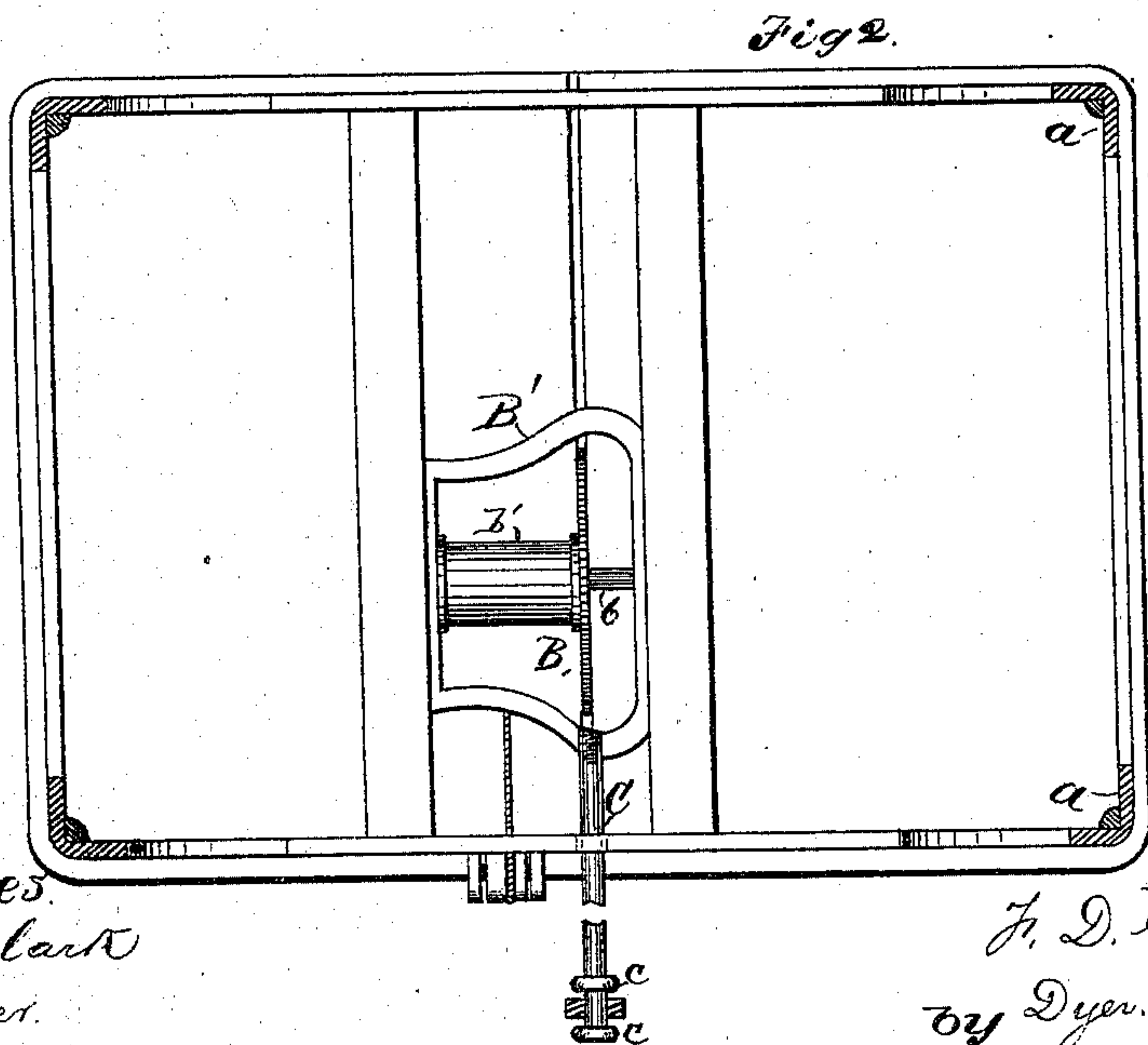
