

L. HARLOW.

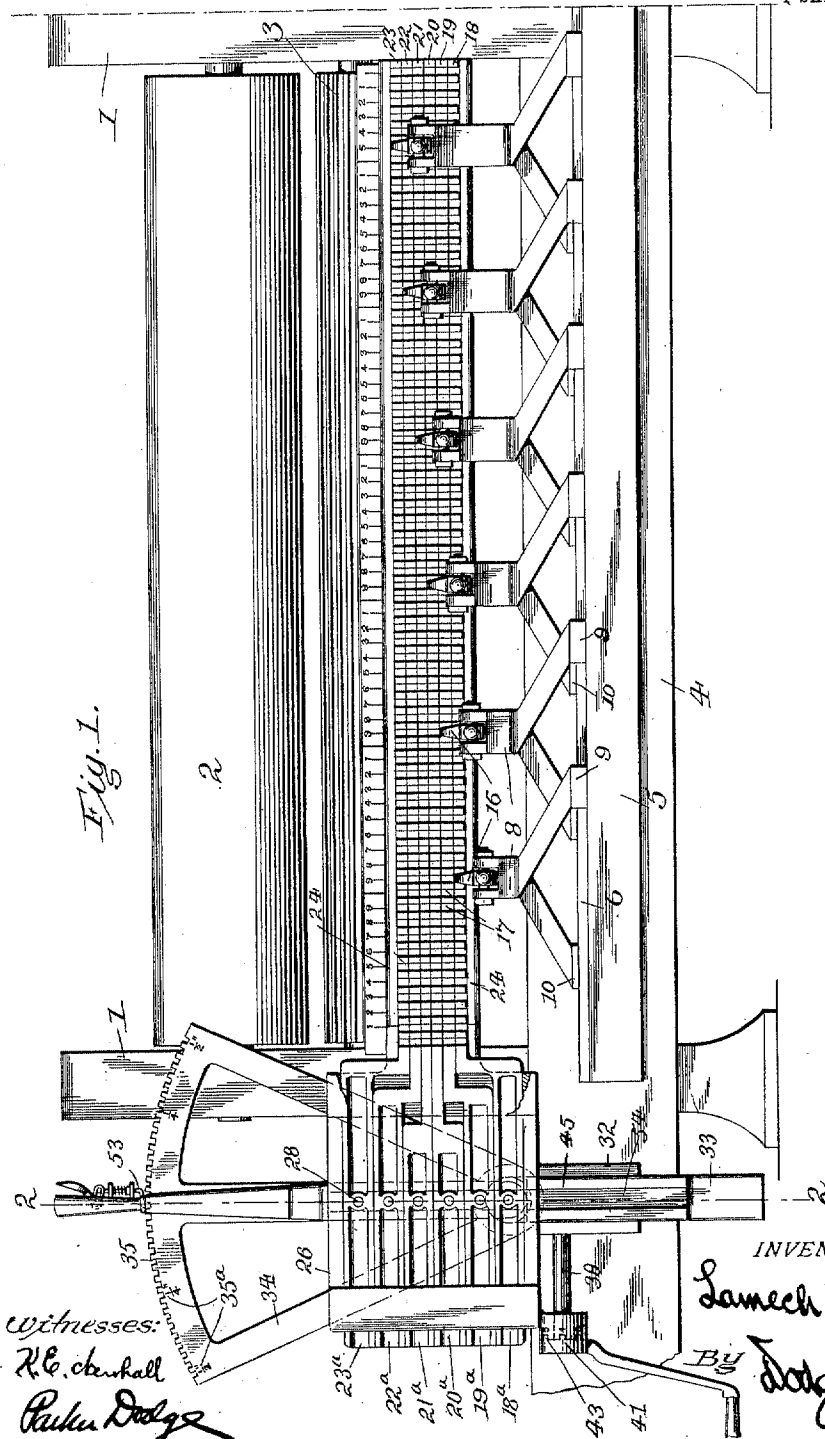
GANG EDGER.

APPLICATION FILED DEC. 22, 1909.

982,602.

Patented Jan. 24, 1911.

