

(Model.)

A. MALM.
Paper-Cutting Machine.

No. 227,803.

Patented May 18, 1880.

Fig. 3.

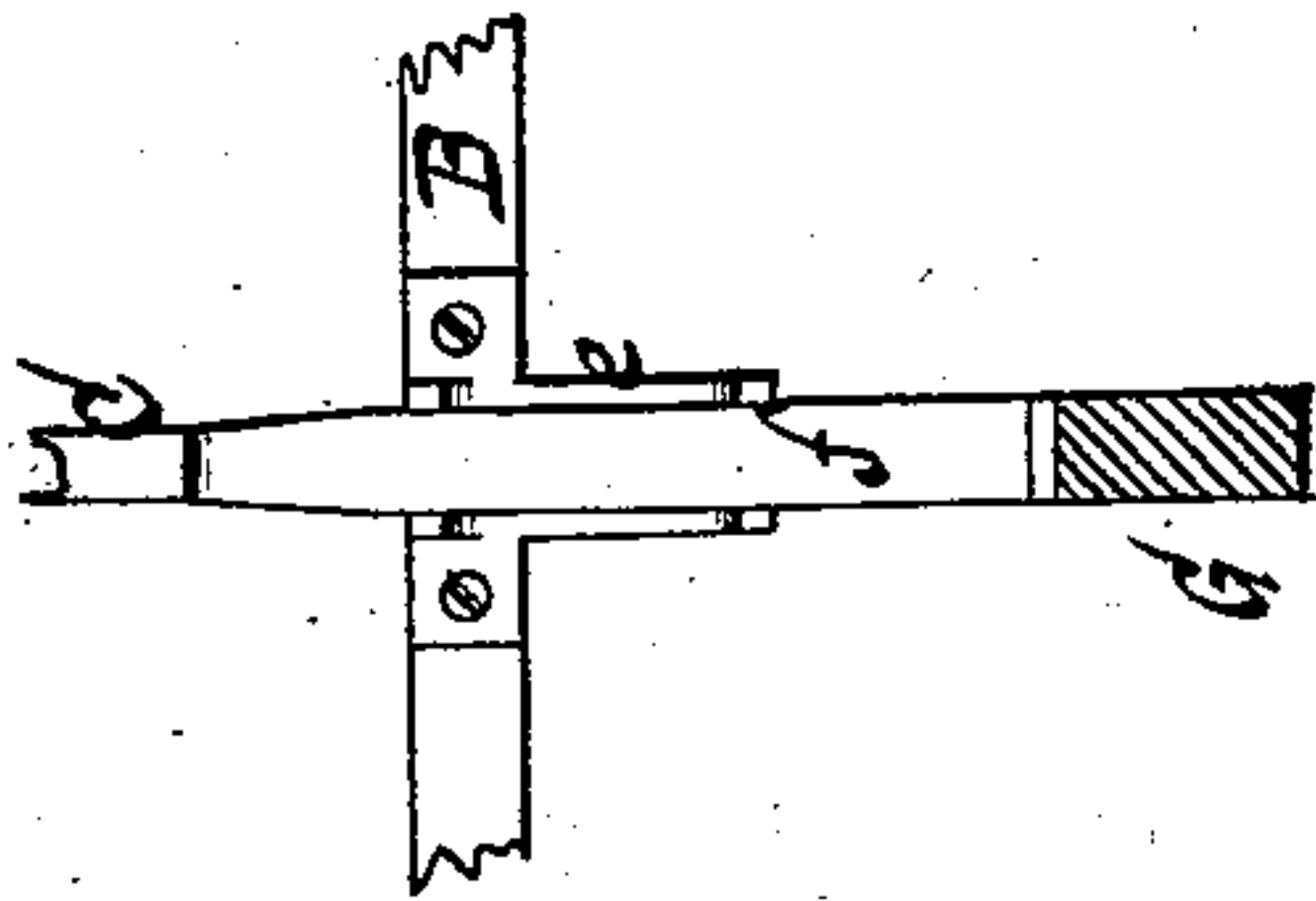


Fig. 2.

