entire length of the sill frame 1, and at one side of the same, and this elevator frame will be hereinafter more particularly referred to, but at
65 this point it is to be noted that the track consisting of the rails 4, is located at one side or in front of the said elevator frame.

At a suitable intermediate point on the frame 1, is secured a stationary saw frame 6,
70 consisting of a base portion 7, and an upright portion 8, this saw frame being suitably bolted to the sill frame 1, and also to the front track stringer and to the elevator frame by means of suitable bracing connections 9. The
75 upright portion 8, of the saw frame is adapted to adjustably support in position at upper opposite ends thereof the vertically adjustable aligned bearing boxes 10, provided with the slotted attaching plates 11, adjustably
80 bolted to the saw frame on the combined clamping and adjusting bolts 12, and said opposite bearing boxes are connected by intermediate frame pieces 13, which insure the alignment of both bearing boxes and complete
85 a vertically adjustable bearing frame. Said vertically adjustable bearing frame forms a journal support for the saw arbor 14, to one end of which is removably clamped the vertical circular saw 15, which is disposed at a
90 central point between the spaced track rails, while to the other outer end of the horizontal arbor 14, is secured the belt pulley 16, over which passes one end of a drive belt 17 receiving motion from a belt wheel 18, mounted
95 on one end of a transverse drive shaft 19, journaled in opposite bearing boxes 20, located at one end of the sill frame 1, and on the end of the drive shaft 19, opposite the belt wheel 18, is mounted a band wheel 21, rco

which receives a belt from an engine or other motor designed to communicate motion to the several working parts of the sawing machine.

Adjustably attached at one side of the up-
right saw frame 6, near to the vertical saw 15,
is a laterally and angularly adjustable bearing
frame 22. The adjustable bearing frame, or
more properly speaking bearing plate 22, is
of a bowed shape and is provided at its up-
per and lower extremities with the vertically
aligned bearing boxes 23, which accommodate
the vertical saw shaft or arbor 24, to the up-
per end of which is fitted the horizontal cir-
cular saw 25, disposed at one side of the ver-
tical saw 15, and adapted to cut on a line co-
incident with the cutting line of the said ver-
tical saw in order that a blank spoke may be
cut out of a piece of stock fed longitudinally
onto both of said saws. The said vertical
saw arbor 24, has mounted at an intermediate
point thereon, between the bearing boxes 23,
a vertical belt pulley 26, over which passes
the inner end of the drive belt 27, which is
driven from the belt wheel 28, mounted at an
intermediate point on the drive shaft 19.

At the upper and lower ends of the bear-
ing plate or frame 22, the same is provided
at both sides of the vertical shaft or arbor
24, with the horizontally disposed adjustment
slots 29, which receive the bolts 30, that pass
through and engage in the curved or inclined
slots 31, formed in upper and lower portions
of the saw frame 6, and providing means for
the angular adjustment of the horizontal saw
25. While ordinarily the horizontal saw 25,
is rotated in a substantially horizontal plane,
it will be obvious that it is necessary to give
a pitch or angle to such saw in cutting out
blanks from a circular log of wood, and by
reason of the several adjustments, the proper
relative positions of the vertical and horizon-
tal saws may be always maintained with re-
spect to the center of the log being operated
upon, and with respect to each other, so that
the nearest adjacent edges thereof will cut on
the same line and therefore completely sever
or separate the blank strip from the log stock.

Arranged to travel on the track rails, and
directly over the two saws which are located
between the ends of the track, is a longitudi-
nally moving log carriage 32. The log car-
riage 32, is provided with a truck frame 33,
consisting of opposite connected side and end
bars, and at each corner of said frame the
same is provided with the bearing brackets
34, depending therefrom and provided with
open bearing notches 35, in their lower edges
to loosely receive the bearing spindles 36,
projected from both sides of the carriage roll-
ers 37, that travel over said track rails 4, and
the inner pair of carriage rollers 37, are pe-
ripherally grooved to engage the upper edge
of the inner one of the track rails 4, to pre-
vent the carriage from slipping out of posi-
tion, and the carriage is additionally secured
on the track by means of a pair of retaining
arms 38, extended from the inner side bar of

the truck frame 33, and provided with lower
hooked ends 39, embracing the lower project-
ing edge of the inner track rail, and thereby
effectually preventing the carriage from leav-
ing the track.

