May 7, 1968 R. M. DUNN 3,381,729

BOARD FEET INDICATOR AND METHOD

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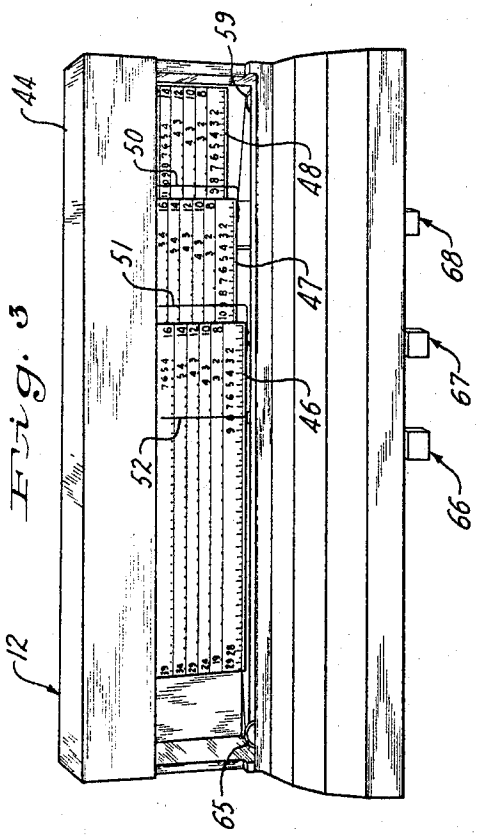



