No. 753,435. PATENTED MAR. 1, 1904.

E. M. SCHANTZ.

MARKING MACHINE.

APPLICATION FILED AUG. 6, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

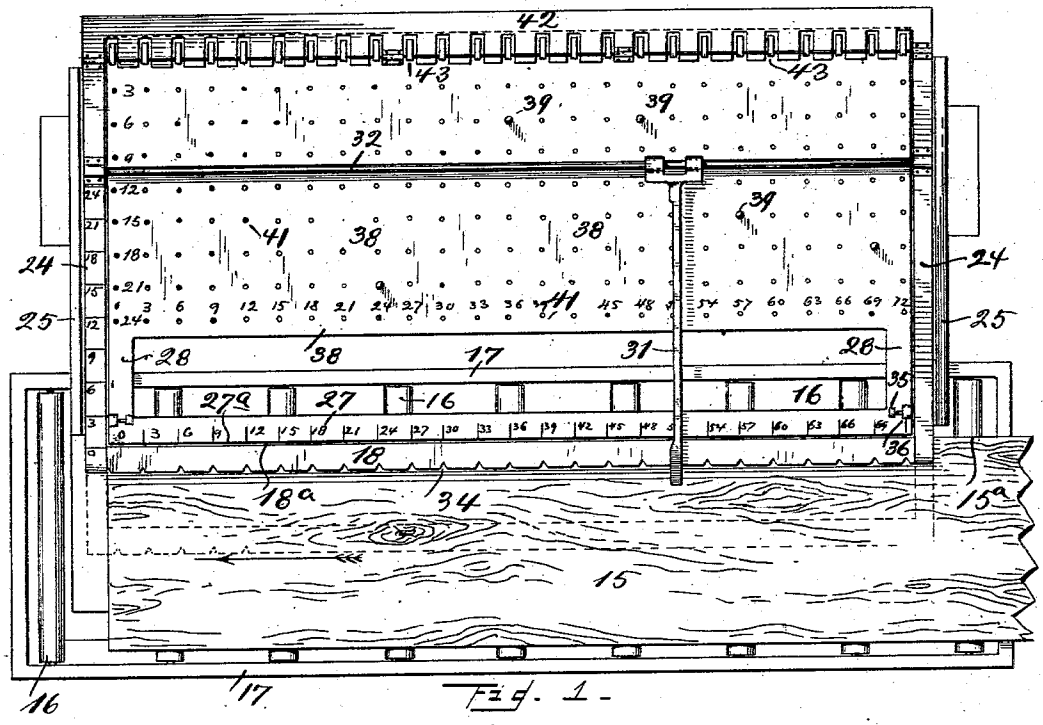

Fig. 1.

