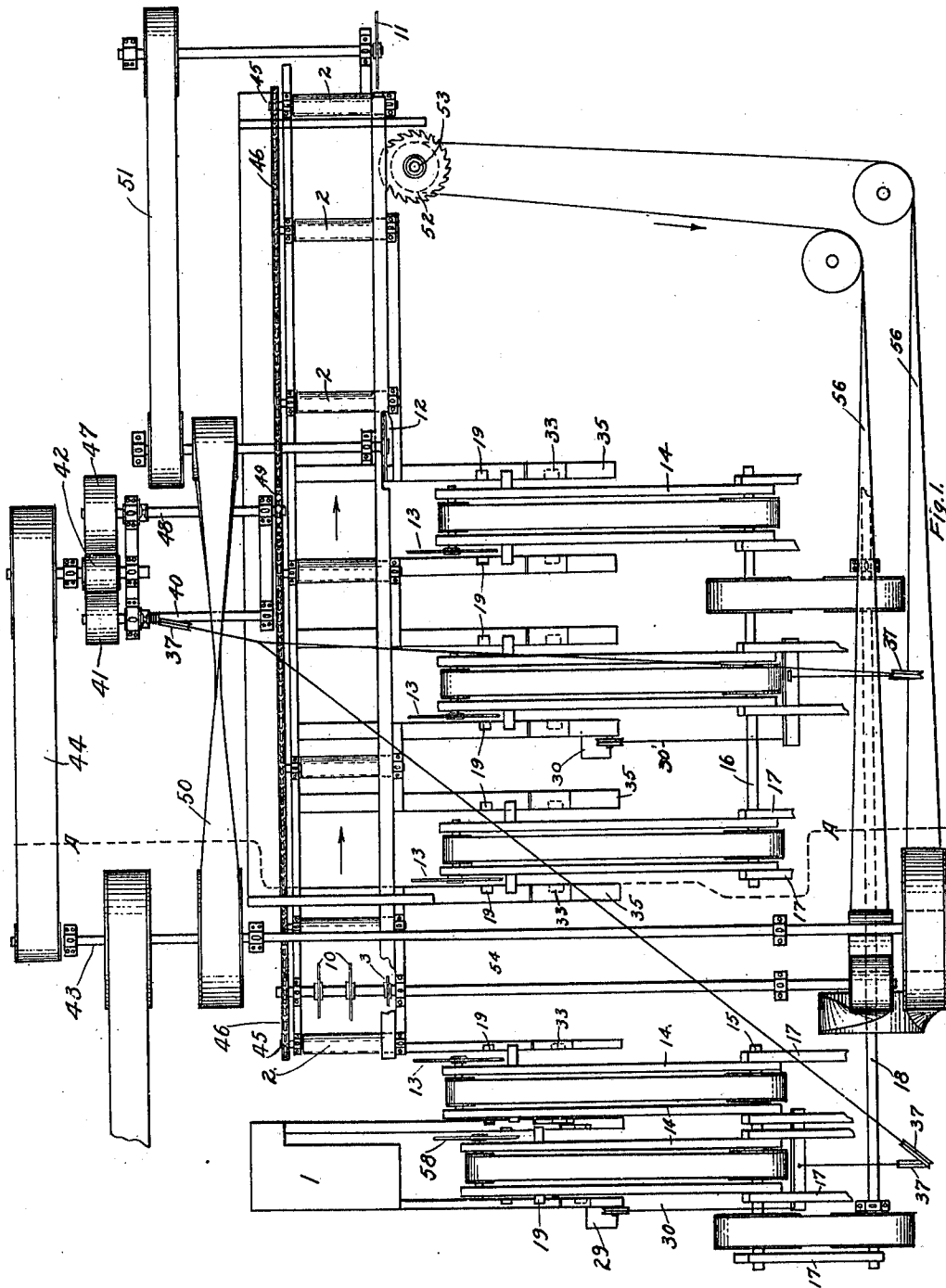


A. S. FROSLID.
LUMBER EDGER, TRIMMER, AND LATH MILL.
APPLICATION FILED FEB. 14, 1910.

Patented Dec. 27, 1910.

