

May 13, 1924.

1,494,174

F. L. LANE

AUTOMATIC LUMBER FEEDER

Filed June 3, 1922

8 Sheets-Sheet 1

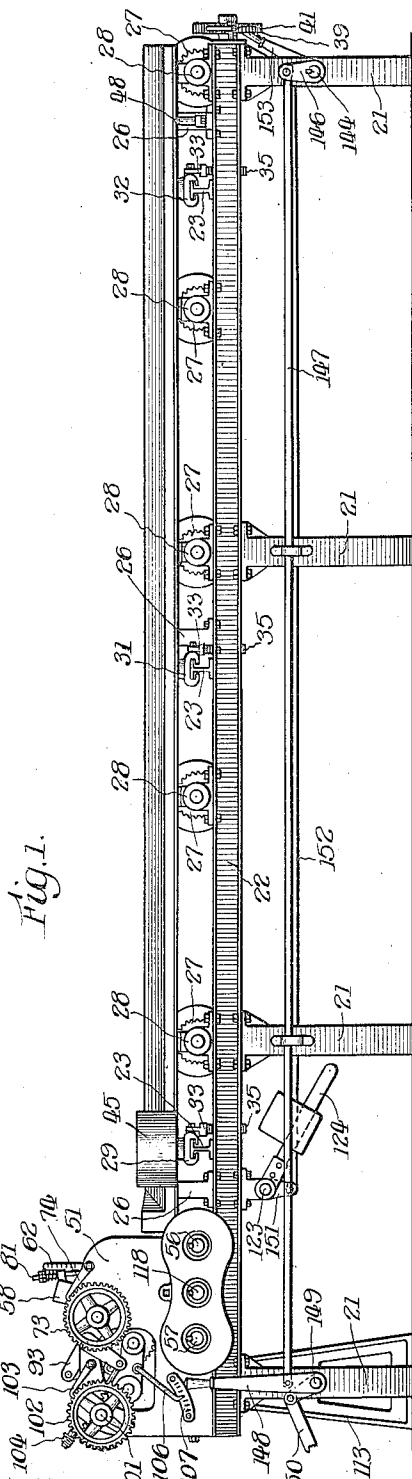


Fig. 1.

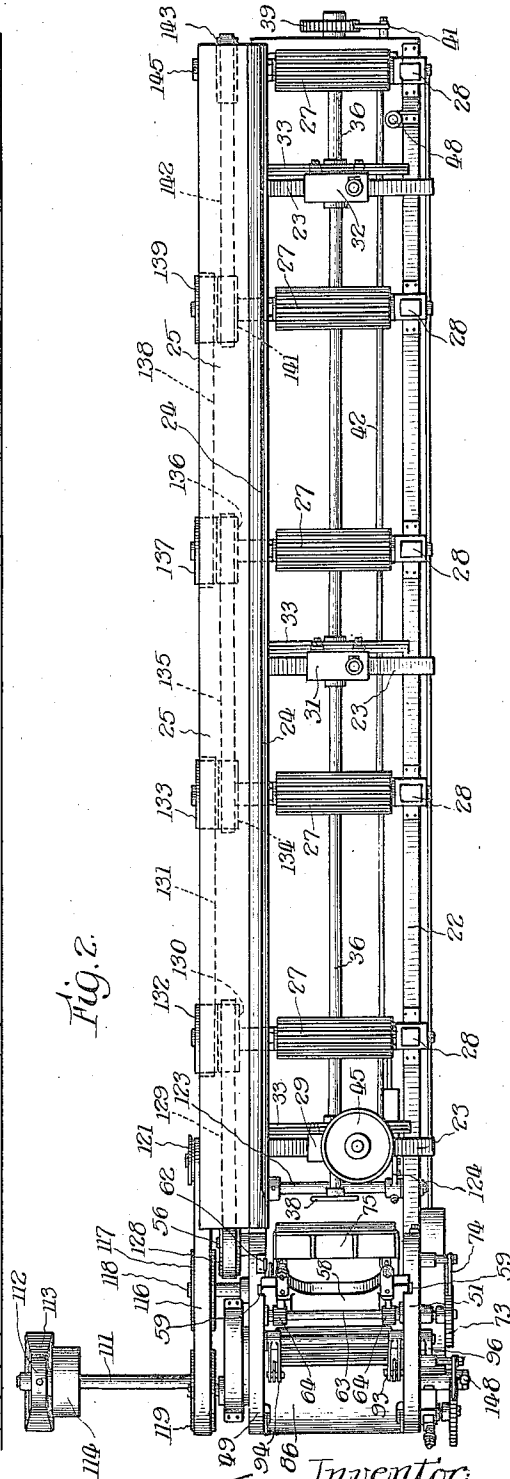


Fig. 2.

Witness:
A. J. Samsen,

Inventor:
Franklin L. Lane
By Walter M. Fuller atty.

May 13, 1924.