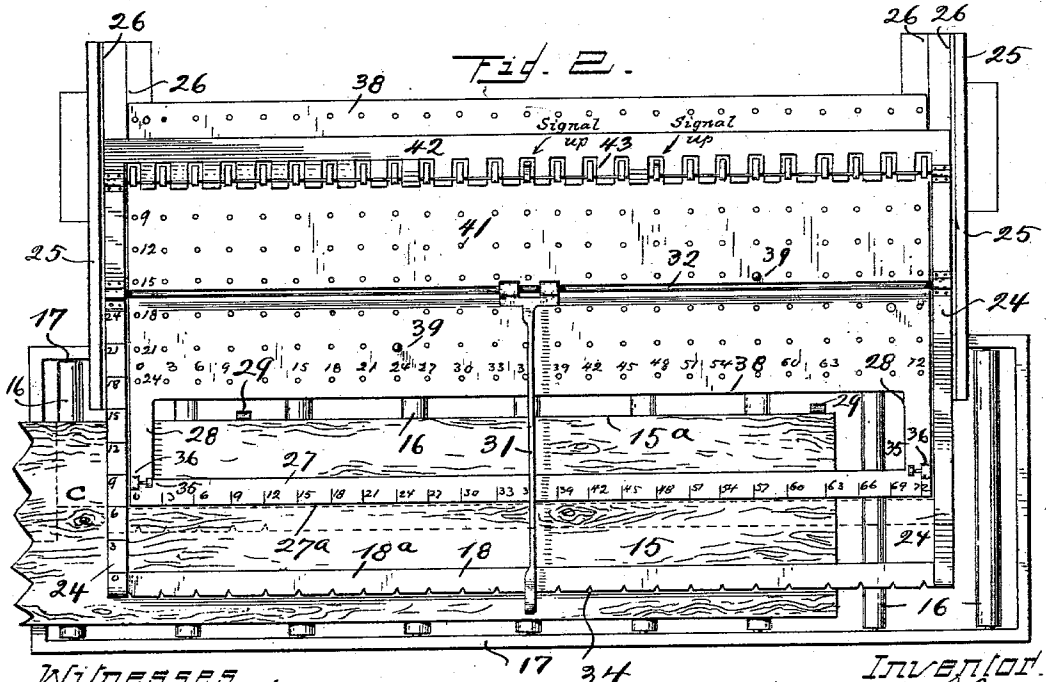

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

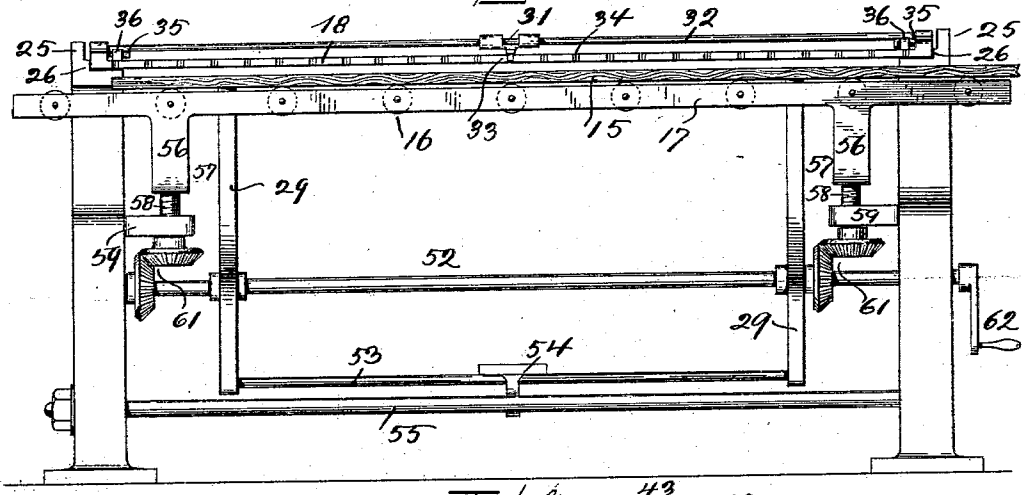


Fig. 4.

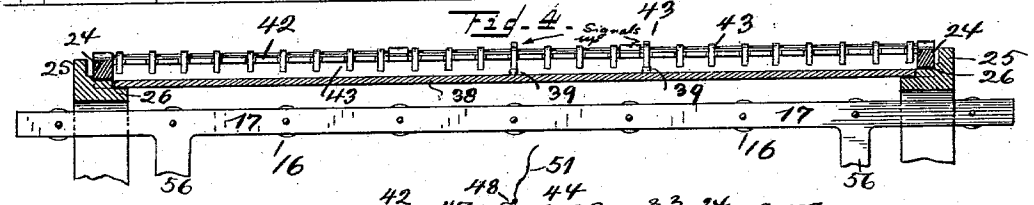


Fig. 11.