4 SHEETS-SHEET 1.



Witnesses:

R. C. Chenhall

Arthur Dodge

INVENTOR;

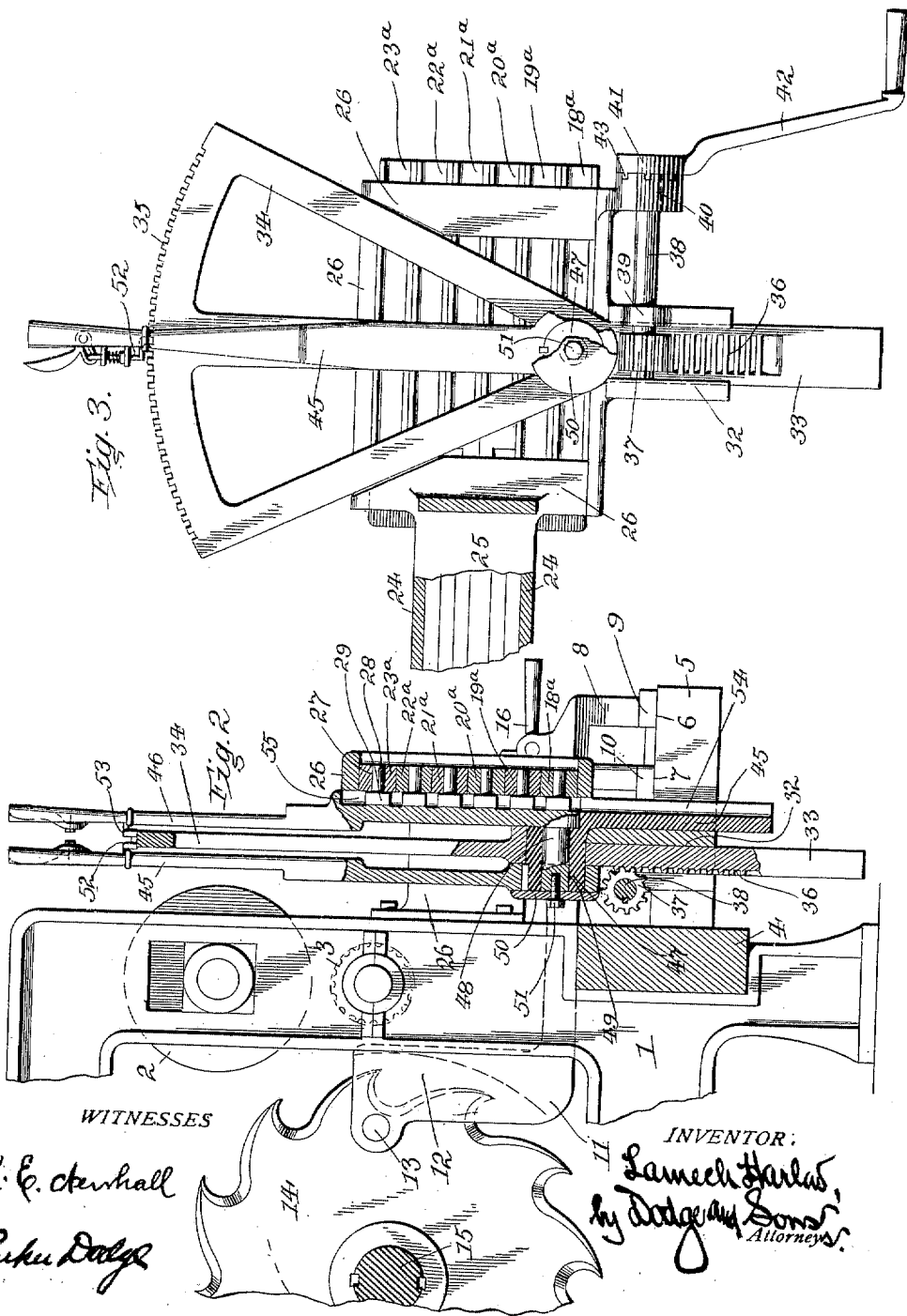
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4 SHEETS—SHEET 2.