The inner ends of the opposite end bars of
the truck frame 33, are angled as at 40, to
bring the inner pair of rollers on the higher
inner track, which disposition is necessary to
provide for the proper disposition of the hori-
zontal saw 25, and for the carrying of the log
stock thereover, and arranged for transverse
adjustment on top of the truck frame 33 is
the transversely adjustable supporting frame
41. The transversely adjustable supporting
frame 41, consists of the opposite sliding end
bars 42, having inner angled ends 43, con-
nected by the inner side bar 44, the opposite
extremities of which slightly overlap the in-
ner ends of the truck frame end bars to prop-
erly support the said supporting frame for a
sliding movement, and the front ends of the
sliding end bars 42, move under the opposite
guide plates 45, secured to opposite front cor-
ners of the truck frame 33, and journaled be-
tween the said opposite guide plates and the
front side bar of the frame 33, are the bear-
ing rollers 46, against which works one edge
of the end bars 42, to ease the sliding move-
ment of said transversely adjustable support-
ing frame and relieve the same from undue
friction.

The opposite sliding end bars 42, of the
frame 41, have attached to the under side
thereof the pivot brackets 47, to which are piv-
otally connected the inner ends of the adjust-
ing arms 48, provided with outer slotted ends
49, into which adjustably work the set screws
50, that secure in position within the outer slot-
ted ends of said adjusting arms the crank arms
51, bent from each end of the front adjusting
rock shaft 52. The adjusting rock shaft 52,
is arranged longitudinally of the truck frame
of the log carriage, and is journaled in the
aligned bearing eyes 53, projected from the
front side bar of the truck frame. The said
rock shaft is provided with a centrally ar-
ranged lever or handle 54, which is manipu-
lated to rock the shaft and thereby move the
transversely adjustable supporting frame
either in or out to adjust the log stock to and
away from the saws as the particular stage
of the work may demand.

The transversely adjustable supporting
frame 41, supports at opposite ends thereof
the opposite pairs of vertical supporting rods
55, connected at their upper ends by the par-
allel longitudinal connecting bars 56, and the
transverse guide frames 57, directly connect-
ing the pairs of rods at each end of the sup-
porting frame, and said guide frames 57, are
provided with the vertically aligned guide
openings 58, and one of said guide frames is
further provided at one side with a perforated
bearing lug 59, the function of which will be
presently described. The vertically aligned
guide openings of the bearing frames, located

at the upper ends of the opposite pairs of supporting rods 55, accommodate therein for vertical adjustment the upper threaded ends of the vertical adjusting rods or shanks 60, which are secured at their lower ends to the sliding cross heads 61, provided at their opposite extremities with the slide collars 62, loosely working on the supporting rods 55, and the vertical adjustment of these cross heads is secured from the interiorly threaded sprocket nuts 63, which engage the upper threaded ends of the rods or shanks 60, and are supported in position between the vertically aligned guide openings 58 of the opposite top guide frames 57.

Motion is communicated to the interiorly threaded sprocket nuts 63, by the endless adjusting chains 64, passing there-around and driven from the upper and lower superposed chain wheels 65 mounted on a short vertical adjusting shaft 66, journaled in vertically aligned bearing openings 67, formed in the intermediate bearing frame 68, bolted on to the longitudinal connecting bars 56 at an intermediate point.

The lower of the chain wheels 65, is fast on the shaft 66, and the upper of said wheels is loose on said shaft, but both of said wheels are provided at their adjacent sides with the clutch hubs or faces 69, which are normally held in engagement with each other by means of the spring 70, arranged on the shaft 66, over the upper one of said wheels to normally provide for the simultaneous turning thereof, and to the lower end of the shaft 66, at the bottom of the frame 68, is attached the horizontal beveled gear wheel or pinion 71, which is engaged by a vertical beveled gear pinion 72, mounted on the inner end of the short operating shaft 73, journaled in the horizontal bearing 74, extended from the front lower side of the frame 68, and the outer end of said shaft 73, is extended into a crank lever or handle 74', which is turned in either direction as it may be desired to adjust the cross heads 61, up or down.

Normally, both of the cross heads 61, are adjusted by the rods or shanks 60, simultaneously, but the character of the log at times demands a different adjustment for the cross head which carries the adjustable centering device, and to provide means for securing the separate adjustment, the upper one of the chain wheels 65, is adapted to be lifted out of engagement with the lower one of said chain wheels by means of the lifting arms 75, which form a yoke extended from one side of the short gear shaft 76, journaled between the opposite bearing lugs 77, projected from one side of the bearing frame 68. A gear lever 78, is extended from one end of the shaft 76, and by depressing on the outer free end of this lever the upper one of said chain wheels 65, will be lifted out of engagement with the lower one of said wheels in order that the adjustment of one of said cross-heads may be effected separately.