4 SHEETS—SHEET 1.

980,147.



Witnesses.

J. G. Wood
Carl C. Wood.

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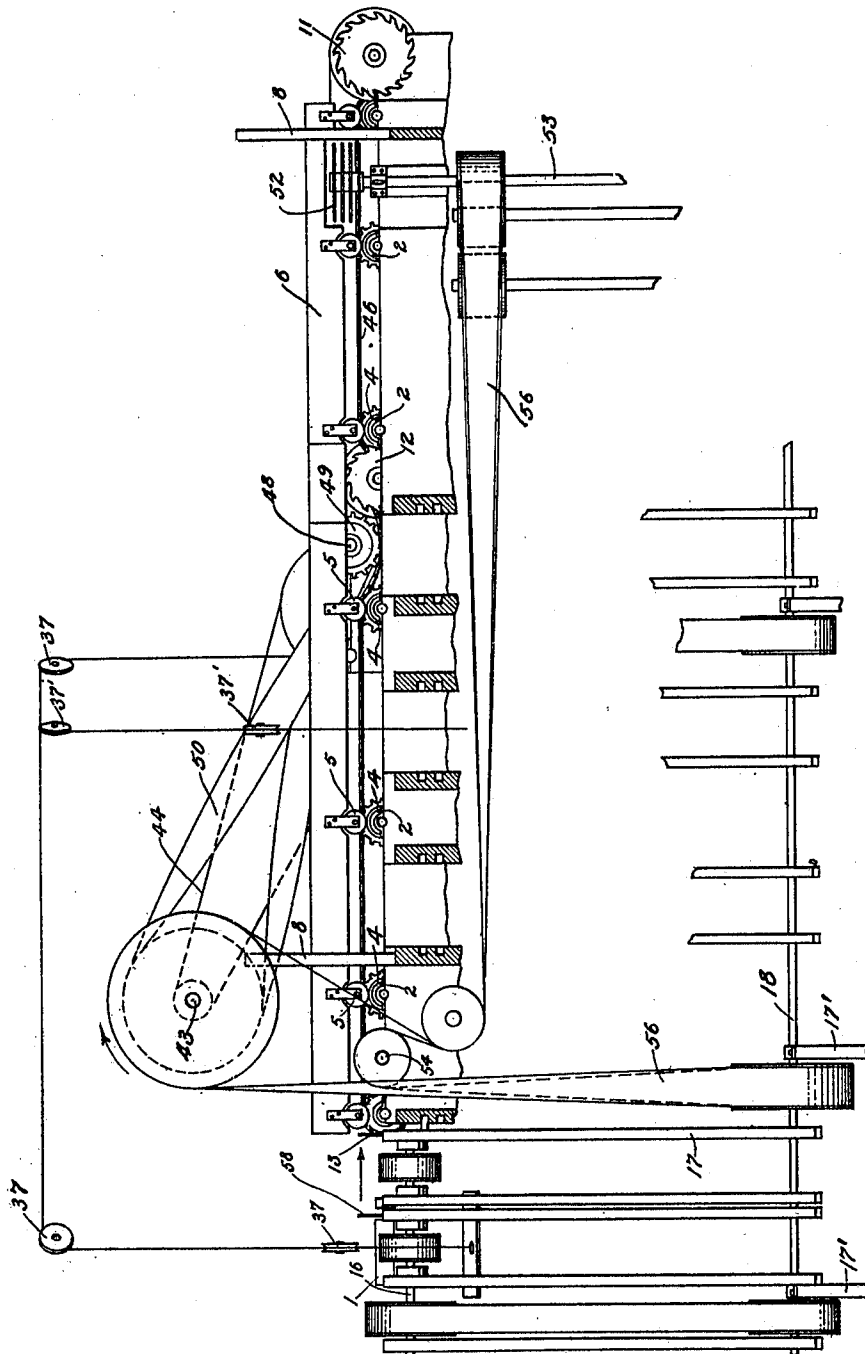


Fig. 2

Witnesses.

