

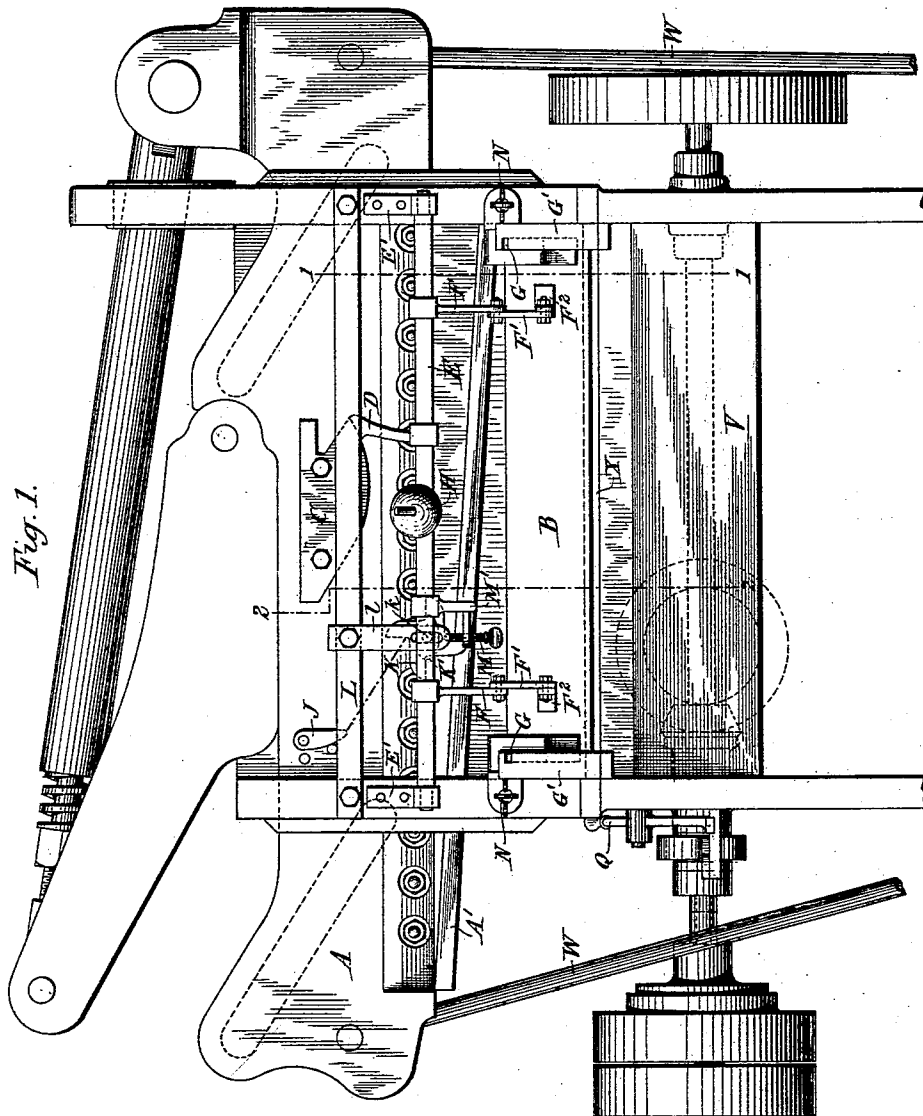
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6 Sheets—Sheet 1.

L. U. GILL.
GUILLOTINE PAPER CUTTING MACHINE.

No. 450,147.

Patented Apr. 14, 1891.



WITNESSES:

John Peckert
Hed White

INVENTOR:

Leonard Unsett Gill,

By his Attorneys:

