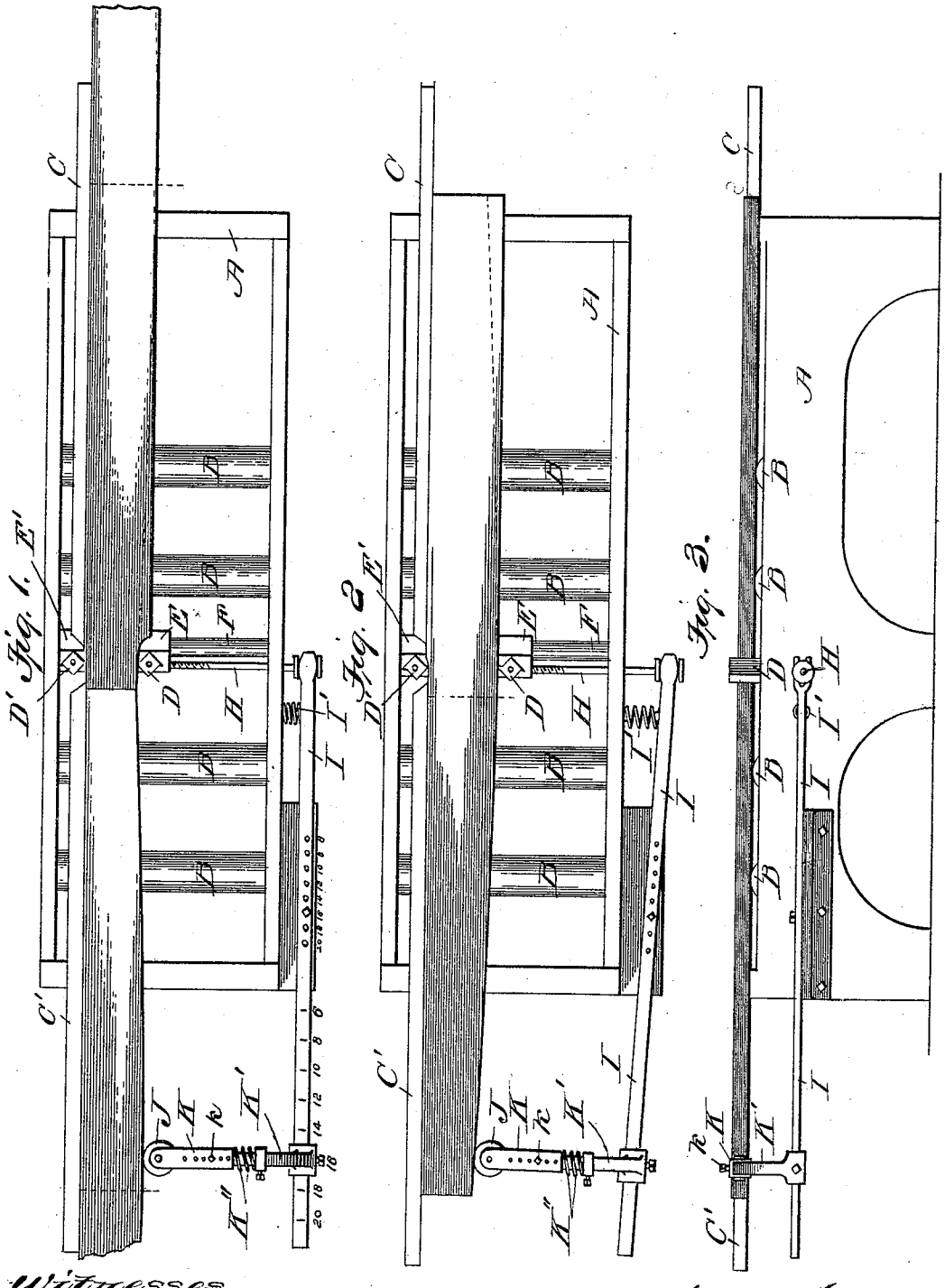
(No Model.) 2 Sheets—Sheet 1.

J. FRIEDRICHS.

MACHINE FOR CROWNING FLOOR JOISTS.

No. 552,360. Patented Dec. 31, 1895.



