(No Model.)

2 Sheets—Sheet 1.

A. MALM.

PAPER CUTTER.

No. 474,341.

Patented May 3, 1892.

Fig. 2.

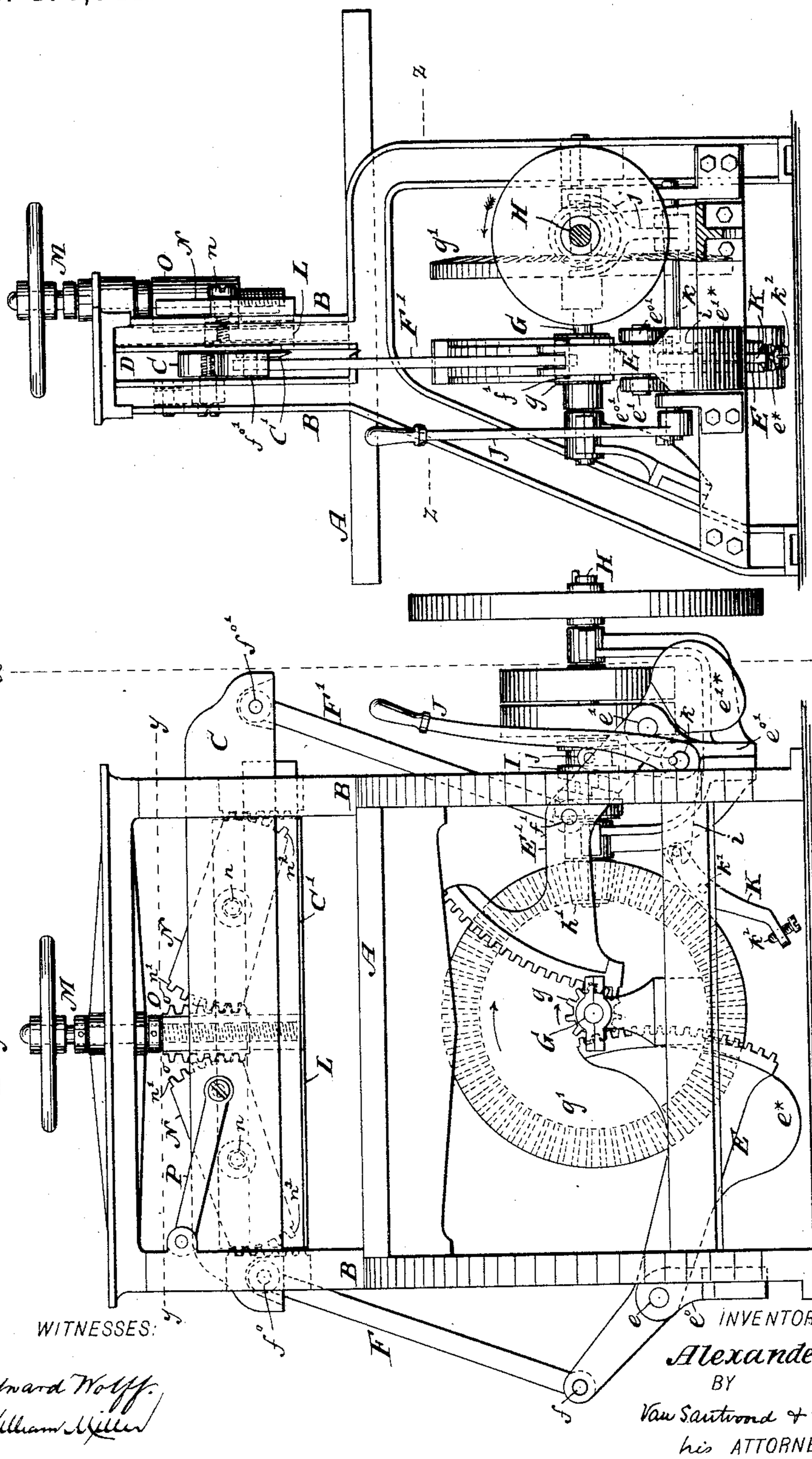

Fig. 1.

WITNESSES:

Edward Wolff.

William Miller

INVENTOR:

Alexander Malm.