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4 SHEETS-SHEET 3.

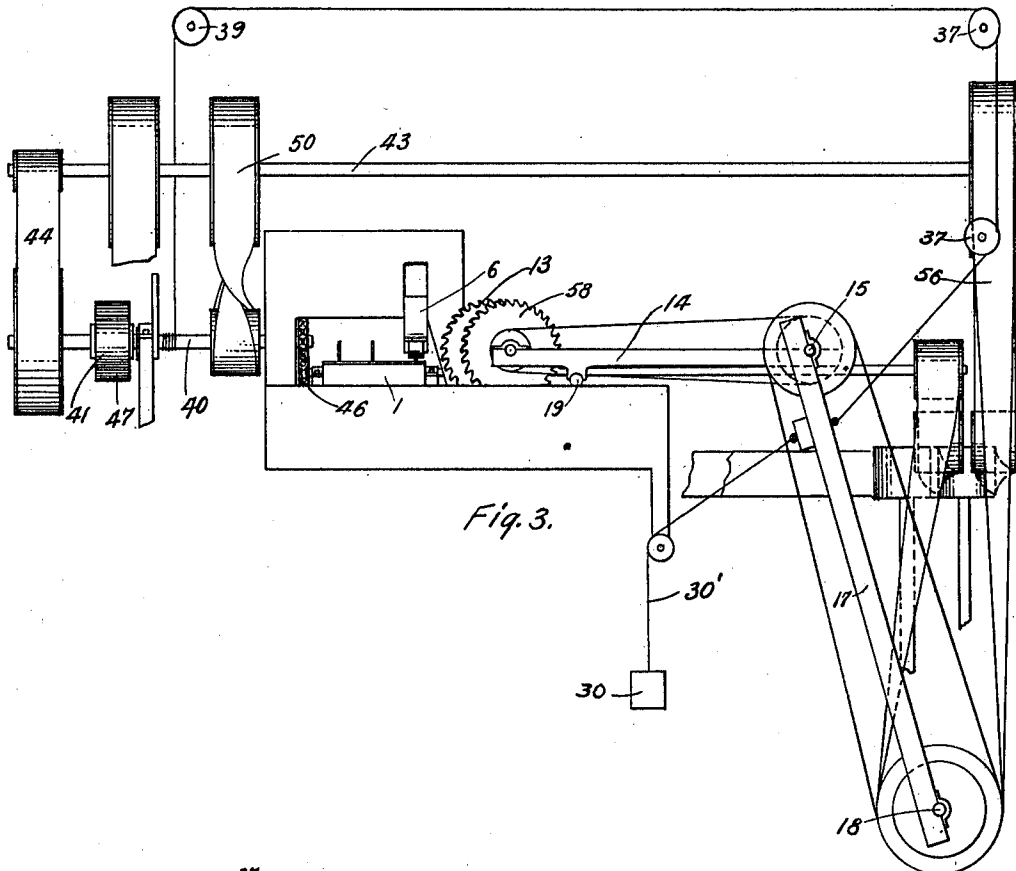


Fig. 3.