Witnesses
F. R. Cornwall
Hugh H. Wagner

Inventor
Joseph Friedrichs
by Paul Bakewell
his att'y.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

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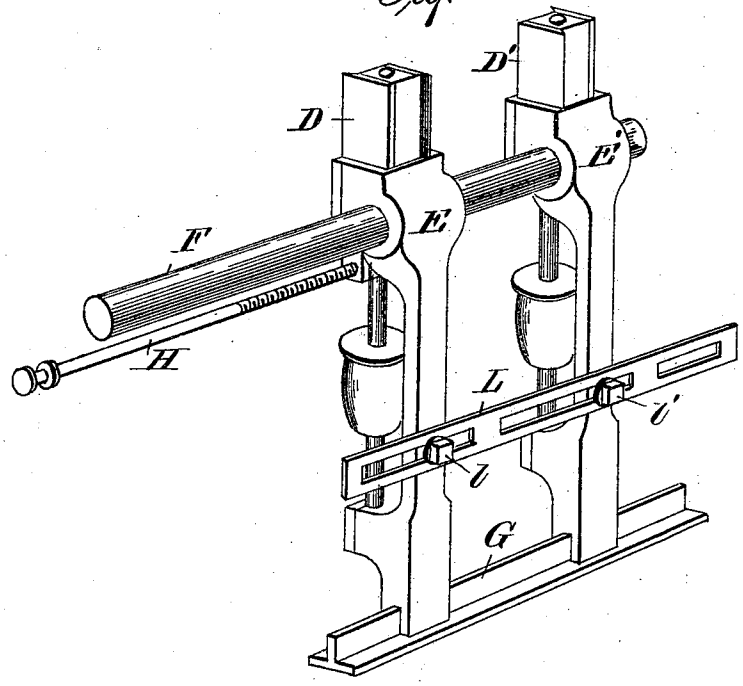
Fig. 4



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UNITED STATES PATENT OFFICE.

JOSEPH FRIEDRICHS, OF ST. LOUIS, MISSOURI.

MACHINE FOR CROWNING FLOOR-JOISTS.

SPECIFICATION forming part of Letters Patent No. 552,360, dated December 31, 1895.

Application filed April 16, 1895. Serial No. 545,900. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH FRIEDRICHS, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Machines for Crowning Floor-Joists, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a top plan view of my improved machine, showing the manner of using the finished or crowned joist as a templet for the joist which is being operated upon. Fig. 2 is a similar view in which one end (the finished end) of the joist acts as a templet for the unfinished end. Fig. 3 is a side elevational view. Fig. 4 is a detail of the cutter-heads and their associate parts.

This invention relates to a new and useful machine for crowning floor-joists, the object being to utilize the finished joist or finished part of joist as a templet for the joist or part of joist to be crowned.

With this object in view, the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates the framing of the machine, B the rollers constituting the bed, and C and C′ the guide-rails.

Slidingly mounted within the machine are two side cutters D and D′, which are mounted in transversely-movable frames E and E′. These frames are preferably mounted upon a bar F, which passes through them near their upper ends, while the bottoms of the frames are grooved and receive a tongue G.

The frame E has connected thereto a rod H, by which said frame is moved transversely. Rod H is preferably screw-threaded into the frame, in order to adjust the cutter-head D transversely the machine, and on the outer end of the rod are arranged collars, between which is received the end of an actuating-lever I. This lever I is of the first order, and is pivoted on a bracket arranged at the side of the machine, and on the other end of the lever is an adjustable arm, consisting of two or more sections, in one of which is mounted a roller J, which bears against a finished joist, or the finished part of a joist, controlling the position of the cutter-head D (or cutter-heads D and D′) through the medium of the lever I and rod H. A spring I′ is arranged between the frame and lever I near the rod H, for forcing the roller J inwardly and the cutter-head D outwardly. It is of course understood that, instead of a spring, a weight could be used, or the spring or weight placed on the other side of the pivot-point. The location and character of the power-medium for controlling the lever I is immaterial, a spring, located as shown, being used only as an illustration.