Fig. 3

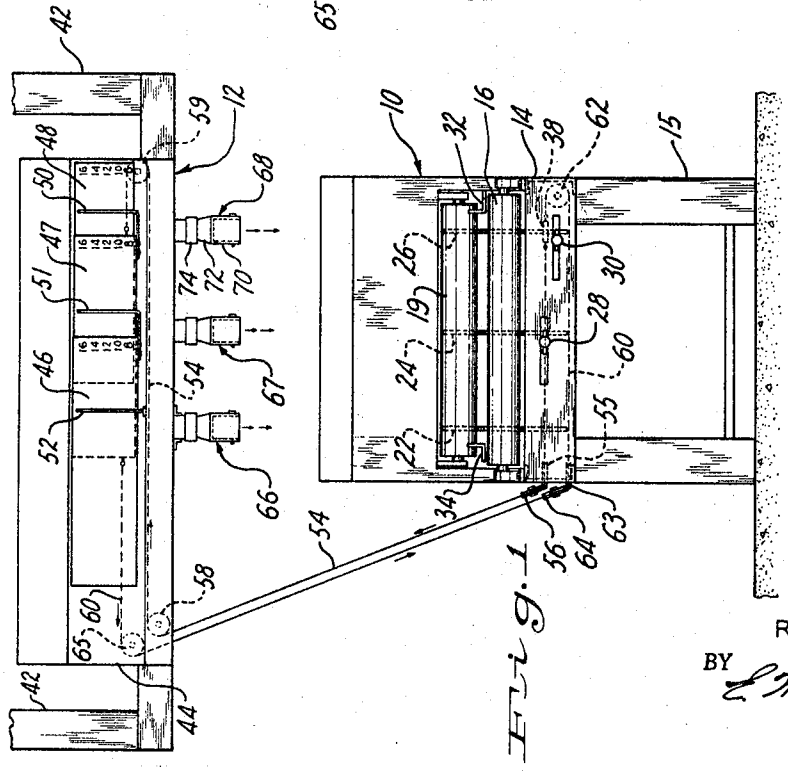


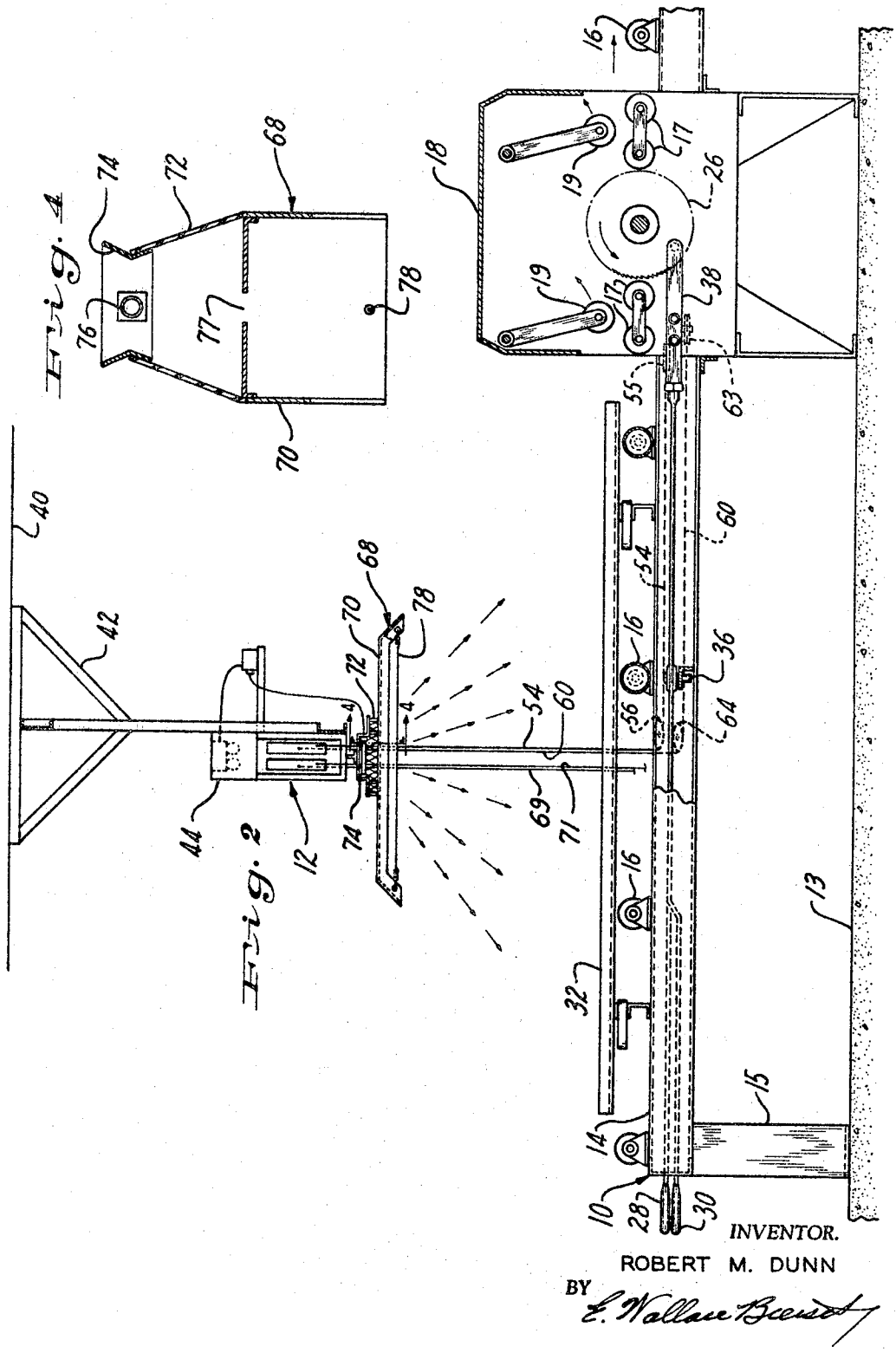

Fig. 1

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3,381,729

# BOARD FEET INDICATOR AND METHOD

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This invention relates to a board foot indicator and more particularly to a device to be attached to an edger to indicate the number of board feet in a single or in each of a plurality of edged boards to be cut from a single rough board, before such cutting takes place and a method of determining the number of board feet in such proposed boards.

The device of this invention provides pointers and scales operatively connected to the guides and saws of a multiple saw edger so that when the saws and guides are moved into position for cutting edged boards from a rough board, the pointers will indicate on suitable scales the number of board feet which will be included in each edged board cut from a rough board.

The device of this invention also provides a light source and straight line members to cast shadows of projected cuts upon the rough board.

The utility of such a device and method is well understood by those familar with the standard set of grading rules and regulations set up by the National Hardwood Lumber Association and accepted throughout all the United States and Canada by the Hardwood Lumber Industry. Under these rules hardwood lumber can be any width above a stated minimum in any fraction of an inch and will be paid for on the basis of the number of board feet contained in the board. The rules further state that the board will be credited to the nearest whole number of board feet, that is when the board reads between 10½ and 11½ feet it will be credited as 11 board feet.

The use of shadow lines in conjunction with the scales and pointers of this invention also makes it possible to determine the number of board feet of lumber that can be obtained from the rough board as well as indicating where the cut can be made nearest the rough edge without including more than the allowable amount of wane in a lower grade board.