BY

Van Santvoord & Hauff

his ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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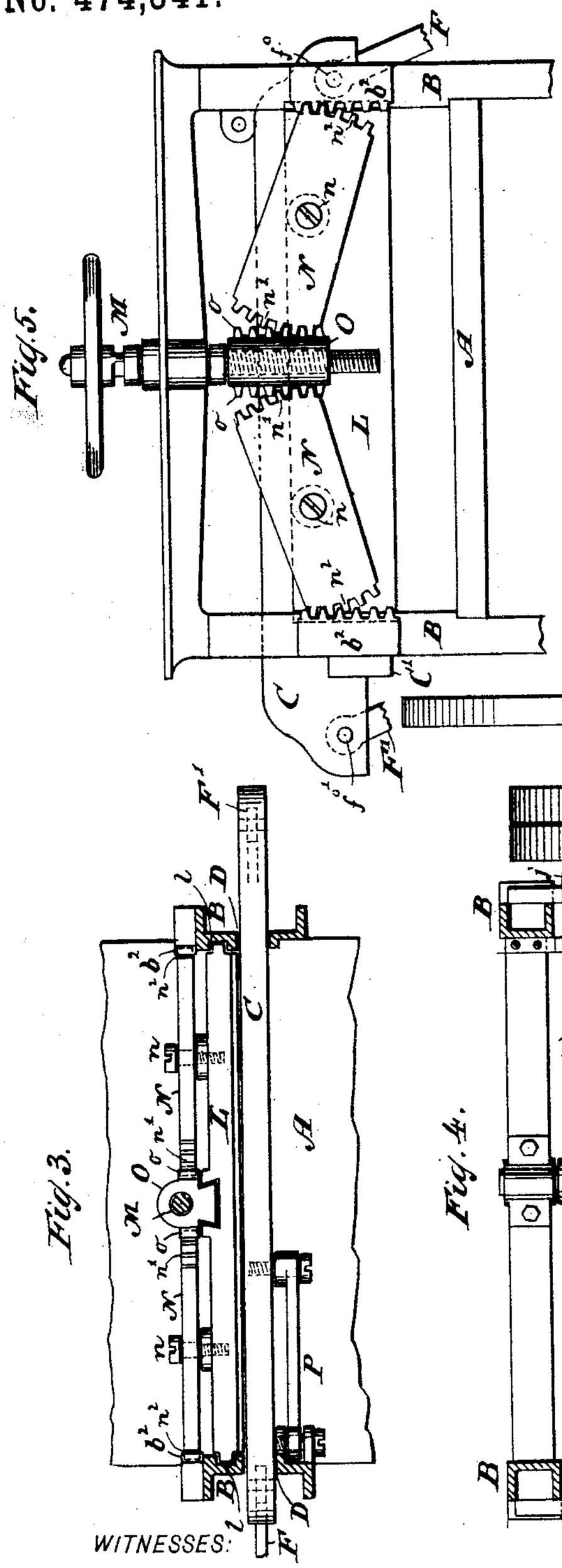

Fig. 5.

Fig. 3.