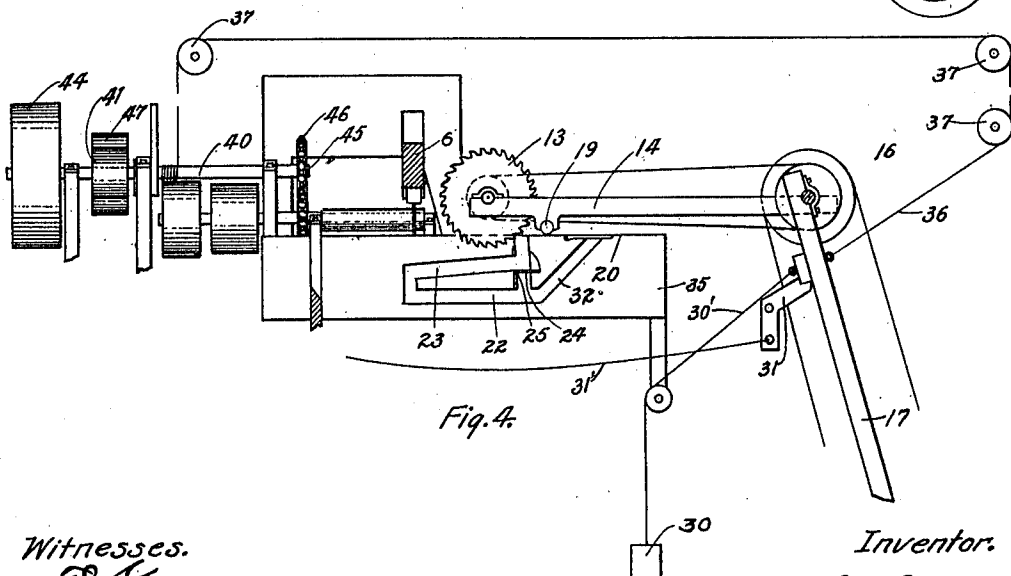


Fig. 4.

Witnesses.

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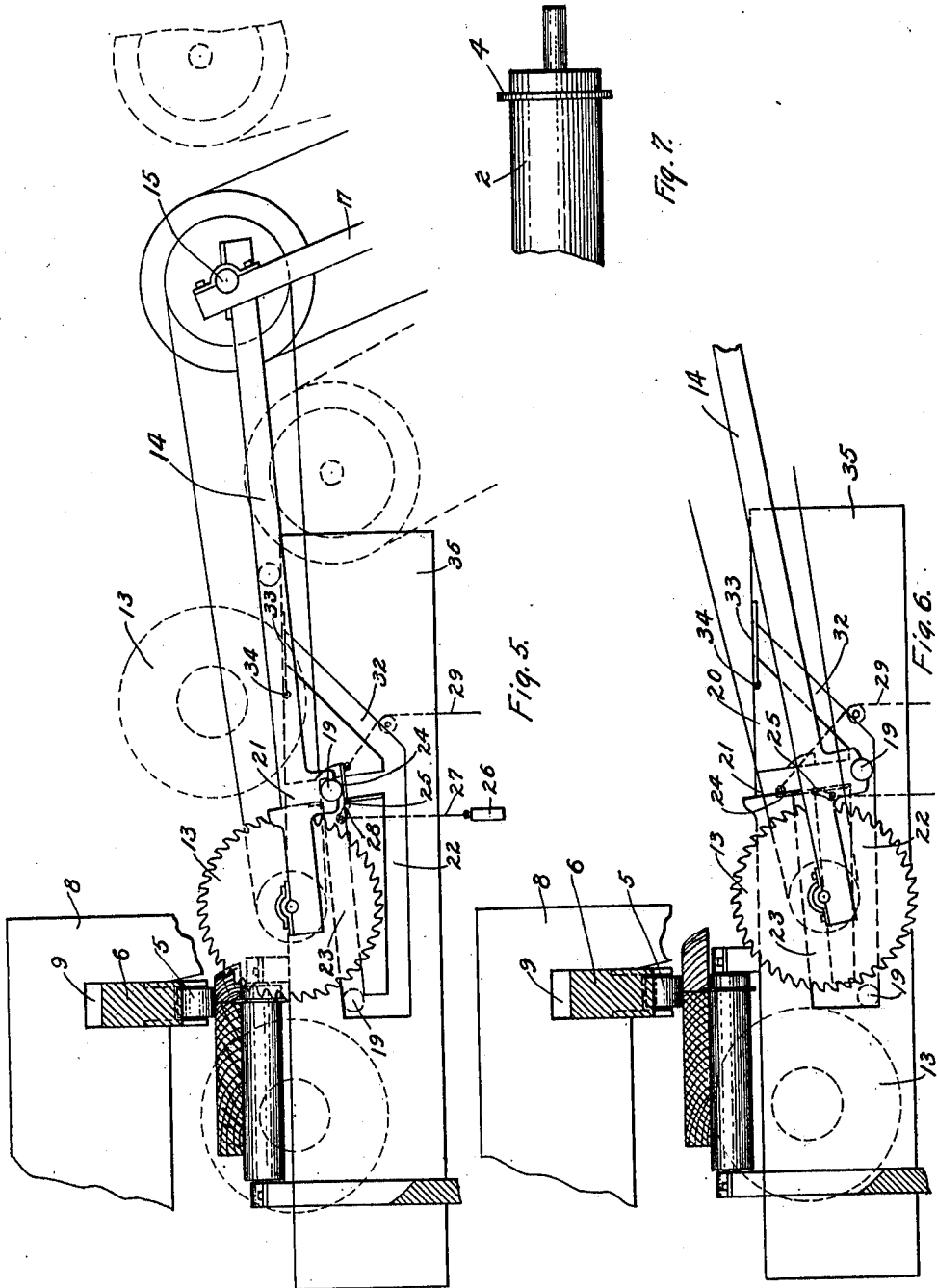
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980,147.