The objects and advantages of this invention will be more readily understood upon consideration of the following description and drawings in which:

FIG. 1 is an end elevational view of an edger operatively connected to a board foot indicator constructed according to the principles of this invention;

FIG. 2 is a side elevational view of the structure of FIG. 1;

FIG. 3 is an enlarged three dimensional view of a board foot indicator constructed according to the principles of this invention; and

FIG. 4 is an enlarged sectional view taken substantially on line 4—4 of FIG. 2.

In FIGS. 1 and 2 there is shown an edger generally indicated at **10** operatively connected to a board foot indicator generally indicated at **12** constructed according to the principles of this invention. The edger **10** is a type well known in the art and comprises an elongated horizontally extending table **14** suitably supported at a suitable distance above a floor **13** as by legs **15** and having rotatably mounted thereon a plurality of boards supporting rollers **16** extending transversely across the table **14** to support a board for longitudinal movement along the table. Encompassing an intermediate portion of the table **14** is a generally rectangular saw housing **18** having mounted therein a plurality of suitably powered feed rollers **17** suitably related to pivotally mounted hold down rollers **19** so that rollers **17** and **19** engaging a board on the under and upper sides, respectively, will cause the board



to be moved longitudinally of the table **14** in a manner well known in the art. Also suitably mounted and suitably powered for rotation within the saw housing **18** is a plurality of saws (shown as **3**) and identified by the numbers **22**, **24**, and **26** as left hand, intermediate and right hand, respectively, as viewed in FIG. 1. It being noted that the left hand saw **22** is fixed in the position shown while the intermediate saw **24** and the right hand saw **26** are moveable transversely of the table **14** by use of suitably elongated levers **28** and **30**, respectively.

Mounted upwardly adjacent the support rollers **16** and extending longitudinally along the table **14** above the right hand ends of the rollers **16** is a stationary angle iron guide member **32** so positioned that a board placed on the rollers **16** against the guide **32** will enter the housing **18** without interfering with the side member thereof. Moveably mounted in a similar position above the left hand portion of the rollers **16** is an angle iron moveable guide member **34** which can be moved longitudinally of the rollers **16** toward the stationary guide member **32** as desired and hereafter more fully explained. As is known the stationary guide member **32** is primarily useful in conjunction with a moveable saw when cutting a board having at least one sawed edge. All of the above described elements are common to many types of edger and may vary somewhat in details of construction and operation without having any effect on the application and operation of the board foot indicator **12** of this invention and the above and further description of the edger **10** should be taken as typical but not limiting the scope of the present invention.

The levers **28** and **30**, pivoted intermediate their lengths as at **36** (see FIG. 2), are provided at their ends nearest the saws **24** and **26** with transversely moveable guide brackets **38** suitably mounted for movement transversely of the table **14** and suitably engaging the saws **24** and **26**, respectively, to cause the saws **24** and **26** to move transversely of the table **14** in response to movement of the levers **28** and **30**, respectively.

The board foot indicator **12** is shown suspended from an overhead ceiling portion **40** of a suitable building (not shown), housing the edger **10**, by a pair of suitably rigid brackets **42** so that the indicator **12** is positioned over an intermediate portion of the table **14** to the left of the housing **18** as seen in FIG. 2 with the indicator **12** extending transversely above the table **14** and beyond the lateral edges of the table **14** particularly on the left hand side as viewed in FIG. 1. The brackets **42** are sufficiently rigid that the indicator **12** is held in fixed relationship to the edger **10** standing as it does on the floor **13** of the same structure as that of which the ceiling **14** is a part.

The indicator **12** comprises an elongated, generally rectangular, hollow housing **44** having mounted therein three elongated generally flat, vertically disposed scale members **46**, **47** and **48** being left hand, intermediate and right hand, respectively, with the right hand scale member **48** extending from the right hand end of the interior of the housing **44** as seen in FIGS. 1 and 3 and being fixed in that position. The intermediate scale **47** as shown in FIGS. 1 and 3 is mounted in front of right hand scale member **48** in an intermediate portion of the housing **44** and is suitably supplied with guides and rollers so that the member **47** may be readily moved longitudinally with respect to the housing **44** and transversely with respect to the edger **10** as hereinafter more fully described. Similarly mounted for longitudinal movement in front of the scale **47** is the scale **46**. Mounted on the right hand ends of the scales **46** and **47**, spaced outwardly therefrom and extending downwardly across the faces of scales **47** and **48**, respectively, are pointer means **50** and **51** with the pointer **50** mounted on, and moveable with the scale **47** and readable on the scale **48** while the pointer **51** is mounted on and movable with the scale **46** and readable on the scale

47. A fixed pointer 52 is rigidly mounted on and upwardly extending from a forward portion of the housing 44 in such a position that it extends upwardly over and is readable on the left hand scale 46 in a manner to be hereinafter more fully described.

