

(No Model.)

3 Sheets—Sheet 1.

H. P. FEISTER.  
PAPER CUTTING MACHINE.

No. 581,417.

Patented Apr. 27, 1897.

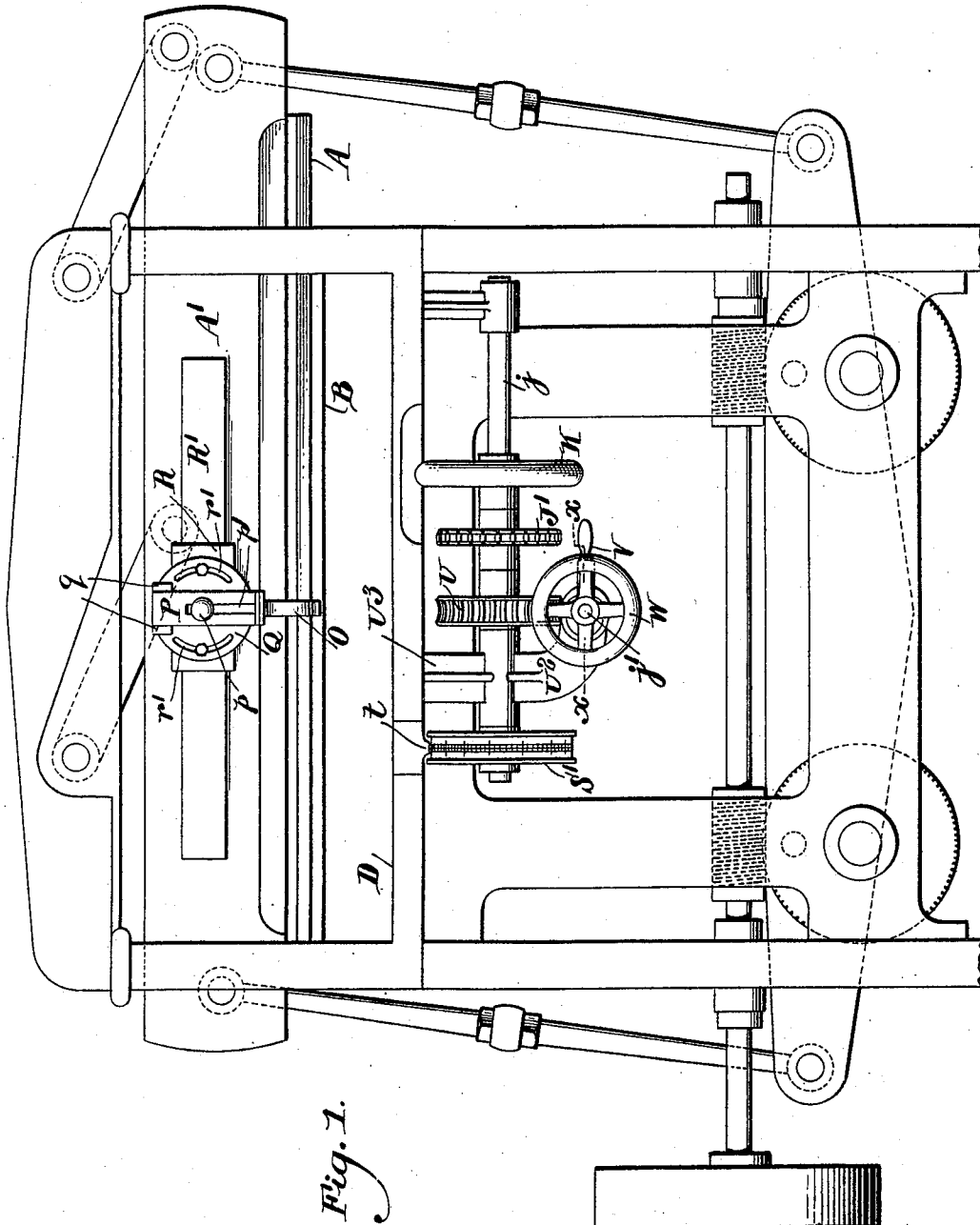


Fig. 1.

Witnesses.

*Henry D. King*  
*Wm. L. Keane*

Inventor.

*Henry P. Feister*  
*By [Signature]*  
Attorney.