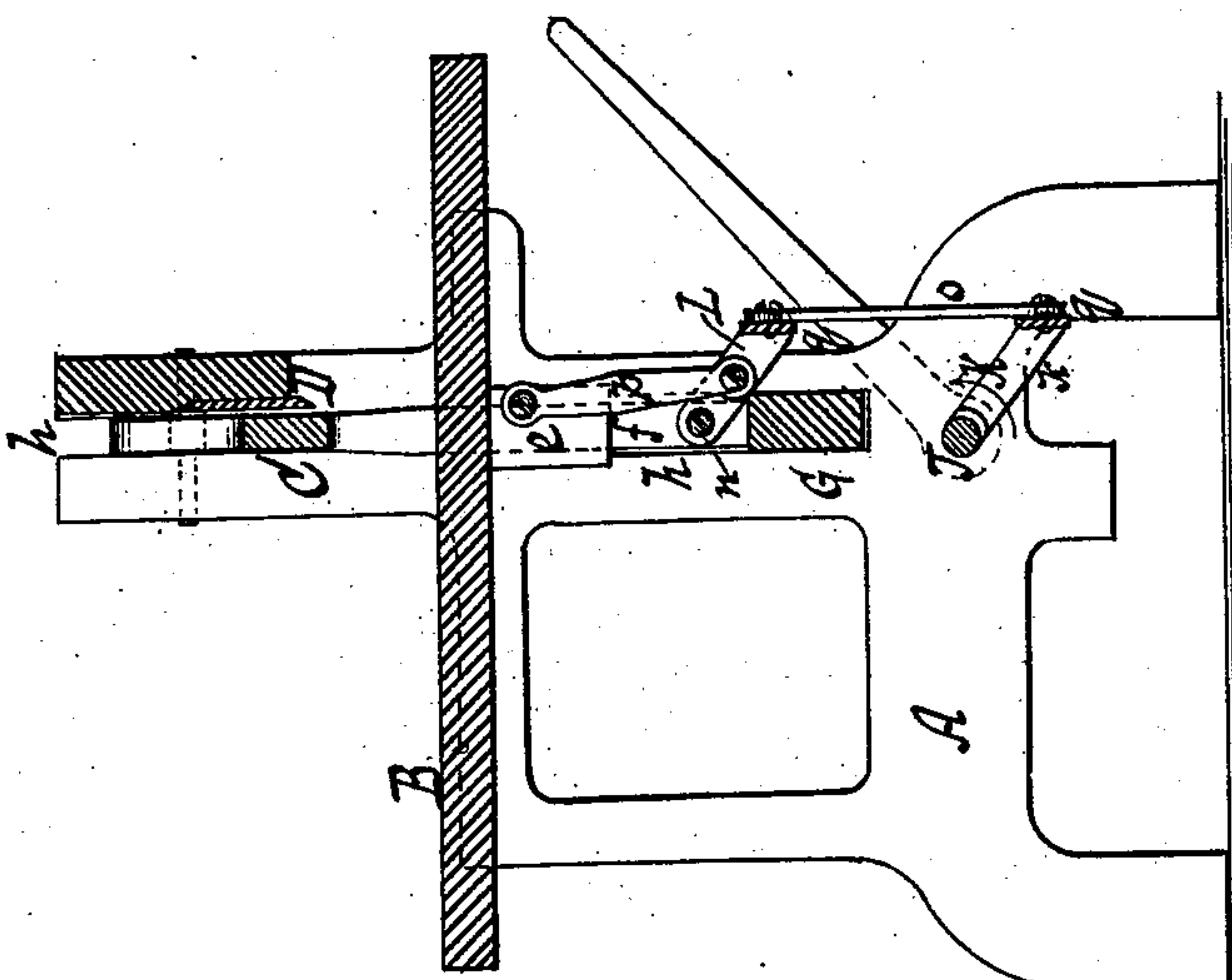
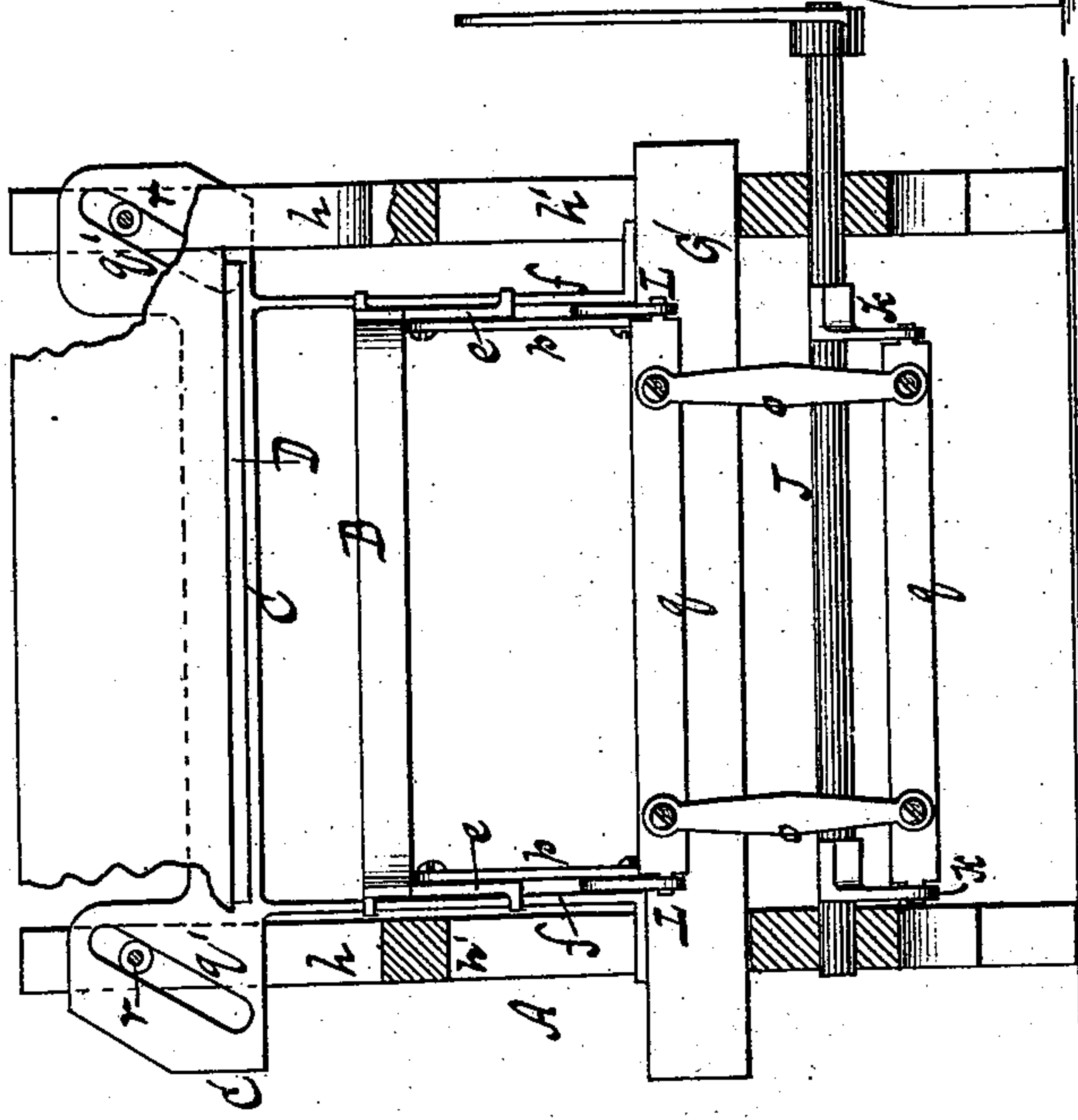


