

(No Model.)

C. B. WOODRUFF.  
JOIST CROWNING MACHINE.

No. 413,007.

Patented Oct. 15, 1889.

Fig. 2.

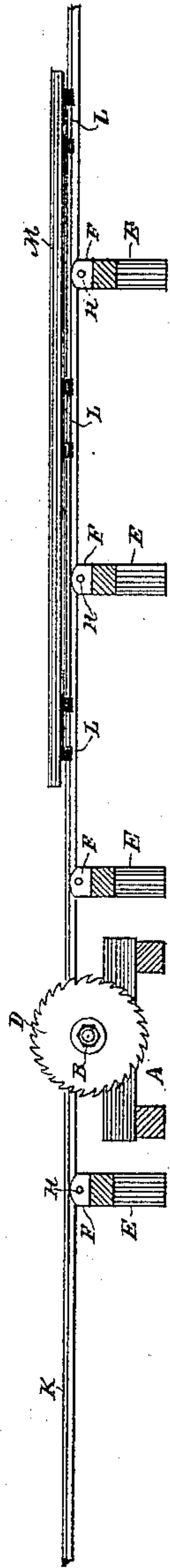


Fig. 6.

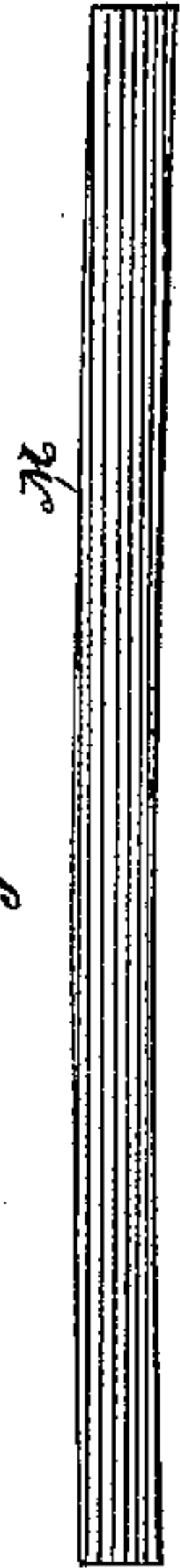


Fig. 1.

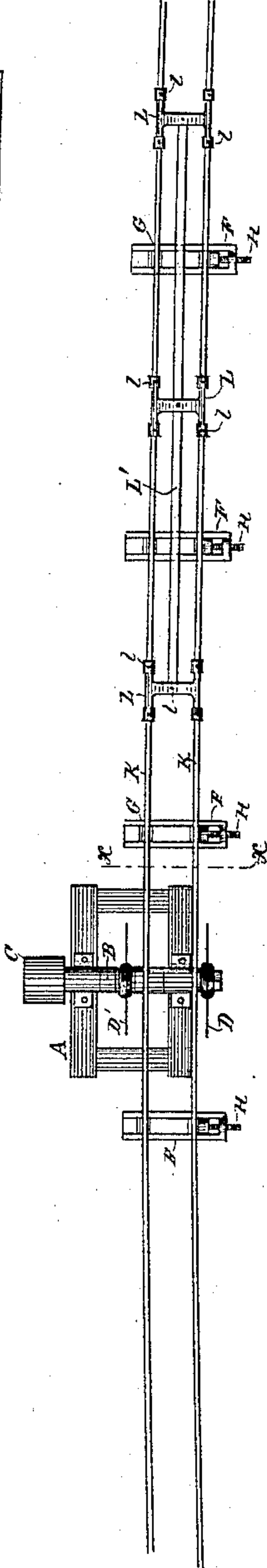


Fig. 3.