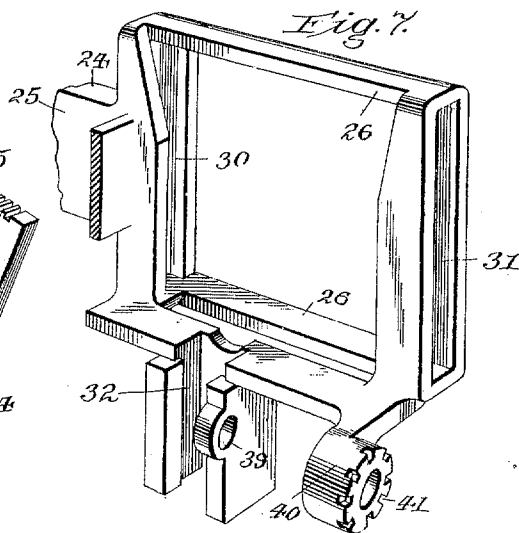
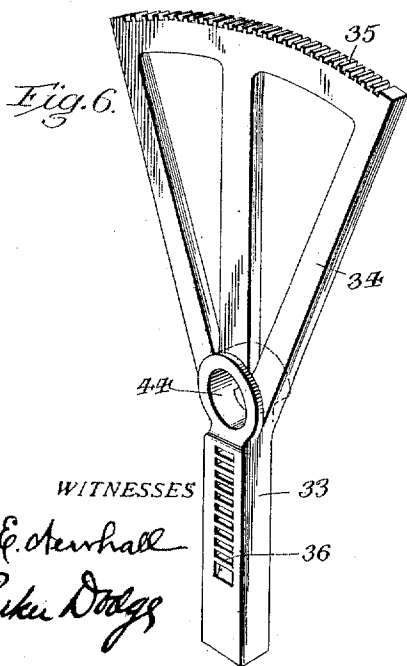
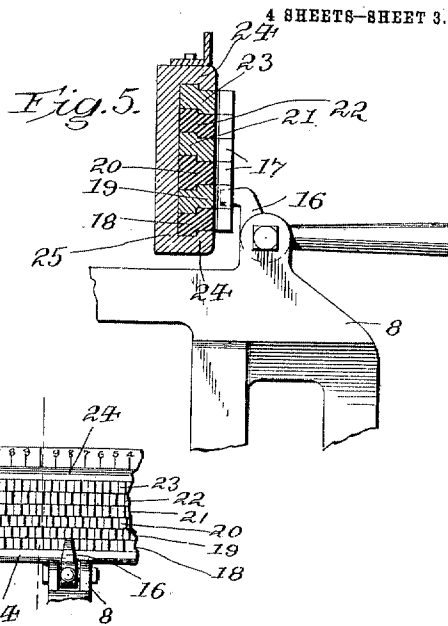
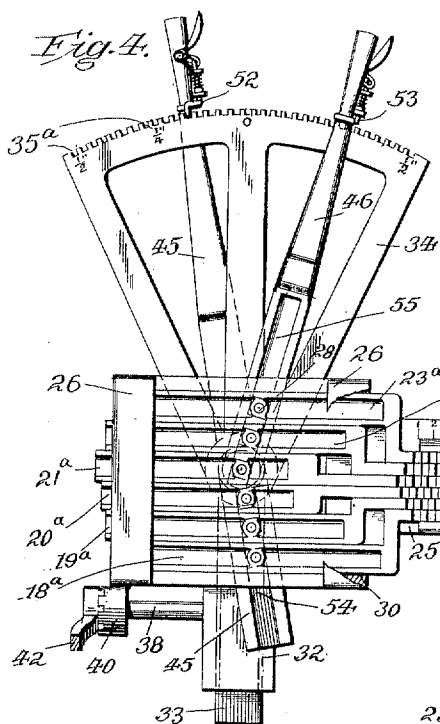
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4 SHEETS—SHEET 3.