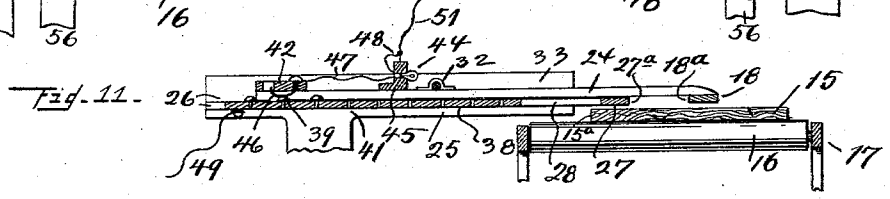


Fig. 12.

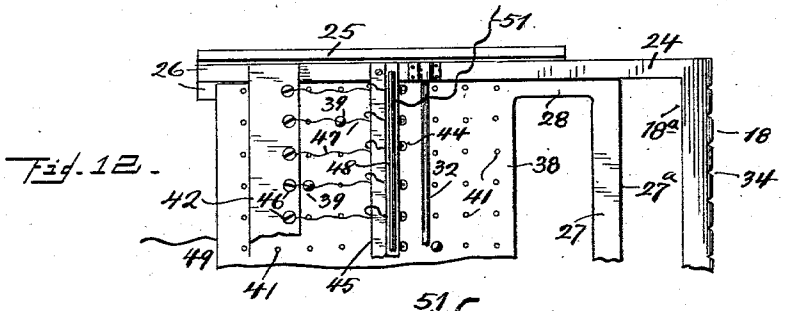
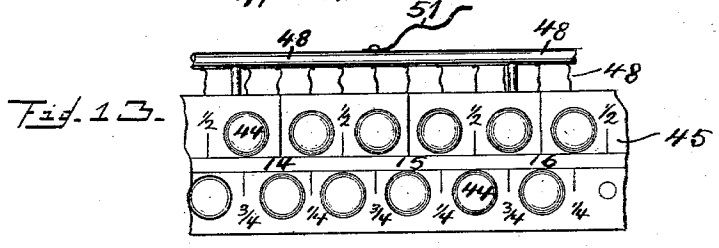


Fig. 13.



Witnesses

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

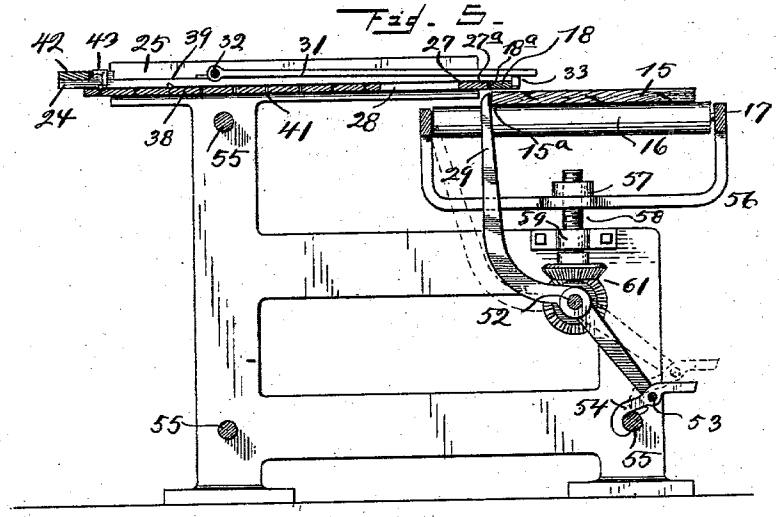


Fig. 6.

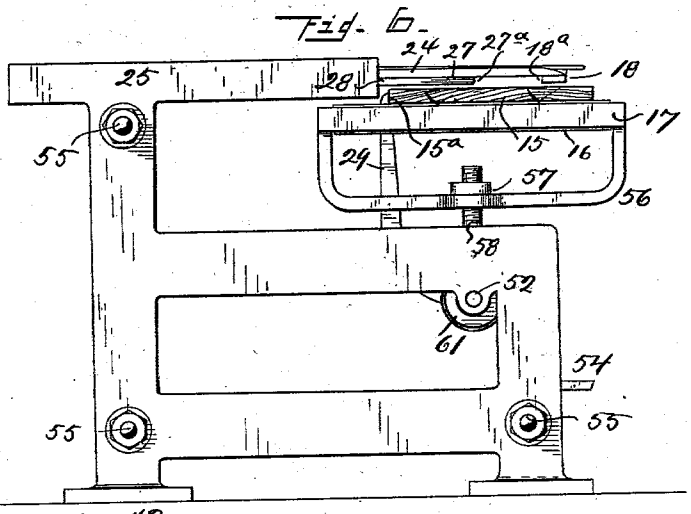


Fig. 10.