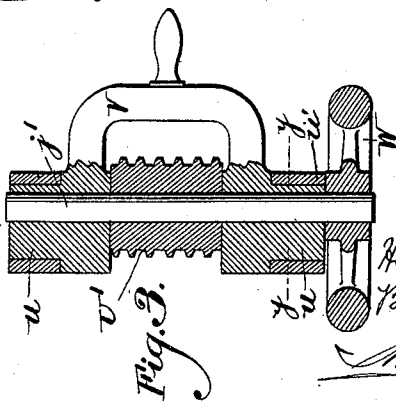
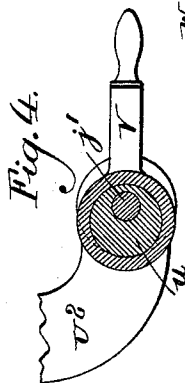
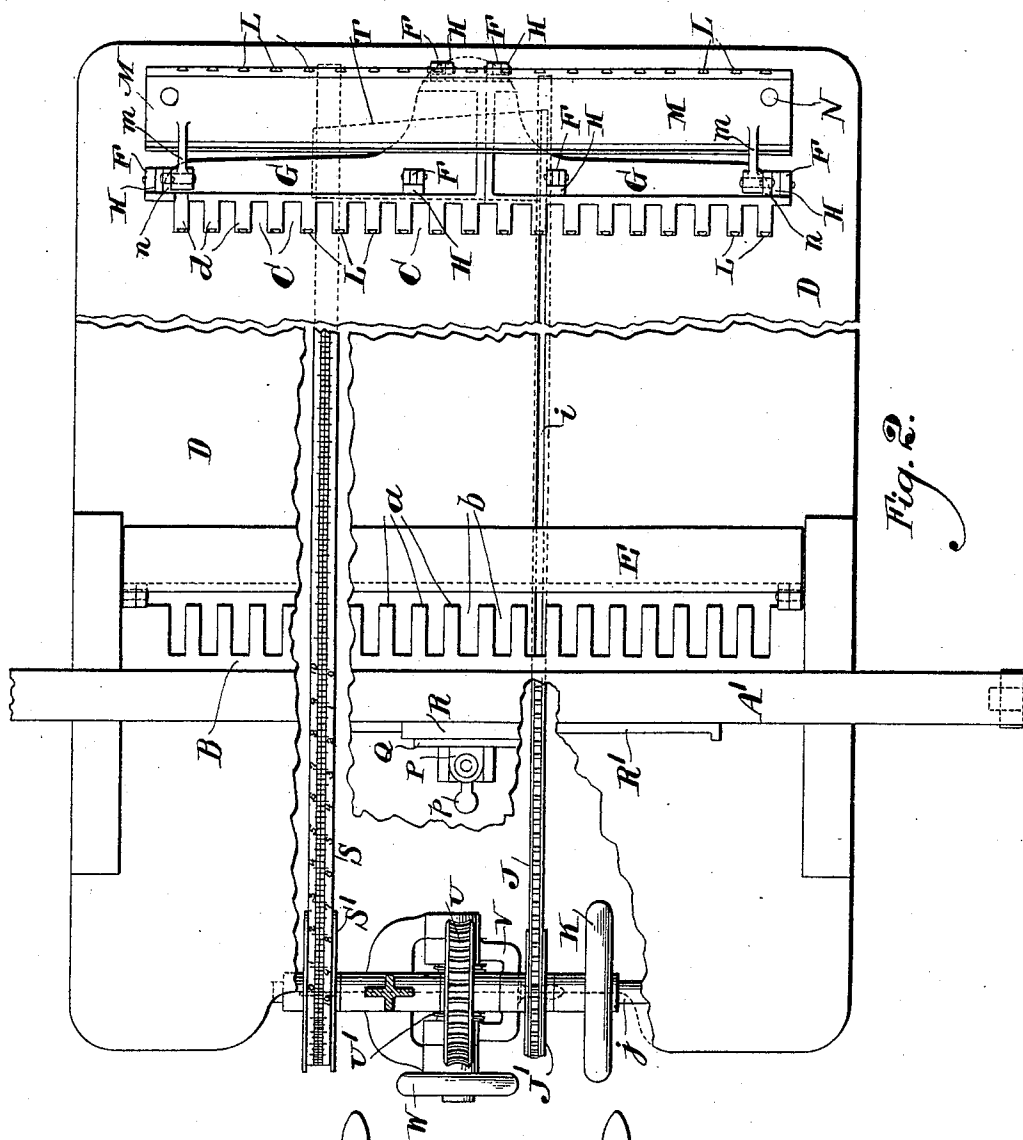
(No Model.)