Arthur C. Brasen & Co.,

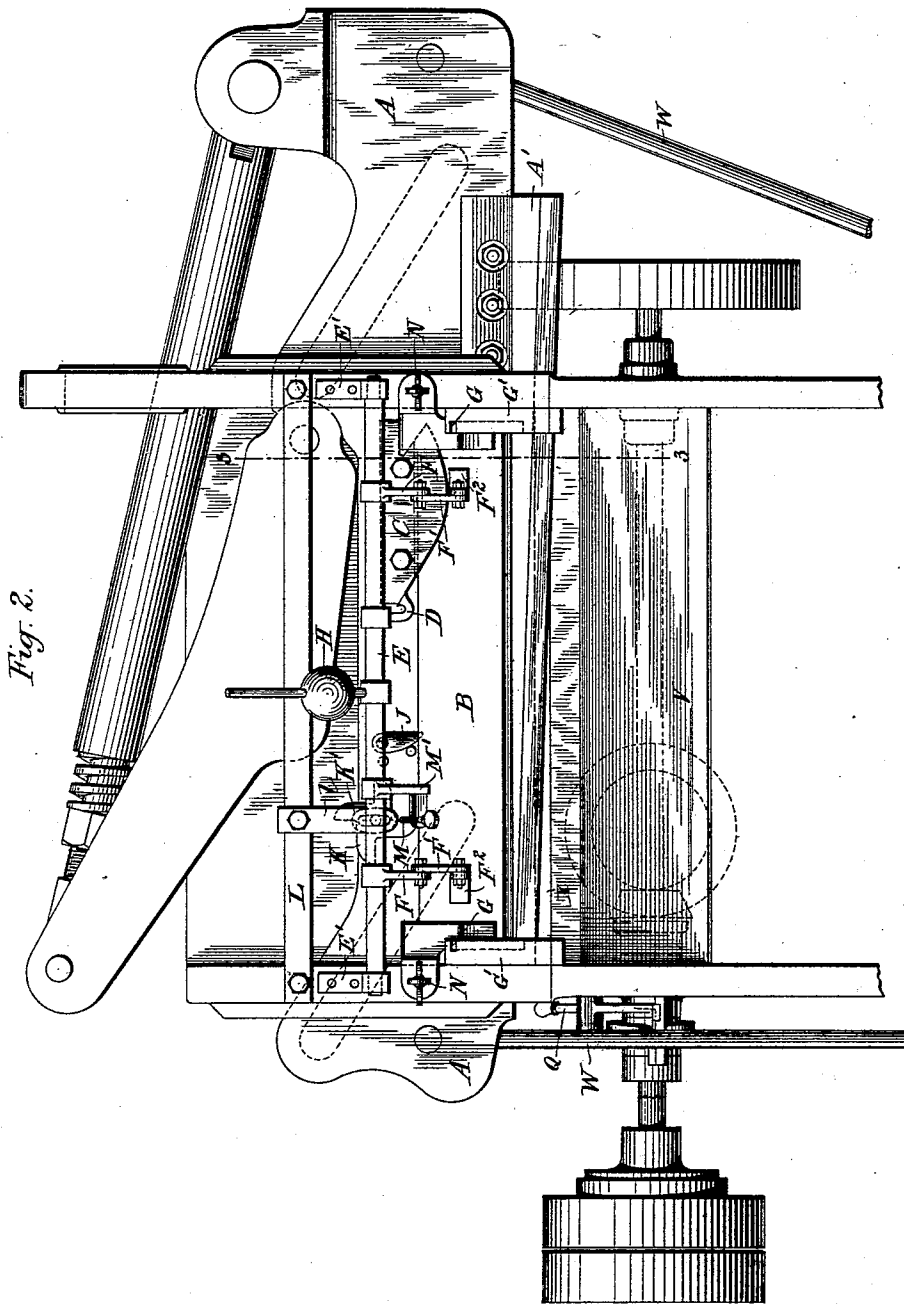
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WITNESSES:

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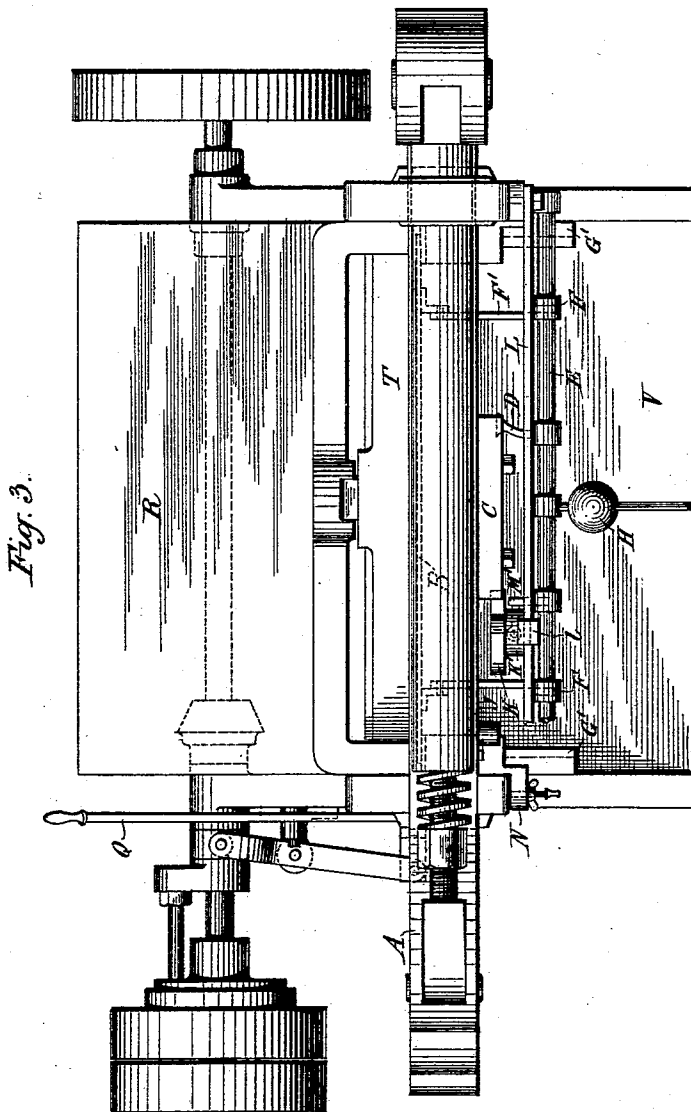
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L. U. GILL.
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WITNESSES:

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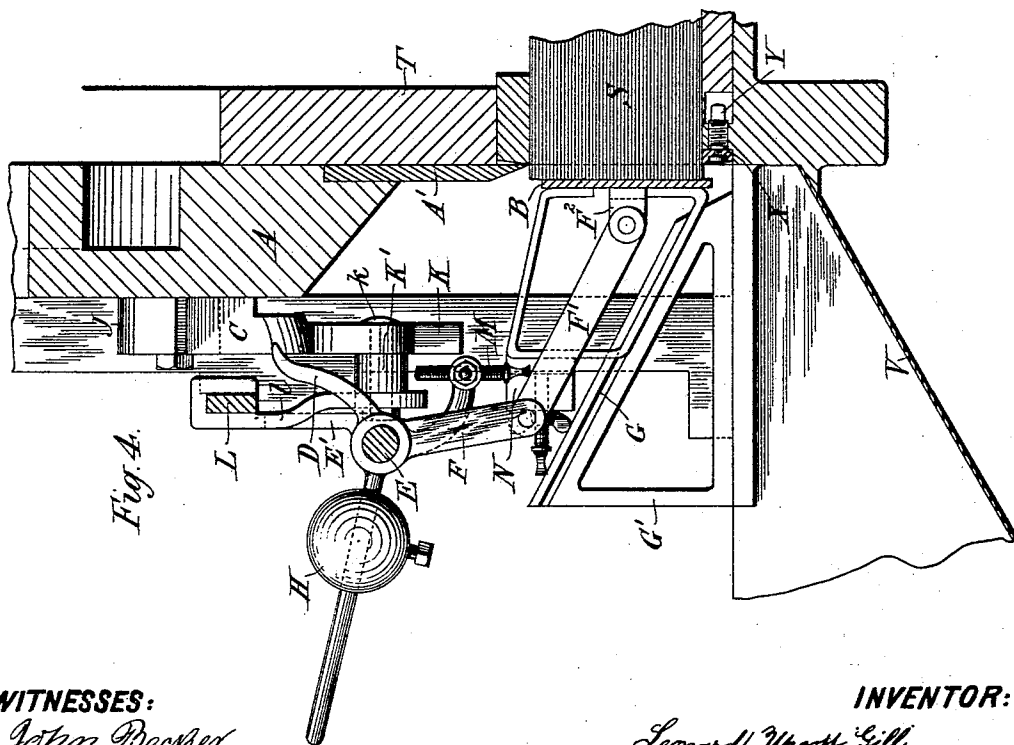
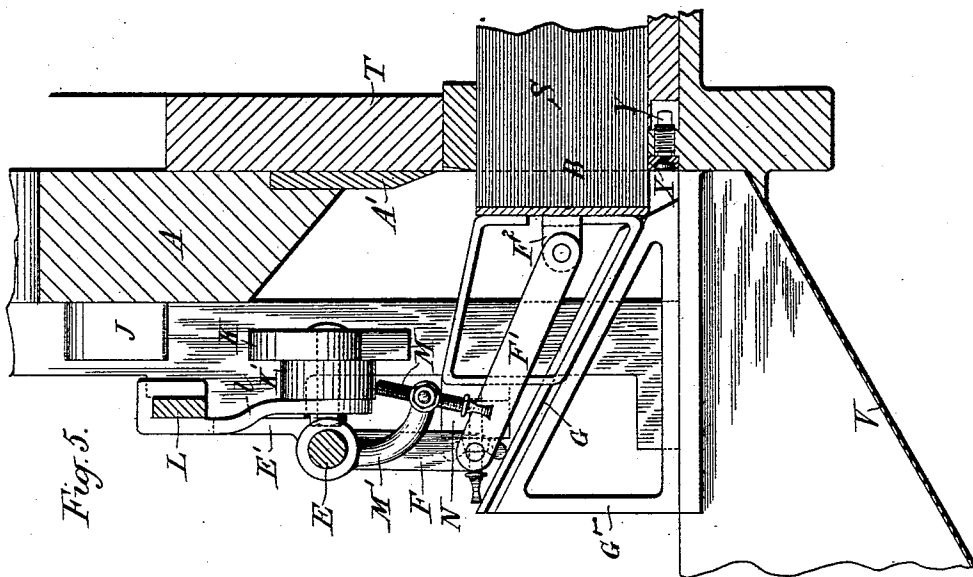
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6 Sheets—Sheet 4.