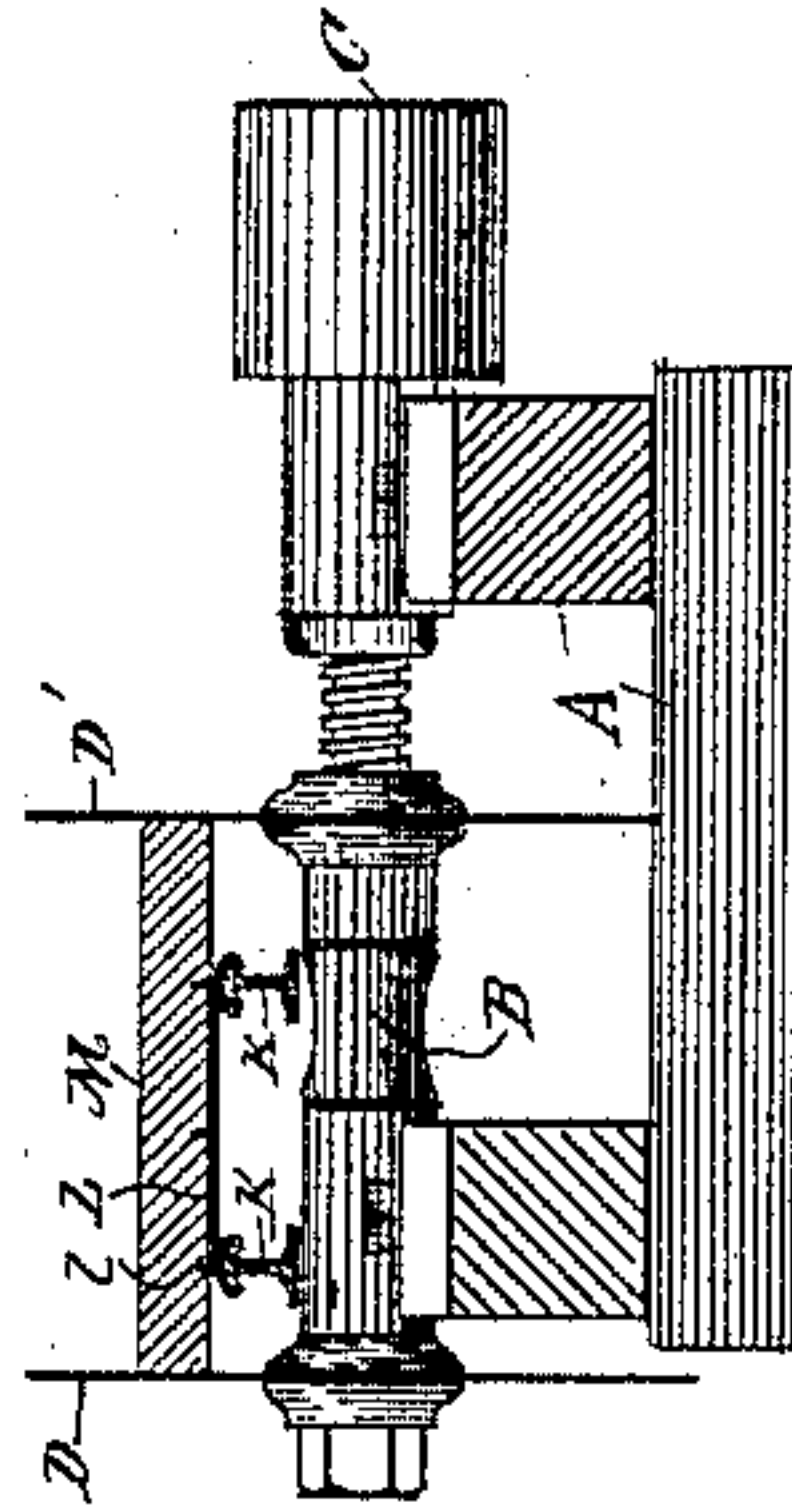


Fig. 5.