3 Sheets—Sheet 2:

H. P. FEISTER.  
PAPER CUTTING MACHINE.

No. 581,417.

Patented Apr. 27, 1897.



Witnesses.

Henry Denny  
Wm. L. Cress

Inventor.

Henry P. Foster

By 

Attorney.

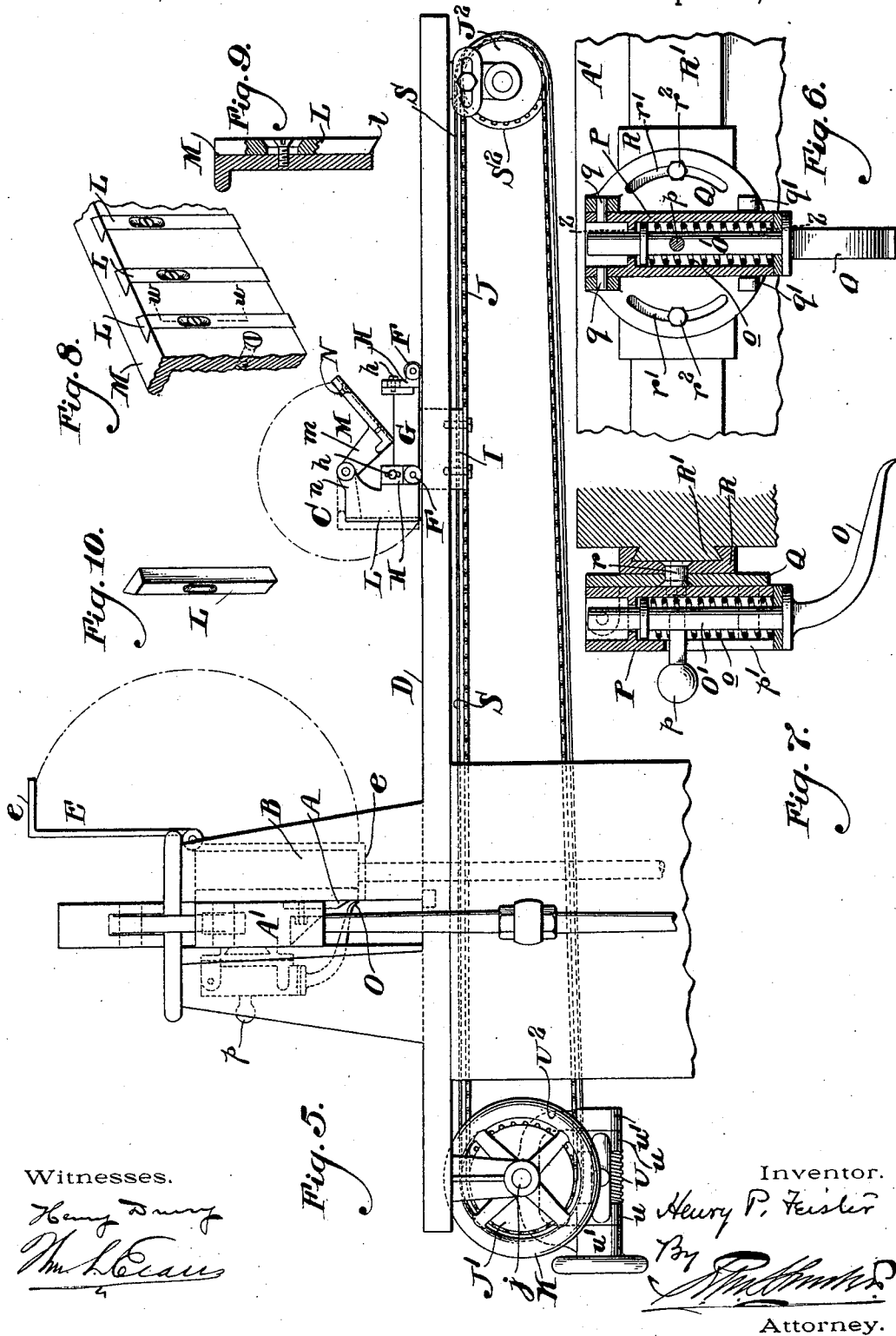
(No Model.)