L. U. GILL.
GUILLOTINE PAPER CUTTING MACHINE.

No. 450,147.

Patented Apr. 14, 1891.



WITNESSES:

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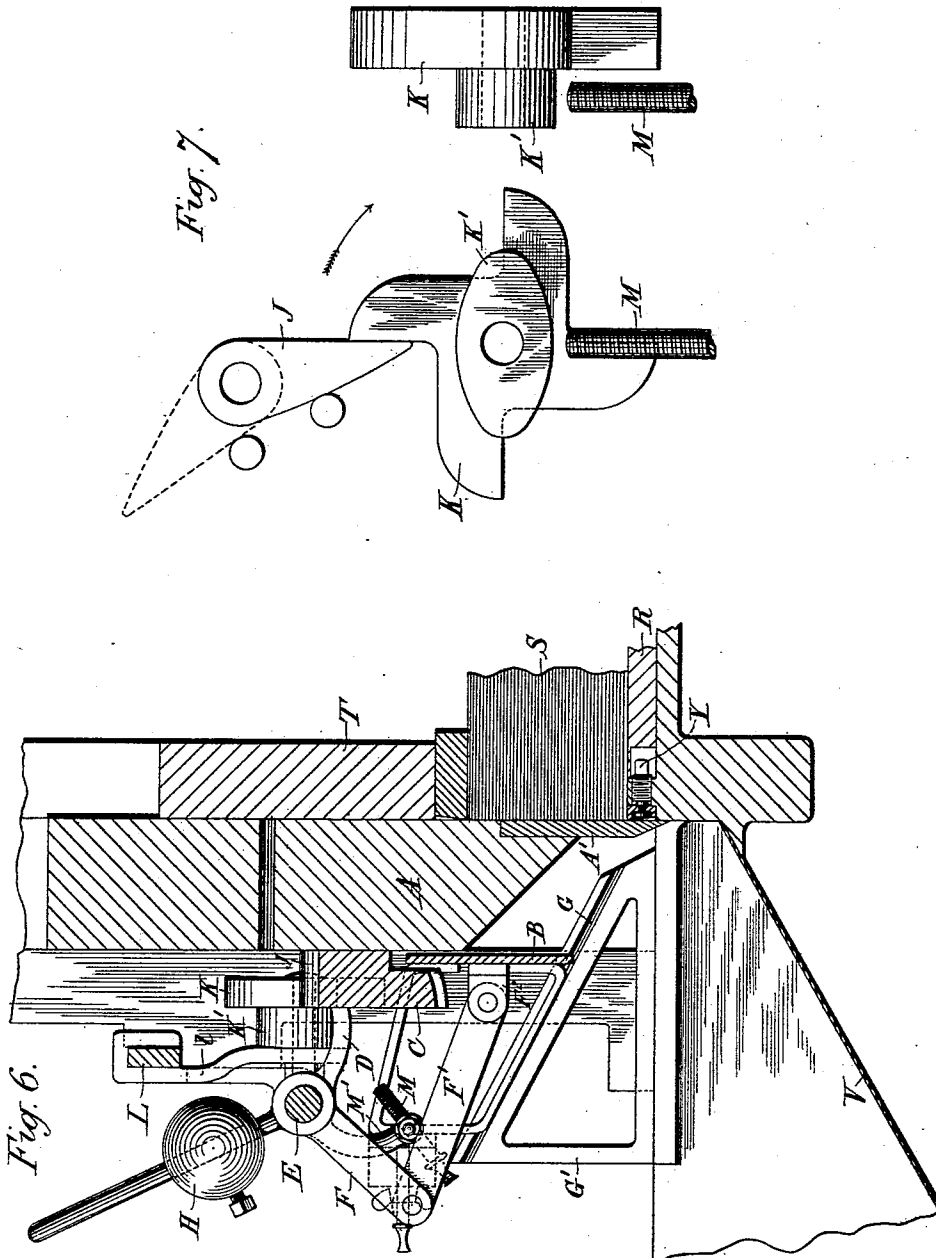
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6 Sheets—Sheet 5.