A bearing frame 78', is extended from one side of one of the cross heads 61 and the rod or shank 80, connected thereto, and said bearing frame 78', carries at its outer end the bearing lug 79, in which is journaled the outer end of the short turning shaft 80, the other end of which turns in a bearing 81, at the under side of the cross head referred to, and from the inner end of said turning shaft 80, is projected the fixed centering pin 82, that is adapted to engage one end of the log at the center thereof, and at the base of said fixed centering pin is arranged a toothed clutch collar 83, which engages firmly in one end of the log so that by turning the shaft 80, the log must necessarily be turned therewith in order to properly shift the position of the same as the operation of sawing is continued around the log stock.

A worm pinion 84, is attached to or mounted on the shaft 80, near the outer end thereof and is engaged by the adjusting worm 85, mounted on the short adjusting shaft 86, journaled in horizontal bearings 87, on the frame 78', and provided at one end with a crank 88, for adjusting the same.

An off-standing supporting bracket 89 is secured to the cross-head and the adjusting rod or shank thereof opposite the fixed centering pin 82, and is provided at its outer end with a guide opening 90, aligned with a similar opening 91', formed in the lower end of the adjacent rod or shank 60, and these aligned guide openings accommodate therein for longitudinal movement the longitudinally adjustable and movable thrust bar 91. The longitudinally adjustable and movable thrust bar 91, is provided at its inner end with the centering pin 92, which is opposed to the pin 82, and is adapted to be thrust into one end of the log stock to properly center and support the same in position, and these two centering pins are adapted to be arranged in a line with or in the same vertical plane as the saw 15, when the frame 41, is adjusted inward as far as possible, and this relative position of the centering pins and the vertical saw is necessary to secure the greatest possible amount of stock out of the log.

The thrust bar 91, is provided in its upper edge with a series of locking notches 93, and loosely receives thereon the longitudinally movable latch sleeve 94. The latch sleeve 94, is prevented from being moved off of the outer end of the thrust bar by the stop flange 95, attached to the outer end of said bar, and said sleeve is provided in its top with the latch openings 96, at each side of which are located the bearing lugs 97, between which are pivoted the inner ends of the lock latches 98. The lock latches 98 are provided with the upwardly extending adjusting handles 99, and are adapted to have their inner ends moved into the latch openings 94, and into engagement with the locking notches 93 of the thrust bar 91, and by adjusting the latch sleeve 94, longitudinally on the thrust bar

and locking the same in its adjusted position, the distance between the two centering pins may be shortened or lengthened for accommodating the machine to different lengths of logs according to the length of spoke blanks to be sawed. The said latch sleeve 94, has pivotally connected to one side thereof the link block 100, to which is pivotally connected one bifurcated end of the adjusting link arm 101, which arm is bifurcated at both ends and is pivotally connected at the outer end thereof to the angle of a horizontally arranged bell crank adjusting lever 102, the inner extremity of which is pivoted at 103, to one side of the supporting bracket 89 near or at the outer end thereof. By moving the bell crank adjusting lever 102, horizontally, in either direction the thrust bar 91 may be moved against and away from one end of the log.

It is necessary to carry the log carriage, which has been described in detail, automatically over the saws 15 and 25, and to provide for this I secure to the carriage a feed clutch which I shall now proceed to describe. A substantially rectangular bearing bracket 104, is secured at its lower end to one inner corner of the truck frame 33, of the log carriage and has journaled therein the upper and lower horizontal feed shafts 105, carrying upon their outer ends at one side of the brackets the feed chain or sprocket wheel 106, and having mounted thereon inside of the bracket the friction disks or rollers 107, which are distanced apart slightly greater than the length of the friction block 108, arranged there-between and mounted to slide in the bracket 104. The friction block 108, is provided with upper and lower notched clutch ends 109, that are adapted to embrace one of said friction disks or rollers at a time, and said block is secured to the vertically adjustable sleeve 110, embracing and sliding on one side of the bracket 104 and having pivotally connected thereto the lower end of the adjusting link 111. The adjusting link 111, is provided with an upper yoked end 112, embracing the upper end of the bracket 104, and has pivotally connected thereto the inner crank-end 113, of the horizontal adjusting shaft 114, the inner end of which turns in the bearing lug 115, projected from the upper portion of the bracket 104, embraced by the yoke 112. The shaft 114, also loosely works in the perforated bearing lug 59, of one of the frames 57, and has attached to the outer end thereof the downwardly extending operating lever 116. By moving the lever 116, to the right or to the left the friction block 108, will be moved tightly against either the upper or lower friction disk or roller 107, so as to clutch or hold stationary either one of the horizontal feed shafts 115.