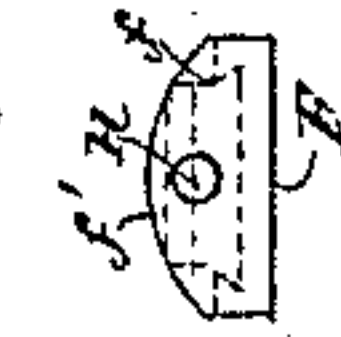
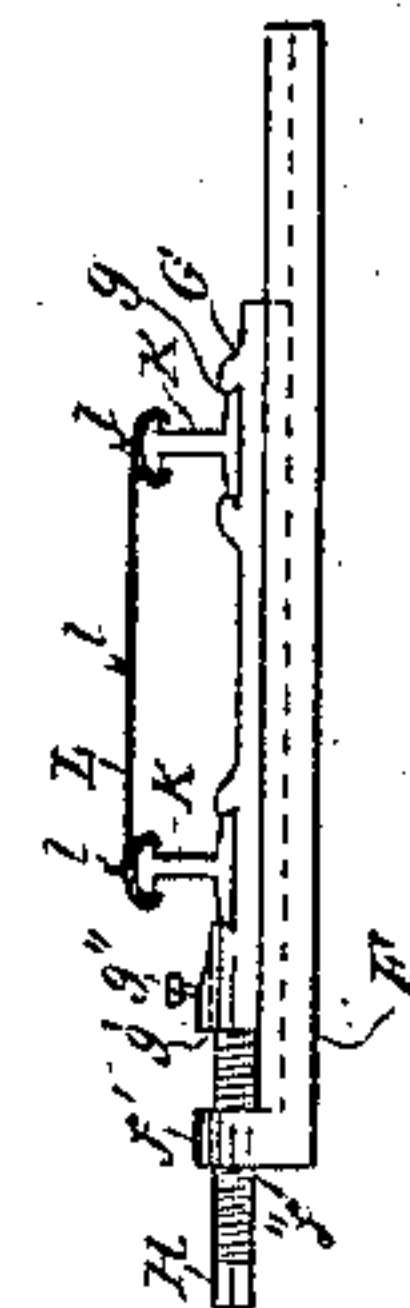


Fig. 4.



Witnesses

A. H. Opsahl.  
Emma F. Elmore

Inventor

Charles B. Woodruff  
By his Attorney  
Geo. F. Williamson

# UNITED STATES PATENT OFFICE.

CHARLES B. WOODRUFF, OF DULUTH, MINNESOTA.

## JOIST-CROWNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,007, dated October 15, 1889.

Application filed December 28, 1888. Serial No. 294,850. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. WOODRUFF, a citizen of the United States, and a resident of the city of Duluth, in the county of St. Louis, State of Minnesota, have invented a certain new and useful Joist-Crowning Machine, of which the following is a specification, reference being had to the accompanying drawings.

10 In the construction of buildings it has for some years been the practice to make provision for the settling or springing of floors under superimposed weight. This end has been accomplished by what is known in the trade as "crowning the floor-joist." In other words, the joists have been made slightly concave on their lower surfaces and convex on their upper surfaces, so that when the center of the floors springs downward under its weight all its parts will be brought to the same level. Hitherto joists have been crowned in this way by hand—a somewhat tedious operation, requiring the expenditure of a large amount of labor.

25 The object of my invention is to do the work by machinery. To this end I provide a fixed saw-frame with one or more saws, preferably circular rip-saws, and through the cutting-plane of these saws I pass a curved track or guide adjustable in curvature to a shorter or longer radius, and on this track I mount a joist-carriage. The carriage is provided with devices for holding the joist in a fixed position. One of the saws is adjustable on its arbor, so that the pair may be supported at any required distance apart to give the proper size to the joist. The carriage is then moved lengthwise of the track, carrying the joist through the saws on a curved line, sizing and crowning the same by a single operation. The track or guide may be single or double and may be rendered adjustable to different curvatures in any suitable way. The carriage may also be of any suitable construction. I preferably use a double track and a sliding carriage closely fitting the top of the rails.