Patented Dec. 27, 1910.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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LUMBER EDGER, TRIMMER, AND LATH MILL.

980,147.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed February 14, 1910. Serial No. 543,769.

To all whom it may concern:

Be it known that I, ANTON S. FROSLID, a citizen of the United States, residing at No. 67 East Twentieth street, in the city of Portland, county of Multnomah, and State of Oregon, have invented a new and useful Lumber Edging, Trimming, and Lath-Making Machine, of which the following is a specification.

My invention relates to improvements in saw mill machines in which lumber-edging, trimming or lath making is done; and the objects of my improvements are, first, to provide a lumber edger and trimmer with which lath making is so combined that the by-product material will be operated upon before it is detached from the lumber proper; second, to provide a lumber edger and trimmer in which these two actions are so joined and so simultaneous that the advantage of doing each after the other has been completed may be secured; third, to provide a machine for edging and trimming lumber and making lath in which all these things are accomplished with only one handling of the stock; fourth, to provide a gang trimmer of lumber in which the stock has a lengthwise movement facilitating cutting out of defects; and, fifth, to so join lumber-edging, trimming and lath making that these operations will require far less than the usual space, and so that efficient machinery for these purposes may be manufactured and installed at less than the usual cost. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine; Fig. 2, a side elevation of the same with portions broken away; Fig. 3, a front elevation; Fig. 4, a transverse vertical section on the line A A; Fig. 5, an enlarged sectional detail of a portion of the machine on the same line as that of Fig. 4; Fig. 6, an enlarged detail like that of Fig. 5, with saws in other positions; and Fig. 7, an enlarged detail of a portion of the rollers 2 with guide projections thereon.

Similar numerals refer to similar parts throughout the several views.

The table 1 together with the rollers 2 constitutes the feed table upon which the stock travels through the machine. It is guided in traveling over this table by the

guide line made up of the grooving saw 3 and the projections 4 from the rollers 2. These circular projections from the rollers are placed in line with the grooving saw, and the diameter of the saw is just large enough so that it will project slightly above the table and cut a groove in the underside of the stock, into which the projections from the rollers will successively enter, and thereby prevent side motion of the board. The projections are pressed into and held in the groove by means of the rollers 5, attached to the bar 6, and placed directly over the grooving saw and the projections from the rollers. This bar with attached rollers rests upon the stock and has a vertical movement to permit stock of different thickness to pass under it. It is held in place by yokes 8, placed over and across it. These yokes have grooves 9 into which the bar fits, and in which it may move up and down in response to the varying thickness of the stock.