The bearing bracket 104, is provided at the inner side thereof with the oppositely extending spindle arms 117, carrying at their outer extremities the spindles 119, on which

are loosely mounted the spacing rollers 120, which loosely work between the upper and lower horizontal portions of the endless feed chain 121, and serve to hold the upper portion of the chain into engagement with the lower side of the upper one of the chain feed wheels 106, and the lower portion of said chain into engagement with the lower one of said chain feed wheels 106, so that when the upper one of the shafts 105, is locked fast by the means described, the log carriage will be moved in the direction of travel of the upper portion of the said feed chain, and vice versa. The said endless feed chain 121, is driven from the drive sprocket wheel 122, mounted on one end of the chain shaft 123, journaled horizontally in aligned bearings 124, secured to one end of the elevator frame 5, and at an intermediate point on this shaft is mounted the belt wheel 125, over which passes the drive belt 126, which is driven by the belt pulley 127, mounted on the shaft 19, and through these gear connections the endless feed chain 121, is driven at the proper speed to provide for automatically moving the carriage back and forth over the track.

At a point opposite the location of the drive sprocket wheel 122, the endless feed chain 121, passes over a chain or sprocket wheel 128, to communicate motion to the automatic gearing for the elevating devices, which will now be particularly referred to. The chain or sprocket wheel 128, is mounted on the front end of the short drive shaft 129, journaled transversely in the adjustable bearing blocks 130. The bearing blocks 130, are provided with the squared openings 131, which loosely embrace the squared bracket arms 132 secured to one end of the elevator frame 5, and standing off therefrom. The said bearing blocks 130, may be adjusted to and away from the end of the elevator frame 5, on the bracket arms 132 and are held fast in their adjusted positions by means of the set screws 132', working in threaded openings in the lower side of said bearing blocks and adapted to impinge against the under side of the bracket arms 132. It will be obvious that this adjustment of the opposite bearing blocks 130, provides means for maintaining or adjusting the endless feed chain 121, at the proper tension.

The short drive shaft 129, carries at a point between the adjustable bearing blocks 130, a small cog wheel or pinion 133, that is normally out of engagement with a similar cog wheel or pinion 134, mounted at an intermediate point on the counter drive shaft 135, normally supported in a position above the shaft 129, so as to normally hold the cog wheel or pinion 134 out of gear with the wheel or pinion 133. The opposite extremities of the counter drive shaft 135, are arranged to work in the slotted upper ends or extensions 136 of the bearing blocks 130, and are journaled in the bearing collars 137 at the lower ends of the spring-supported pins 138, loosely work-

ing through perforations 139, in the top ends of the bearing blocks 130, and provided with upper threaded portions to receive the adjusting nuts 140, which hold in position on such upper portions of the pins the supporting springs 141, arranged between the nuts and the top of the bearing blocks, and said nuts not only serve to secure the springs in position but are also provided for adjusting the tension thereof.

The supporting springs 141 normally elevate the shaft 135, and loosely fitted at their upper ends on the said shaft 135, are the oppositely arranged curved adjusting links 142, the lower ends of which are pivotally connected at 143, to opposite sides of the swinging adjusting yoke 144, which yoke is provided at its upper or fixed end with the sleeves 145, loosely turning on the shaft 129, at both sides of the wheel or pinion 133, and extended inwardly from the swinging end of the yoke 144 is the trip arm 146, to an intermediate point of which is pivotally connected the upper end of the connecting rod or wire 147, the lower end of which is pivotally connected to the outer extremity of the rock arm 149. The rock arm 149, is secured to the inner end of the adjusting shaft 148, mounted transversely at one end of the machine frame, and at the outer end of said shaft the same is provided with the press-arm 150, which is depressed to swing the moving end of the yoke 144 downward, and cause the links 142, to lower the shaft 135, and bring the wheel or pinion 134, into engagement with the wheel or pinion 133, and thereby cause motion to be transmitted to the shaft 135, to turn the chain wheel 151, mounted on one end of the said vertically movable counter drive shaft. The chain wheel 151, gives motion to an endless chain 152, which also passes over a chain or sprocket wheel 153, mounted on one end of the winding shaft 154. The winding shaft 154, is journaled in the bearing boxes 155, mounted on top of the elevator frame 5, and said winding shaft carries the winding drum 156, on which winds and unwinds the elevating rope 157, which is secured fast at its other end to the top of the elevator frame and passes under the elevator pulley 157', secured to the top of the guide frame 158, arising from the elevator platform 159, on which a log is adapted to be placed and be elevated up into the log carriage to a position convenient for engaging the centering pins with the log.