WITNESSES

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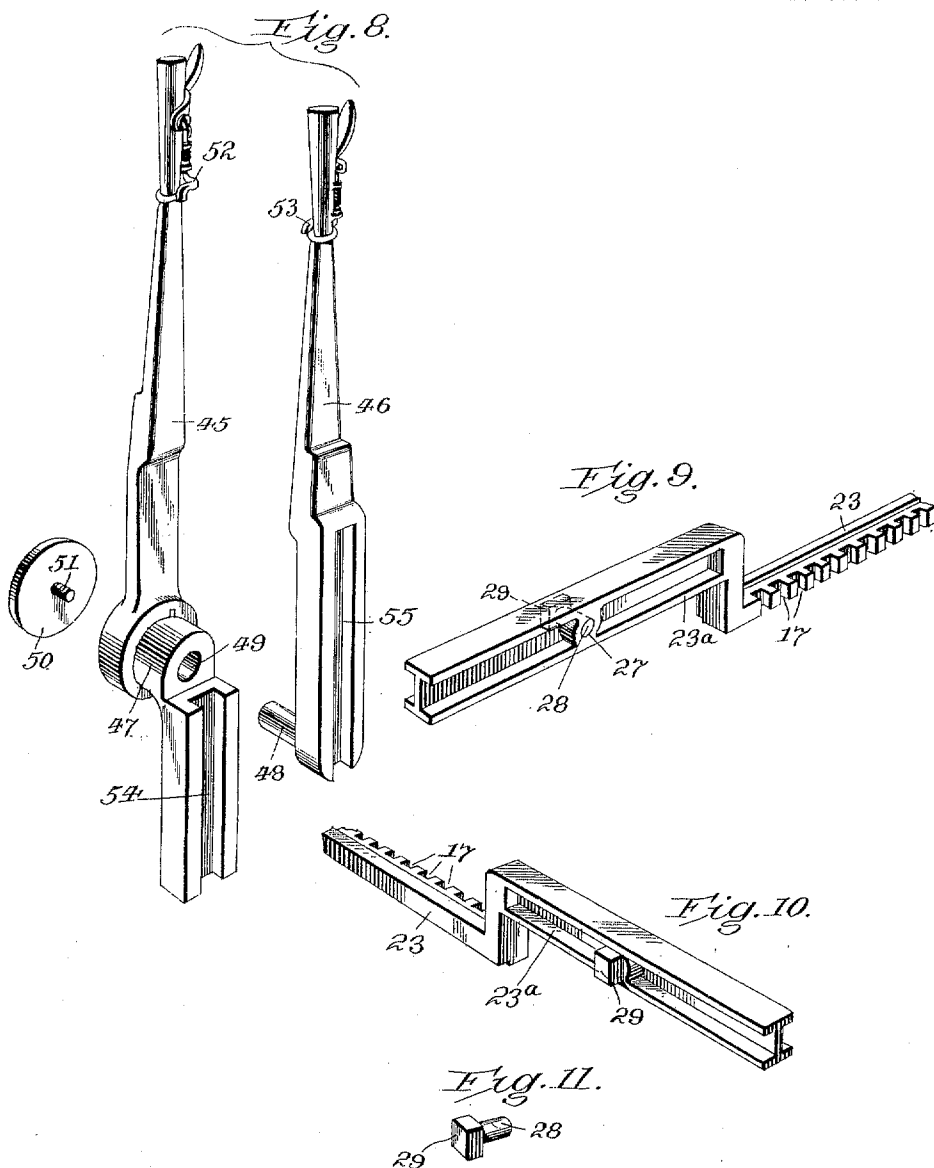
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4 SHEETS—SHEET 4.

982,602.



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UNITED STATES PATENT OFFICE.

LAMECH HARLOW, OF PORTLAND, OREGON.

GANG-EDGER.

982,602.

Specification of Letters Patent.

Patented Jan. 24, 1911.

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To all whom it may concern:

Be it known that I, LAMECH HARLOW, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Gang-Edgers, of which the following is a specification.

This invention relates to gang edgers, and particularly to the mechanism for varying and controlling the positions of the saws, so as to determine the width of the finished lumber.

In its usual form a gang edger consists of suitable feed mechanism and a plurality of circular saws movable along an arbor and adjustable thereon to vary the interval between each two successive saws, so as to trim the edges of stock to produce lumber of various desired widths, according to the intervals between the saws. Customarily the saws are adjusted by latching individual saw guides upon the front of the machine and the lumber is fed between one or another pair of saws in order to secure one or another corresponding width. When so arranged, adjustments of small fractions of an inch can be secured only by the use of unduly light or delicate latching mechanism for the saw guides, and all adjustments of the interval between the saws must be made individually and at the front of the machine.

By my invention, as coarse and heavy latching mechanism may be used as is used in other forms of machines where graduations in width not finer than one inch are contemplated, and the interval between saws may be varied by any desired fraction of an inch, such variation affecting a plurality of saws simultaneously and in the same degree, and moreover this adjustment is effected from the side of the machine.

In its simplest form my device may be said to consist essentially of primary means for spacing these saws in any desired relation in unit widths, (as in even inch widths) in a manner analogous to that ordinarily used, and secondary means operating from a point preferably at the side of the machine to vary the positions of the saws uniformly by fractional increments or decrements, (as fractions of an inch) said secondary means operating through but independently of the primary means.

It will be understood that in this device

all the saws affected by the second means are affected by amounts varying in an arithmetical progression, the result being that the interval between each successive pair of saws is increased or diminished by the same amount. Thus if the width between one pair of the saws so affected is increased, say one quarter of an inch, the width between all the other pairs of these saws will be increased one quarter inch, though each successive saw is moved a successively increasing distance, the first saw not moving, the second moving one quarter inch, the third one half inch, the fourth three quarter inches, and so on. An elaboration of the idea is also contemplated and is illustrated in the drawings, wherein the saws may be divided into two groups with respect to the operation of the secondary means, and the groups may then be controlled by said secondary means independently of each other. The two groups would then be controlled by the secondary means so as to vary the width of the finished stock by a fractional increment or decrement, each group being varied independently of the other so as to be variable by the same or by different amounts in the same or in opposite directions. Means also is provided for varying the point of division so that one saw or a number of adjacent saws may be handled in one group, and the remaining saws of the machine be handled in another group.