As the stock travels along the table in the direction indicated by the arrows, it first encounters the edger saws 10. These are the usual movable edger saws, and they are moved along the arbor by the usual means, so as to divide the stock on the left side of the grooving saw 3 into such widths of lumber as may be desired. That part of the stock which is placed to the right of the grooving saw 3 is to be used for lath or some similar by-product. The edger saw 11 is placed exactly in line with the grooving saw 3 and cuts the by-product away from the lumber. The edger saw 12 is placed just outside the by-product zone and cuts the wastage away from the by-product. These edger saws 11 and 12 are the usual stationary saws. The arbors that carry the cross-cut saws 13 are placed in frames 14, which for the sake of distinction are called arbor frames. These frames swing upon the shafts 15 and 16; and these shafts are in turn placed in frames 17 which swing upon the shaft 18. This manner of mounting the cross-cut saws gives them a vertical as well as a horizontal movement. In addition to the horizontal movement across the feed table it gives them a vertical movement which makes it possible for them to move horizontally on three levels, which for the sake of distinction are called the notching level, the cutting level and the return level.

The arbor frames 14 rest upon rollers 19 so mounted in boxes that the ends project somewhat outside the frames, and these ends rest upon guide ways. The guide ways 20 carry 5 and guide the rollers while the saws are on the upper or notching level, as shown in Fig. 3, and until the rollers reach the first dropping point 21. When the rollers have 10 reached this point the foremost point of each saw will have reached the guide line, that is, a point in line between the grooving saw 3 and the guide projections 4 from the rollers 2. It follows that each saw will have cut 15 a notch into the stock extending through all the material which happens to be on the right or by-product side of the guide line. If lath is to be the by-product the saws should be placed four feet apart as this is 20 the standard length into which laths are usually cut.

At the dropping point 21 all saws may drop at once to the return level which is marked by the guide ways 22, as shown in solid lines in Fig. 6; or some of them may 25 be dropped only to the cutting level, marked by the guide ways 23, as shown in solid lines in Fig. 5. If the saws drop at once to the return level they are below the stock and no further cutting will be done; but if they are 30 made to drop only to the cutting level enough of each saw will project above the feed table to cut the stock. Whether the saws will drop to one level or the other will depend on the manipulation of the gates 24. 35 These gates swing upon axes 25. Ordinarily they assume a vertical position in response to the weight 26, which is connected by the cord 27 to the gate lever 28. When the gates are in this position the saws will drop 40 at once to the return level; but if the operator wish to use any saw or saws for cutting off the stock he can by a pull on the cord 29 which controls such saw bring the gate into a horizontal position, as shown in Fig. 45 5. The rollers 19 will then fall on the gate, and it will carry them over on the guide ways 23. The length of this guide way is determined by the maximum width of stock that it is desired to cut. Therefore, when 50 the rollers reach the end of these guide ways and drop to the return level the saws will have cut through the stock.

The horizontal movement of the saws across the feed table is brought about by 55 means of the weights 30 which are connected with the frames 17 through the cords 30'. When the saws are not in use the frames 17 are held in place by the bell crank pawls 31; and the forward movement of the saws is 60 started by a pull on the cord 31', thereby lifting the pawls out of engagement with the frames 17.

When the saws have finished the cutting and have dropped to the return level the 65 operator pulls back the frames 17 until they

are again locked by the pawls 31. During this act the rollers 19 travel on the guide ways 22 to and along the inclined guide ways 32, at the upper end of which are 70 located the trap doors 33 which swing on axes 34. The rollers on their upward passage lift the loose ends of the trap doors, and when they have passed the trap doors close by their own weight. All the guide 75 ways are secured bolted to the inside of the frames 35.

The power for returning the saws after finished cutting is furnished through the cords 36 which pass over the idler pulleys 37 to the shaft 40 upon which they are 80 wound by means of the friction wheel 41 coming in contact with the drive friction 42. This drive friction pulley is driven from the main shaft 43 by means of the belt 44; and the main shaft 43 is driven 85 from the general source of power used in the mill. The feed rollers 2 are driven by means of sprocket wheels 45 and chain 46. This chain is driven from the drive friction pulley 42 by means of the friction wheel 47, 90 the sprocket wheel 49 and the shaft 48. The friction wheels 41 and 47 are brought in and out of contact with the drive friction pulley 42 by means of eccentric boxes and levers in the usual way. The edger saw 95 12 is driven from the main shaft 43 by means of the belt 50; and the edger saw 11 is driven from the arbor which carries the saw 12 by means of the belt 51.