Fig. 1.



Witnesses
Otto Stufelund
William Muller

Inventor
Alexander Malm
by Van Genterwood & Rauff
his attys

UNITED STATES PATENT OFFICE.

ALEXANDER MALM, OF BROOKLYN, NEW YORK.

PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 227,803, dated May 18, 1880.

Application filed March 10, 1880. (Model.)

To all whom it may concern:

Be it known that I, ALEXANDER MALM, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Paper-Cutting Machines, of which the following is a specification.

Heretofore machines for cutting paper have had combined in them a table adapted to be raised and lowered with respect to a reciprocating knife, said table being connected with a clamp by suitable gearing in such a manner that the table and the clamp were caused to move simultaneously toward or from each other for the purpose of clamping the material to be cut or for releasing it when cut.

My invention consists in combining with the movable clamp arranged above the movable table of a paper-cutting machine a stationary knife which is located above the table and mechanism for elevating the table and the paper thereon, said mechanism serving to elevate the table and the material thereon without imparting any movement to the clamp until the table or material thereon comes in contact with the clamp, automatically causing the clamp to bear upon the material to be cut and to ascend with the table, during which latter operation the mechanism for elevating the table and the mechanism for operating the clamp act jointly on the table and clamp, thereby subjecting the paper to the action of the stationary knife with the resistance offered by the paper to the action of the knife reacting on the clamp. With the parts enumerated are combined oblique guides, whereby the table and clamp are caused to move simultaneously in an inclined plane.

This invention is illustrated in the accompanying drawings, in which Figure 1 shows a machine, partly in front view and partly in section, embodying my invention. Fig. 2 is a vertical cross-section thereof, and Fig. 3 a detail view.

