(No Model.)

W. LYON.

WOODWORKING MACHINE.

No. 518,529. Patented Apr. 17, 1894.

Fig 3.

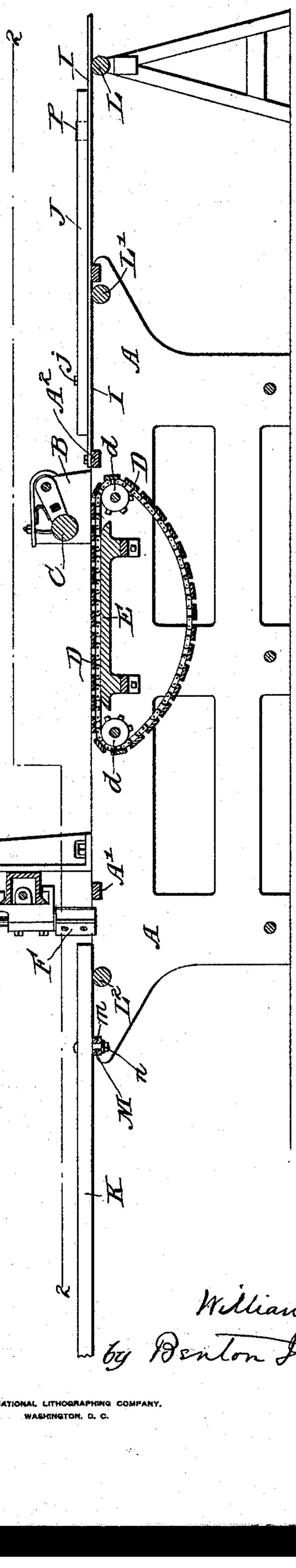

Fig 1.

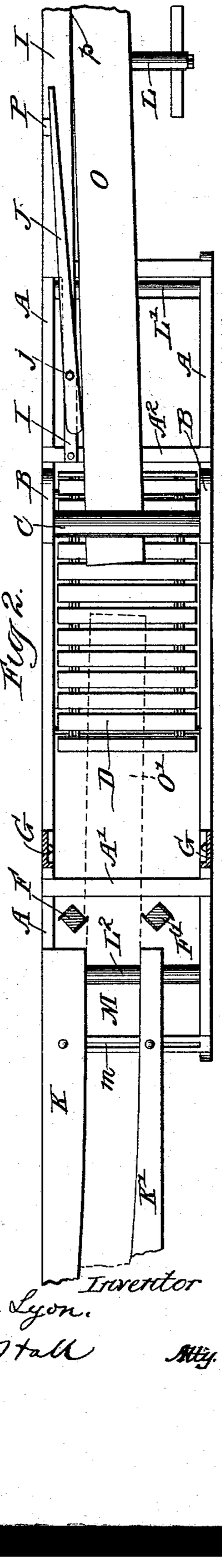

Fig 2.

Witnesses
Wm. F. Fleming
Nellie M. Harris

Inventor
William Lyon.
by Benton F. Hall Atty.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM LYON, OF BURLINGTON, IOWA, ASSIGNOR OF TWO-THIRDS TO WILLIAM CARSON, JR., AND HORACE S. RAND, OF SAME PLACE.

WOODWORKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 518,529, dated April 17, 1894.

Application filed May 13, 1893. Serial No. 474,065. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LYON, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented new and useful Improvements in Woodworking-Machines, of which the following is a specification.

My invention relates to improvements in wood-working machines, of a novel and useful construction, and its objects are to provide means for crowning joists, and edging or cutting the sides of joists and boards in curved or straight lines, that shall be parallel to each other; also to edge or cut one side of the board or slab, in a perfectly straight line. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which like reference letters refer to like parts throughout.

Figure 1 is a longitudinal sectional view of my invention, taken upon the central vertical longitudinal line of Fig. 2, in which the brackets and support of one of the cutter-heads is illustrated. Fig. 2 is a top plan view of my invention, with the brackets and supports of the cutter-heads, and the shafts and pulleys thereof removed. Fig. 3 is a detail view of one of the joists.