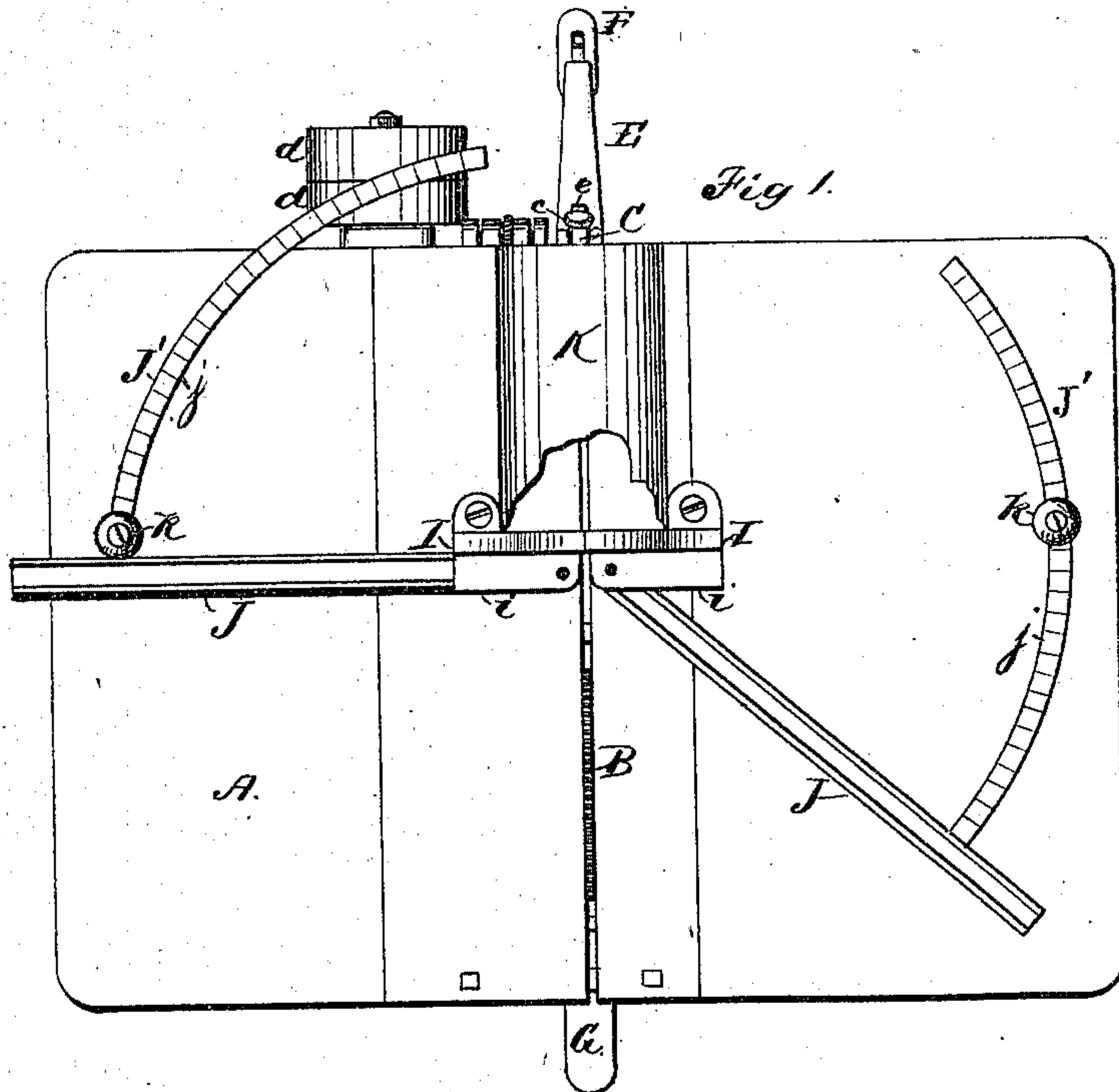