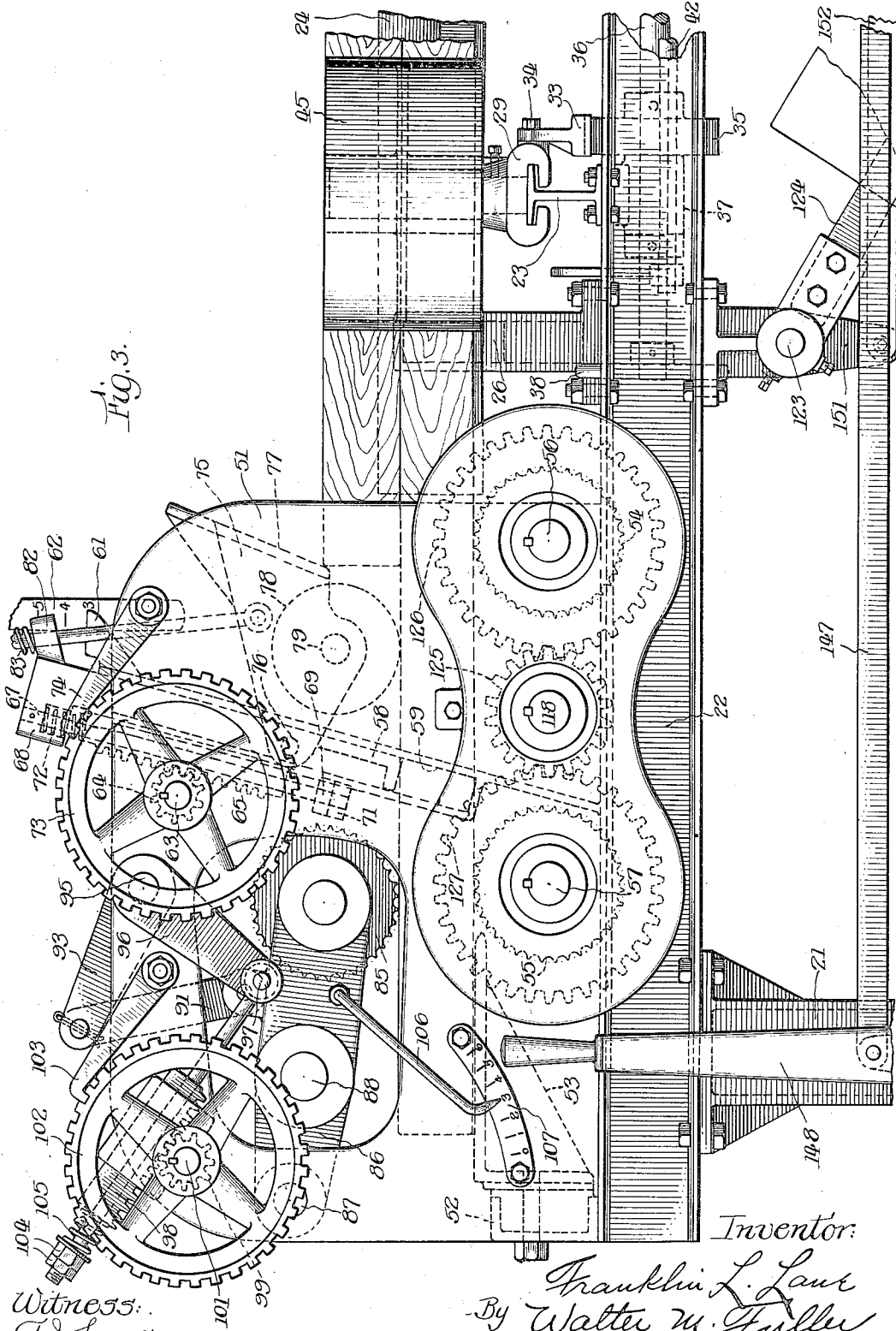
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Filed June 3, 1922

8 Sheets-Sheet 2



Witness:
A. J. Sauer.

Inventor:
Franklin L. Lane
By Walter M. Fuller
Atty.

May 13, 1924.

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F. L. LANE

AUTOMATIC LUMBER FEEDER

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8 Sheets-Sheet 3

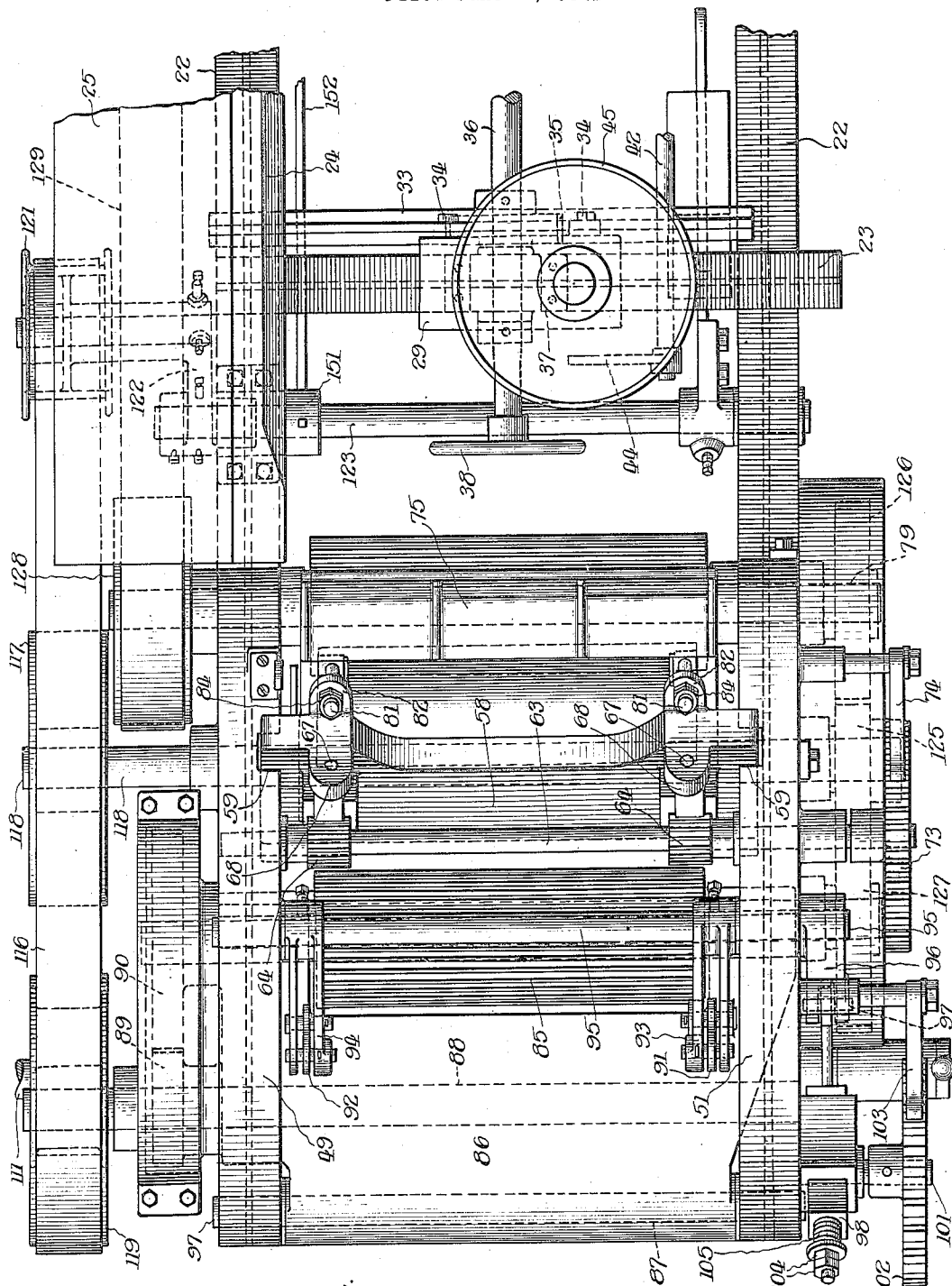


Fig. 4.

Witness:
A. J. Sauer.

Inventor:
Franklin L. Lane
By Walter M. Fuller
Atty.

May 13, 1924.