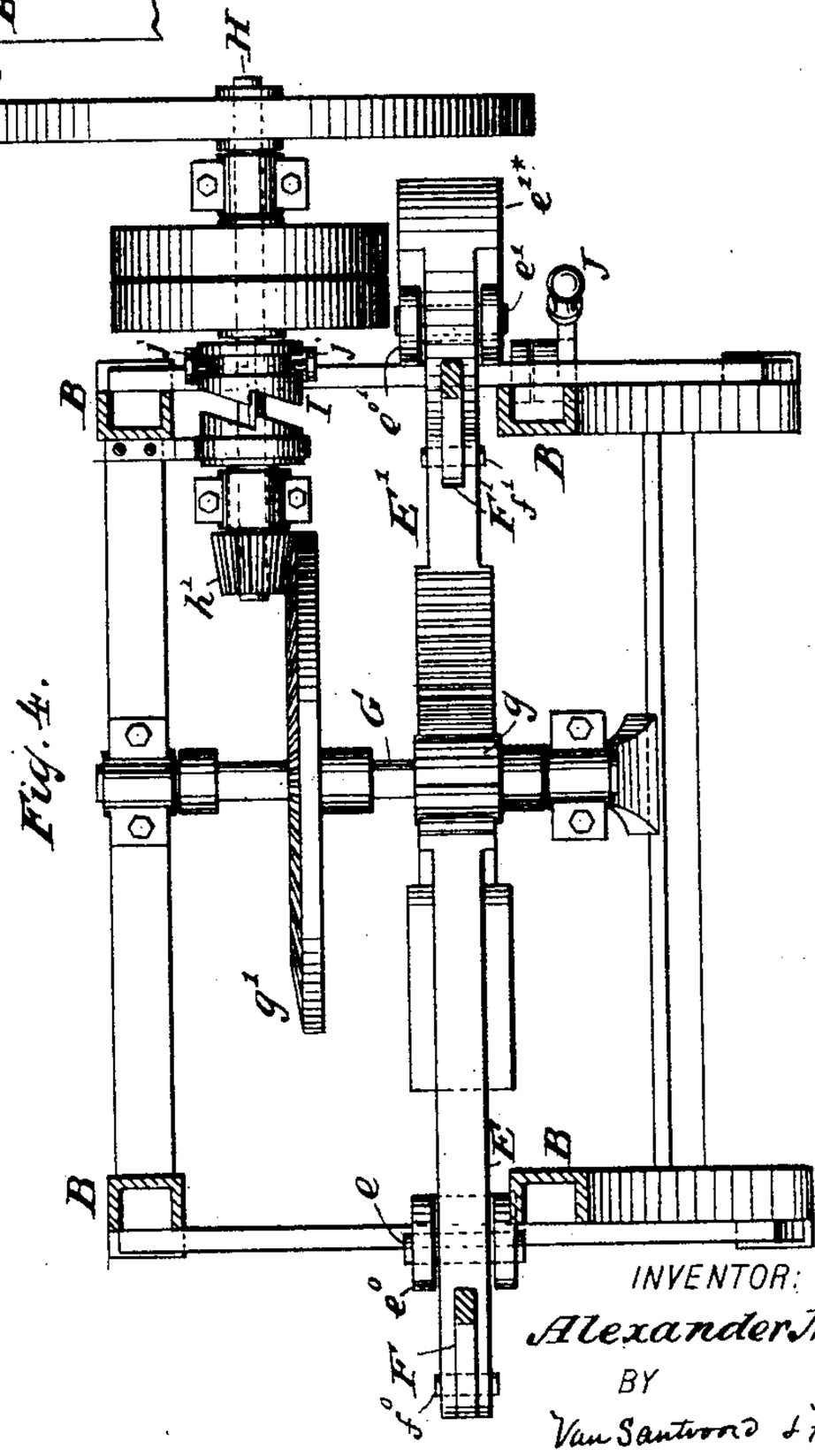

Fig. 4.

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UNITED STATES PATENT OFFICE.

ALEXANDER MALM, OF NEW YORK, N. Y.

PAPER-CUTTER.

SPECIFICATION forming part of Letters Patent No. 474,341, dated May 3, 1892.

Application filed February 4 1892. Serial No. 420,333. (No model.)

To all whom it may concern:

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

This invention relates to paper-cutting machines; and it consists in certain new features and combinations described in the following specification, and specified in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is an end view of the machine, partly in section, on the section-line *x x* of Fig. 1. Fig. 3 is a horizontal section on the line *y y* of Fig. 1. Fig. 4 is a horizontal section on the line *z z* of Fig. 2. Fig. 5 is a rear view of the upper part of the machine, including the table.

The letter A designates the table of the machine on which the paper to be cut is placed and which is permanently fixed in the frame B of the machine.

C is the cutter-head, which carries a knife C′ in the usual manner and is moved in slots D in the ends of the frame, motion being imparted to the cutter-head by means of segment-levers E E′, which connect with said cutter-head by rods F F′. The segment-lever E has its fulcrum on a pivot *e*, secured in a bracket *e*°, and the rod F is connected to said lever by a pivot *f* and to the cutter-head by a pivot *f*°. The segment-lever E′ has its fulcrum on a pivot *e*′, secured in a bracket *e*°′, and the rod F′ connects with said lever by a pivot *f*′ and with the cutter-head by a pivot *f*°′; or, in other words, the rod F connects with the segment-lever E at its outer end and the rod F′ connects with the segment-lever E′ at a point between the pivot *e*′ and its inner end.

The inner ends of the segment-levers E E′ are in engagement with a shaft G, which is geared with the driving-shaft H. In the example shown in the drawings the engagement of the levers E E′ with the shaft G is effected by means of a pinion *g*, which is firmly mounted on said shaft and which engages cogs formed on the segmental inner ends of the levers E E′, and the engagement between the shafts G and H is effected by a bevel-wheel *g*′, mounted on the shaft G, and a bevel-pinion *h*′, which is loosely mounted on the shaft H and can be thrown into engagement with the same by a clutch mechanism I. This clutch mechanism can be actuated by a hand-lever J, and it is thrown automatically out of engagement by two levers *i j*, which are firmly mounted on a rock-shaft *k*, the lever *j* being forked and made to engage the clutch-sleeve I, (best seen in Figs. 1 and 2,) while the lever *i* engages the upper end of a lever K, which has its fulcrum on a pivot *k*′, secured in the frame B.