L. U. GILL.
GUILLOTINE PAPER CUTTING MACHINE.

No. 450,147.

Patented Apr. 14, 1891.



WITNESSES:

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INVENTOR:

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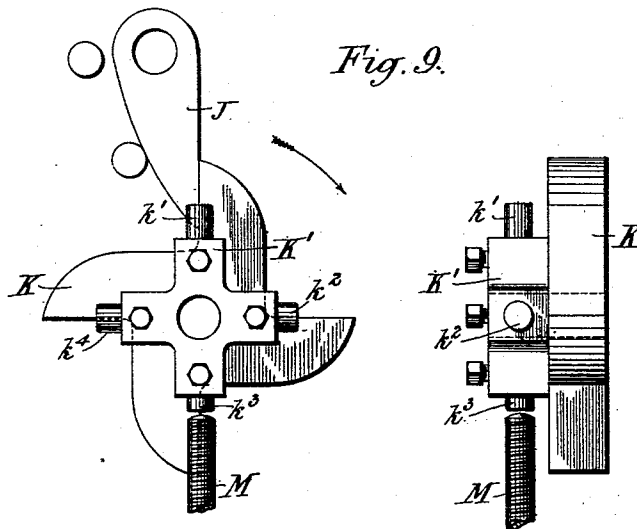
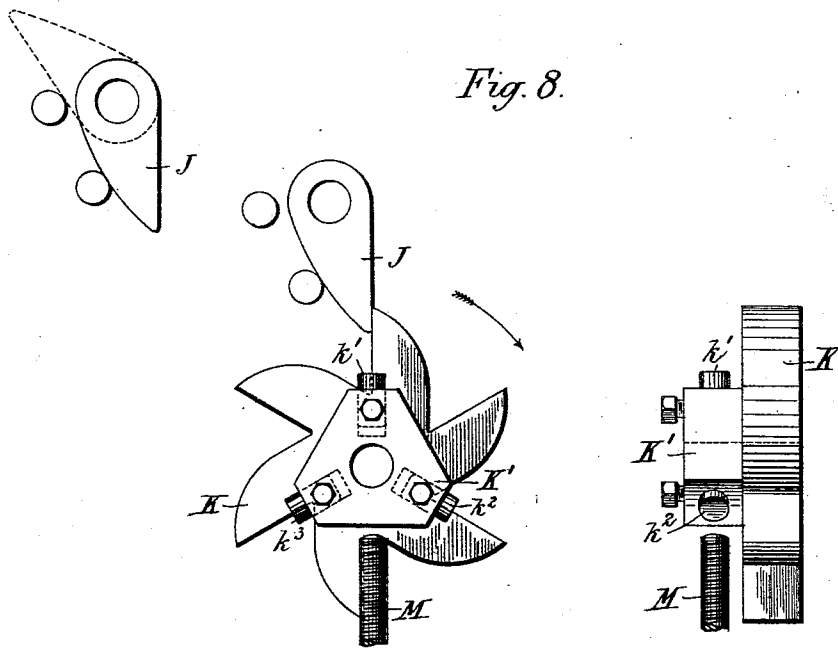
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6 Sheets—Sheet 6.