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F. L. LANE

AUTOMATIC LUMBER FEEDER

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8 Sheets-Sheet 4

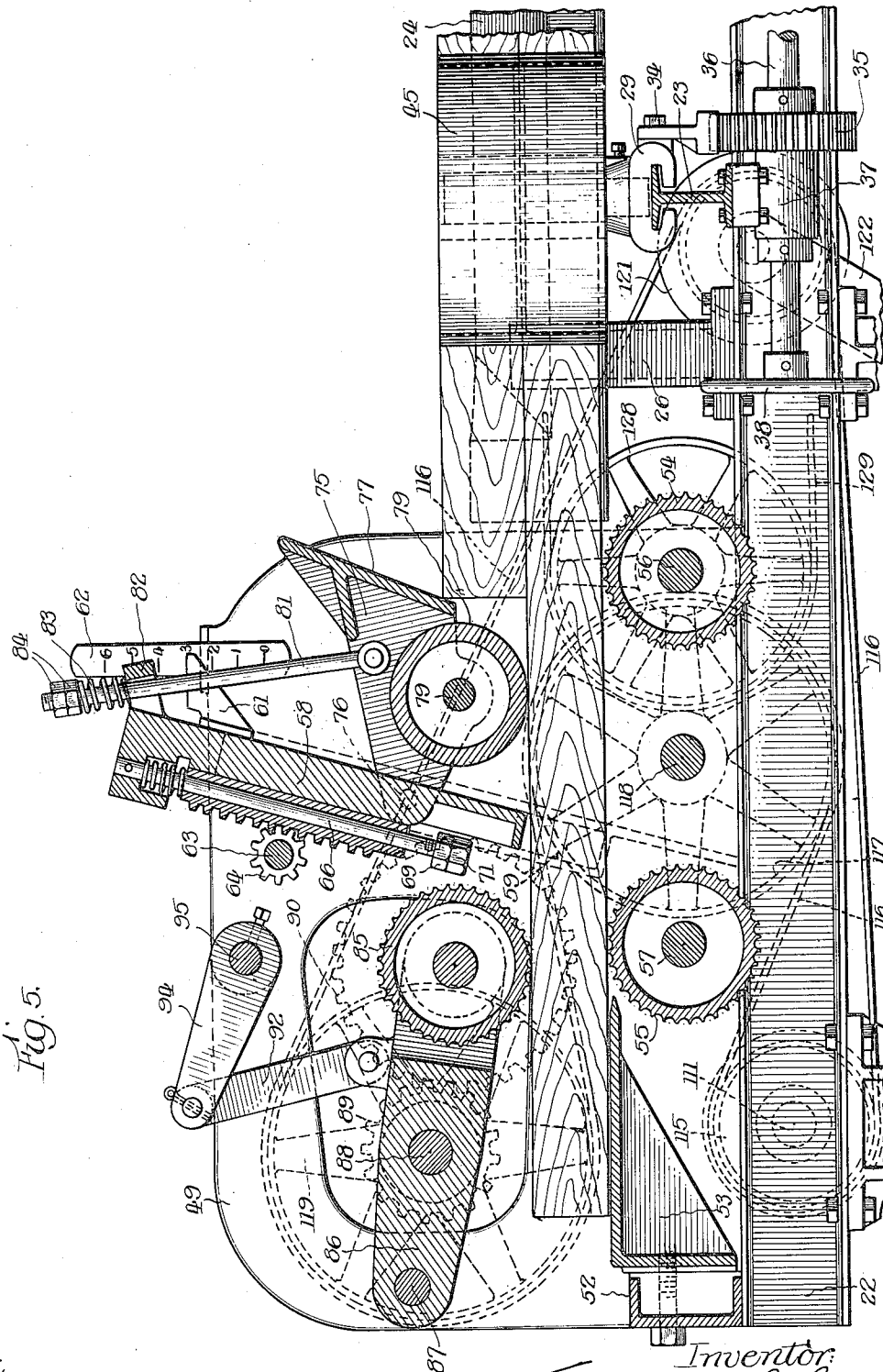


Fig. 5.

Witness:
A. J. Sauer.

Inventor:
Franklin L. Lane
By Walter M. Fullhatty.

May 13, 1924.

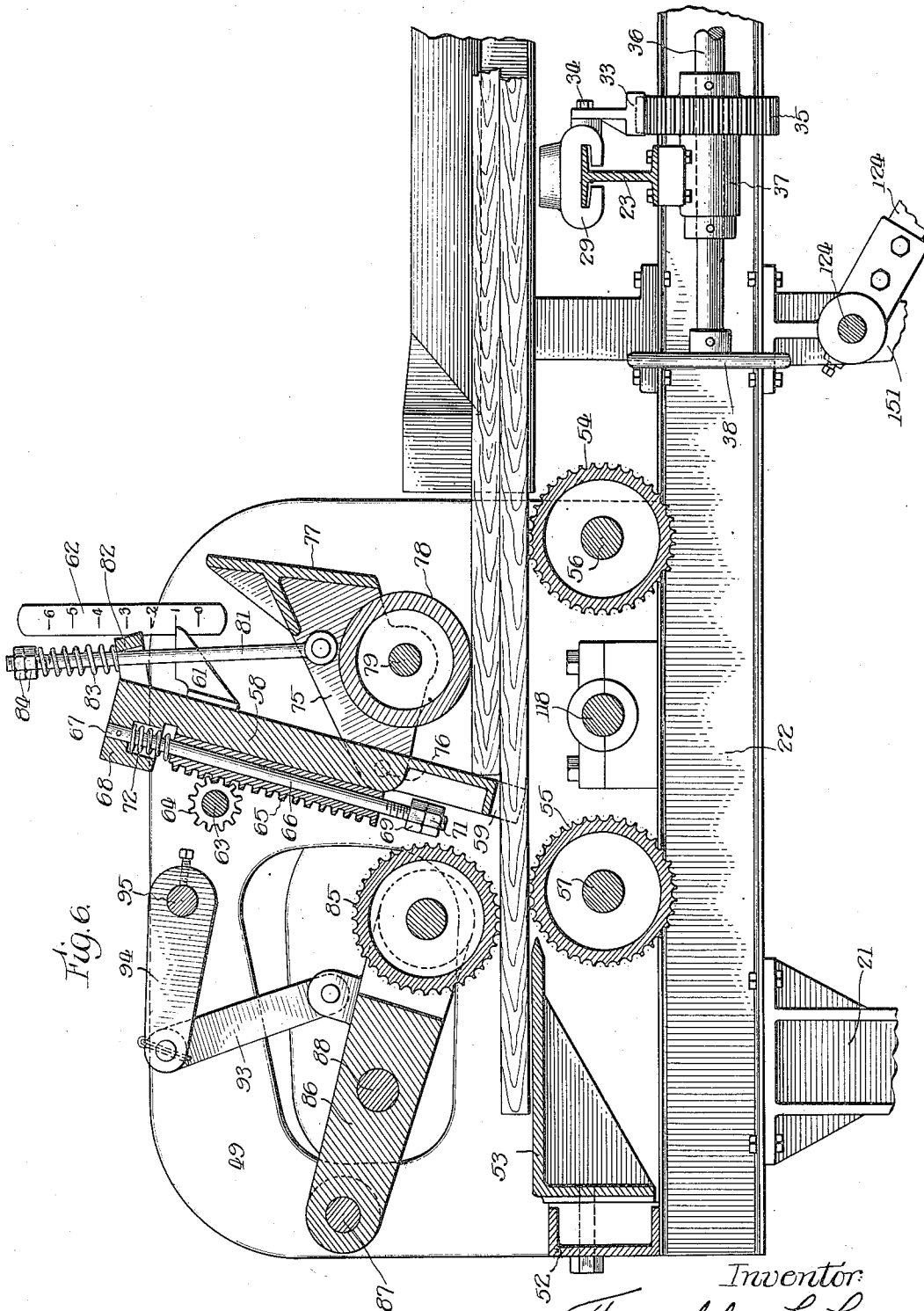
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F. L. LANE