Referring again to FIG. 1 it will be seen that a long flexible member such as the cable 54 is connected to the left hand side of the guide bracket 38 and extends leftwardly over a suitable pulley 55 out through the left hand side of the table 14, forwardly therealong to a pulley 56 and obliquely upwardly to the left hand side of the housing 44 where, being trained about a portion of a suitable pulley 58, it extends lengthwise within the housing 44 to a suitable pulley 59 adjacent the right hand end thereof and being reversely trained about the pulley 59 is attached the right hand end of the intermediate scale 47. A similar elongated member such as a cable 60 secured to the right hand side of the guide bracket 38 extends to the right thereof and reversely about a portion of a suitable pulley 62 mounted adjacent the right hand side of the table 14 and across to the left hand side of the table 14 where, being trained about a suitable pulley 63, it extends forwardly therealong to a pulley 64 and thence obliquely upward into the housing 44 adjacent the left hand end thereof, whereupon, being trained about a suitable pulley 65 the cable 60 extends, and is connected to the left hand end of the intermediate scale 47. All of which cables, pulleys and connections represent any suitable means by which the intermediate scale 47 is attached to the right hand saw 26 and is movable therewith in the same direction, and by the same amount, as the saw 26 is moved. Another pair of cable members 66 and 67 partially shown in FIG. 2 are similarly connected to the saw guide bracket of saw 24 and to the ends of the left hand scale 46 so that the left hand scale moves in the same direction and by the same amount as the saw 24 controlled by the movement of the lever 28. Only the cables 54 and 60 have been completely shown since to show the similarly trained and applied cables 69 and 71 in their entirety would be extremely confusing and would serve no useful purpose since the pulley positions and training of cables 69 and 71 are so similar to that of the cables 54 and 60.

It is to be noted that both pairs of cables are provided with turnbuckles or other length adjustments so that after being placed in position on the pulleys the cables can be tightened sufficiently to remove lost motion and assure that the scales 46 and 47 will move in constant relationship to the saws 24 and 26 respectively.

It is to be noted that, should the edger 10 have a greater number of saws, more scales could be provided in the indicator 12 or if the edger had fewer saws one of the movable scales could be removed from the indicator 12 or simply moved all the way to the left and disregarded.

Suspended from the bottom of the housing 44 is a plurality of lamp members 66, 67 and 68 being left hand, intermediate and right hand, respectively, as viewed in FIG. 1 with the lamp member 66 being vertically aligned with and rigidly fixed above the fixed saw 22 while the lamp members 67 and 68 are vertically aligned and movable with the movable saws 24 and 26 as by being suspended from the scales 46 and 47, respectively. The lamp members 66, 67 and 68 being entirely similar except for the feature of being movable of being fixed will all be described in terms of the lamp member 68 best seen in FIG. 2. The lamp member 68 comprises an elongated generally rectangular shade member 70 extending longitudinally above the table 14 and formed of sheet metal, substantially opaque plastic or the like, generally in the form of an inverted U with side portions of the downwardly depending legs of the U shape cut away. The shade member 70 is rigidly secured to upwardly extending side portions 72 formed of expanded metal or plastic with holes therein which side pieces 72 extend upwardly and are fastened to narrowly spaced apart sheet metal bracket members 74 which are in turn secured to the underside of the scales 46 and 47 respectively, or to the underside of the housing 44 in the case of the lamp member 66 which is not movable with the scales. The lamp members 66, 67 and 68 further comprise an elongated tubular light source 76, mounted above and aligned with the narrow space or slot 77 between members 74 to give a long relatively narrow beam of light. The light sources 76 are connected in the usual manner to a suitable source of electric power (not shown) and are suitably controlled by the usual switches. Directly below the lamp member 76 and mounted in the center of the end portions of the shade member 70 is a small diameter string or wire suitably tensioned so that it is a straight line member suitably adjustable to cast a sharp shadow line directly below the light source 76 and such shadow line will be directly aligned with its respective saw so that when a board is placed on the rollers 16 the shadow lines thereon will show the exact line of the cut to be made by the saws 22, 24, and 26 if the saws should remain in the position presently indicated.