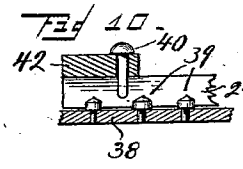


Fig. 8.

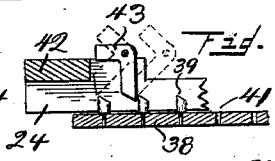


Fig. 7.

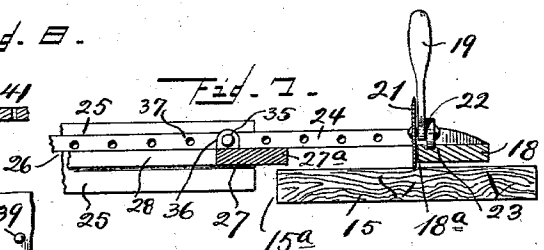
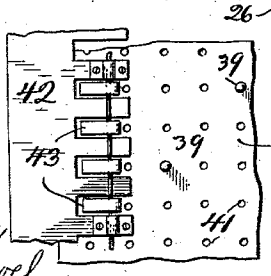


Fig. 9.



Witnesses
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No. 753,435. Patented March 1, 1904.

UNITED STATES PATENT OFFICE.

EDWIN M. SCHANTZ, OF ZIMMERMAN, OHIO.

MARKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 753,435, dated March 1, 1904.

Application filed August 6, 1903. Serial No. 168,459. (No model.)

To all whom it may concern:

Be it known that I, EDWIN M. SCHANTZ, a citizen of the United States, residing at Zimmerman, Green county, State of Ohio, have invented certain new and useful Improvements in Marking-Machines; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to improvements in marking-machines of the kind described in a patent issued to me on July 28, 1903, and which machines are used to mark off by lines pieces which are to be cut from a larger piece, said marked-off lines indicating the lines on which this latter is to be subsequently cut. The machine shows at the same time the superficial dimensions—that is, length and width of the surface so marked off for subsequent cutting.

While these machines may be used on most any kind of material of limited thickness, they are exceedingly well adapted for use in connection with lumber, the invention being accordingly described, and larger pieces of which, like boards, planks, &c., are to be cut up in smaller pieces, which latter may be so-called "mill" or "dimension" stuff.

The patented machine as well as this present device consist, first, of a member called a "marking-guide" and which serves to guide a pencil, piece of chalk, or other suitable marking implement while the same, held in the hand, is moved over the surface to be marked off. In connection therewith is used an indicating measuring device operatively connected to the marking-guide in a manner that any change of this latter from one position to another is immediately shown in certain selected scale units—as inches, for instance—thereby, while showing the distance between the marking-lines as run by the marking-guide, also indicating the corresponding size of the particular piece to be marked off for subsequent cutting.

A leading feature of the machine described in the patent is that the measuring device while showing the sizes of the pieces shows at the same time whether pieces of such size are wanted. The means whereby this effect is obtained are adjustable in arrangement, so that the machine may be arranged accordingly and before use to set it to various sizes which are wanted and to show them. Thus, for instance, in mill-work where numbers of certain-sized pieces have to be turned out the machine is arranged and set accordingly before work on a certain order is started, after which the marking-guide while manipulated causes the measuring device to show the width of the pieces marked, the measuring device also showing in addition and at the same time what pieces and of certain sizes are wanted. Thus, for instance, pieces of various lengths may be wanted all of the same width. In such a case the operator while having the required sizes before his eyes, as indicated by the measuring device, may where the pieces are also required to be clear of defects arrange the running of the marking-lines with respect to existing defects—like knot-holes, for instance—to avoid these and at the same time obtain pieces which may be made use of, thus entailing very little or no waste. For instance, he may mark out a smaller piece where by reason of existing defects he cannot obtain a larger one, the measuring device showing him how to arrange the size of such smaller piece, so it can be made use of.