The horizontal lath saws 52 are carried 100 by the vertical arbor 53. These lath saws reach exactly to the guide line, that is, to the kerf line of the grooving saw 3, which coincides with the kerf line of the edger saw 11. It will be noticed that the cross-cut 105 saws 13 also cut to this kerf line before they drop and as they drop from the notching level to any one of the levels below it. In order that all these kerfs may connect properly it is important that the stock 110 should pass over the table without any side movement. The edger saws 10, 11 and 12, being placed at different points along the feed table, also require, in order to make 115 lumber of even width, that the stock should have no side movement. Further, the horizontal lath saws 52, when in engagement with the stock, have a tendency to produce a side movement. Therefore, the grooving 120 saw and guide projections have been employed to prevent any possible inaccuracy in manufacturing the lumber, and to secure greater accuracy in the operation of saws upon the material in the by-product zone 125 between the edger saws 11 and 12. By such operation upon the material to the right of the guide line, before it has been detached by the final edger saw 11, it becomes possible to operate upon all of it. This could obviously not have been done if the piece had 130

first been detached; for some of it would lack the required firmness, and the labor cost would be too high.

When the foremost point of each cross-cut saw 13 shall have reached the guide line there is a check to the forward movement. The bottoms of the notches cut into the material by these saws, are at this point circular in form as the saws are circular, whereas the bottoms of these kerfs ought to be straight lines. They will be made so by the drop of the saws at this point through the dropping of the rollers 19 at the points 21.

It will be noticed that any or all of the cross-cut saws may be used to trim the lumber on the left side of the guide line, and that the cuts through the material on the right side of said line have been made as a mere incident in trimming the lumber for which no extra time has been used. It will also be noticed that by providing a special return level, upon which the saws are below the stock, the forward movement of the stock upon the rollers 2 can be resumed the moment all saws have dropped, and the return of the saws may be accomplished while the other saws are working. The double swings of the saws contribute to this result.

In the combination here presented it is possible to furnish power for the most important arbors through one single belt. Thus arbors 53 and 54 and the shaft 18 are all driven by the belt 56. This contributes to lessening the space required and to reducing the cost of manufacturing and installing the machine.

The operation of the machine is accomplished by two persons. The feeder introduces the stock to the feed rollers 2 by lifting the end of the bar 6 to which the rollers 5 are attached. The forward movement of the stock will after that come under the control of another man whose duty it is to operate the levers that bring the friction wheels 41 and 47 in and out of contact with the drive friction pulley 42. At his position by these levers converge all the cords 29 which operate the gates 24. Logs are frequently cut so long that the lumber will be long enough, when presented to this machine, to make two or more pieces of standard length. Therefore, it becomes the duty of the operator to divide the long boards into suitable lengths. He seeks to make the division at or near some defect in the material when that is practicable in order that he may cut out the defect and raise the grade and value of the lumber. This machine is especially adapted to this work, because it has the lengthwise movement of the stock and the transverse movement of the saws combined with the choice of letting the saws cut through or pass

under the stock as his requirements may dictate. The operator lets the board pass forward until the point at which he desires to make his first division has come within two feet of the first cross-cut saw, which for the sake of distinction from the saws 13, is designated by the numeral 58. This saw is placed only two feet from the next cross-cut saw, whereas the distance between the other cross-cut saws is four feet. The division point having come within two feet from this saw, the forward movement of the stock is stopped when the point at which it is desired to trim the forward end reaches the first saw. As this can never be more than four feet away it will be seen that the division point can not be more than two feet from the nearest saw when the board stops. Both ends can thus be trimmed at the same time, and the piece cut off will be of standard length and a multiple of two feet, though the saws, with one exception, are placed four feet apart. Thus standard length lath, that is four feet, and standard length lumber, that is multiples of two feet, may be cut in one operation and from the same board.

The first cross-cut saw 58 is not used to notch the material, and is, therefore, not a part of the lath making machinery. The notching level is, for this reason, omitted in the case of this saw, and for it the cutting level becomes the upper level. This means that the guide ways 20, including the trap doors 33, are dropped to the level of the gate 24 when it is in the horizontal position.