F. D. GREEN.

Improvement in Machines for Cutting Miters.

No. 131,949.

Patented Oct. 8, 1872.



Witnesses:  
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G. K. Dyer.

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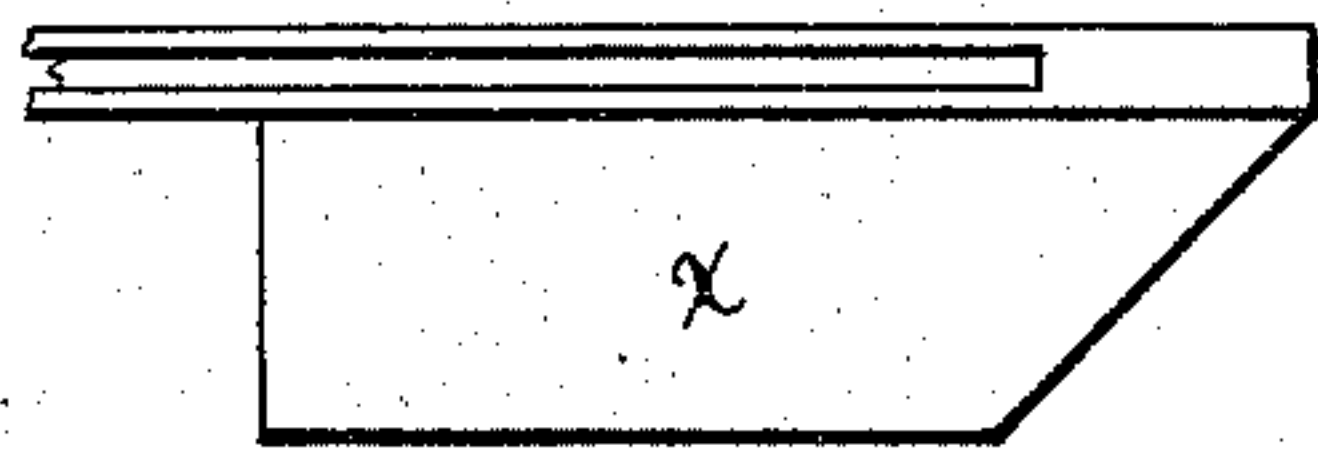
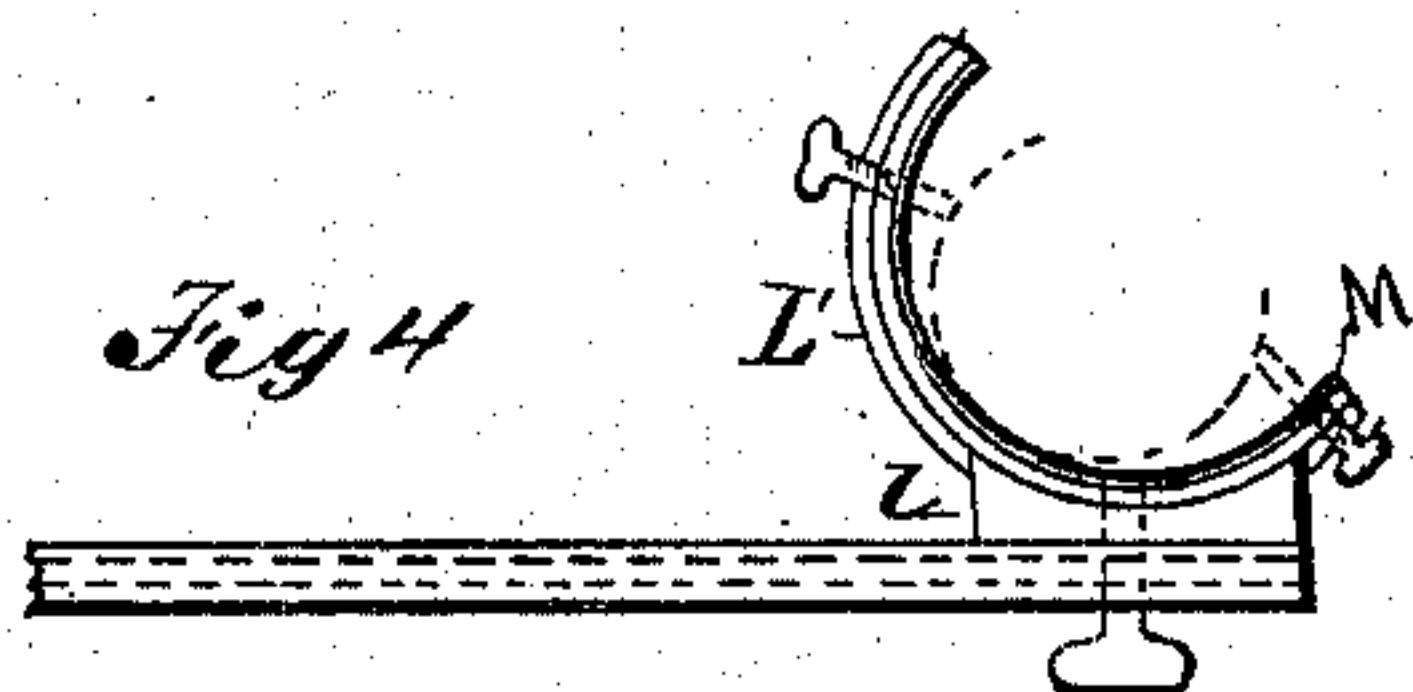
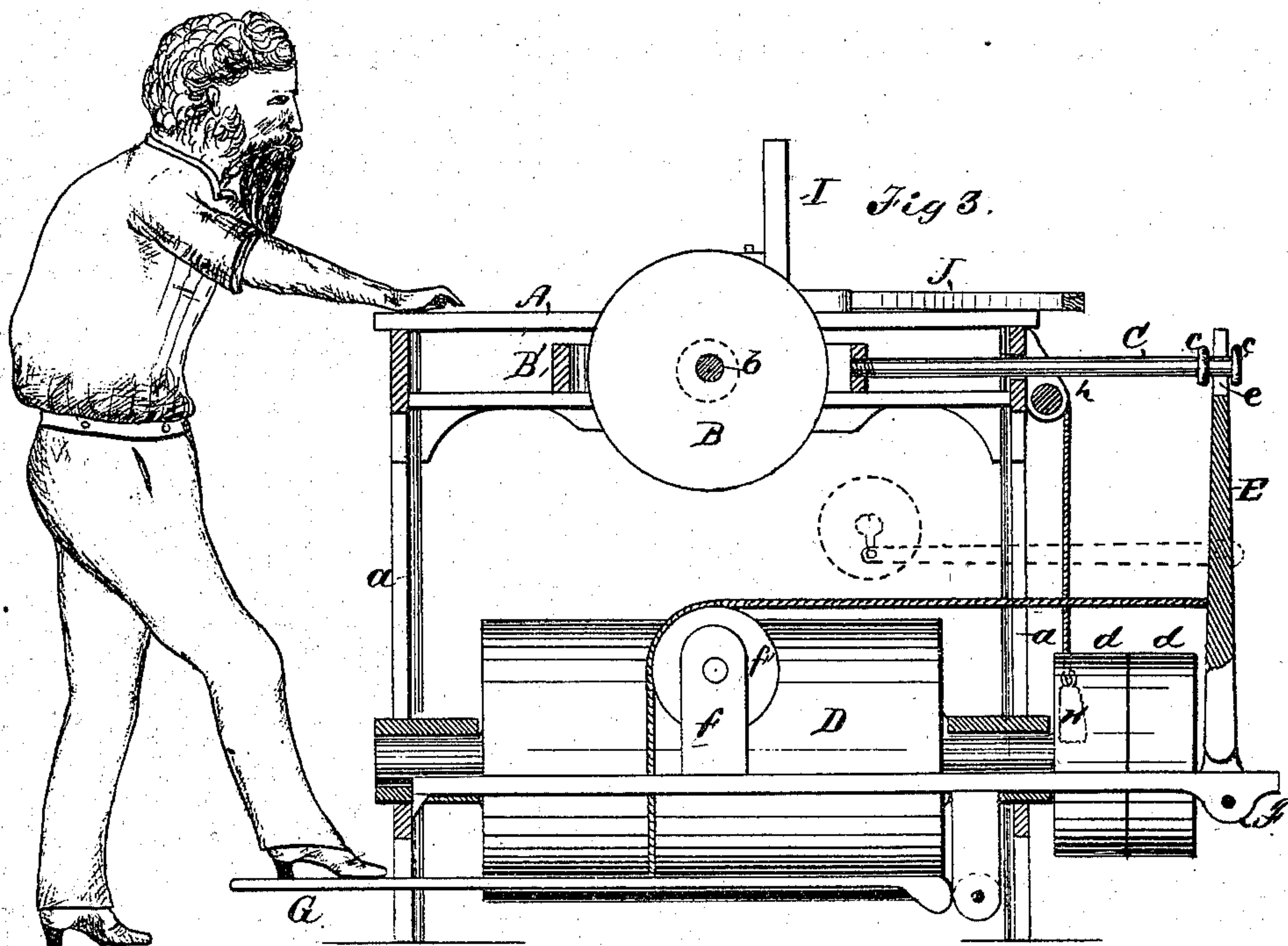