AUTOMATIC LUMBER FEEDER

Filed June 3. 1922

8 Sheets-Sheet 5



Witness:
A. J. Sausser.

Inventor:
Franklin L. Lane
By Walter M. Fuller
Att'y.

May 13, 1924.

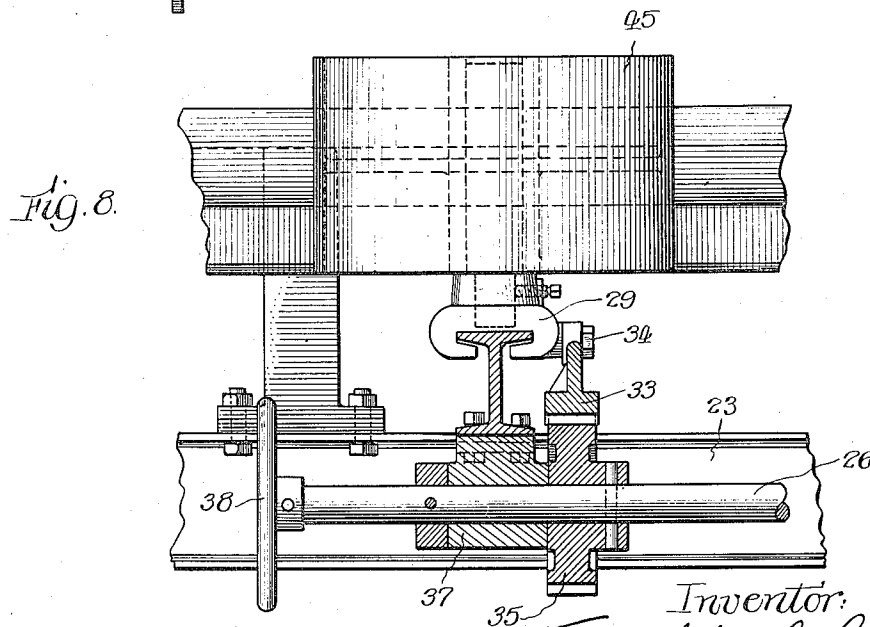
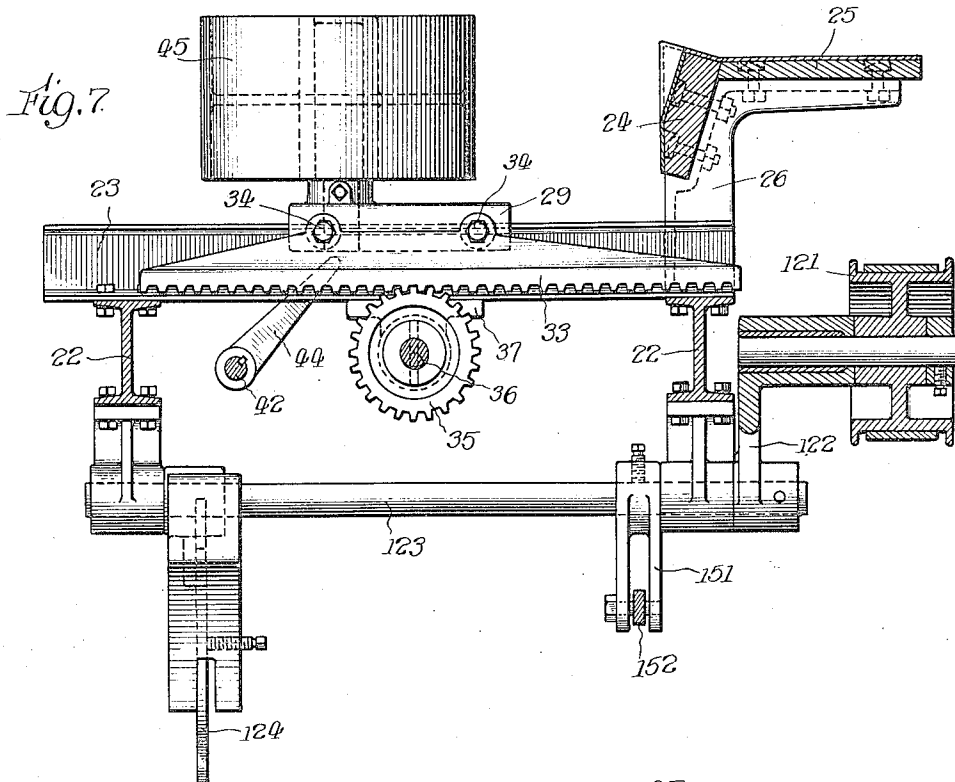
1,494,174

F. L. LANE

AUTOMATIC LUMBER FEEDER

Filed June 3, 1922

8 Sheets-Sheet 6



Witness:
A. J. Sauer,

Inventor:
Franklin L. Lane
By Walter M. Fuller
Atty.

May 13, 1924.