Lever I is provided with a series of pivot-holes, which are preferably marked to insure the correct position of the pivot-bolt in crowning different lengths of joists. The bracket in which the lever is pivoted is provided with a like number of holes for receiving the pivot-bolt when it is placed in the different holes in the lever. The free end of the lever is also marked with a scale to indicate the position the roller-arm should occupy for different lengths of joists, the position of the roller bearing against the joist as a templet necessarily having to correspond with the pivot-bolt, said pivot-bolt being placed just half the distance between the bearing-point of the roller and the cutting-edge of cutter-head D. In this manner, as the roller travels down the crown of a finished joist, it causes the cutter-head to be moved laterally on the same curves or lines but in an opposite direction, making the first half-crown of an infeeding joist. In other words, when the roller bears against the center of a crowned joist (its thickest part) the cutter-head is making its first cut on an infeeding joist, and this cut forms the narrowest or end part of the crown, as shown in Fig. 1. As the crowned joist leaves the roller, the joist being crowned advancing closely behind the finished joist, will afford a bearing for the roller, and the semi-crowned portion of this joist will act as a templet for the portion to be crowned, as shown in Fig. 2.

The roller J is mounted in a section K which is slidingly and adjustably arranged upon the section K′, in one end of which is formed a bearing or eye to receive the lever I. The sections K and K′ telescope, and in section K

I prefer to arrange a number of holes through which a set-screw *k* passes into a slot in the section K'. A spring K'' is arranged on the section K' and tends to hold the section K and roller J in an outward position, thus making said roller yielding. Through the medium of set-screw *k* roller J may be adjusted to accommodate different widths of joists.

The frames E and E' are slidingly mounted upon the bars F and G, and in order to retain the frame E' in a stationary position or connected with the frame E, I mount in juxtaposition to said frame a slotted bar L, as shown in Fig. 4, which bar may be connected to the frame E or E', or disconnected from said frame, by binding-nuts *l* and *l'*, which pass through the slot into the frame.

If it is desired to retain both cutter-heads D and D' in a stationary position, the rod H is disconnected, or the lever I removed, and the nuts *l* and *l'* tightened. Another binding-nut is used to connect the bar L to the framing A of the machine, whereby the two cutter-heads may be adjusted transversely the machine. If it is desired to crown one side of the joist, as shown in Figs. 1 and 2 of the drawings, the rod H is connected to the frame E and the cutter-head D adjusted to its proper position, the bolts *l* having first released bar L. The lever I is placed in position and the pivot-bolt thereof arranged in its proper opening. The sections K and K' are adjusted so that the roller J will space off the proper width, and said parts are slid along the lever I to their proper position, according to the length of the joist to be crowned. In first starting the machine, a templet is used as a guide for the first semi-crown. After first half of the joist has been crowned, the crowned joists act as templets for the joists to be crowned, as before described. Should it be desired to crown both sides of the joist, the proper space is determined between the cutting-edges of the cutter-head D and D', bolts *l* and *l'* tighten, and the bar L released from the framing A. Frames E and E' with their cutter-heads D and D' will now move coincidently, cutter-head D crowning one side and cutter-head D' concaving the opposite side.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my invention could be made and substituted for those herein found and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a movable cutter-head, of a lever of the first order for moving said cutter-head, said lever bearing at one end against the finished joist or finished part of the joist; substantially as described.

2. In a machine for crowning floor joists, the combination with a movable cutter head, of a lever of the first order, having one end connected to the cutter head, and a roller on the other end of the lever for bearing against the curved or crowned part of a finished joist or joist being crowned, for actuating the lever and moving the cutter in a reverse direction from that communicated to one side of the lever by the roller; substantially as described.

3. In a machine for crowning floor joists, the combination with a movable cutter head, of a lever of the first order for moving said cutter head, and a yielding bearing mounted upon the opposite end of the lever for contacting with the finished stock and communicating an opposite movement to the cutter head from initial movement of the yielding bearing; substantially as described.

4. In a machine for crowning floor joists, the combination with a movable cutter head, of a spring-pressed lever of the first order for moving said cutter head, one end of said lever being connected to the cutter head, and the other end being adapted to bear against the finished stock; substantially as described.