L. U. GILL.
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No. 450,147.

Patented Apr. 14, 1891.



WITNESSES:

John Decker
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INVENTOR:

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UNITED STATES PATENT OFFICE.

LEONARD UPCOTT GILL, OF LONDON, ENGLAND.

GUILLOTINE PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,147, dated April 14, 1891.

Application filed January 17, 1890. Serial No. 337,255. (No model.) Patented in England March 13, 1889, No. 4,409.

To all whom it may concern:

Be it known that I, LEONARD UPCOTT GILL, a subject of the Queen of Great Britain, residing at London, England, have invented certain new and useful Improvements in and Relating to Guillotine Paper-Cutting Machines, (for which I have obtained a patent in Great Britain, No. 4,409, bearing date March 13, 1889,) of which the following is a specification.

My invention relates to paper-cutting machines, such as are used for trimming the edges of books, pamphlets, or folded newspapers; and it consists of an improved gage or stop of that class wherein the gage is located at the beveled side of the knife in order to avoid the necessity for the operator to pass his hands or arms under the cutting-knife when placing the material to be cut and great speed in the execution of the work is obtained.

The invention comprises other improvements, which will be fully understood from the description hereinafter given.

According to my invention I use a reciprocating or traveling wood or metal gage or stop on the side of the machine facing the beveled or chamfered edge of the cutting-knife, and I arrange this gage or stop so that its position with respect to the cutting-edge of the knife may be adjusted as desired. The gage or stop is also mounted in such a manner that it will work automatically away from the knife as the knife comes down and cuts the paper, thus preventing the cuttings or shavings from jamming between the knife and the gage or stop, and that it will on the rising of the knife automatically resume its first position ready for the next cut. The reciprocating or traveling motion of the reciprocating gage is preferably derived from the knife-bar, so as to insure the synchronous action of the reciprocating gage with the knife.

In using a cutting-machine fitted with my improved gage or stop the operator stands on the opposite side of the machine to that which he occupies in the usual machines—that is to say, on the side facing the flat or cutting edge of the knife—and he presses the paper or material to be cut up against the

gage or stop, the said gage or stop being adjusted, so that the knife shall cut off the desired quantity from the paper or other material.

A machine fitted with the automatic reciprocating gage or stop, as hereinbefore described, is especially suited for trimming the edges of newspapers, pamphlets, &c., as the particular arrangement of gage or stop allows the machine to be kept constantly running—i.e., the knife continually rising and falling—thereby increasing both the power and speed.

Preferably in applying my invention I employ a well-known adjustable under cutter bar or knife of steel constituting an accurately-adjustable second cutting-edge, which the guillotine cutter passes in the latter part of its downstroke. The result is that the under cutter-bar can be so adjusted to the cutter that the edges of the pile of paper receive a clean cut throughout. The under cutter bar or knife is preferably fitted with screws or other means of adjustment. As heretofore, I set the cutter at a slight inclination (which may be adjustable) to the horizontal plane, whereby I obtain or insure what is termed a "draw-cut."

The manner in which my invention may be carried into effect will be understood by the annexed drawings, which represent a machine in which my improvements are embodied.

Figure 1 is a rear elevation of the machine, showing the knife bar or beam in its highest position and the automatic stop or gage in its normal position. Fig. 2 is also a rear elevation of the machine and shows the knife bar or beam in its lowest position and the automatic stop or gage in its highest position. Fig. 3 is a plan of Fig. 1. Fig. 4 is a cross-section on line 1 1, Fig. 1, showing the gage or stop in its normal position (previous to the descent of the knife-bar) when a comparatively small width has to be cut off the material. Fig. 5 is a cross-section on line 2 2, Fig. 1, showing the gage or stop in its normal position (previous to the descent of the knife bar or beam) when a wider cut is required. Fig. 6 is a cross-section on line 3 3, Fig. 2, showing the knife-bar in its lowest position

and the gage or stop in its highest position clear of the knife-bar. Figs. 4, 5, and 6 are on a larger scale than Figs. 1, 2, and 3.

