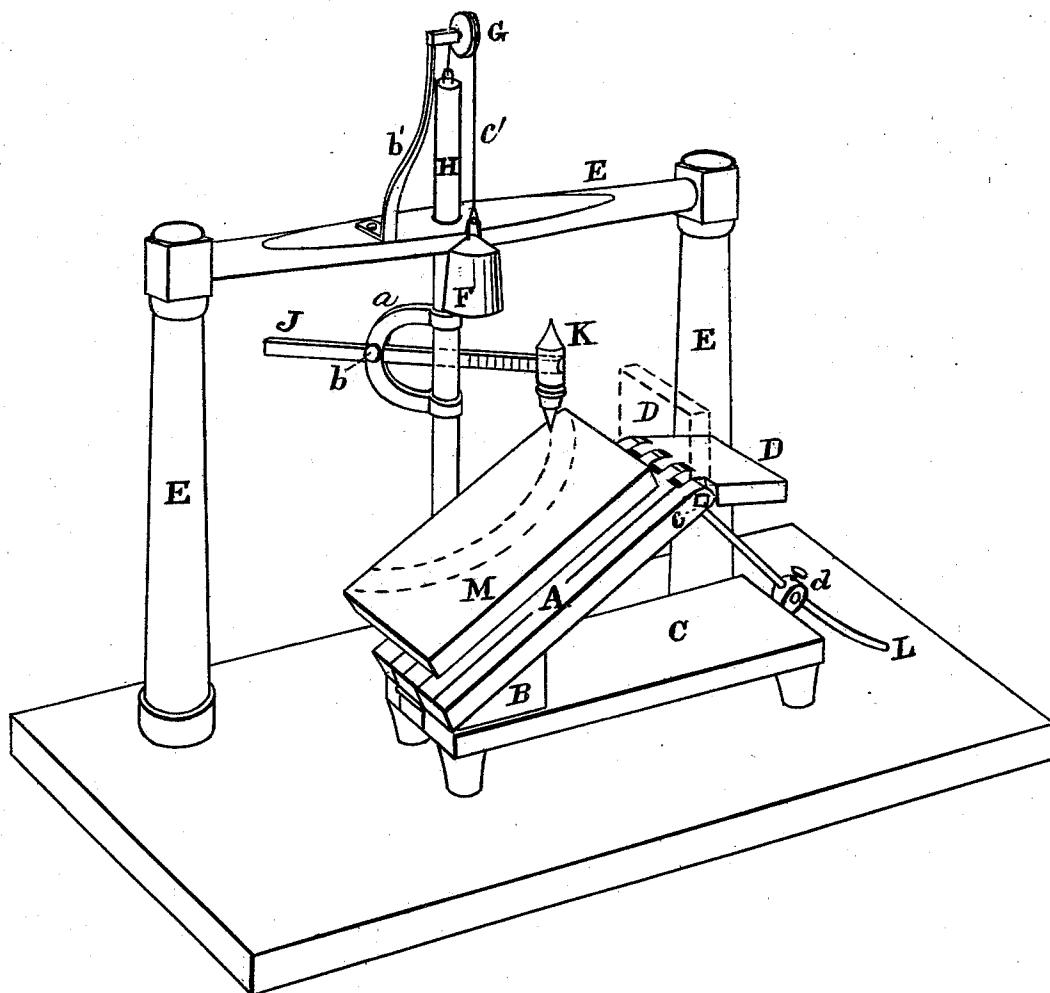


A. D. PALMER.

MACHINE FOR LAYING OUT STAIR-RAILS.

No. 175,871.

Patented April 11, 1876.



Witnesses :
Theodore Mungen.
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UNITED STATES PATENT OFFICE

ALFRED D. PALMER, OF LYONS, IOWA.

IMPROVEMENT IN MACHINES FOR LAYING OUT STAIR-RAILS.

Specification forming part of Letters Patent No. **175,871**, dated April 11, 1876; application filed February 15, 1876.

To all whom it may concern:

Be it known that I, ALFRED DUDLEY PALMER, of Lyons, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in the Manner of Laying Out Stair-Rails; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters reference marked thereon, which form a part of this specification, in which drawings the devices are shown in perspective.

My invention relates to devices for laying out stair-rails for circular or geometrical stair-cases, as hereinafter described.

A represents an adjustable leaf, hinged at one end to a platform or flat table, C, and provided at the other end with an adjustable end, D. H is an upright shaft adjusted in guides in the frame E to slide vertically and turn horizontally, to allow the required movements of the marking-pencil attached to the arm connected with the shaft. G is a pulley mounted on a bearing attached to the top of the standard b', which pulley carries a cord, c', one end of which is attached to the top of the shaft, and the other end to a weight, F, to balance the weight of the shaft, and to aid the vertical motion thereof required in marking out the lines of the stair-rails. J represents an arm provided with a measuring-scale, and adjusted to slide through slots in the shaft and in the guide a, which is provided with a set-screw, b. K is a pencil-point holder adjusted on the end of the arm J, and provided with an internal set-screw to secure it in place, and to render it reversible for the purpose of marking on each side of the lumber. L is a rod pivoted on the bolt e, which is the pivotal bolt of the joint of movable end D, and extending through a clamp, d, pivoted to lugs attached to the end of table C, to render the clamp adjustable to any required position in raising and lowering the end of leaf A. This leaf may be made of layers of light

and dark colored wood alternately arranged in parallel lines for convenience to aid in properly adjusting the lumber upon the leaf.

The table C being adjusted in position near the shaft, and leaf A set to the required pitch by the pitch-board B, and secured in position by the rod L in clamp d, the lumber M is placed on the leaf with one edge projecting over the leaf far enough to allow the arm and pencil-holder to sweep under the lumber. And the arm J being set so that the length from the pencil-point to the shaft will correspond with the length of the radius of the well of the stairs, the pencil is moved over the lumber, the shaft sliding vertically to allow the pencil to follow the inclination of the lumber, and thus the inner line of the rail is marked on the top of the lumber, as shown in the drawings. The pencil-holder is then reversed, the shaft moves downward, and the inner line of the rail drawn on the under side of the lumber. The arm J is then moved outward to extend the pencil-point the width of the rail, and the outer line is drawn in like manner as the inner line on the upper and lower sides of the lumber, as shown by dotted lines in the drawing.

To obtain the line of the joint in the rail, the holder K is removed, and the arm is placed at any convenient point on the rail, and a line drawn across it, from which line a line is drawn at right angles with the pitch-line, which gives the line of joint in the rail.

To obtain the "twist" the arm is placed at the end of the rail after it is cut, and a line drawn at the top and bottom of the rail, which show the surplus wood. The arm being always level will give at any point the level of the top and bottom of the rail, and show the surplus wood to be cut away.

To obtain the "vamp" the lumber is adjusted in proper position on the leaf A and movable end D, either before or after working the casement, and then the pencil in holder K is moved over the lumber, thus giving the line of the required curve.

I claim in devices for laying out circular stair-rails—

1. The combination of the adjustable shaft H, weight F, cord *c'*, and pulley G, substantially as and for the purpose described.

2. The automatically-adjustable shaft H, having arm J and pencil-holder K, in combination with adjustable leaf A, end D, rod L, and clamp *d*, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

ALFRED DUDLEY PALMER.

Witnesses:

WM. W. SANBORN,

FRANK P. LEFFINGWELL.