The scales 46, 47 and 48 as best seen in FIG. 3 are all similarly graduated and so will be described in terms of the graduations on the stationary scale 48 whereon it is seen there are 6 horizontal rows of numbers extending from right to left across the face of the scale 48 and a vertical column of numbers adjacent the right hand edge thereof. The bottom row of numbers is simply an inch scale with its zero end at the right hand edge of the scale 48 and the remainder of the row of numbers indicating 2 up to 29 inches with half inch graduation between the indices for the inch marks. Progressing upwardly the next row is identified at its right hand end by a large number 8 representing the number of feet linear measure in a board to be edged. As seen in FIG. 3 the horizontal row of figures corresponding to the eight foot index begins with a two directly above the three inch mark of the bottom row. This, as is well known, represents the number of board feet in a one inch board three inches wide and eight feet long. The rest of the indices in the eight foot row are similarly spaced to give the number of board feet in a one inch board eight feet long and of a width equal to that readable from the bottom row of graduations directly below the given board foot number. The third, fourth and fifth rows of numbers counting upwardly from the bottom are identified by the large numbers 10, 12 and 14 respectively at the right hand edge of the scale 48 and are similarly graduated in board feet corresponding to the number of board feet in a one inch board, 10, 12 or 14 feet long, respectively, and of the width indicated by the inch mraks in the bottom scale directly below the indices of a particular row. As for instance, a 14 foot board 6 inches wide would contain 7 board feet as shown by the fact that the number 7 and its graduation in the top or 14 foot row is directly above the 6 inch mark in the bottom row of numbers. It is to be noted that the right hand end of the scale 48 represents the stationary guide bracket 32 although, for convenience of positioning and reading, the right hand edge of the scale 48 is positioned somewhat to the right of the guide member 32.

The cables 54 and 60 are so adjusted that the pointer 50 moveable with the scale 47 represents the width of board to be cut for any position of the saw 26 relative to the stationary guide member 32 if a board is held against the guide member 32 and fed across the saw 26. Thus, the operator of the edger 10 can approximately position his saw for an advantageous cut in the rough board and then by glancing at the position of the pointer 50 on the scale 48, and knowing the length of the board on which the cut is to be made, can read directly the number of board feet which will be contained in the board which he proposes to cut, even though the width of the new board may be in some fraction of an inch. If, upon glancing at the indicator 50, he notes that the number of board feet

in the proposed board would be a whole number of board feet plus some fraction less than half a board foot, a slight adjustment of the saw and another glance at the pointer would be all that was necessary to change this fraction to slightly greater than half thus assuring that the board would be cut having a maximum value to the lumber owner as for instance 9 9/10 board feet credited as 10 board feet rather than 9 9/10 board feet being credited as 9 board feet according to the rules of the hardwood lumber association as hereinbefore explained. If, the board cannot be edged to provide the extra board feet then the operator will set the saw to obtain a board having the best appearance.

In an entirely similar manner the moveable scale **47** has inch graduations in the bottom row beginning at zero at the right hand edge of the scale **47** and representing the number of the inches of width in a board being cut by saws **24** and **26** when the pointer **51** mounted on the scale **46** and moveable with the saw **24** is properly positioned with respect to the scale **47**. Thus, the pointer **51** indicates on the scale **47** the board feet in a board being cut by saws **24** and **26** positioned as indicated by the pointer **51** readable on the scale **47**. In a similar manner the scale **46** has graduations representing the number of board feet in a one inch board of given length which is being cut by the saws **22** and **24**. Since the saw **22** is not transversely moveable the pointer **52**, representing saw **22**, is also fixed in position with the scale **46** moveable behind it to represent the positioning of saw **24** relative to the saw **22**.

The use of the moveable saw **24** to introduce variations of the above described simple operation of the indicator **12** will be obvious to those skilled in the art of edging. For example two edged boards cut from a single rough board and containing a total of 21¼ board feet if cut so that each board contains 10⅝ board feet would be credited as 11 board feet in each board for a total of 22 board feet while, if these boards had been cut to contain 11 board feet and 10¼ board feet respectively the total board feet counted would be 11 plus 10 or 21 board feet with a loss to the owner of the lumber being edged, of one board foot. This difference in credit may seem small but since this situation occurs hundreds of times every day on a single edger the total number of board feet of credit to be gained by knowing the exact footage that will be credited to a board before it is cut can run into thousands of dollars a year. Since the device of this invention makes it possible for the edger man to read directly the number of board feet or fraction thereof which will be in any board before he cuts it, these added thousands of dollars of yearly profit can be realized.