The same letters of reference indicate like parts in all the figures.

Figs. 7 to 9 are detail views and are hereinafter referred to.

A is the knife bar or beam, operated by the rods W W from a shaft below, as is usual in paper-cutting machines of this character, and A' is the knife, set at an inclination to the horizontal plane, as clearly seen in the figures.

B is my reciprocating gage or stop, placed so as to face the beveled or chamfered side of the knife instead of the flat side, as has hitherto been the case. The reciprocating movement of this gage or stop to and from the knife is imparted to it as follows: Upon the face of the knife-bar A is a cam C, which in the ordinary downward movement of the knife-bar acts upon a lever D, secured to a rocking shaft E, which shaft is mounted in bearings E' E', attached to the framing of the machine. On the rocking shaft E are two levers F F', which are connected to the gage or stop B through the intermediation of links F' F'', attached to small bracket-bearings F² F² on the gage B. By the action of this mechanism (which, however, can obviously be considerably varied) the gage B, during the downward movement of the knife-bar, is caused to move back from its normal position—that is to say, in the line of cut (see Figs. 4 and 5)—to the position seen in Fig. 6, and during this backward movement it rises, owing to the inclined grooves or guides G in frames G' G', attached to the frame of the machine. The lever D is fitted with an adjustable counter-weight H, which keeps it in contact with the lower edge of the cam C, and by the adjustment of the weight more or less resistance can, if desired, be given to the gage B when the work is placed against it. When this cam rises in the following upward movement of the knife-bar, the gage or stop B again moves forward to the line of cut. If the width of the cut is to be always uniform, the movements of the gage or stop will likewise be always uniform—that is to say, the gage will always return to the same position in relation to the knife; but when the width of cut requires to be varied at every cut or every second or third cut, then the movements of the gage B are varied accordingly, as hereinafter explained. Whether the cut is to be varied or not, the workman stands at the feed-table R, facing the flat side of the knife A', and places a pile of papers S against the gage B. He then starts the machine by means of the hand-lever Q, (or other means of starting—such as a foot-lever—may be adopted, if preferred, as will be well understood.) The knife-bar A commences to descend, together with the usual clamp T, which is slightly in advance of it. While the knife is performing the cut the cam C, through the intermediation of the mechanism already described—viz., the lever D, rocking shaft E, levers F F',

and links F' F'—is causing the gage or stop B to move backward and upward until it reaches its highest position, Fig. 6, where it remains for a time. This backward and upward movement of the gage prevents the cuttings or shavings getting jammed between it and the gage. These cuttings fall down the chute V to the floor. The movement of the gage need not be upward, but only backward, so as to clear the cuttings; but by providing for the upward movement, as described, gravity assists the gage to return to the normal position or line of cut. In the ascent of the knife-bar after completing the cut the gage or stop returns to its normal position, the workman places another pile of papers against it or another edge of the same pile, and the knife again descends.

X is the under cutter bar or knife. It is slightly beveled or undercut. It operates with the guillotine cutter A', the action resembling that of the blades of scissors. The position of the knife X relatively to the knife A' can be adjusted by means of the screws Y, engaging the knife X, and constructed when turned to move the latter perpendicularly of the plane of the cut.

I have already referred to its being sometimes required to vary the width of cut every time or every second or third time. For instance, in trimming a folded magazine or newspaper it will generally be required to cut the top edge or "head," the fore edge, and the bottom edge or "tail." The fore edge should have a wider cut than the head and sometimes a wider cut than the tail, and the cuts for the head and tail should also, as a rule, be differentiated. I adjust and make the changes automatically by means of stops in connection with the gage or stop B. One device for the purpose, and which is adapted for giving alternately a wide and a narrow cut, is shown in the machine illustrated and also in detail in Fig. 7. It consists of a pawl J on the knife-bar A and of a tappet K, free to turn on a stud or pin k, which is secured to a hanger l, attached to a horizontal bar L, which is connected to the frame of the machine. On the side of the tappet K is an oval cam K', with the larger diameter of which the adjustable stop M comes in contact. This stop M is connected by an arm or lever M' to the rocking shaft E and thus controls its action. In the downward movement of the knife-bar A the pawl J gives a quarter-turn to the tappet K, while in the upward movement the pawl rides over the tappet inactively. In the position of the tappet K and oval cam K' seen in Fig. 7 the stop M, if it were allowed to come in contact with the cam, would allow of the maximum forward movement of the gage B, and would consequently produce the minimum cut. When the cam is in the reverse position, the forward movement is reduced and a much wider cut is given. (See Fig. 5.) I show, however, other adjustable stops N N, which are attached to