The elevator platform may be of any suitable construction, either slatted or floored over and suitably braced to the guide frame 158, thereof, which moves at one side of the inner track rail and works between the metallic guide flanges 160, secured to and projecting beyond one side of certain of the upright frame pieces of the elevator frame 5.

The elevator just described works beneath and up to the track on which the log carriage runs, and after the gearing for elevating the elevator has been thrown into gear by de-

pressing the press arm 150, the elevator will continue to be lifted up with the log thereon until the trip pin 161 engages under the extended trip arm 146. The trip pin 161 is projected from one side of the trip plate 162, provided with the vertically disposed slots 163, to receive the screws 164, adjustably securing the said plate to one side of the guide frame 158. As the trip pin 161 comes in contact with the trip arm 146, this trip arm throws the moving end of the yoke 144 upwardly and allows the springs 141 to lift the shaft 135 out of gear with the shaft 129, which immediately and automatically stops the upward travel of the elevator, and the elevator is prevented from descending by means of the check pawl 165.

The check pawl 165, is pivoted at 166, to the front side of the elevator frame 5, on the top portion thereof, and is adapted to have the engagement or point end thereof work on the ratchet disk or wheel 167, secured to one end of the winding shaft 154. The other end of the pawl 165 is reduced and loosely projects through a perforation or opening 168, in the spring-supported rod 169. The upper end of the springsupported rod 169, is threaded to receive the nut 170, under which is placed the supporting spring 171, resting on the perforated bracket 172, through which works said rod 169, and which is secured to one top end of the elevator frame 5. The lower end of the rod 169, is pivotally connected to the shaft arm 173, projected from one end of the operating shaft 174, journaled transversely of the main frame of the machine at one end thereof and provided at its outer end with a lever arm 175. Normally, the spring 171, holds the pawl 165 in engagement with the ratchet disk or wheel 167, to prevent the backward rotation of the winding drum after the elevator has been raised, but when it is desired to lower the elevator, it is simply necessary to depress the lever 175, which movement will release the pawl 165, from the ratchet disk or wheel and allow the elevator to automatically lower to the sill frame.

The log which is centered between the centering pins of the log carriage is usually marked off at the end which moves onto the saws, but not necessarily so, and after each cut of a blank spoke out of the same it is necessary to turn the log a certain distance for the next succeeding cut, and the proper turn of the log is regulated or limited by the gage arm 176, which carries at its outer end the gage roller 177, against which the log bears as it is carried onto the saws, and said gage arm 176, is projected from the upper end of the gage rod 178, loosely mounted in the vertically aligned bearing openings 179, formed at an intermediate point in the gage frame 180. The lower one of said bearing openings is formed in the lower end of a depending bracket 181, on which is supported the turning spring 182, connected with the rod 178, and bearing at one end against said

bracket in order to normally project the gage arm 176, to the front and in the path of the log, said gage arm normally resting against the stop flange 183 formed at one upper side of the gage frame. By reason of the spring connection with the gage rod, the same will freely turn in the direction of the travel of the log carriage as it moves over the saws to cut the log, and after the log has passed the gage the spring will immediately throw the gage arm 176, back to its normal front position, and any tendency to depress the gage arm and rod is readily yielded to inasmuch as the said gage rod has a vertical movement in the vertically aligned openings 179, and is limited in this movement and properly adjusted with respect to the centers of the log carriage by means of the adjusting nut 184, engaging the lower threaded end 185, of said gage rod and working under the bracket 181.

The gage frame 180, is provided at one side of the gage rod supported thereby with the upper and lower supporting rods 186, arranged to slide in the guide openings 187, formed in one of the uprights of the elevator frame, and projecting forwardly in a direction opposite to the rods 186, is the adjusting arm 188, having an outer threaded end 189, on which works the adjusting sleeve 190, mounted to loosely turn in the bearing collar 191, secured to the front side of the upright saw frame 6, and said adjusting sleeve is interiorly threaded and is provided at its outer end with a hand wheel 192, which provides means for conveniently adjusting the gage frame in and out to properly adjust the position of the gage rod and the arm carried thereby.