This present machine may be used in the same manner, except that the means for attaining the desired results have been changed and improved. A different measuring device is used, and the means which indicate width and show what various sizes are wanted have also been changed and improved.

The invention consists, therefore, of these changes and improvements as they are hereinafter described and claimed and as they, together with their operating parts and construction, are illustrated in the accompanying three sheets of drawings, in which—

Figure 1 shows a top view of the improved machine with all parts in their normal position and a piece of lumber all ready for starting operation. Fig. 2 in a similar view shows operations started. Fig. 3 is a front view of the machine. Fig. 4 is the upper part of a longi-

tudinal section taken back of and parallel to the preceding front view. Fig. 5 is a vertical cross-section of the machine. Fig. 6 is an end view of the same. Figs. 7, 8, and 9 are enlarged detailed views which will be referred to in the following description, after which they will be fully understood. Fig. 10 in a view similar to Fig. 8 shows a modified construction of the indicating means. Figs. 11 and 12 in views similar to Figs. 8 and 9 or parts of 5 and 2, the first being a cross-section, the other a top view, show the indicating means electrically operated. Fig. 13 shows a front view of the lamp-carrier.

The lumber 15, to be marked for subsequent cutting up, rests upon a suitable support constituted, preferably, by rollers 16, mounted in a frame 17, and which facilitate the manipulation of the lumber and permit it to be easily moved along by being slid over said rollers.

18 is the marking-guide—that is, that device which guides the hand while running those lines which divide the board longitudinally. Pencil or chalk may be used or an implement, as shown in Fig. 7, having a handle 19, carrying a serrated roller 21, like a tracing-wheel, and a guide-roller 22, fitted into a groove 23 of the marking-guide. This marking-guide is carried by two arms 24 24, extending rearwardly from its ends, and which arms are supported in frame-arms 25 25, the support being in a manner which permits said arms 24 to move back and forth for the purpose of permitting placing of the marking-guide in position above the wood wherever a particular line is to be run. This support is, further, such that these arms during their movement are guided in a manner that the various adjusted positions of the marking-guide, respectively, the lines run thereby, are all parallel to each other. For such purpose grooves or shoulders may be provided in frame-arms 25, acting as guideways 26, on which arms 24 of the marking-guide are guided.

Supported below the marking-guide, preferably, also, on arms 25 and in a manner to be free for a similar guided movement, there is a measuring device 27 showing widths and having also rearwardly-extending arms 28 for guiding and supporting it on arms 25. At the beginning the parts are in a normal or zero position, as shown in Figs. 1 and 5, front edge 27^a of the measuring device, the inner edge 18^a of the marking-guide, and the front edge 15^a of the board being all alined in juxtaposition. The board is advanced from right to left along stops 29, which define the position above referred to, and, as shown in Fig. 2, it has nearly reached its end.