The utility of the lamp members **66**, **67** and **68** in casting a shadow line on the rough board to show exactly where the saws **22**, **24** and **26** will cut is related to the edging of odd shaped boards such as those which are tapered or crooked and is further related to the grade of lumber being produced. If the rough board is tapered the choice of cut is between a long relatively narrow board and a shorter relatively wide board with the value being determined by the number of board feet in either of the two boards. With the indicator **12** the edger man would place the rough board on the rollers **16** and adjust the saws for a long narrow board with the shadow lines falling almost entirely within the edges of the tapered board. A glance at the appropriate scale will tell him how many board feet this positioning of the saws will produce. The edger man can then set his saws for the wider short board with the shadows indicating the length of board that he can expect to get at this setting of the saws and a glance at the appropriate scale will tell him how many board feet this setting of the saw will produce. It then becomes simply a matter of choosing the board having the greater number of board feet therein and proceeding to set the saws and cut the board at that setting.

If, as often happens, a portion of the rough board is sufficiently clear of imperfections such as knots, that portion would receive superior grading according to the grading rules and with the shadow line it is possible to determine how many board feet of clear lumber can be cut and this choice can readily be made by the use of the shadow line and the scales of the indicator **12**. With the device of this invention it is also possible to decide between the value of the relatively narrow clear board and a wider board which would include some imperfections as shown by the shadow lines.

A further example of utility is found when a proposed board showing a value of 10¼ board feet can be upgraded by narrowing to a value of 9⅝ board feet without loss of footage credit to the lumber owner.

Further utility of the indicator **12** with or without the lamp members **66**, **67** and **68** will occur to those skilled in the art.

A preferred embodiment of the board foot indicator of this invention having been herein described and illustrated it is to be realized that variations in the structure and arrangement of the present invention may be made without departing from the broad spirit and scope of this invention. It is therefore respectfully requested that the claims appended hereto be interpreted as broadly as possible and limited only by the prior art.

What I claim:

**1.** Apparatus for edging a board comprising, a table, defining an elongated path of movement for a board to be edged, sawing means selectively moveable to fixed locations transversely of said path at one end thereof to define one side of at least one longitudinal portion of said path, scale means, indicator means having a movement adjacent said scale directly related to the movement of said sawing means, and said scale means having indicia thereon located to indicate in conjunction with said indicator means the number of board feet in boards of various lengths having a width determined by the location of said sawing means.

**2.** Apparatus as defined in claim **1** and additionally including, a second sawing means selectively moveable to fixed locations transversely of said path at said one end thereof to define one side of another longitudinal portion of said path, a moveable second scale means having a movement directly related to the movement of said first mentioned sawing means, a moveable second indicator means having a movement adjacent said second scale directly related to the movement of said second sawing means, and said second scale means having indicia thereon located to indicate in conjunction with said second indicator means the number of board feet in boards of various lengths having a width determined by the location of said first mentioned sawing means and said second sawing means.

**3.** Apparatus as defined in claim **2** in which said first mentioned indicator means is carried by said second scale means.

**4.** Apparatus as defined in claim **2** in which each of said scale means carries a shadow line producing means.

**5.** Apparatus as defined in claim **2** in which said shadow line producing means include means for adjusting the produced line.

**6.** Apparatus as defined in claim **2** and additionally including, a third sawing means selectively moveable to fixed locations transversely of said path at said one end thereof to define one side of still another longitudinal portion of said path, a moveable third scale means having a movement directly related to the movement of said second sawing means, a moveable third indicator means having a movement adjacent said third scale directly related to the movement of said third sawing means, and said third scale means having indicia thereon located to indicate in conjunction with said third indicator means the number of board feet in boards of various lengths having a width determined by the location of said second and said third sawing means.

7. Apparatus as defined in claim 6 in which said first mentioned indicator means is carried by said second scale means and said second indicator means is carried by said third scale means.

8. Apparatus as defined in claim 6 in which each of said scale means carries a shadow line producing means.

9. The method of edging a board comprising, guiding an elongated board to be edged along a straight path, locating at least one sawing means in one of a plurality of selectible fixed positions along a path extending transversely at one end of said first mentioned path to longitudinally cut one portion of said guided board when said guided board is fed thereunto, and simultaneously indicating the number of board feet in said guided board as determined by the location of said sawing means.

10. The method as defined in claim 9 which further requires indicating by shadow line where said longitudinal cut will be on said guided board.



11. The method of edging a board as defined in claim 9 in which said locating is of a plurality of sawing means, and said indicating is of the board feet determined by the location of said plurality of sawing means.

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