The ordinary wood working machinery with which the trade is familiar in general has been defective in that it is difficult to cut or edge the side of a joist or plank in a perfectly straight line, owing to the fact that in feeding the material to the cutter-heads, the ordinary guides would permit the line of cut to conform to the natural inequalities and irregularities of the side of the board to be cut, and consequently, in such machines, the cut made by the cutter-heads conformed, to a greater or less degree, to the natural irregularities and inequalities of the board. I am aware also, that it has been common to crown joists, by placing them edgewise upon a feeder in the planing machine, on supports at each end, allowing the central portions to be curved by sagging. As the joist then passes beneath the planer, it shaves off the upper surface, so as to form a crown thereon, when the joists are removed and placed in a straight position; but I am not aware of any device that will cut one edge of the joist or board, possessing inequalities or irregularities, in a perfectly straight line, or that will edge or cut both sides of the joist or board in curved or straight lines, as the case may be, parallel to each other.

One of the peculiar features of my invention, is, that it can be practicably applied to any of the well known planing machines for dressing lumber, without any material change or modification, in their structure or arrangement. It is common in such machines to be provided with two vertical cutter-heads, to cut or dress the sides of the plank, and two horizontal planers placed above and below each other, to dress the upper and under surfaces of the plank, so that the board in passing through such a machine, is cut and dressed upon all its sides.

My invention can be applied to such machines, although ordinarily in crowning joists and other similar material, it is not usual to dress the broad surfaces thereof, and I have only illustrated so much of the planing machine as provides cutter heads for cutting or dressing the sides of the plank.

Letter A represents the frame work of a wood-working machine, supporting the usual chain D, operated upon the sprocket wheels *d d*, whose upper portion rests and passes over the table E, supported in said frame.

Letter B represents one of the brackets or supports, resting upon said frame, of the presser-roll C.

Letters F and F′ represent the cutter-heads.

Letter G represents one of the brackets, supporting the frame work, provided with bearings for the shafting *h* of the cutter-head F. The corresponding bracket G, shaft, and bearings being located upon the opposite side of the frame work, carrying the cutter-head F′, within which frame-work the cutter heads F and F′ are capable of lateral adjustment.

Letter H represents a pulley rigidly attached to the shaft of the cutter-heads, by means of which the power is communicated to the cutter-heads.

Letter I represents the guide, against which the board to be dressed or crowned is placed, as it is fed into the machine. Heretofore,

this guide has extended beneath the presser-roll C, to the cross-bar A′, by which the board was guided practically up to the point when it came in contact with the cutter-head F. But in my construction, I find that the extension of this guide I from cross-bar A″ to cross-bar A′, renders it impossible for the board O to be so guided to the cutter-head F as to enable the latter to cut a curved edge in such board, and I therefore have omitted that portion of the guide, and substituted other means for feeding the joist or board to this point of first contact with the cutter-head F.

Letter J represents a lever pivoted to the guide I at the point *j*.

Letters K and K′ represent guides which are rigidly affixed to the frame work of the wood-working machine, and are properly supported in a horizontal plane. By means of the slotted cross-bar M and the bolts N, these guides K and K′ are adjustable, so that the space between their inner sides may be enlarged or diminished to correspond to the size of the joist or board to be edged or cut. It is evident that the inner sides of these two guides may be formed in parallel straight lines or parallel curved lines as may be required.

Letters L, L′ and L″ represent the ordinary rollers or idlers, which support the joist or plank in its passage through the machine. It is to be understood, of course, that in the form of my invention illustrated in Figs. 1 and 2, the joist or board, after being fed to the presser-roll C is carried forward and fed to the cutter-heads by means of the movement of the chain D, which is operated by power the same as the cutter-heads.

As already explained one of the difficulties in feeding the joists or boards to the cutter-heads in the old wood-working machines, such as are illustrated in Figs. 1 and 2, has consisted in the impossibility of providing a guide for the joist or plank as it is fed to the cutter-heads, the straight guide I having been extended as already explained, to the cross-bar A^2. I have obviated this by means of the lever J, in connection with the chain D and the presser-roll C. When the board O, Fig. 2, is first fed to the machine, one of its sides is placed along in line with the line of the guide I, until its forward end is about entering upon the chain D, and beneath the presser-roll C; before this actually occurs, the lever J is applied in such a way, as to press the forward end of the joist away from the guide I, while its rear end still remains in contact with the guide at *p;* by this means, as will be seen the joist or board O passes under the presser-roll C, in a diagonal position; the throw thus given to the lever J is regulated by the length of the board to be cut, and by the distance from the presser-roll to its contact with the cutter-head F; the object being to have the joist or board O as it travels forward and is gradually moved to the right, to meet the cutter-head F at the exact corner of the board O, so that the edging or incision in the first instance, will be exceedingly slight or have its initial beginning. It is evident that with the proper gaging of the throw of the lever J, the position of the joist or board O will be such, in consequence of its passing under the presser-roll C and upon the chain D obliquely, the forward end will gradually travel, not only forward, but also to the right, the rear end being kept, by hand or otherwise, in contact with the guide I, until, the joist or board has passed under the presser-roll C. It is to be understood, that the moment the front end of the joist or board passes under the presser-roll C, the lever J is released, and from that on, the course and direction of the joist or board is controlled entirely by the chain D and the presser-roll C. As soon as the front end of the joist or board has passed between the cutter-heads F F′ it enters between the guides K K′, which from thence on, control the character of the edging or crowning thereof. It will thus be seen that the particular feature of my invention, consists in providing means for feeding the joists or boards to the cutter-heads, and in determining the curve or line of the crowning or edging of such joists or boards by guides, having predetermined lines or curves as may be required and applying these improvements to all known and common wood-working machines without any essential or important changes or modifications in their construction or arrangement.