The operation of the marking and measuring devices is, however, the same as to any portion of the board, which is over the table and below them at the time. Thus, for instance, if a piece is wanted of a certain width or of a certain width and also clear of defects or knot-holes marking-guide 18 is moved out, as shown in Fig. 1 in dotted lines, and in which position it does not include any knot-holes on the board shown. The width is assumed to be about eight inches and a marking-line *c* would be run. (See Fig. 2.) Before running the next line members 18 and 27 must come again to a zero position on line *c*, for which purpose member 27 is pulled out to meet line *c*, as shown in Fig. 2, and where it also meets member 18 in its advanced position, as the same is shown in dotted lines in Figs. 1 and 2. For running the next line marking-guide 18 is advanced again—that is, moved away from member 27 and as shown in Fig. 2. The width of the pieces are shown by the distance between edges 27^a and 18^a and may be indicated by the position of front edge 27^a of the measuring device with reference to certain graduations which may be on one of the arms 24, preferably the left one. Fig. 2 shows best this manner of reading. Lengths may be shown by graduations or notches either on edge 18^a or 27^a, or both. This measurement starts from the inner edge of left arm 24. (See position of board in Fig. 1.) Cross-lines or lines defining ends of the pieces marked being only of limited lengths may be run free hand, or an additional marking-guide 31 is used, which is hingedly mounted on a rod 32, on which it may be laterally adjusted to the proper position. This rod may be supported between arms 25 or between arms 24 and move with them, as shown, the connection in either case to either set of arms being the same. Guide 31 has a projection 33 on the under side of its free end whereby it may be temporarily held in position while a line is run, said projection dropping into one of a number of notches 34 in the edge of marking-guide 18 and graduated to correspond to the scale on edge 27^a. Marking-guide 18 and measuring device 27 may be locked together if, for instance, a large number of pieces would have to be marked which are all of equal width and also of equal or various lengths, so that for adjustment to a new line the two can be moved at once intstead of first moving member 27 to the zero position or to the previously-run line and then marking-guide 18 to the new position. This is done by a pin 35, mounted in a lug 36 on member 27, and which pin may be pushed in any of a number of openings 37 on the inner side of arm 24 and spaced to correspond to the graduations on said arm. (See also Fig. 7.) When so locked together, it is only necessary to move edge 27^a to the zero position or to the previously-run line, the marking edge 18^a being found then at once in its proper position.

When clear pieces free of defects and at the same time of fixed sizes are desired, the running of the marking-lines is governed simultaneously by these two controlling circum-