The preferred embodiment of the device contemplates the use of a plurality of slides together with a lever mechanism.

It will be described in connection with the accompanying drawings, in which:—

Figure 1 is a front elevation of such portions of a gang edger as are necessary to illustrate the attachment of my mechanism showing the device as applied; Fig. 2 is a side elevation of the mechanism shown in Fig. 1, certain parts of the device being sectioned on the line 2—2 of Fig. 1; Fig. 3, is a rear elevation of the lever and quadrant, together with certain portions of the slides; Fig. 4, is a front elevation of a portion of the mechanism shown in Fig. 1, and illustrates a different position of the slides and levers; Fig. 5 is a section on the line 5—5 of Fig. 4, showing the construction of the slides and of the primary spacing mechanism; Fig. 6 is a detail perspective view of the latching quadrant; Fig. 7 is a

detail perspective view of the frame and guides, viewing them from the rear with respect to Fig. 1; Fig. 8 is a perspective of the levers separated from each other and illustrating the method of assembling and attaching them; Fig. 9 is a perspective view of a portion of one of the slides viewed from the front; Fig. 10 is a perspective view of the same viewed from the rear; and Fig. 11 is a detail perspective view of one of the slide pins.

Referring particularly to Figs. 1 and 2, 1 represents the housings of the machine, and 2 and 3 are the feed rolls. The housings 1 are connected by a cross frame 4, formed with a forward projection 5 carrying the guide ways 6 and 7. These guide ways constrain the saw guide yokes 8 to rectilinear motion across the machine parallel to the saw arbor. These guide yokes 8 are preferably formed with spreading or straddling feet 9 and 10 to give greater stability, and have a rearward projection 11 passing over the cross frame 4 and terminating in a bifurcated saw guide 12, carrying guide pins 13 between which the saws 14 are constrained to rotate.

The saws 14 are splined upon their arbor 15. Thus movement of the guide yokes 8 along the ways 6 and 7 will cause the movement of the respective saws 14 along the arbor 15, so that the spacing of the saws upon the arbor is determined by the positions of the yokes 8. These yokes and the saw guides may be constructed as shown, or may be of any of the types well known in the art, the main requisites being a wide range of motion for the saws without interference of the guide yokes together with stability of the latter. The guide yokes are not identical in form but are of successively greater heights, and each carries a pivoted latch 16 which because of increasing heights of the yokes, engage the notches 17 in the successive adjacent longitudinally-sliding racks 18, 19, 20, 21, 22 and 23. The distances on centers between the successive teeth on these slides or racks are the same on all the racks and are preferably of a unit length, as for instance one inch, thus when the sliding racks are so positioned that their teeth are alined and the guide yokes are latched to their respective racks the various saws will be spaced apart in even inches, the interval between each successive pair of saws being dependent upon the position of the corresponding yokes 8 with respect to their racks. These racks are guided so as to slide longitudinally by flanges 24 on a guide plate 25 carried upon the frame of the machine, the faces of the racks being parallel to the guides 6 and 7. The racks are further guided and steadied by each other, due to their interlocking cross sections as shown in Fig. 5.

The apparatus thus far described differs from that ordinarily employed, mainly in the provision of individually slidable racks, one for each yoke. The fractional increments in the widths are produced by moving the sliding racks relatively to each other, the absolute distances the successive racks move increasing or decreasing in arithmetical progression, so that the intervals between successive saws so controlled, shall all be varied by the same amount. This relative movement is produced by a lever engaging lugs on the sliding racks at uniformly increasing radial distances from its fulcrum.

The housing 1 carries a frame 26 which is bolted thereto, and which frame serves to guide the ends of the sliding racks and also to support the lever mechanism. These racks are offset at their ends successively increasing distances to each side of the middle racks as at 18^a, 19^a, 20^a, 21^a, 22^a, and 23^a respectively, as shown in Figs. 9 and 10, the offsets being so proportioned that the various sliding racks will nest (see Fig. 1) and yet slide relatively to each other. At the mid-length of the offset portion of the rods are holes 27 for the reception of cylindrical pivot pins 28, having a squared head 29. Inspection of Fig. 1 will show that the distance on centers between the holes 27 in the successive rack bars is a constant quantity, the purpose of which will later be explained. The object in offsetting the ends of the sliding rack bars is to increase this distance between the holes on the individual bars, without unduly increasing the width of the toothed portions of the bars where they pass across the front of the machine. The amount of offset is therefore largely a question of design, as affecting the range of throw of the levers, etc.