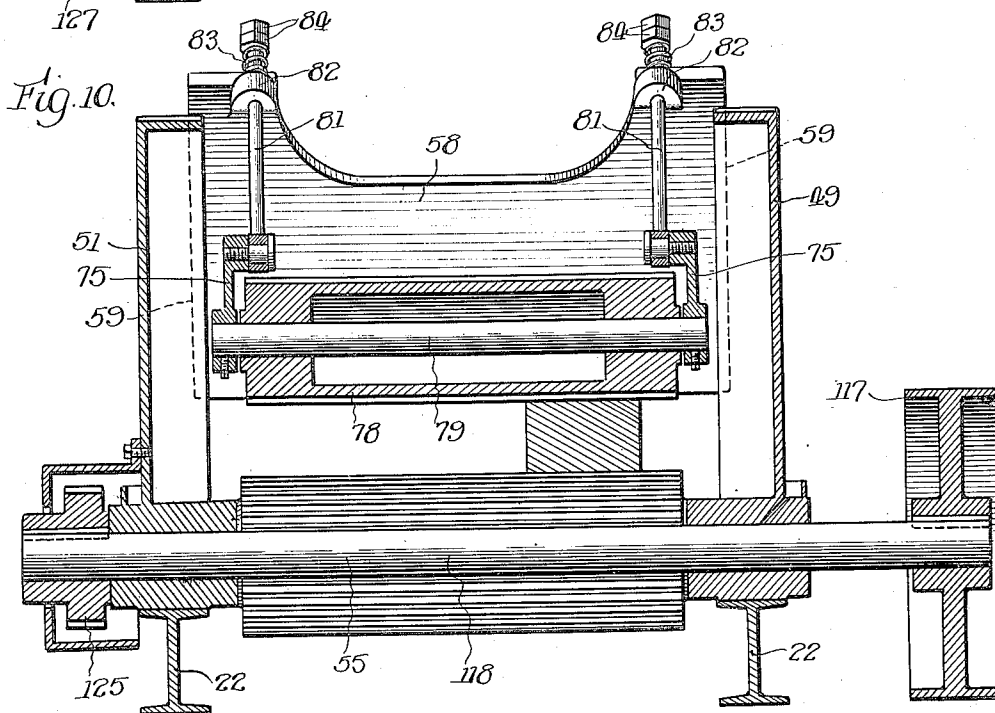
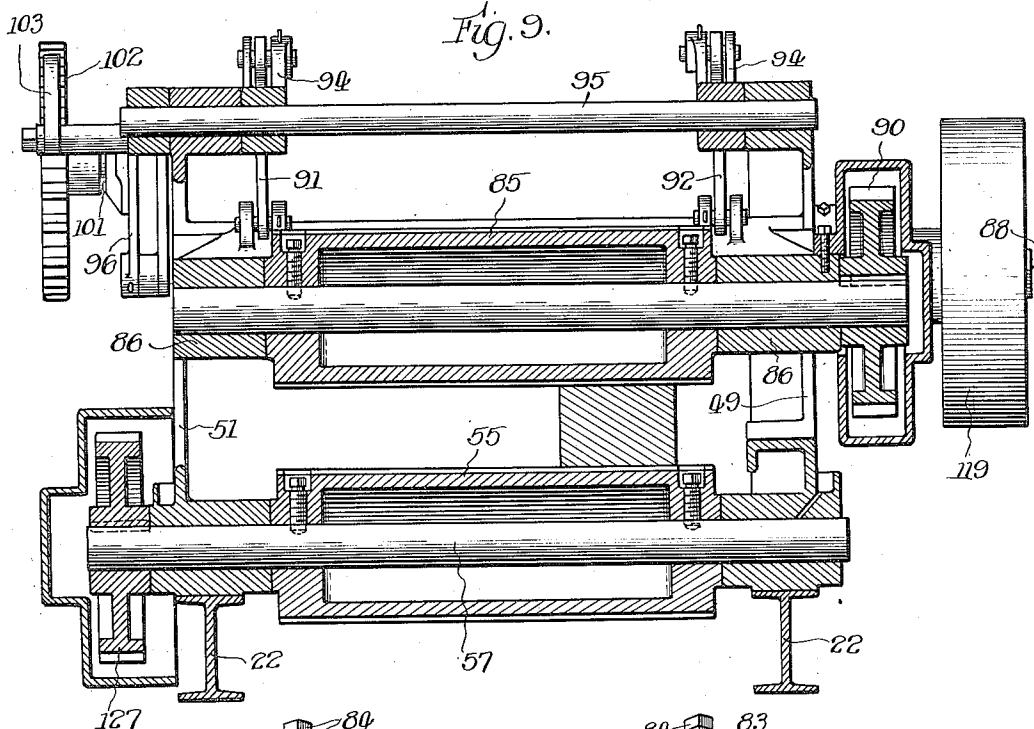
1,494,174

F. L. LANE

AUTOMATIC LUMBER FEEDER

Filed June 3, 1922

8 Sheets-Sheet 7



Witness:
A. Sausser.

Inventor:
Franklin L. Lane
By Walter M. Fuller Atty.

May 13, 1924.

1,494,174

F. L. LANE

AUTOMATIC LUMBER FEEDER

Filed June 3 1922

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Fig. 11.