Fig. 6.

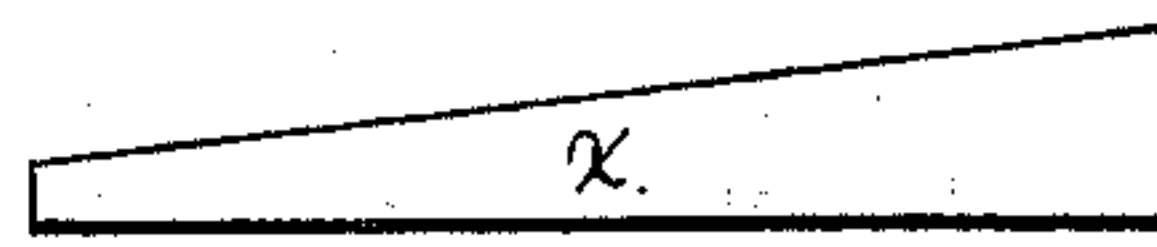
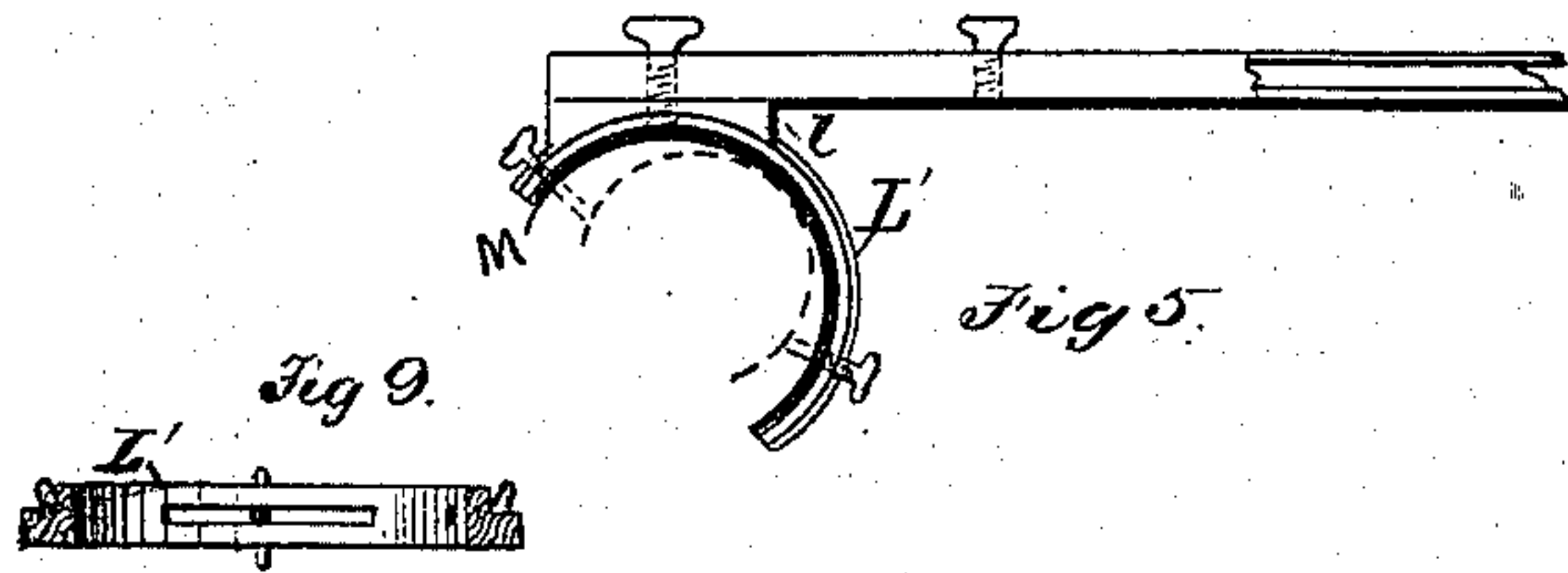
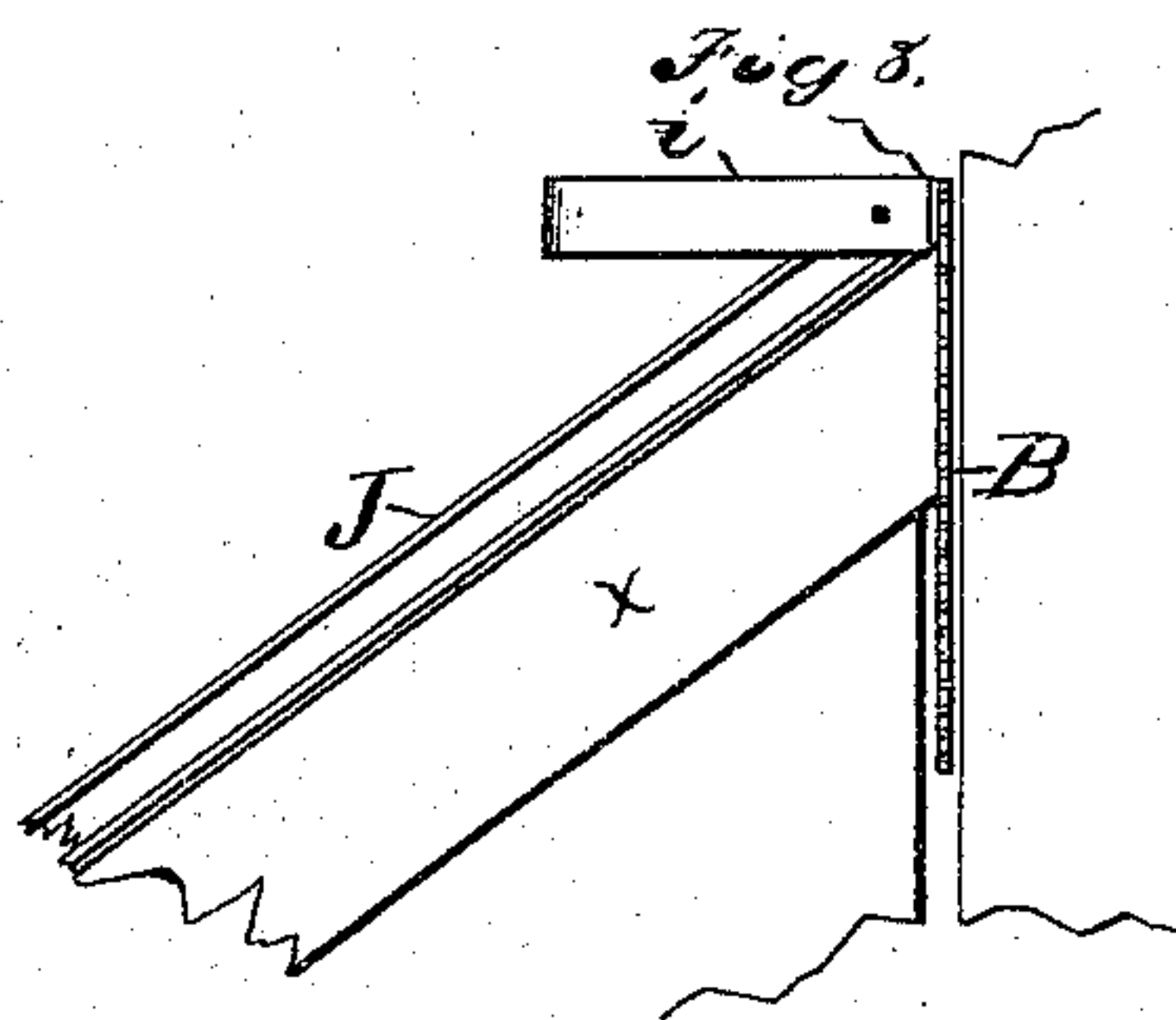