guides on the gage B and act against the frame of the machine, which forms an abutment thereto. These stops N N come into action before the stop M can get into contact with the smaller diameter of the oval cam K', and they therefore make the corresponding cuts somewhat more than the minimum. The cuts are thus controlled alternately by the larger diameter of the oval cam K' and by the stops N N. If the pawl J be thrown out of gear, so as not to act on the tappet K, the cuts will always be of the same width.

Fig. 8 represents another form of tappet and cam for varying the cut, one or more pawls being employed to actuate them, according to requirement. This cam is provided with adjustable pieces k' , k^2 , and k^3 , which may be of the same or different lengths. The cam will produce three variations of cut if the two pawls J be used, these two pawls giving the cam one-third of a revolution at each descent of the knife-beam, and if one pawl be thrown out of action an alternate variation of cut will be given, as the movement of the cam will only be one-sixth of a revolution, the spaces between the pieces k' , k^2 , and k^3 causing the stops N N, attached to the guides on the gage B, to come into action at the intermediate periods.

Fig. 9 shows another modification by which four varying cuts can be made, each adjustable; also, three varying cuts by cutting two piles together, heads and tails, and fore edges separately. The cam, which in this case is in the shape of a cross, is provided with adjustable pieces k' , k^2 , k^3 , and k^4 , one in each arm. By this arrangement a pile of work can be cut on its four edges to any required degree of variation in each instance, the order of the cuts following the same sequence in all cases. In the second case, where two piles of work are placed on the machine at once, first the two heads are cut, then the piles are reversed and the tails cut, and then the fore edges are presented separately, thus making up the four cuts and completing one series.

It is obvious that many other modifications could be made to produce the same or other variations in cutting; but the above are sufficient for the purpose of illustrating my invention.

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

1. In a guillotine paper-cutting machine, the combination, with the feed table or board R, facing the flat side of the guillotine cutter

A', and the gage or stop B at the opposite side of the cutter, of a cam C on the knife-bar A, lever D, rocking shaft E, levers F F', and links F' F', whereby as the knife-bar descends said gage or stop is caused to move back from its normal position, substantially as set forth.

2. In a guillotine paper-cutting machine, the combination, with the guillotine cutter, a feed table or board facing the flat side thereof, and a reciprocating gage at the opposite side of said cutter constructed to be moved out of its normal position when said cutter descends, of a movable stop for determining the position of the gage, constructed to be operated by said cutter in its movement and adapted to bring the gage automatically to different distances from the cutter at successive cutting operations.

3. In a guillotine paper-cutting machine, the combination, with the guillotine cutter, a feed table or board facing the flat side thereof, and a reciprocating gage at the opposite side of said cutter constructed to be moved out of its normal position when said cutter descends, of a movable stop for determining the position of the gage, constructed to be operated by said cutter in its downward movement and adapted to bring the gage automatically to different distances from the cutter at successive cutting operations.

4. In a guillotine paper-cutting machine, the combination, with the feed table or board R, facing the flat side of the cutter A', and the reciprocating gage or stop B at the opposite side of said cutter, of the pawls J on the knife-bar A, the tappet K and cam K' on a fixed part of the machine, and the stop M and arm M' on the rocking shaft E, substantially as and for the purpose set forth.

5. In a guillotine paper-cutting machine, the combination, with the feed table or board R, facing the flat side of the cutter A', and the reciprocating gage or stop B at the opposite side of said cutter, of the pawl J on the knife-bar A, the tappet K and cam K' on a fixed part of the machine, the stop M and arm M' on the rocking shaft E, and the adjustable stops N N on said gage or stop B, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEONARD UPCOTT GILL.

Witnesses:

JOHN C. NEWBURN,
GEORGE C. BACON.