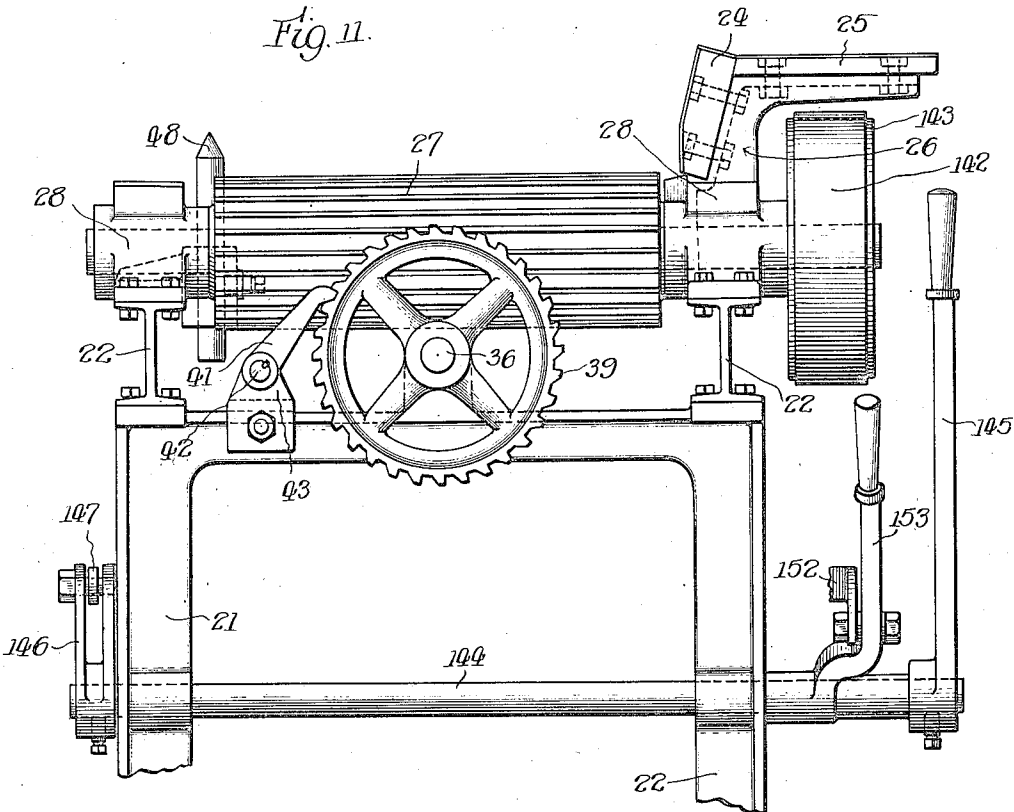
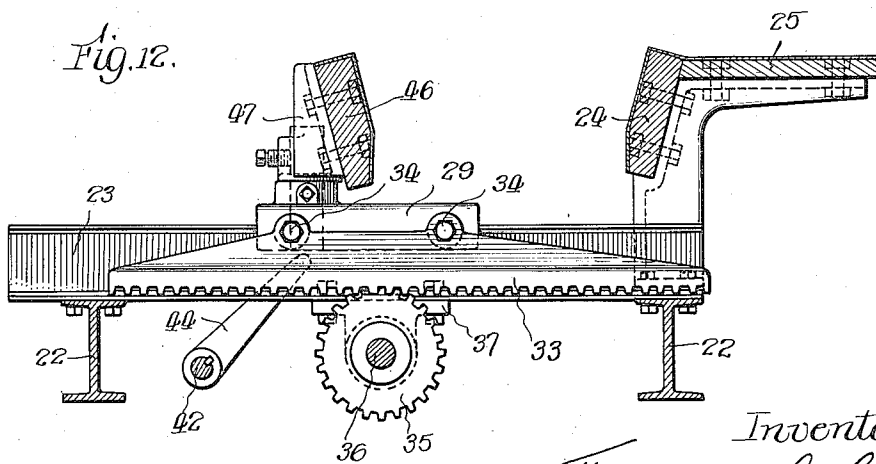


Fig. 12.



Witness:
A. J. Sauser.

Inventor:
Franklin L. Lane
By Walter M. Fuller
Atty.

UNITED STATES PATENT OFFICE.

FRANKLIN L. LANE, OF BELOIT, WISCONSIN, ASSIGNOR TO P. B. YATES MACHINE CO.,
OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

AUTOMATIC LUMBER FEEDER.

Application filed June 3, 1922. Serial No. 565,770.

To all whom it may concern:

Be it known that I, FRANKLIN L. LANE, a citizen of the United States, residing in the city of Beloit, county of Rock, State of Wisconsin, have invented certain new and useful Improvements in Automatic Lumber Feeders, of which the following is a specification.

My present invention concerns a novel type and style of power-driven feeding appliance or table for advancing lumber to planing or other machines, whereby the ends of the boards are maintained butted together or in contact and a single continuous line of end to end abutted boards is fed to the planer so that the latter may operate to maximum advantage and capacity.

The table is designed and intended to accommodate a number of boards at a time, enabling the operator to have ample opportunity to so turn the individual boards over or end for end as he places them on the table that the highest grade of finished lumber is easily attainable.

One prime object of the invention is the provision of a feeding table of this kind which will feed the boards positively and with certainty even though they may be warped or twisted or have other irregularities.

Another purpose of the invention is to supply a feeding appliance which may be fed from either or both sides, whereby there may be no loss of time in delivering the boards from a new loaded truck just as soon as the preceding one becomes unloaded.

This is easily accomplished by feeding alternately from trucks or dollies on opposite sides of the table.

An additional aim of the invention is to provide an appliance of this type which is rugged and capable of satisfactorily withstanding the more or less rough usage to which it is subjected without becoming damaged or injured and without interruption of efficient service.

To the accomplishment of these and other desirable objects I have invented the new form of feeding table, preferred and desirable embodiments of the invention being illustrated in the accompanying drawings forming a part of this specification and

throughout the several views of which like reference characters refer to the same parts.

In these drawings:

Figure 1 is a side elevation of one embodiment of the invention;

Figure 2 is a plan view of the same mechanism;

Figure 3 is a fragmentary enlarged side elevation of a portion of the machine;

Figure 4 is a plan view of that part of the machine shown in Figure 3;

Figure 5 is a longitudinal vertical section through the part of the mechanism shown in Figures 3 and 4;

Figure 6 is a view similar to Figure 5 showing the feeder handling thinner lumber;

Figure 7 is a fragmentary vertical cross-section through the feed table;

Figure 8 is a similar longitudinal section;

Figures 9 and 10 are other vertical cross-sections;

Figure 11 is an end view of the feeding table; and

Figure 12 is a vertical cross-section showing a modified form of construction.

Referring to these drawings, it will be perceived that the machine comprises a substantial and rigid frame having a plurality of legs 21, 21 at each side supporting a pair of parallel, longitudinal I-beams 22, 22 cross-connected together at intervals by short, transverse I-beams 23, 23, these several frame elements being suitably bolted or riveted together.

Along one lengthwise edge of this frame, a slightly-inclined, wooden, metal-faced side-guide 24 and a similar, horizontal shelf or ledge 25 are mounted on a plurality of appropriate supporting brackets 26, carried by the corresponding longitudinal I-beam 22.

The machine also has a plurality of longitudinally fluted rollers 27 disposed crosswise the frame and mounted on shafts rotatable in bearings 28 on the frame members 22, such feed rollers being rotated by means described hereinafter.

These power-driven feed-rollers are designed to accommodate a plurality of boards resting on top of one another and to feed out the lowermost one, and then the

successive ones as they in turn become the lower board resting on the rollers.

To hold such boards over against the side guide or fence 24 during such advancing or feeding operation to guide or direct them properly to the planing machine, two different or interchangeable structures are employed depending upon the widths of boards handled.

10 This structure comprises three shoes 29, 31 and 32 fitting around the top flanges of and adapted to slide on the upper faces of the three cross-beams 23 of the frame, each of such shoes, as is indicated in Figures 7 and 8, having a rack 33 fixed thereto by cap screws 34, the teeth thereof on its bottom face being in mesh with those of the companion gear 35, all three gears being carried by a longitudinally-disposed shaft 36 rotatable in bearing members 37 fastened to the lower flanges of the cross I-beams 23.