The assembled offset ends of the various rack bars pass through apertures 30 and 31 in the frame 26 (see Fig. 7) and are guided thereby. The frame 26 also carries a vertical guide way 32 in which an arm 33 of a latching sector 34 is constrained to vertical movement. This latching sector 34 is provided with teeth 35 which are engaged by latches upon the levers, later to be described and bear appropriate dimension graduations as at 35^a. The arm 33 is provided with teeth 36 upon its rear face and these teeth are engaged by a gear 37 splined upon a shaft 38 which turns in bearings 39 and 40. The face of the bearing 40 is formed with notches 41 and the hub of the crank 42 fast to the shaft 38 is provided with corresponding projections 43. Thus the shaft 38 may be moved longitudinally in its bearings so as to cause the projections 43 to move into and out of engagement with the notches 41. By this means the shaft 38 may be locked in different positions.

The sector 34 is provided with a cylindrical bearing 44, and in this are mounted two levers 45 and 46, the boss 47 on the lever 45 turning directly in the bearing 44 and a pin 48 fast to lever 46 turning in the concentric bearing 49 formed in the boss 47 (see Fig. 8). The lever structure is held together and held in position in the bearing 44 by means of a cover plate 50 and machine screw 51, entering end of pin 48 (see Fig. 2).

The levers 45 and 46 are provided with latches 52 and 53 respectively, each independently engaging different portions of the teeth 35 on the sector 34, so that the levers may be individually latched in any desired position relative to this sector. It is also obvious that by turning the crank 42 the sector and the levers carried thereby may be raised or lowered so that the common fulcrum of these levers is traversed across the offset ends of sliding racks 18 to 23 inclusive and may be locked in various positions by the notches 41. The line of travel of the lever fulcrum coincides with the line of centers of the pins 28, when the racks are in mid-position. The distance between the notches 41 is so proportioned that the device may be locked in position only when the center line of the lever fulcrum is in coincidence with the center line of one or another of the pins 28. The squared heads of the pins 28 travel and fit closely in the slots 54 and 55 extending longitudinally on the levers 45 and 46 respectively, the slot 55 being a continuation of the slot 54 when the levers are parallel.

As clearly shown in Fig. 1, when the latching sector is in its lowest position, the common fulcrum of the levers coincides with the pin 28 of the slide 18. Thus the slot 54 is entirely below the pins and has no effect on them so that lever 45 is virtually disconnected. The squared heads 29 of the pins 28 of the slides 18, 19, 20, 21, 22, and 23 are disposed in the slot 55 of the lever 46 and, due to the equal spacing of these pins above referred to, are spaced at uniform intervals radially upon the lever. Thus as the lever is rocked in one or the other direction all the slides except slide 18, whose pin is at the fulcrum, are moved simultaneously and in the same direction, but to an amount increasing in arithmetical progression in the successive slides counted out from the fulcrum. Thus by the use of the lever 46 with the fulcrum in its lowest position the first function of the apparatus, namely the uniform fractional variation of the interval between all the saws is accomplished. Suppose, however, the sector be raised by means of the crank 42 and locked in the position where the fulcrum of the levers coincides with the pin of some other slide, for instance the pin of slide 21, as shown in Fig. 4. Then the pin 28 of this slide 21, and

of slides 22 and 23 are in the slot 55 of the lever 46. Consequently the movement of the lever 46 will cause no movement of slide 21 but will cause slides 22 and 23 to move in a manner identical in principle with that already set forth, so as to produce uniform fractional increase of the interval between the three saws so controlled. The pins of slides 18, 19 and 20 are in the slot 54 of lever 45 and movement of lever 45 will cause movement of these slides as above set forth, but independent of the movement of the remaining slides. Thus the slides and consequently the saws controlled thereby are divided into two independent series and by merely varying the elevation of the sector the point of division may be varied.

It is to be noted that the saw at the point of division, that is the saw whose corresponding pin 28 coincides with the fulcrum of the two levers, does not move, but that the adjacent saws on either side do move under the influence of their corresponding levers. Consequently the intervals between each successive pair of saws including the intervals on each side of the dividing saw are under control, and according to the principle of arithmetical progression set forth, so that there is no sacrifice of any part of the machine when such division into two groups is effected.

In the construction illustrated, alinement of the teeth of the various sliding racks is secured when the two levers are brought to mid-position producing even inch intervals between the saws. A variation of one half inch increase and one half inch decrease from this adjustment is allowed by the movement of each of the levers according to the direction of its movement, and consequently a total range of variation of one inch is secured by the movement of either lever through its entire range. Since the distance between the teeth on the racks is one inch provision is thus made for any width of lumber whether integral or fractional within the range of the machine.