In operation, the log carriage is placed in a position on the track directly over the elevator, with its thrust bar retracted out of the way of the log to be elevated. The log to be elevated is rolled onto the platform of the elevator, and by depressing the press arm 150, the gearing for the elevator is thrown into gear in a manner already described, and the log will be elevated into the log carriage in a proper position to be grasped by the centering pins thereof, and at about this time the automatic trip devices will throw the gearing for the elevator out of gear to stop the elevator and hold the same stationary. By properly adjusting the vertical adjustment of the centering devices on the log carriage and engaging the opposite centering pins at the end centers of the log, the same will then be supported in a position for being fed onto the saws. The elevator is then dropped by disengaging the check pawl herein referred to. In making the first cut it is necessary to move the log to the front side of the center of the log carriage and therefore bring its center out of alignment with the vertical plane of the vertical saw 15, and this is accomplished by raising the lever or handle 54, to adjust the supporting frame 41, which carries the centering devices, toward the front.

In the meantime the carriage remains stationary, inasmuch as the feed chain 121 freely turns the chain feed wheels 126, but by moving the lever 116, to the left the lower one of the wheels 106, will be clutched onto the lower portion of the chain 121, so that the carriage will be carried directly over the saws which will cut out the first strip. After this movement the lever 116, is moved to the right to clutch the upper one of the wheels 106, on the upper part of the chain 121, so as to move the carriage back to its starting point, after which the lever 54, is moved downward to bring the center of the log in line with the vertical saw or line of cut, and the carriage moved over the saws to cut out the first spoke blank, it being understood that the first movement of the log over the saws was to cut out the first slat or strip. After the carriage has been again returned the log is turned by the turning device herein described, until it contacts with the gage which determines the proper adjustment for the next cut, and this operation is repeated until all the stock possible is cut out of the log, it being understood that the log is adjusted downward as the operation continues.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. The combination with the main frame having an elevated track, and the adjacent vertical and horizontally disposed circular saws located between the track rails; of the log carriage running on said track, and an independent mechanically operated log elevator arranged to work below and up to the track and log carriage, substantially as set forth.

2. In a sawing machine of the class described, the combination with the elevated track and the saws between the rails; of the wheeled log carriage arranged to travel on the track and having a truck frame, a transversely adjustable supporting frame mounted to slide on the truck frame and carrying log supporting and centering devices, means for adjusting said supporting frame and the separate log elevator working under the track independently of the carriage, substantially as set forth.

3. In a sawing machine, the combination with the track and the saws between the rails; of the wheeled carriage truck frame arranged on the track and provided at the front side thereof with oppositely arranged guide plates and rollers in the space inclosed by said plates, a transversely adjustable supporting frame carrying the centering devices and mounted to slide on the truck frame with the end bars thereof moving under said guide plates at one side of the rollers, adjusting arms pivotally connected at their inner ends to the opposite ends of said supporting frame and provided

with outer slotted ends, an adjusting rock shaft journaled at the front of the truck frame and provided at its extremities with crank arms engaging the slotted outer ends of said adjusting arms, and set screws working through the outer slotted ends of said adjusting arms into the slots thereof, said rock shaft having an operating lever or handle, substantially as set forth.

- 10 4. A log carriage for sawing machines consisting of a wheeled truck frame, a supporting frame mounted for transverse adjustment on the truck frame, vertically adjustable cross heads supported over said supporting frame,
 15 a log turning and centering shaft mounted on one of said cross-heads, an offstanding supporting bracket projected from one side of the other cross-head, a longitudinally adjustable thrust bar supported to work in said
 20 bracket and having a centering pin in its inner end, an adjusting device connected with said thrust bar, means for adjustably locking the connection of said adjusting device with the thrust bar at different points on the bar,
 25 and means for simultaneously adjusting both cross-heads vertically, and for separately adjusting one of the cross-heads, substantially as set forth.

5. In a machine of the class described, the
 30 combination with the saws and the track; of the log carriage having a transversely adjustable supporting frame, opposite pairs of vertical supporting rods arising from opposite ends of said adjustable supporting frame,
 35 longitudinally arranged connecting bars connecting the upper ends of said supporting rods, transverse guide frames connecting the upper ends of each pair of rods and having vertically aligned guide openings, vertically
 40 adjustable cross heads having collars sliding on each pair of supporting rods and having respectively an offstanding bracket and frame for carrying the log centering and supporting devices and also having threaded adjusting
 45 rods or shanks working through the guide openings of said guide frames, sprocket nuts mounted in the guide frames and working on the threaded rods or shanks, an intermediate bearing frame mounted on said longitudinal
 50 connecting bars and provided with vertically aligned bearing openings, a vertical adjusting shaft journaled in said bearing frame and having a gear wheel at its lower end, a fast and loose chain wheel mounted on said
 55 vertical shaft and having normally engaged clutch hubs or faces, a spring arranged over the upper loose wheel, sprocket chains passing from said chain wheels to the sprocket nuts, a short operating shaft carrying a gear
 60 wheel meshing with that of the vertical shaft and a gear lever mounted at one side of the intermediate bearing frame and having a lifting yoke adapted to engage under the upper loose chain wheel, substantially as set forth.