Fig. 7.



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# UNITED STATES PATENT OFFICE.

FRANCIS D. GREEN, OF WILLIAMSPORT, PENNSYLVANIA.

## IMPROVEMENT IN MACHINES FOR CUTTING MITERS.

Specification forming part of Letters Patent No. 131,949, dated October 8, 1872.

*To all whom it may concern:*

Be it known that I, FRANCIS D. GREEN, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Machines for Cutting Miters; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention is a machine especially designed for sawing miters, but adapted for other work; which consists mainly in the combination of a saw having a reciprocating movement with a table provided with pivoted gage-bars. It further consists in the employment of a rod for communicating motion to the saw-frame, which rod is rigidly held from movement otherwise than in a longitudinal direction; and also in certain details of construction, and in the machine as an entirety, as will be fully described hereinafter.

In the drawing, Figure 1 represents a plan view of my improved machine, a portion of the shield adapted to cover the saw when not in operation broken away to show the table beneath; Fig. 2 represents a plan view of the table reversed; Fig. 3 represents a sectional elevation; and Figs. 4, 5, 6, 7, 8, and 9, views of attachments designed for various purposes, as will be described hereinafter.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and manner of operation.

A represents the table of the machine, constructed of any proper size, which is supported in place by any suitable legs or standards *a a*, as shown. B represents the saw, hung upon a suitable shaft, *b*, turning in proper bearings in the frame *B'*, and provided with a pulley, *b'*, Fig. 2, upon which runs a belt, communicating motion from the drum D. The saw-frame is adapted to reciprocate in proper guide-ways secured beneath the table, and has rigidly attached to it, in any suitable manner, the connecting-rod C, which latter, extending through a guide-opening in the table-frame, is loosely connected to the operating-lever E, as shown. This connection is made by means of flanges *c c*, which extend, one upon each side of the forked lever, over the edges of the slot *e*. This

slotted lever is pivoted at its lower end to the bar F, secured to the frame-work of the machine, which bar also supports, at any proper point, the standard *f* which sustains the pulley *f'*, as shown. G represents a foot-treadle, the front end of which extends outward, within convenient reach of the operator who is using the machine, its rear end being pivoted to a suitable block attached to the frame-work. This treadle is connected to the lever E by means of a rope or chain passing through a suitable opening in the bar F and over pulley *f'*, as shown in Fig. 3. H represents a suitable weight, which is attached to the saw-frame by a proper rope or chain passing through a hole in the frame-work and over the pulley *h* attached to the side of the frame. The drum D is attached to a suitable shaft hung in bearings in the frame-work and provided with the fast and loose pulleys *d d*. I I represent standards of corresponding form, which are secured, preferably, by flanges and bolts to the table upon each side of the central opening in which the saw moves, each standard being recessed slightly to permit the saw to move freely between them. These standards may be readily removed from the table at any time by loosening the securing-bolts. J J represent gage-bars, pivoted at one end to the flanges or ribs *i i* of the standard I upon each side of the line of the saw's movement, as near to it as is possible. The front ends of the bars are held in any desired position by means of the curved bars *j*, which are themselves held by means of set-screws in the slotted standards *k k*. The bars *j*, it will be observed, are spaced with distance-marks, by means of which the gage-bars J can be accurately secured at any desired angle. K represents a removable shield adapted to cover the saw when not in operation and protect the person of the workman and others from injurious contact with it.