As already suggested, it is evident that there may be many changes and modifications, in the construction and arrangement of the various parts of my invention, without departing from the spirit thereof, for instance, instead of employing the chain D and the sprocket wheels *d d* in connection with the presser-roll C, a feed roll may be employed, with the presser-roll C, for the purpose of feeding the joist or plank to the cutter-head; I therefore do not limit myself to the precise details of construction and arrangement of parts shown.

Having thus described my invention and explained its mode of operation, what I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a wood-working machine the combination of a frame with two vertical cutter-heads supported thereon; guides carried by said frame and capable of adjustment with reference to each other; the feed chain D; the presser-roll C, pivotally supported in its bearings and provided with means for vertical action and reaction; and means for guiding a joist or board between the feed chain D, and presser-roll C, to the cutter-heads and into said guides in a predetermined angle, whereby said joist or board will be crowned or edged in lines conforming to the lines of said guides, all substantially as shown.

2. In a wood-working machine the combination of a frame, with two vertical cutter-heads supported thereon; guides carried by

said frame, and capable of adjustment with reference to each other; the feed chain D operated by the sprocket wheels *d d;* the slide or table E; the presser roll C pivotally supported in its bearings, and provided with means for vertical action and reaction; and the guide I and the lever J pivotally located thereon; whereby a joist or plank may be fed, to and between said feed chain, and presser-roll at a pre-determined angle and in its onward travel will thereby be fed and carried to and between the cutter-heads and into said guideway in the required position, and said joist or plank will be crowned or edged in parallel lines conforming to the lines of said guides; all substantially as shown.

3. In a wood-working machine the combination of a frame, with two vertical cutter-heads supported thereon; mechanism for feeding a joist or board to said cutter-heads; a guide I supported on said frame and a lever J, supported and held by a pivot; whereby a joist or plank, may be fed to said feeding mechanism at such predetermined angle, as will cause the feeding mechanism to feed it to the cutter-heads in the required position for crowning or cutting: all substantially as shown.

4. In a wood working machine, substantially such as herein described, the combination with a frame, and vertical cutter-heads supported thereon, of a feed mechanism disposed at one side of and in line with the cutter-heads, a pair of spaced parallel guides disposed on the opposite side of said cutter-heads and in line with the same and with the feed mechanism to receive the material between themselves after it has passed through and between the cutter heads, a longitudinal stationary guide, as I, for guiding the material to the feed mechanism, and manually-controlled devices on said stationary guide I arranged to act against the edge of the material and to guide the same in a predetermined angle thereto and to the cutter heads, as and for the purposes described.

5. In a wood working machine, the combination with a frame, and a pair of vertical parallel cutter-heads supported thereon, of a longitudinal stationary guide, as I, against which the material is fitted edgewise on its entrance to the machine, a feed-mechanism between the cutter-heads and said longitudinal fixed guide, I, a movable guide-device sustained adjacent to said feed-mechanism and the stationary guide and adapted to bear against the material to direct the same in a predetermined angle to the feed mechanism and the cutter-heads, and the longitudinal spaced guides K, K′, disposed at the opposite end of the machine from the feed mechanism and in line with the cutter heads and the feed mechanism to receive the material between themselves after it has passed between the cutter-heads, the inner adjacent edges of the spaced guides being parallel to each other and conforming to the contour edge of the material to be crowned, as and for the purposes described.

WILLIAM LYON.

Witnesses:
THOS. S. ARCHIBALD,
WM. C. STEINMETZ.