Very satisfactory devices can be constructed on the above principle by omitting altogether the vertical adjustment of the sector. When this is done, either of two courses may be followed. A single lever corresponding to lever 46 may be used to operate all the slides in a manner analogous to that described above in connection with the lowest position of the sector, so as to move all the saws simultaneously. A slightly better construction would consist in the use of two levers somewhat in the manner illustrated in Fig. 4, so that the saws could be controlled in two groups but without means for varying the point of division into groups. Since each lever would then give complete control over the fractional adjustments of its corresponding saws through a range of one

inch, identical effects can be so produced as are produced with the single lever mechanism above outlined. It would also be possible, if desired, to connect this device to only a portion of the saws of the machine in case such an adjustment were not needed for the other saws, and various other modifications are obvious. The essential principle is movement of the saws in arithmetical progression to effect simultaneous variation of the intervals between successive saws by equal amounts.

The operation of the device will be sufficiently apparent from the above descriptions. It is to be noted that the control of the fractional variations is had without need for stopping the machine, and that by graduating the sector 34 the fractional setting of the saws can be directly read. Another important advantage is that the operator, when controlling the fractional movements of the saws, stands at the side of the machine out of the path of travel of the stock to and from the machine.

The dimensions given throughout the specification are merely to aid in giving a clear description of the device, and it is to be understood that any convenient unit may be used. Also it is not essential to the successful embodiment of the invention that the range of fractional adjustment should be exactly equal to the interval of primary adjustment. To use the dimensions already suggested, assuming that the interval upon the racks is one inch it is not absolutely essential that the complete range of adjustment secured by the levers should be one inch, as it might be somewhat less or considerably more without affecting the principle of operation of the device.

Having thus described my invention, what I claim is:—

1. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon and adjustable lengthwise thereof; individual guides for the saws; a plurality of individually movable members; means for adjustably connecting the guides to corresponding movable members to secure a primary individual adjustment of the saws; and means for moving said members through a limited range to secure a secondary and relatively small adjustment of the intervals between the saws.

2. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; individual guides for the saws; a plurality of individual toothed slides; means carried by the individual guides for engaging the teeth on respective toothed slides at variable points in the length of said slides; and means for simultaneously moving said slides.

3. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon,

and adjustable lengthwise thereof; individual guides for said saws; a plurality of individually movable members; means for simultaneously moving said members by distances increasing in arithmetical progression for successive members; and means for adjustably connecting successive saw guides to corresponding successive movable members.

4. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; individually movable guides, for the saws; a plurality of slides corresponding to said guides; means for adjustably connecting said guides to corresponding slides; and means for moving the slides simultaneously by distances increasing in arithmetical progression for the successive slides.

5. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to the guides; means for adjustably connecting the guides to corresponding movable members; a lever; a fulcrum therefor; and a plurality of connections between the lever and the successive members at uniformly varying distances from the fulcrum.

6. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable toothed slides corresponding to the guides; means carried by the guides for engaging the teeth on their corresponding slides to connect the guides and slides in adjusted relations; a lever; a fulcrum therefor; and a plurality of connections between the lever and the successive slides at uniformly varying distances from the fulcrum.

7. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; slides corresponding thereto; means for connecting the saw guides adjustably to their corresponding slides; a slotted lever; and pins in said slides entering the slot in the lever at uniformly increasing successive radial distances for the successive slides.

8. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; individual saw guides; slides corresponding thereto; means for connecting the saw guides adjustably to their corresponding slides; a slotted lever; and pins in said slides entering the slot in the lever at uniformly increasing successive radial distances for the successive slides; and a latch to retain the lever in various adjusted positions.

9. In a gang edger, the combination of an

arbor; a plurality of saws mounted thereon and adjustable lengthwise thereof; individual saw guides; slides corresponding thereto; means for connecting the saw guides adjustably to their corresponding slides; a lever; a fulcrum for said lever; and sliding connections between the slides and the lever at uniform intervals.

10. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of movable members corresponding to said guides; connections between the guides and their respective movable members; pins in the various movable members; a lever provided with a slot engaged by said pins at uniform intervals; a fulcrum for said lever; and means for traversing the fulcrum transversely to the movable members adjacent to the pins.

11. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of movable members corresponding to said guides; means for connecting the guides to their corresponding movable members; a lever; a fulcrum for said lever; sliding connections between the movable members and the lever at uniform intervals on the latter; and means for traversing the fulcrum of said lever transversely to the movable members.

12. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of slotted levers; a fulcrum common to both levers, the slot in one lever being adapted to form a continuation of the slot in the other; and pins in said members entering said slots.

13. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of co-axial levers; and sliding connections between said movable members and the levers at uniform intervals on the latter.

14. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of slotted levers, the slot in one lever being adapted to form a continuation of the slot in the other; pins in said members engaging said slots; a common fulcrum for the levers; and means

for traversing said fulcrum transversely to said movable members.

15. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of co-axial levers; sliding connections between said movable members and the levers at uniform intervals on the latter; a common fulcrum for the levers; and means for traversing said fulcrum transversely to said movable members.

16. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; adjustable connections between the guides and said movable members; a pair of slotted levers; a fulcrum common to both levers; the slot in one lever being adapted to form a continuation of the slot in the other; and pins in said movable members entering said slots.

17. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of slotted levers; a fulcrum common to both levers; the slot in one lever being adapted to form a continuation of the slot in the other and extending in an opposite direction from the fulcrum; and pins in said movable members entering said slots.

18. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of slotted levers; a fulcrum common to both levers; the slot in one lever being adapted to form a continuation of the slot in the other and extending in an opposite direction from the fulcrum; pins in said movable members entering said slots; and means for traversing the common fulcrum of the levers transversely to said members.

19. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides and said movable members; a pair of slotted levers; individual latches on said levers; a fulcrum common to both levers; the slot in one lever being adapted to form a con-

tinuation of the slot in the other; and pins in said movable members entering the said slots.

20. In a gang edger, the combination of
5 an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of individually movable members corresponding to said guides; connections between the guides
10 and said movable members; a pair of slotted levers; individual latches on said levers; a fulcrum common to both levers; the slot in one lever being adapted to form a continuation of the slot in the other and extending in opposite directions from the fulcrum; and pins in said movable members
15 entering said slots.

21. A lever mechanism for controlling the saws of gang edgers, comprising in combination with the usual sliding saw guides of the edger, a plurality of movable members each connected to a different guide; a pair of slotted levers; a fulcrum common to said levers; pins in said members entering said
25 slots; and means for moving the fulcrum into axial alinement with one or another of said pins.

22. A lever mechanism for controlling the saws of gang edgers, comprising in combination with the usual saw guides of the edger, a plurality of movable members, individually connected to different guides; a slotted lever; a fulcrum for said lever; pins in said members entering the slot in the lever; and means for moving the fulcrum into
35 axial alinement with one or another of the pins.

23. In a gang edger the combination of an arbor; a plurality of saws mounted
40 thereon, and adjustable lengthwise thereof; individual guides for the saws; a plurality of movable members; connections between said members and the saw guides; a quadrant; a fulcrum on said quadrant; levers
45 mounted in the fulcrum; latching means carried by the levers and engaging the quadrant; pins on said movable members engaging the levers; and means for moving the quadrant so as to bring the fulcrum into axial alinement with said pins selectively.
50

24. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of movable
55 members; connections between said members and the saw guides; a quadrant; a fulcrum on said quadrant; a lever mounted in the

fulcrum; latching means carried by the lever and engaging the quadrant; pins on said movable members engaging the lever; 60 and means for moving the quadrant so as to bring the fulcrum into axial alinement with said pins selectively.

25. In a gang edger the combination of an arbor; a plurality of saws mounted
65 thereon, and adjustable lengthwise thereof; guides for the saws; a plurality of slides having offset portions; connections between said slides and said guides; a lever; and pins carried by the offset portions of the
70 slides, and engaging the lever.

26. In a gang edger, the combination of an arbor; a plurality of saws adjustably mounted thereon; a plurality of movable members; mechanism located at one side of
75 the machine for shifting said members; individual guides for the saws; and means for latching said guides to corresponding movable members in adjustable relations.

27. In a gang edger, the combination of
80 an arbor; a plurality of saws adjustably mounted thereon; a plurality of movable members; individual guides for the saws; means for latching said guides in adjustable relation to corresponding movable members; 85 and a mechanism operable from a point at one side of the machine and out of the path of travel of the stock past the saws for securing adjustment of one or more of the movable members and consequently of the
90 corresponding saws.

28. In a gang edger, the combination of an arbor; a plurality of saws mounted thereon and adjustable lengthwise thereof; individual guides for the saws; a plurality
95 of individually movable members; means for connecting successive saw guides to corresponding successive movable members each such connection being adjustable to positions successively differing from each other
100 by a unit interval; and means for simultaneously moving said members by distances increasing in arithmetical progression for successive members, the range of relative movement of any two successive members
105 being equal to said unit interval.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LAMECH HARLOW.

Witnesses:

E. E. LAWRENCE,
R. H. DUNN.