I will now describe my preferred construction in detail.

50 In the drawings, like letters referring to

like parts throughout, Figure 1 is a plan view; Fig. 2, a side elevation; Fig. 3, a cross-section on the line X X of Fig. 1. Fig. 4 is a side elevation of one of the sleepers and ties detached. Fig. 5 is an end view of the same, 55 and Fig. 6 is a plan view of one of the crown-joists.

A is the saw-frame; B, the saw-arbor mounted on the same; C, a pulley on one end of the same for the application of power. 60

D and D' are a pair of circular rip-saws, of which D is fixed and D' is adjustable.

E are a set of supporting-trusses constructed in any suitable way for sustaining the track.

F are metallic sleepers rigidly secured to 65 the top beams of the trusses E, provided on their top surfaces with guides *f* for the sliding tie and an upturned flange *f'* on one end having a screw-threaded hole *f''*.

G is a sliding tie adapted to fit in the guides 70 *f*, provided with rail-seats *g*, a socket *g'*, and a set-screw *g''* in one end for attachment of the screw.

H is a screw working in the lug *f* as a fixed nut and having its inner end attached, so that 75 it will freely turn in the end of the sliding tie G. This attachment may be made in any suitable way, as by an annular groove in the screw H and the set-screw *g''* in the tie G. By turning the screw H the tie may be moved 80 to and fro on the sleepers F.

K are I-shaped iron rails resting in the seats *g* of the sliding ties G.

L is a joist-carriage. This is preferably made of three cross-pieces of sheet metal provided with downturned flanges adapted to span the track and have its flanges engage with the heads of the track-rails. The cross-pieces are tied together at the desired distance apart by a longitudinal bar L', secured there- 85 to by bolts *s*. The upper surfaces are provided with projecting points *l*, adapted to engage the joist and hold it in a fixed position.

It will be readily understood that the track may be moved so as to give any required curvature and any corresponding convexity and concavity to the joist by the adjusting- 95 screws H.

It should be noted that the track or guide rail or rails are either continuous or composed 100



of sections rigidly secured together. This makes a continuous track, and the adjustment to different arcs is accomplished by springing the rails upon themselves. This is a very  
5 material feature in the operation of my machine. Every tie is independent of every other. The sleepers are fixed. In virtue of this special construction the track can be adjusted truly to the exact arcs of different circles. Any other construction—such as short  
10 sections pivotally connected—would never give a true curve, but would only give the lines of a polygon.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination, with a saw-frame provided with one or more saws, of a joist-carriage, a guide, sleepers for supporting said guide, ties mounted on said sleepers, and  
20 means for adjusting said ties, substantially as set forth.

2. The combination, with a saw-frame provided with one or more saws, of a joist-carriage guide constructed of material adapted  
25 to be sprung upon itself to the true arcs of different circles, and means for adjusting said guide to such arcs, substantially as and for the purpose specified.

3. The combination, with a fixed saw-frame

provided with one or more saws, of a joist-carriage guide through the cutting-plane of the saws adjustable to the true arcs of different circles, consisting, essentially, of fixed sleepers, transversely-movable independent ties mounted on said sleepers, and one or more  
35 continuous guiding-rails rigidly secured to said ties, substantially as described.

4. The combination, with a fixed saw-frame provided with the pair of saws, of the joist-carriage track herein described, consisting of  
40 fixed sleepers provided with tie-seats, the transversely-movable ties mounted in said seats, the adjusting-screws for controlling the movement of the ties independently of each other, and the continuous parallel rails rigidly secured to said ties, substantially as described.

5. The combination, with a saw-frame and saws, of track-rails adjustable by flexure to the true arcs of different circles, transversely-adjustable ties in which the rails are seated,  
50 means for independently adjusting said ties, and a carriage movable upon said rails, substantially as set forth.

CHARLES B. WOODRUFF.

In presence of—

WALTER AYERS,

FRANK CRASSVELLER.