3 Sheets—Sheet 3.

H. P. FEISTER.  
PAPER CUTTING MACHINE.

No. 581,417.

Patented Apr. 27, 1897.



Witnesses.

*Henry Dwyer*  
*Wm. H. C. C.*

Inventor.

*Henry P. Feister*

Attorney.

# UNITED STATES PATENT OFFICE.

HENRY P. FEISTER, OF PHILADELPHIA, PENNSYLVANIA.

## PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,417, dated April 27, 1897.

Application filed April 24, 1896. Serial No. 588,857. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY P. FEISTER, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Paper-Cutting Machines, of which the following is a specification.

My invention relates to paper-cutting machines; and it consists of the improvements which are hereinafter described and claimed, and which are illustrated in the accompanying drawings.

My improvements are designed particularly to improve the construction and simplify the operation of paper-cutting machines and to enable the operator to perform his duties with greater ease and accuracy.

In the drawings, Figure 1 is a front elevation of a paper-cutting machine embodying my improvements. Fig. 2 is a plan view of the machine with part broken away to expose certain parts. Fig. 3 is a horizontal sectional view, enlarged, of part of the mechanism for operating the back gage, taken on the line  $xx$  of Fig. 1. Fig. 4 is a transverse sectional view on the line  $yy$  of Fig. 3. Fig. 5 is a side elevation of the machine. Fig. 6 is a vertical view, enlarged, of the indicator-finger and the frame which carries it. Fig. 7 is a vertical sectional view of the same on the line  $zz$  of Fig. 6. Fig. 8 is a perspective view of part of the movable apron of the back gage. Fig. 9 is a vertical sectional view of the same on the line  $ww$  of Fig. 8, and Fig. 10 is a perspective view of one of the floating pieces of the back gage.

For the purpose of illustrating and explaining my improvements I have shown them applied to a well-known form of paper-cutting machine having a reciprocating cutter A, a front clamp B for clamping the edge of the paper adjacent to the cutter, and a rear or back gage C, adapted to be moved over the table D to and from the cutter. The front clamp B is raised and lowered by suitable devices. A machine of this character is described and shown in Letters Patent No. 539,502, dated May 21, 1895, to Samuel Brown, and No. 400,652, dated April 2, 1889, to myself.

I shall now describe my improvements, which relate, first, to the movable back gage and the means for adjusting it, and, second,

to the pointer or indicator for indicating the cutting-line upon the paper.

*The front clamping devices.*—In machines of this character it is customary to construct the clamp B with a series of notches  $b$  at the rear, forming a series of tongues or ribs  $a$ , and to similarly provide the front face of the movable gage C with complementary notches and gages  $c$   $d$ , adapted to engage with the notches and ribs  $b$   $a$  when the gage is moved forward to the clamp B. This is done for the purpose of permitting the gage C to be moved closer to line of cutting action of the knife than would otherwise be possible. In some classes of work, however, this construction is objectionable for the reason that the formation of the notches and ribs in the face of the clamp B destroys the flat unbroken clamping-face, and with thin paper there is liability of the upper sheets becoming puckered or injured by the irregular face of the clamp. To obviate this difficulty, I employ an auxiliary clamping piece or apron E, which has a smooth clamping-face  $e$  and is adapted to be thrown into action when the character of the paper renders it desirable. This apron E, I have shown as a plate or frame hinged to the clamp B and adapted, when thrown down, to fit under the face of the clamp B, so as to cover the notched face thereof and present its flat smooth clamping-face  $e$  to the paper, as indicated in dotted lines in Fig. 5.

*The movable back gage and the devices for adjusting it.*—The back gage C consists of a transversely-arranged frame movable longitudinally over the table, and usually has its face provided with the notches and ribs  $c$   $d$ , as described. The gage has usually been guided in its movements by longitudinal guides engaging grooves or ways in the face of the table. This has been found objectionable owing to the liability of the guides to bind and the difficulty in applying lubricants without soiling the paper. To obviate these difficulties, I provide the gage C with rollers F, adapted to run on the surface of the table when the gage is moved. I have shown the gage C provided with a rearwardly-extending frame G, carrying the rollers F, which are preferably journaled in frames H, adjustably connected with the frame G, as by

slot-and-screw connections  $h$ , which enable the gage C to be adjusted vertically with reference to the table. I prefer to construct the guide C in two or more sections, as shown.