stances. Thus, for instance, when a larger (wider or longer) piece cannot be marked out on account of an existing defect the particular clear area may be utilized to mark out on it a smaller piece, thus obviating waste. To show the operator at once whether he can so utilize a particular stretch of board and without having first to consult his order-list to see whether such a smaller piece is wanted and could be made use of, I provide a dimension-indicating device which shows him at once whether he can use such stretches or what part of it. He will then place his marking-guide in position to clear any defects and also at the same time watch his dimension-indicator, which will show him all the various sizes of pieces wanted close to the position set and the next available size he will make use of. This device consists, first, of what I call the "size-board" 38, so connected and supported as to move with the measuring device 27, it being connected to arms 28 thereof. It consists, substantially, of a metallic plate and should be of sufficient thickness and rigidity to carry free between the frame-arms 25 25 unless intermediate supports or a continuous shelf are provided between these arms and below said plate, in which case its thickness and weight may be accordingly limited. This plate is provided with removable projections, preferably in shape of plugs 39, to be inserted in openings 41. These openings are arranged in rows lengthwise and crosswise on the board, and they are spaced in these rows to correspond to the graduations on arm 24, showing width of pieces, and also to correspond to the graduations on scale 27^a, which shows lengths. While all these graduations and scales and also the spaced openings 41 are only shown for every three inches to obtain a clear drawing, they should in practice appear one at least for every inch, and, if preferable, the half and quarter inches may also be shown. At the beginning of a day's work or when a certain order is to be turned out this board is studded with plugs 39 in proper position. For instance, if pieces are wanted six inches wide and three feet long a plug is placed at the intersection of these graduations, such plug then indicating at the same time length and width. If several lengths are wanted at the same width, additional plugs are placed in the same longitudinal line, &c. In conjunction with this size-board operates the indicator proper, the same consisting of a carrier 42, connected so as to move with marking-guide 18, it being attached to the rear ends of arms 24 thereof, so that when the marking-guide is moved said carrier is also caused to move, it passing over the size-board. This carrier is provided with devices spaced so as to correspond to the graduations showing lengths on scale 27^a, so that these devices depending sufficiently they will move in a path where they will encounter plugs 39 wherever they may be. This contact I use to operate indicating-signals which are visible to the operator and show him, whenever one of them acts, that he now has moved his marking-guide in a certain position which defines a certain dimension of a board and which board is wanted in his order. The width is given at once by marking-guide 18, which he simply leaves where it was at the moment it operated the indicating-signal, unless a defect in the wood should interfere and prevent him from getting a clear piece, in which case he again moves the marking-guide to the next available size. The length is also given by the position, laterally considered, of the particular signal actuated by the particular plug beneath, and according to it he adjusts the other marking-guide 31, provided, however, that no defects in the wood interfere. Thus, again referring to Figs. 1 and 2, it will be noted by plugs 39, inserted on the size-board, that pieces six inches wide and three feet long and of same width and four feet long are wanted. The marking-guide when arriving in a position six inches from edge 27^a will therefore cause two signals to operate, one representing a piece six inches by three feet and the other six inches by four feet. On looking at his lumber the operator observes that he cannot obtain the longer piece free of knot-holes. (See Fig. 2.) He therefore places guide 31 as shown in said figure and marks out the shorter, but clear piece. The particular means for operating these signals may be mechanical—as, for instance, they may consist of little angular pieces 43, pivotally supported on carrier 42, and the lower members of which depend, so as to encounter plugs 39. This causes the other members to rise up, as shown in dotted lines in Fig. 8, thereby becoming visible to the operator, or they may consist of vertically-operating means like pins 40. (Shown in Fig. 10.) They would also allow a closer subdivision. They may also be operated electrically by means of small incandescent lamps arranged and used on the principle of the modern telephone-switch-board. There would be a lamp 44 for each size, as now shown by the devices on carrier 42, and which lamps would be carried in a bridge 45, supported either stationary between arms 25 or between arms 24, so as to move with the marking-guide and carrier and as shown in Figs. 11 and 12. The carrier would of course not have the signal-levers, their place being taken by electrical contact-pieces 46 in shape of yielding springs, one for each lamp. The entire size-board 38 would serve as a part of the current-carrier, so that whenever one of the metallic plugs would come in contact with one of these pieces the particular lamp would light up.

The lamps may be arranged as shown in full size in Fig. 13, a different color being used for the inches, halves, and quarters. The wires 47 may pass directly each over to

its respective lamp, as shown, or they may be bunched first on carrier 42, then carried over as a rope to the lamp-bridge 45 and distributed again. Going out they are preferably bunched or otherwise consolidated, as shown at 48. Suitable supports may be provided to hold up the necessary surplus of wire which is needed to compensate for the movement of the parts. 49 is the wire to the size-board, and 51 is the outgoing wire.

It may sometimes be necessary to run lines not parallel to the edges of the board, which requires that this latter be free to be shifted unimpeded by any stops. Stops 29 are for such purpose caused to drop below the surface of the rollers which support the lumber. To permit this, stops 29 are pivotally supported on a rod 52 and connected to each other by another rod 53, so as to move as one. A trip-lever 54, suitably engaged—as, for instance, to one of the tie-rods 55 of the machine-frame—holds stops 29 in their normal position. By releasing said trip-lever, which may be done with the foot, they drop below the rollers, as shown in dotted lines in Fig. 5.

When changing from one thickness of lumber to another, the means supporting the same should be vertically adjustable. This may be done by various means—for instance, as shown in my prior patent or as shown here.

The roller-frame 17 is provided with two brackets 56, embodying each a nut 57. A screw 58 is fitted to each of these brackets and supported by a bearing 59, whereby it is also held against longitudinal movement. By two sets of bevel gear-wheels 61 these two screws are simultaneously rotated, and according to the direction of rotation the roller-frame with the lumber on it is either raised or lowered. For the purpose of such simultaneous rotation one wheel of each set is mounted on a common shaft, rod 52 serving as such, and is provided with a crank-handle 62 for rotation.