5. In a machine for crowning floor joists, the combination with a movable cutter head, of a lever of the first order having one end connected to said cutter head, the other end of said lever bearing upon the crowned or partly crowned portion of a joist, and a spring or equivalent power for exerting a tendency to withdraw the cutter head away from the joist being crowned; substantially as described.

6. In a machine for crowning floor joists, the combination with a movable cutter head, of a lever of the first order for moving said cutter head, a spring or its equivalent which bears against one end of the lever and exerts a tendency to force the cutter head away from the stock, and a spring-pressed roller mounted on the other end of the lever and adapted to bear against the stock; substantially as described.

7. In a machine for crowning floor joists, the combination with a movable cutter head, of a lever of the first order for moving said cutter head, one end of said lever being connected to the cutter head, an adjustable fulcrum for said lever, and an adjustable bearing mounted on the rear end of the lever for contacting with the stock, said bearing being adjustable longitudinally the lever and toward and from the lever; substantially as described.

8. In a machine for crowning floor joists, the combination with a movable frame, of a cutter head mounted in the frame, a lever of the first order, and adjustable connections between one end of said lever and the frame, by which said frame is moved when the lever is actuated, said lever being actuated by its other end which bears upon the stock; substantially as described.

9. The combination with a movable cutter-head, of a lever of the first order for moving said cutter-head, said lever having an adjustable fulcrum whereby it may be adapted for different lengths of joists, and said lever

bearing at one end against the crown of the finished joist or finished part of the joist, the distance of the bearing point of the lever against the joist from the cutter-head, being one-half or about one-half the length of the joist to be crowned, the other end of the lever being connected to the cutter head for moving the same; substantially as described.

10. In a machine for crowning floor joists, the combination with a movable frame, of a cutter head mounted in said frame, an adjustable threaded rod mounted in said frame, a lever of the first order for actuating said rod and frame, and a roller adjustably mounted on the other end of the lever for contacting with the stock and actuating the lever; substantially as described.

11. The combination with one or more movable frames, means for locking one or both of said frames to the framing of the machine, or releasing said frames from the framing of the machine and locking them to each other, cutter heads mounted in said frames, and a lever of the first order for moving one or both of said frames, the rear end of said lever being adapted to bear upon the stock; substantially as described.

12. The combination with a movable frame, of a cutter-head mounted therein, a lever of the first order for moving said frame and cutter-head, a spring or equivalent means which exerts a tendency to force the cutter-head away from its work, a bearing-point which is adjustably mounted on the rear end of said lever and which is adapted to contact with or bear upon the crown portion of the joist, a spring for forcing said bearing point in yielding contact with the joist, and means for limiting the thrust or movement of said spring-pressed bearing point; substantially as described.

13. The combination with one or more movable frames, means for moving one or both of said frames, and means for locking one of said frames, or both of said frames to the framing of the machine, or releasing said frames from the framing of the machine and locking them to each other; substantially as described.

14. The combination with two frames mounted to slide transversely the machine, cutter-heads mounted in said frames, and a bar L which is adapted to lock one or both of the frames to the framing of the machine, or release said frames from the framing of the machine and lock the frames together; substantially as described.

15. In a machine for crowning floor joists, the combination with a laterally movable cutter-head, of a lever for moving said cutter-head laterally, and a bearing point mounted on the lever near the rear end of the machine, said parts being located upon the same side of the work, and said bearing point being adapted to contact with the shape previously given to the joist by the cutter head, whereby as said bearing point follows the shape of the finished joist or part of joist, it causes said cutter-head to duplicate said shape or curve on the same joist or the succeeding joist; substantially as described.

16. In a machine for crowning floor joists, the combination with a movable cutter head, of a fulcrumed lever for moving the same, said lever being connected on one side of its fulcrum to said cutter head, the rear end of the lever at the other side of its fulcrum bearing against the crown of the finished joist or finished part of the joist, whereby, as the finished joist is leaving the machine, the last half of the crown of a finished joist acts as a pattern for the first half of the crown of the succeeding joist, and the first half of the crown of the joist being crowned, acts as a pattern for the last half of the crown of said joist; substantially as described.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 30th day of March, 1895.

JOSEPH FRIEDRICHS.

Witnesses:
F. R. CORNWALL,
HUGH K. WAGNER.