5 (See Fig. 2.)

I is an arm depending from the gage C through a longitudinal slot  $i$  in the table D and engaging an endless chain or band J. The gage C may be moved longitudinally over  
10 the table D. The chain J passes over a sprocket-wheel J' at the front of the frame and over a second idler sprocket-wheel J<sup>2</sup> at the rear of the frame. The sprocket-wheel J is mounted on a shaft J', which may be  
15 turned, as by the hand-wheel K, to operate the chain and move the gage.

To enable an accurate or nice adjustment of the back gage C, I employ, however, an auxiliary device for operating the shaft  $j$  independently of the hand-wheel K.

U is a worm-wheel carried by the shaft  $j$ . U' is a worm carried on a short transverse shaft  $j'$ , journaled eccentrically in bearings  $uu$ , journaled in a bracket U<sup>2</sup>, carried by the  
25 frame U<sup>3</sup>, in which the shaft  $j$  is supported. The bearings  $uu$  are carried by a lever V, by which they may be turned in their bearings  $u'u'$  in the bracket U<sup>2</sup>, and when so turned they will raise or lower the shaft  $j'$ , so as to  
30 throw the worm U', which it carries, into or out of mesh with the worm-wheel U. Normally the lever V may be thrown down, so that the worm U' is not of engagement with the worm-wheel U, and the shaft  $j$  may be operated by  
35 the hand-wheel K.

When the lever V is raised, the shaft  $j'$  is elevated and the worm U' is thrown into mesh with the worm-wheel U. This shaft  $j'$  may be rotated by a hand-wheel W, carried by  
40 it, thus driving the shaft  $j$  and the sprocket-chain J through the worm U' and worm-wheel U. This operation of the shaft  $j$  through the worm and worm-wheel produces a slow gradual movement and enables a nicer adjustment of the back gage to be made than  
45 would be possible with the quick direct movement produced by the directly-acting hand-wheel K.

Heretofore more or less difficulty has been  
50 met owing to the liability of the lower sheets in the pack to slip under the edge of the gage C and thus become displaced. This could not be satisfactorily overcome by arranging the gage so that it would press at its edge  
55 tightly or heavily upon the table, because such pressure would greatly increase the friction and add to the difficulty of adjusting the gage. To entirely overcome this defect and to practically prevent the sheets slipping under  
60 the gage without perceptibly increasing the friction upon the table, I provide the face of the gage with floating fingers or pieces L, which bear loosely upon the surface of the table, and, being entirely free, are always in  
65 contact with it at their ends. These fingers preferably consist of small brass pieces loosely fitted in dovetailed vertical grooves in

the face of the guide and presenting flat faces even with the face of the guide. In the construction illustrated in Fig. 2 I have shown  
70 one of these strips in each of the ribs  $d$  of the gage, but it is not essential that they should be used in each rib. To insure a more certain contact being maintained by the ends of these floating pieces with the surface of  
75 the table and to reduce friction to a minimum, I prefer to form these pieces L with beveled noses  $l$ , as shown in Fig. 9. The pieces L are preferably secured to the gage by a slot-and-pin connection, such as is  
80 shown in Fig. 9, which, while permitting the floating pieces to move freely, prevents them from dropping out of the grooves.

To obviate the difficulties that arise from the pressure of the notched face of the gage  
85 C upon light thin sheets, which, as has been before explained in connection with the clamp B, is liable to produce wrinkling and injury to the paper and to throw the sheets out of position, I employ an auxiliary gage plate or  
90 apron M, having a smooth continuous face and adapted, when required, to be placed over the notched face of the gage.

I have shown the plate or apron M as a plate of substantially the length of the face of the  
95 gage C, provided at its extremities with arms  $m$ , by which it is hinged to lugs or projections on the body of the gage. When in use, the plate M is thrown over the front of the gage, as indicated in dotted lines in Fig. 5. When  
100 out of use, it is thrown back, as indicated in full lines. The face of this auxiliary gage plate or apron is preferably provided with a series of floating fingers or pieces L, arranged and operating like the similar pieces in the  
105 face of the gage C. Owing to the employment of these floating fingers L in the gage C and apron M it is not necessary that the base of the gage C should make contact with the surface of the table. I am therefore enabled  
110 to support it wholly upon the rollers F, and there will be no friction during the adjustment of the gage, except the comparatively small amount produced by the rollers and the noses of the floating strips L.