- 65 6. The combination with the saws and the track; of the log carriage having an adjustable supporting frame, vertically adjustable

cross heads arranged on said supporting frame and one of which carries a fixed centering pin and log turner combined, a supporting bracket extended from one side of the opposite cross head and having a guide opening aligned with a similar opening in the adjacent cross head, a longitudinally movable thrust bar working through said guide openings and having a centering pin at its inner end, an adjustable sleeve mounted loosely on said thrust bar, means for locking said sleeve at any point on the thrust bar, and lever devices connected with the sleeve to move the thrust bar longitudinally, substantially as set forth.

7. In a sawing machine, the combination with the saws and the track; of the log carriage having a supporting frame, vertically adjustable supports at each end of the supporting frame and one of which carries a combined fixed centering pin and log turner, a longitudinally movable thrust bar arranged on the opposite support and provided in its upper edge with a series of locking notches, a longitudinally movable latch sleeve embracing said thrust bar and provided in its top with latch openings, lock latches pivotally mounted in said latch openings of the latch sleeve and provided with outer extended handles and inner locking ends adapted to be moved into engagement with the notches of the thrust bar, adjusting links pivotally connected with said latch sleeve, and a bell crank adjusting lever pivotally connected to said adjusting links and to the support carrying the thrust bar, substantially as set forth.

8. In a sawing machine of the class described, the combination with the main frame having an elevated track, and the horizontal and vertical saws between the track rails; of an endless feed chain arranged horizontally above the inner track rail, the log carriage, a feed clutch mounted on the log carriage and having upper and lower chain wheels normally loosely rotated by the feed chain, means for locking either of said chain wheels to that portion of the feed chain in engagement therewith, the log elevator, and operating devices for said elevator geared with said endless feed chain, substantially as set forth.

9. In a sawing machine of the class described, the combination with the track and the saws; of an endless horizontally arranged feed chain located above one of the track rails, a feed clutch arranged on the log carriage and having upper and lower chain wheels normally loosely rotated by the upper and lower portions of the feed chain, and spacing rollers between the separate portions of the feed chain, and means for locking either of said chain wheels to that portion of the feed chain in engagement therewith, substantially as set forth.

10. The combination with a track and an endless feed chain arranged above one of the track rails and constantly moving in the same direction; of a log carriage travel-

ing on the track, a bearing bracket secured to the log carriage, upper and lower feed shafts journaled in said bearing bracket and carrying at their outer ends chain wheels normally loosely rotated by the upper and lower portions of the feed chains, spacing rollers journaled at opposite sides of said brackets and taking between the separate portions of the feed chain, friction disks or rollers mounted on said feed shafts, a friction block mounted to move in said bracket and having notched clutch ends adapted to embrace one of said friction disks or rollers at a time, a vertically adjustable sleeve embracing one side of the bracket and secured to said friction block, an adjusting link pivotally connected at its lower end to said sleeve, and a lever-operated adjusting shaft supported in suitable bearings and provided at its inner end with a crank loosely connected to the upper end of said adjusting link, substantially as set forth.

11. In a sawing machine of the class described, the combination with the track and the elevator frame at one side of the track; of the log carriage adapted to move over the track, the log elevator arranged to move within the elevator frame and under the track, a chain drive-shaft journaled at one end of the elevator frame and having a sprocket wheel at one end, bracket arms extended from the opposite end of the elevator frame, bearing blocks adjustably mounted on said bracket arms, a short drive shaft journaled in said adjustable bearing blocks and carrying a chain or sprocket wheel at one end, an endless feed chain passing over the oppositely arranged chain wheels and adapted to be suitably connected with the log carriage for moving the same, and normally disengaged gearing devices adapted to be connected with said short drive shaft and the log elevator, substantially as set forth.

12. In a sawing machine, of the class described, the combination with the main frame having an elevated track and an elevator frame at one side of the track, of the log carriage moving on the track, a log elevator arranged to work below and up to the track, a feed chain for the log carriage, a lifting device for the log elevator, gearing connected with said lifting device and the feed chain, and an automatic trip for said gearing, substantially as set forth.