The open space shown between the measuring device 27 and size-board 38 is not necessary, and arms 28 might be omitted, since the two former move and operate as one, the measuring device being practically the front edge of the size-board. I prefer, however, the space shown between them, as permitting a more extended observation of the lumber.

Considering the many possible combinations as to sizes required and location of defects, it is of course not possible to describe all the possible uses and necessary manipulations of the machine; but these will readily suggest themselves to the practical lumber-worker.

Having described my invention, I claim as new—

1. In a marking-machine, the combination of a support for the material, a marking device or guide and a device arranged parallel thereto and operating in conjunction with it to show widths, this operation being by adjustment of one of the two devices last mentioned with reference to the other and parallel to each other, each being adjustable, the adjustment of both being over the surface of the material and in a plane also parallel to it and to each other.

2. In a marking-machine, the combination of a support for the material, a marking device or guide, a device arranged parallel thereto and operating in conjunction with it to show widths, this operation being by adjustment of one of the devices with reference to the other and in a direction parallel to each other, the adjustment of both being over the surface of the material and also parallel to it and an indicating device to show simultaneously lengths and widths and operating due to the joint action and adjustment of the devices above mentioned.

3. In a marking-machine, the combination of a support for the material, a device to show widths and a marking-guide, both these latter so supported as to be adjustable with reference to the material and parallel to the upper surface of the same, the marking-guide being also independently adjustable with reference to the device showing widths, an indicating device carried by the marking-guide showing simultaneously lengths and widths and means for actuating the same and operating due to the adjustment between the marking-guide and the device showing widths.

4. In a marking-machine, the combination of a support for the material, a marking-guide and a device to show widths in combination with this latter, all three so supported as to be adjustable with reference to each other and an additional marking-guide supported so as to be adjustable at right angles with reference to the adjustment of the other parts.

5. In a marking-machine, the combination of a support for the material, an adjustable marking-guide and an adjustable device to show widths, all so supported that the adjustment takes place in planes parallel to each other and in a direction parallel to the upper surface of the material and stops to hold the material in proper position with reference to the marking-guide, they being adjustable at an angle to the adjustment of the marking-guide.

6. In a marking-machine, the combination of a support for the material and a measuring device, both so supported that one is adjustable with reference to the other, a marking-guide supported so as to be adjustable with reference to the measuring device, and indicating devices to show simultaneously lengths and widths, said devices consisting of complementary interacting parts, one set of these parts being carried by the measuring device and the other being operatively connected to the marking-guide.

7. In a marking-machine, the combination of a support for the material and a measuring

device, both so supported that one is adjustable with reference to the other, a marking-guide supported so as to be adjustable with reference to the measuring device, electric-light signals to indicate by their position and when lighted up, simultaneously lengths and widths, complementary sets of contact-pieces which control the action of these lights, one set of these pieces being carried by the measuring device and the other being carried by the marking-guide.

8. In a marking-machine, the combination of a support for the material and a measuring device, both so supported that one is adjustable with reference to the other, a size-board connected to the measuring device and provided with plug-sockets arranged in graduated scales, a marking-guide supported so as to be adjustable with reference to the measuring device, indicating devices to show simultaneously lengths and widths, means for operating these devices and a support connected to the marking-guide whereby these means are carried and caused to pass over the size-board in a manner whereby the plugs on this latter are capable to actuate these means.

9. In a marking-machine, the combination of a support for the material, a device to show widths, both so supported that one is adjustable with reference to the other in a direction parallel to the upper surface of the material, a marking-guide also supported in a manner to be adjustable with reference to the upper surface of the material and parallel thereto, an indicator to show lengths and widths carried by the marking-guide and means for actuating the same and operating due to the adjustment of the marking-guide.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

EDWIN M. SCHANTZ.

Witnesses:

C. SPENGEL,

ALBERT A. MOEBUS.