To permit of a slight angular adjustment  
115 of the plate or apron M, I provide it with set-screws N, adapted to bear against the face of the gage C. By adjusting these screws N the plate or apron may be thrown into a slightly-  
120 inclined position to right or left of a vertical line to permit of its assuming a parallel position at all times with relation to the cut of knife.

*The devices for indicating the cutting-line upon the paper.*—It is highly desirable that  
125 the operator should be able to ascertain at any time the exact point at which the cutter will act upon the paper without operating the clamp for that purpose. When the paper is  
130 clamped, the clamp B will show the point at which the cutter will act, but if the paper is found not to be in proper position it becomes necessary to release the clamp before the

paper may be moved. To overcome this difficulty, I provide the machine with an indicator or pointer, which may be operated independently of the clamp and cutter to move in the line of the cutting action of the cutter and thus indicate upon the face of the pack of sheets the exact point at which the cutter will act. This pointer may be moved out of the way when desired and may be adjusted to suit the size or position of the pack of sheets.

O is a pointer arranged in front of the cutter-bar and having its end, when in operative position, in the line of movement of the cutter. I have shown the pointer carried by the cutter bar or head A'.

P is a hollow box in which the shank O' of the pointer projects, and a spring o in the box holds the shank and pointer in a normally-elevated position, but permits them to be depressed. The shank O' may be provided with a thumb-piece p, projecting through a slot p' in the box, by means of which the pointer may be depressed. A counterweight may of course be substituted for the spring o.

The box O' is carried by a plate Q, which is pivotally connected, as at r, with a slide R, adapted to a longitudinal guide P' on the bar A'.

The box O' is shown hinged to the plate Q by ears q q at the top, and it may be swung out upon this hinge to move the pointer O away from the pack of sheets. Lugs q' q' on the plate Q engage the box O'.

The plate Q may turn on its pivotal connection r with the slide R, and to guide and support it the plate may be provided with curved slots r', engaging pins r<sup>2</sup>, carried by the slide R.

The operation of the pointer O is as follows: Supposing the pointer to be in the position shown in Fig. 5, immediately below the cutter A and held in a raised position by the spring o, if a pack of sheets is placed upon the table under the cutter and the pointer O is depressed by the thumb-piece p it will touch the top of the pack of sheets at exactly the point at which the cutter will act, thus indicating to the operator the line of cutting action and enabling him to change the position of the sheets if further adjustment is necessary. By moving the slide R upon the guide R' the pointer may be adjusted laterally to suit the position occupied by the pack of sheets on the table. When it is desired to operate the pointer O with an oblique movement with relation to the table, the plate Q may be turned on its pivotal connection r. After the pointer has been used it may be thrown out of the way upon its hinge q. It may also be turned into any angular position desired by turning the plate Q upon its pivot r.

*The indicating device for indicating the position of the pack of sheets with reference to the line of cutting action.*—Machines of this character employ means to indicate the position of the back gage and the pack of sheets

with reference to the line of action of the cutter. Such indicating means show both the distance from the line of cutting action to the front end of the sheets, or the amount to be cut off, and the distance from the line of cutting action to the rear end of the sheets. Heretofore these dimensions have usually been indicated by metal gage-strips set into the surface of the table and numbered in opposite directions from the line of cutting action. Such indicators are inconvenient, as they are not in position to be seen by the operator, who stands at the head of the machine. In carrying out my invention I employ an indicating device which shows to the operator at the head of the table the exact adjustment of the back gage and operates automatically with the adjustment of the sheets.

S is an indicator strip or band arranged below the table and passing about idlers S' S<sup>2</sup> at the front and rear of the machine. This strip or band is connected below the table by an arm T (dotted lines in Fig. 2) with the frame or arm I of the gage C, which is connected with the endless chain J. Whenever the endless chain J is moved to adjust the position of the gage C, the strip or band S is moved correspondingly, and consequently the movements of the indicator strip or band will correspond exactly with those of the back gage C.