13. In a sawing machine of the class described, the combination with the main frame having an elevated track, and an elevator frame at one side of the track; of the log carriage moving on the track a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, lifting device for the log elevator, normally disengaged gearing connected with the lifting device and the feed chain, means for throwing said gearing into gear, an automatic trip for the gearing operated by the log elevator,

and means permitting the log elevator to automatically lower, substantially as set forth.

14. In a sawing machine of the class described, the combination with the main frame having a track and an elevator frame at one side of the track; of the log carriage moving on the track, a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, a lifting device for the elevator, adjustable bearing blocks supported beyond one end of the elevator frame, a short drive shaft journaled in said bearing blocks and having at one end a chain wheel driven by said feed chain, and carrying at an intermediate point a small cog wheel or pinion, a counter-drive shaft normally elevated above the short drive shaft and carrying a small cog wheel or pinion adapted to mesh with that of the short drive shaft, said counter drive shaft being geared with the elevator lifting device, a device for lowering the counter drive shaft into gear with the short drive shaft, said lowering device having a trip arm, and a trip plate attached to the log elevator and adapted to engage said trip arm to lift the counter drive shaft out of gear, substantially as set forth.

15. In a sawing machine of the class described, the combination with the main frame having a track, an elevator frame at one side of the track, and the saws; of the log carriage, a feed chain for the log carriage, a log elevator sliding in the elevator frame and working up to the track, a lifting device for the elevator, adjustable bearing blocks supported beyond one end of the elevator frame and having slotted upper ends, a short drive shaft journaled in said bearing blocks and geared with the feed chain, said drive shaft having a centrally arranged cog wheel or pinion, spring-supported bearing pins working in the upper slotted ends of the bearing blocks and having bearing collars at their lower ends, a counter drive shaft journaled in said bearing collars and geared with the elevator lifting device, said counter drive shaft having a cog wheel or pinion adapted to engage with that of the short drive shaft, a swinging adjusting yoke loosely connected with the short drive shaft and having an off-standing trip arm, adjusting links pivotally connected to said yoke and the upper counter drive shaft, lever connections with said trip arm to lower the same, and an adjustable trip plate connected to the elevator and adapted to disengage said trip arm to disengage the gearing, substantially as set forth.

16. In a sawing machine of the class described, the combination with a main frame having a track, the elevator frame at one side of the track, and the saws; of the log carriage, a log elevator sliding in the elevator frame and working up to the track, said elevator having a pulley at the top, a feed chain for the carriage, automatically tripped gearing driven by said feed chain and having a

counter shaft provided with a chain wheel at one end, a winding shaft journaled on top of the elevator frame and having a chain wheel at one end and a ratchet disk or wheel at its opposite end, a chain connection between said chain wheels, an elevating rope winding and unwinding on said winding shaft and passing under the elevator pulley, a check-pawl pivoted at one side of the elevator frame and normally engaged with said ratchet disk or wheel, and a lever actuated spring supported rod loosely connected to one end of said pawl to normally engage the same with said ratchet disk or wheel and to provide for the disengagement thereof, substantially as set forth.

17. In a sawing machine of the class described, the combination with the track, the saws between the track rails and the log carriage having a turning device; of a gage frame supported for transverse adjustment below the tracks at one side of the saws, and a vertically and laterally movable gage arm supported in said frame, substantially as set forth.

18. In a sawing machine of the class described, the combination with the track, the saws and the log carriage; of a gage frame arranged for transverse adjustment below the track and provided with a depending bracket and vertically aligned bearing openings, one of which is formed in the bracket, and a stop

flange at one upper side thereof, a turning gage rod mounted for vertical movement and adjustment in said bearing openings and provided at its upper end with an off-standing gage arm carrying at its extremity a gage roller, and a spring arranged on said gage rod above said depending bracket to normally hold the gage arm against said stop flange, substantially as set forth.

19. In a sawing machine of the class described, the combination with the frame; of the adjustable gage frame provided at one side with upper and lower supporting rods arranged to work through suitable guide openings in the frame and at its opposite side with a threaded adjusting arm, a suitably arranged bearing collar, an interiorly threaded adjusting sleeve turning in said bearing collar and working on said threaded adjusting arm, and a vertically and laterally movable gage arm supported in said gage frame, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE SPENCER FRY.
SAMUEL LEWIS WALKER.

Witnesses:

WALTER HAYS,
R. M. SHIREY.