In the lower end of the lever K is secured a set-screw k^2, which is situated in the path of the segment-lever E′. When the pinion *g* is turned in the direction of the arrow marked near it in Fig. 1, the inner end of the segment-lever E is moved upward and that of the segment-lever E′ is moved downward, and consequently the cutter-head C is moved down, and the knife is caused to cut through the material placed on the table A. When the knife has descended to the required depth, the segment-lever E′ strikes the lever K, and the clutch-sleeve is thrown out of engagement, so that the movement of the shaft G stops. The moment when this takes place it can be adjusted by the set-screw k^2. From this description it will be seen that the set-screw k^2 forms a tappet, which when actuated by the segment-lever E′ serves to stop the motion of the shaft G. In Fig. 1 the clutch-sleeve is out of engagement and the lever K occupies its lowest position. When the shaft G is to be started, the clutch-sleeve is thrown into engagement with the pinion *h*′, and thereby the levers *i j* are actuated and the lower end of the lever K is raised to such a position that when the inner end of the segment-lever E′ descends it strikes the tappet k^2 and depresses the lower end of the lever K, so as to throw the clutch-sleeve out of engagement as soon as the knife has descended to the required point. The segment-levers E E′ are formed in such a manner that when the knife has been depressed to the desired point and the shaft G is thrown out of engagement with the driving-shaft H said segment-levers return automatically to the position shown in Fig. 1. For

this purpose the part e^* of the lever E is made very heavy and a heavy weight e'^* is attached to the outer end of the lever E′. A link P, pivoted at one end to the cutter-head and at its opposite end to the frame, serves to impart to the knife a shear cut.

L is the clamping-bar, which is guided in grooves *l l*, Fig. 3, formed in the frame B, and which engages a screw-spindle M, by means of which it can be raised and depressed. The means which I have devised for the purpose of transmitting the movement of the screw-spindle to the clamping-bar consist of two levers N N, which are connected to the clamping-bar by pivots *n n*, and the inner ends of which are in engagement with the screw-spindle, while their outer ends are in engagement with the frame. For this purpose the ends of the levers N N are made in the form of toothed segments n' n' n^2 n^2, and on the screw-spindle is fitted a nut O, provided with cogs *o o*, which engage the segments n' n' of the levers N N, and on the frame B are formed cogs b^2 b^2, which engage the cogs n^2 n^2 of the levers N N. (See Fig. 5.) It is obvious that the nut O may be left off and the inner ends of the levers N N may be made to engage directly the screw-thread of the spindle M. If this spindle is turned in the proper direction, the inner ends of the levers N N are depressed and the clamping-bar is moved downward toward the table A. At the same time the clamping-bar is firmly retained in position parallel to the table by the cogs n^2 n^2 and the pivots *n n*, so that if a book or other article should be placed upon the table A close to the frame B and the clamping-bar is depressed said article is exposed to a uniform pressure throughout its entire surface, the clamping-bar being prevented from assuming an oblique position in regard to the table A. The power exerted by the screw-spindle upon the clamping-bar may be changed by placing the pivots *n n* closer to or farther from the outer ends of the levers N N.

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

1. The combination, with the table A, frame B, and cutter-head C, of the segment-levers E E′, the rod F, extending from the outer end of the segment-lever E to the cutter-head, the rod F′, extending from a point between the pivot *e′* and the inner end of the segment-lever E′ to the cutter-head, the shaft G, means for gearing this shaft with the segment-levers E E′ and with the driving-shaft H, and a clutch mechanism I for throwing the shafts G and H in or out of engagement, substantially as described.

2. The combination, with the table A, frame B, and cutter-head C, of the segment-levers E E′, the connecting-rods F F′, the shaft G, geared with the segment-levers and with the driving-shaft H, the clutch mechanism I, and the tappet-lever K, geared with the clutch mechanism and having a free end portion arranged in the path of the segment-lever E′ to actuate the clutch mechanism when the knife has descended to the desired point, substantially as described.

3. The combination, with the table A, the frame B, the clamping-bar L, and the screw-spindle M for depressing the clamping-bar, of two levers which engage the clamping-bar at points between their ends and the frame B at their outer and the screw-spindle at their inner ends, substantially as described.

4. The combination, with the table A, the frame B, the clamping-bar L, and the screw-spindle M, of the nut O, provided with cogs *o o*, and the levers N N, pivoted to the clamping-bar between their ends and provided with cogs n' n' to engage the nut O and with cogs n^2 n^2 to engage cogs b^2, formed on the frame B, substantially as described.

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

ALEXANDER MALM.

Witnesses:
WM. C. HAUFF,
E. F. KASTENHUBER.