The strip S is provided with two sets of numbers arranged in opposite directions, as shown. A pointer t is arranged at the front of the table adjacent to the band S, under which the band travels when it is moved. When the back gage is moved, the extent of movement is indicated by one set of numbers, those running from left to right, and the distance of the back gage from the cutting-line is indicated on the other set, those running from right to left. The indicator strip or band is so adjusted that when the back gage is at its extreme rear position the number "0" in one set and "10," or the highest number of the series, in the other set will be under the pointer. If now the gage is moved forward two points, the strip will be turned until the number "2" in the first series and the number "8" in the latter are brought under the pointer, thus showing to the operator at a glance the distance he has moved the back gage and the distance between the back gage and the cutting-line, as well as the distance or length of paper to be cut in front of cutter-knife.

The various details of construction that have been shown may of course be varied without departing from the invention.

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

1. In a paper-cutting machine, the adjustable back gage provided with supporting-rollers F carried in vertically-adjustable frames whereby the back gage may be elevated or lowered with reference to the table.

2. In a paper-cutting machine, the adjust-

able back gage having its front face provided with one or more floating pieces or fingers loosely supported thereon and adapted to rest upon the surface of the table.

5 3. In a paper-cutting machine, the adjustable back gage having its front face provided with notches forming a series of ribs and grooves, and a series of loose floating pieces or fingers carried by said ribs.

10 4. In a paper-cutting machine, the adjustable back gage having dovetailed grooves in its face, and a series of dovetailed floating pieces loosely supported in said grooves.

15 5. In a paper-cutting machine, the adjustable back gage provided with one or more loose floating pieces *L* on its front face provided with beveled noses *l*.

20 6. In a paper-cutting machine, the combination with the adjustable back gage, of an auxiliary hinged plate adapted to be placed over the front of the back gage to form the face thereof and provided with one or more loose floating pieces or fingers, the ends of which are adapted to make contact with the  
25 table.

7. In a paper-cutting machine, the combination with the adjustable back gage, the driving-shaft *j*, power-transmitting connections between the back gage and the driving-shaft, means acting directly on the driving-shaft to operate it, a worm-wheel on the shaft  
30 *j*, a transversely-arranged shaft *j'*, eccentrically journaled in bearings, a worm carried by said shaft, a lever connected with the bearings of the shaft *j'*, by the operation of which the worm may be thrown into or out of engagement with the worm-wheel, and a hand-wheel *W* on the shaft *j* for operating it.

8. In a paper-cutting machine, the combination with the reciprocating cutter, of a  
40 movable indicator or pointer adjacent to the cutter and having its end located above the pack of sheets, and a hinged frame carrying said pointer or indicator whereby the pointer

or indicator may be swung away from the  
45 pack of sheets.

9. In a paper-cutting machine, the combination with the reciprocating cutter, of a movable indicator or pointer adjacent to the cutter and having its end located above the  
50 pack of sheets, and a laterally-adjustable frame carrying said pointer or indicator.

10. In a paper-cutting machine, the combination with the reciprocating cutter, of a movable indicator or pointer adjacent to the  
55 cutter and having its end located above the pack of sheets, and a pivoted frame carrying said pointer or indicator.

11. In a paper-cutting machine, the combination with the reciprocating cutter, of a supporting-frame *Q* located adjacent thereto, a  
60 box *P* hinged to the frame *Q* and the spring-pressed pointer *O* carried by the box and having its end located above the pack of sheets.

12. In a paper-cutting machine, the combination with the reciprocating cutter, of a laterally-adjustable side *R* located in the front  
65 of the cutter or knife bar, a supporting-frame *Q* pivotally connected with the slide *R*, a box *P* hinged to the frame *Q*, and the spring-pressed pointer *O* carried by the box and having  
70 its end located above the pack of sheets.

13. In a paper-cutting machine, the combination with the reciprocating cutter, of the box *P* located in the rear thereof, the indicator or pointer having its end arranged above  
75 the pack of sheets and its shank in the box *P*, the spring *o* in the box holding the indicator in a normally-raised position but permitting it to be depressed, and the thumb-  
80 piece *p* for depressing the pointer.

In testimony of which invention I have hereunto set my hand.

HENRY P. FEISTER.

Witnesses:

BENJ. L. LEHMAN,  
CHARLES WANICH.