This shaft at its end toward the planer or matcher, not shown, is fitted with a hand-wheel 38 and at its other end with a notched 25 or ratchet wheel 39 with the teeth of which a pawl 41 is designed to coact to prevent unintentional turning of the shaft.

Such pawl or dog is carried by a lengthwise arranged shaft 42 oscillatory in suitable bearings 43 and supplied at its opposite end near the hand wheel 38, with an operating handle 44, thus enabling the pawl to be released from either end of the feeding table.

As shaft 36 is turned by either the hand-wheel 38 or the ratchet-wheel 39, the three shoes or slides 29, 31 and 32 will move equally and simultaneously in the same direction toward or from the side fence or guide 24.

40 When relatively wide boards are being fed it is customary to mount a vertical roller 45 on the foremost shoe or slide 29, whereby each board as it is advanced by the power-actuated fluted or roughened rollers 27 will engage such guide-roller 45 and be forced over by it toward or into contact with the side-guide.

For narrower boards, however, this anti-friction, demountable roller is desirably replaced by a relatively-long, horizontal, wooden, metal-covered side-fence 46 removably supported on the three reciprocatory or adjustable shoes 29, 31 and 32 by means of suitable brackets or supports 47 fitting in sockets of the shoes, and under such circumstances the boards piled on one another are accommodated between these spaced approximately, parallel members 24 and 46, the distance between which is subject to control for different widths of boards.

At 48 the frame has a pointed, upstanding rod or pin by means of which the boards may be jacked individually from the trucks on to the feeding-table.

At its planer or matcher end, the feeding-table is fitted with a casting having two, vertical, side-walls 49 and 51 above the corresponding longitudinal I-beams 22 of the frame, such walls being connected together by a cross-wall 52 (Figure 6) carrying a table 53, the top face of which is about on a level with the tops of the fluted, power-driven feed-rollers already mentioned and two others 54 and 55 on shafts 56 and 57, respectively, rotatable in bearings in the side-walls.

An inclined gate or abutment 58 is adjustable up and down in sloping guideways 59, 59 in the inner faces of the side-walls of the casting, the gate bridging or spanning the space between such walls, and being equipped with an index or pointer 61 co-operating with an upright scale 62 to indicate or designate the adjustment of the gate or the thicknesses of boards it is designed to accommodate beneath it in its different positions of adjustment.

To govern or regulate the position of such gate, I provide a cross-shaft 63 revoluble in bearings in the side-walls, the shaft having two pinions 64 fast thereon and in mesh with the teeth of two racks 65 slidably mounted on the gate, each such rack having a round hole extended longitudinally there-through and receiving an inclined rod 66 pinned at its top end at 67 to a lug 68 of the gate and provided at its protruding, lower, threaded end with a nut 69 and associated lock-nut 71, a short, coiled, shock-absorbing spring 72 being accommodated in a cavity in the under side of each lug and interposed between such lug and the top end of the corresponding rack, whereby the gate is supported by the pair of adjustable racks through their springs.

The shaft extends through one side-wall, where it is equipped with a notched hand-wheel 73 by which it may be turned to adjust or vary the position of the gate, the hand-wheel being normally locked in its desired position by a hinged or pivoted dog or pawl 74 coacting with its notches.

A comparatively-heavy yoke 75 is hinged at its opposite ends at 76 to this gate, such yoke having a smooth, usually-inclined wall 77 against which the boards are adapted to strike, and also having a smooth-faced, cylindrical, revoluble roller 78, the shaft 79 of which is mounted in appropriate bearings in the end walls of the yoke.

Two rods 81 hinged to the ends of the yoke extend up through apertured ears 82 at the top of the gate, and above these the rods have coil springs 83 encircling them and resting on the ears, the weight of the yoke under certain circumstances being borne by such springs through nuts 84 on the upper threaded ends of the rods.

When no boards are under the roller 78, the weight of the latter and its yoke will be carried by the gate through the rod and spring connections, and as the position of the gate is adjusted, that of the yoke and its roller will also occur.

An upper, power-rotated, fluted roller 85 adapted to bear on the top surface of the lumber is mounted in a relatively-heavy yoke 86 rockingly hung on a shaft or rod 87 extended between and supported by the side-walls, such yoke also carrying an intermediate, power-driven shaft 88 geared to the shaft of the roller through correlated spur gears 89 and 90, the height or position of the yoke and its roughened roller being governed by two links 91 and 92 pivoted thereto and to two arms 93 and 94, respectively, fixed to a cross-shaft 95 revolubly mounted in and extended through one of, the side-walls, the exposed end of such shaft having an arm 96 rigid therewith pivoted to a rod 97 extended lengthwise through a passage in a slidingly-mounted rack 98, the teeth of which are in coactive relation with those of a pinion 99 on a short shaft 101 fitted with a convenient, notched hand-wheel 102 supplied with a hinged, locking dog or pawl 103.

Between nuts 104 on the screw-threaded upper end of the rod 97 and the corresponding end of the rack, a shock-absorbing spring 105 is interposed, whereby the fluted roller has a certain amount of freedom of movement up and down, that is toward and from the lumber beneath it.

In order to indicate the adjustment of such roller, the yoke has a pointer 106 (Figure 3) traversing a curved, graduated scale 107 on the outside of the side-wall.

The main drive-shaft 111 revoluble in a bearing, not shown, on the frame work and in a bearing 112 in a standard 113 (Figure 2) is supplied with a drive-pulley 114 designed to be connected to the drive-shaft of the planing-machine with which the feeding-table is associated, whereby a predetermined higher speed of lumber feed of the table over that of the in-feed rollers of the planing-machine will be maintained under all normal conditions.

Shaft 111 also has another pulley 115 close to the feeder, and a drive-belt 116 extends around such pulley, a second pulley 117 on a shaft 118, a third pulley 119 on shaft 88, and a slack take-up or tightening pulley 121 on an arm 122 outstanding from a short cross-shaft 123 provided with a weighted arm 124 tending to tighten the belt by its action on this pulley.

The two fluted rollers 54 and 55 are revolved from shaft 118 by a gear 125 on the latter in mesh with gears 126 and 127 on the shafts of the two rollers, all this gearing being suitably enclosed for safety purposes.

Shaft 56 has a pulley 128 which rotates

the shafts of all of the fluted rollers 127 by means of the interconnected belt pulleys 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 141, 142 and 143 whereby all the fluted rollers are rotated in the proper direction simultaneously.