The operation of the machine, when arranged as described, will now be set forth. Power is communicated from any suitable source to the driving-pulley, from which it is conveyed to the pulley *b'* on the saw-shaft by means of the belt running from the drum D. For making square cuts the gage-bars J are swung back against the standards I I, at right angles to the line of the saw's movement, and the lumber being laid against them is cut in any de-



sired length by bringing the rapidly-revolving saw forward, which result is accomplished by means of the foot-treadle and its connections, as before described. Suitable adjustable stops may be attached to the gage-bars J, if desired, for indicating the proper length. If it is desired to cut ordinary miter-joints, each gage-bar J is set at an angle with the central line in which the saw moves of forty-five degrees. The molding is then laid against one of the gage-bars with its inner end crowded to the central line between the gages, and the saw being brought forward by depressing the treadle a proper cut is made. By turning the molding end for end and laying it in a similar manner against the other gage-bar, the other end is also properly cut. If the piece of lumber to be cut is flat upon each surface, both ends may be cut by the same gage-bar by turning the piece end for end after the first end is cut, and by turning it over also, so that its former lower surface is upon the upper side. By swinging one of the gage-bars J forward, so that it is parallel with the central line in which the saw moves, lumber may be ripped, if desired, into narrow widths. By means of a machine thus constructed string-boards for stairs may be readily cut. This result may be accomplished by removing one of the standards I with its gage-bar, and by setting the other gage at the proper angle. When the lumber is placed against the gage-bar, all the lines which correspond in direction may be cut by successive movements of the saw and lumber, and by turning the pieces over end for end the other lines of the angle which correspond may also be cut.

The gages described are adapted for holding lumber having straight sides. For the purpose of holding lumber of other forms, either circular or oval, I employ the semicircular bars L, which, by means of a slot and set-screw, are adjustable upon the block l of the bars L', which latter are adjustably secured by bolts to the main gage-bars.

For the purpose of adapting the molding to frames of different sizes the spring M is employed, which, being secured only at the center, has its ends adjusted by means of set-screws, as shown. By means of this construction circular or oval forms can be cut with the same facility as straight-sided forms.

If it is desired to cut a board with its edges inclined at an angle from the vertical line, this may be accomplished by the employment of the inclined form X, which is securely held to one of the gage-bars. A double bevel also may be cut—that is, the edge of the board may be made inclined—and it may have also the usual angle given to miters, or any other angle, by the employment of the form X, and by adjusting the gage-bar to which it is attached to make the desired angle.

The boards of the table immediately over the saw-frame are made removable, so that the saw is made easily accessible when it is necessary to get at it. The employment of the long drum D permits the belt which communicates power to the pulley on the saw-shaft to travel freely forward and back with the movement of the saw-frame, this result being made possible also by giving the belt a half twist.

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

1. The combination of the reciprocating saw with the supporting-table and pivoted gage-bars, substantially as described.
2. The combination of the pivoted gage-bars J, the indicating-bars J' with the standards I I, and slotted standards k k, as shown and described.
3. The combination of the main gage-bars J with the supplemental holders L' provided with the adjustable spring M, adapted for circular and oval forms, substantially as shown and described.
4. The combination of the foot-treadle G, the operating-lever E, the connecting-rod C, and the saw-frame B', as and for the purpose shown and described.
5. The machine described, consisting of the table A, reciprocating saw B, gage-bars J, drum D, and pulley b', when constructed, arranged, and operating substantially as described.

This specification signed and witnessed this 12th day of September, 1872.

FRANCIS D. GREEN.

Witnesses:

COLUMBUS CHOATE,  
G. K. DYER.