Boards that taper can be edged more economically, in the matter of wastage, after the trimming has been done when they have been reduced to their shortest lengths; on the other hand, the best trimming can be done after the edging when it is seen how far the board has clean edges and how much of it is too narrow to make lumber and will have to be cut off as wastage. In this machine both actions are so joined and so simultaneous that neither of these advantages are lost. For it will have been observed that when the first standard length has been cut off from a board the point of division is in front of the first roller 2, and the remainder of the board is, therefore, loose and will have to be reintroduced by the feeder. This gives him the important opportunity to readjust it so that a little more or a little less of it, according to the tapering, will come within the by-product zone to the right of the guide line. At the same time, the position of the board upon the feed table had disclosed, in advance of the actual edging, how far the edges would be cleaned and where the edger saws would cut. It could, therefore, be seen where the board ought to be trimmed in order that the wastage might be the smallest possible.

When the operator has trimmed the lumber he lets the board pass on to be operated upon by the edger saws 11 and 12 and the lath saws 52. In addition to edging the lumber and removing the wastage the saws 11 and 12 also perform the function of lath bolter saws, for one cuts on one side and the other on the other side of the material operated upon by the lath saws 52. The saw 12 cuts on the outside and cuts away the waste material, leaving a clean edge and a fixed maximum depth of cut for the lath saws 52, while the saw 11 cuts on the inside, parting the lumber and the by-product as the last act.

Owing to the coöperation between the cross-cut saws 13 and the edger saw 12 the waste material drops in an orderly pile for convenient bundling immediately behind the saw 12; or when the machine is used only as a trimmer and edger, without the lath attachment, the waste material drops in the same way immediately behind the saw 11. In this way a slasher, that is a wastage trimmer, is combined with the rest to enhance the fuel value of the waste material. The laths drop in an orderly pile immediately behind the saw 11. It remains only to bunch them and pick out the defective ones. Even the usual trimming of the lath bundle as a whole can here be omitted; for the saws 13 are spaced apart for the purpose, and they always work at right angle with the feed table upon which the stock is always guided. The cost of making lath is, with my machine, reduced in the extreme.

Having thus described my invention I claim:

1. The combination, in a lumber trimmer, of a feed table, and circular saws rotating in vertical planes at right angle with and across said table, said saws being mounted in frames which swing upon axes that in turn are mounted in frames which swing upon another axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

2. The combination, in a lumber edger and trimmer, of a feed table, circular saws rotating in vertical planes parallel with the line of feed, and circular saws rotating in vertical planes at right angle with and across said table, said saws being mounted in frames which swing upon axes that in turn are mounted in frames which swing upon another axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

other axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

3. The combination, in a lumber edger, trimmer and lath mill, of a feed table, circular saws rotating in vertical planes parallel with the line of feed, circular saws rotating in horizontal planes above said table, and circular saws rotating in vertical planes at right angle with and across said table, said latter saws being mounted in frames which swing upon axes that in turn are mounted in frames which swing upon another axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

4. The combination, in a lumber edger and trimmer, of a feed table, circular saws rotating in vertical planes parallel with the line of feed, a circular grooving saw rotating in a vertical plane parallel with the line of feed and projecting slightly above said table, projections from said table placed in line with said grooving saw, and circular saws rotating in vertical planes at right angle with and across said table, said saws being mounted in frames which swing upon axes that in turn are mounted in frames which swing upon another axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

5. The combination, in a lumber edger, trimmer and lath mill, of a feed table, circular saws rotating in vertical planes parallel with the line of feed, circular saws rotating in horizontal planes above said table, a circular grooving saw rotating in a vertical plane parallel with the line of feed and projecting slightly above said table, projections from said table placed in line with said grooving saw, and circular saws rotating in vertical planes at right angle with and across said table, said saws being mounted in frames which swing upon axes which in turn are mounted in frames that swing upon another axis, said arbor frames traveling on guide ways located at different heights with dropping places from one to the other, all substantially as described.

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Witnesses:

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