Similar letters indicate corresponding parts.

In the example shown in the drawings the letter A designates the machine-frame; B, the table; C, the clamp, and D the knife. The table B is located between the sides of the machine-frame A, but is detached therefrom, and to the opposite ends of the table are at-

tached slides *e e*, engaging vertical guide-bars *f f*, which, together with a cross-piece, G, constitute the clamp-frame. Both the clamp C and the cross-piece G of its frame are fitted in vertical slots *h h* or *h' h'* in the machine-frame, the clamp being located above the table and the cross-piece below the same. By the described arrangements of the table B and the clamp C they are both rendered movable.

The knife D is attached to a cross-head, I, on the upper part of the machine-frame, so that it is stationary, and, like the clamp, is located above the table.

In the normal positions of the parts the lower or bearing edge of the clamp C is below the cutting-edge of the knife D, so that if the table moves upward it or the paper resting thereon strikes the clamp before it is subjected to the action of the knife.

In connection with the table B and clamp C, I employ a lifting mechanism, consisting of a rock-shaft, J, crank-arms *k k*, secured to the shaft, levers L L, having their fulcrum on pivots *n n* in the clamp-frame, and links *o o p p*, whereby the levers connect with the crank-arms and table respectively. The links *o o* connect both with the levers L L and the crank-arms *k k* through a horizontal bar, *q*, hung in the levers and arms, as shown in Fig. 1, and the links *p p* connect with the table through the slides *e e*. The fulcrum of the levers L L are at one end thereof, and the links *o o* connect therewith at the opposite end, while the links *p p* are connected to an intermediate portion of the levers.

When the rock-shaft J is turned in the direction of the arrow shown in Fig. 2 the levers L L are thereby swung in an upward direction on their pivots *n n*, and act on the table B to lift the same. The table rises on the guide-rods *f f* in the clamp-frame, and when the paper resting on the table comes in contact with the clamp C the latter is thereby displaced and rises with the table, the paper being at the same time forced up against the cutting-edge of the knife D, so that the lifting mechanism acts on the table only until the clamp is brought into play, and thereafter acts jointly on the table and clamp. As the levers L L are swung upward they exert a downward pressure upon their fulcrum *n*, and since the lat-

ter are in the clamp-frame the levers have a tendency to draw the frame downward, thereby tightening the clamp. Now, when the paper meets with the edge of the knife D it offers a resistance to the action thereof, and hence the work to be performed by the levers L L is increased at that stage of the operation. This increased work of the levers L L causes an increased downward pressure thereof on their fulcrum *n*, and it follows that the resistance offered by the paper to the action of the knife reacts on the clamp.

In the end parts of the clamp C are oblique slots *q' q'*, whereby the clamp engages rollers *r r*, arranged in the slots *h h* of the machine-frame. These oblique slots *q' q'*, together with the rollers *r r*, form guides, whereby the table B and clamp C are caused to follow an inclined plane in their simultaneous movement, the result of which is that the knife has a shearing action.

The mechanism herein described can also be applied to machines having a movable knife operated by a lever; but this feature forms the subject-matter of a separate application for patent, and I do not, therefore, give a detailed description thereof herein.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a paper-cutting machine, of a movable clamp and a stationary knife arranged above a movable table with a lifting mechanism, such as described, for elevating the table independently of the clamp, and mechanism, such as described, for operat-

ing and causing the clamp to bear upon the material to be cut by the material coming in contact with the clamp when the table and clamp ascend together, and the operating mechanism jointly acts on the table and clamp, thereby subjecting the paper to the action of the knife, with the resistance offered by the paper to the action of the knife reacting on the clamp, as set forth.

2. The combination, in a paper-cutting machine, of a movable table, a movable clamp, and a stationary knife, both the clamp and knife being located above the table, and a lifting mechanism, substantially as described, which acts on the table independently of the clamp until the paper resting on the table comes in contact with the clamp, and which thereafter acts jointly on the table and clamp, thereby subjecting the paper to the action of the knife, with the resistance offered by the paper to the action of the knife reacting on the clamp, and oblique guides whereby the table and clamp are caused to move simultaneously in an inclined plane, as set forth.

3. The combination, with the table B and clamp C, of the rock-shaft J, having the crank-arms *k k*, levers L L, and links *o o p p*, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALEXANDER MALM.

Witnesses:

CHAS. WAHLERS,
E. F. KASTENHUBER.