To enable the workman to control the operation of the feeding-table and also to govern the action of the planer or matcher with which the table is coupled up, a cross-shaft 144, mounted in bearings at that end of the table remote from the planing machine, is equipped with a handle 145 by means of which it may be rocked, and the other end of the shaft has a bifurcated arm 146 keyed or otherwise fastened thereto, the arm being hinged to a long, horizontal link 147 pivoted at its other end to a handle 148 on a shaft 149 connected by suitable means 150 to the power control mechanism of the planer, whereby by actuating either handle the operation of the planer may be regulated and controlled.

In order that the feeding-table may be easily rendered operative and inoperative, means are provided for governing the action of pulley 121 on the drive-belt 116 and accordingly a depending arm 151 on shaft 123 is connected by a long link 152 to a handle 153 loose on shaft 144 whereby by manipulating such handle the position of the pulley may be varied to slacken and tighten the driving-belt sufficiently to control the operation of the feeding-table as a whole.

The appropriate side member 45 or 46 having been applied to the feeding-table and adjusted to proper position for the width of boards to be fed to the planer, the boards are placed individually in succession on the fluted rollers, the latter accommodating a plurality of such boards, say, two or three, at a time in superposed relation.

These rollers feed out the undermost board beneath the heavy yoke and its roller, beneath the gate, and the other top fluted roller beyond the gate between the infeed rollers of the planer.

The board on top of such lowermost one is carried along by it until its front end strikes the abutment 77 (Figure 5) thus arresting further forward travel of such board and any others which may be resting on it for the time being.

Or, in some cases with thin boards, such second board passes under the roller 78 and is held back by the gate itself.

As soon as the lowermost board has been fed out, the next one drops into place and is fed forward under the gate being assisted in its initial movement by the somewhat-weighted roller 78.

The mounting for the yoke 77 and its roller 78 permits these parts to rise and descend as occasion requires and during

such downward movements a satisfactory cushioning or shock-absorbing effect occurs by reason of the supporting springs 83.

The gate itself can yield upwardly to some extent to compensate for boards of varying thicknesses, thus eliminating any clogging of the machine by reason of the passage of wedge-shaped boards beneath the gate.

Rollers 55 and 85 to the rear of the gate are effective in assisting the advance of the boards one by one in endwise abutting relation, the feed-rollers of the feeding-table being operated at a sufficiently faster speed than those of the planer to assure a continuous single line stream of boards bearing end to end passing into the planer, which action is facilitated by reason of the ability of the operator to deliver the boards on to the feeding-table rollers from trucks on either side of the table.

It will be noted also that by properly positioning the element 45 or 46, as the case may be, a sufficient distance from the side-fence 24 boards of random widths may be accommodated and properly fed by this feeding-table.

This invention is not limited and restricted to the precise and exact structural features shown and described since these are capable of more or less radical changes without departure from the heart and essence of the invention and without the sacrifice of any of its substantial benefits and advantages.

I claim:

1. In a feeding-table of the character described, the combination of a frame, means on said frame adapted to receive a plurality of superposed boards and to advance them, a gate downwardly inclined in the direction of the feed of the boards beneath which the boards are adapted to be fed individually by said means, a mounting for said gate giving it freedom of movement toward and from the board beneath it, a roller carried by and in front of said gate and designed to bear on the boards and to hold their front ends down to facilitate their passage beneath the gate, and a mounting for said roller on said gate permitting the roller to rise and descend.

2. In a feeding-table of the character described, the combination of a frame, means on said frame adapted to receive a plurality of superposed boards and to feed them, a gate beneath which the boards are adapted to be fed individually by said feeding means, a pressure-roller on said gate adapted to bear on the boards and to hold their ends down to facilitate the introduction of the lowermost board beneath the gate, and a member on said gate having an abutment wall in advance of said gate and against

which the ends of the boards are adapted to strike to prevent their forward feed until the proper moment.

3. In a feeding-table of the character described, the combination of a frame, means on said frame adapted to receive a plurality of superposed boards and to feed them, a gate beneath which the boards are adapted to be fed individually by said feeding means, a pressure-roller on and in advance of said gate adapted to bear on the boards and to hold their ends down to facilitate the introduction of the lowermost one beneath the gate, and a yoke hinged to said gate having an abutment wall against which the ends of the boards are adapted to strike to prevent their forward feed until the proper moment, said pressure-roller being mounted on said yoke.

4. In a lumber feeding-table of the character described, the combination of a frame, power-driven means on said frame adapted to accommodate a plurality of superposed boards and to feed them forwardly, a slidingly-mounted gate beneath which the lowermost boards are adapted to be fed individually by said feeding means, a pair of racks slidingly associated with said gate, a shaft, a pair of gears on said shaft in mesh with said racks, a handle by which said shaft and gears may be turned to adjust the position of said gate, rods on which said gate is mounted slidingly accommodated in passages through said racks, and spring cushions between said gate and racks.

5. In a lumber feeding-table of the character described, the combination of a frame, power-driven means on said frame adapted to accommodate a plurality of superposed boards and to feed them forwardly, a slidingly-mounted gate beneath which the lowermost boards are adapted to be fed individually by said feeding means, a pair of racks slidingly associated with said gate, a shaft, a pair of gears on said shaft in mesh with said racks, a handle by which said shaft and gears may be turned to adjust the position of said gate, rods on which said gate is mounted slidingly accommodated in passages through said racks, spring cushions between said gate and racks, and a revolvable pressure-roller movably mounted on said gate and adapted by its downward pressure on the boards to facilitate the entrance of their front ends beneath said gate.

6. In a lumber feeding-table of the character described, the combination of a frame, power-driven means on said frame adapted to accommodate a plurality of superposed boards and to feed them forwardly, a slidingly-mounted gate beneath which the lowermost boards are adapted to be fed individually by said feeding means, a pair of racks slidingly associated with said gate, a

shaft, a pair of gears on said shaft in mesh
with said racks, a handle by which said
shaft and gears may be turned to adjust the
position of said gate, rods on which said
5 gate is mounted slidably accommodated in
passages through said racks, spring cushions
between said gate and racks, a hinged
mounting on said gate, a cushion between
said mounting and gate adapted to support

the former, and a pressure roller revolvably 10
mounted in said hinged mounting and
adapted by its downward pressure on the
boards to facilitate the entrance of their
front ends beneath said gate.

In witness whereof I have hereunto set 15
my hand and seal.

FRANKLIN L. LANE. [L. S.]