

(No Model.)

3 Sheets—Sheet 1.

P. DILLON.
PAPER CUTTER.

No. 583,141.

Patented May 25, 1897.

Fig. 1.

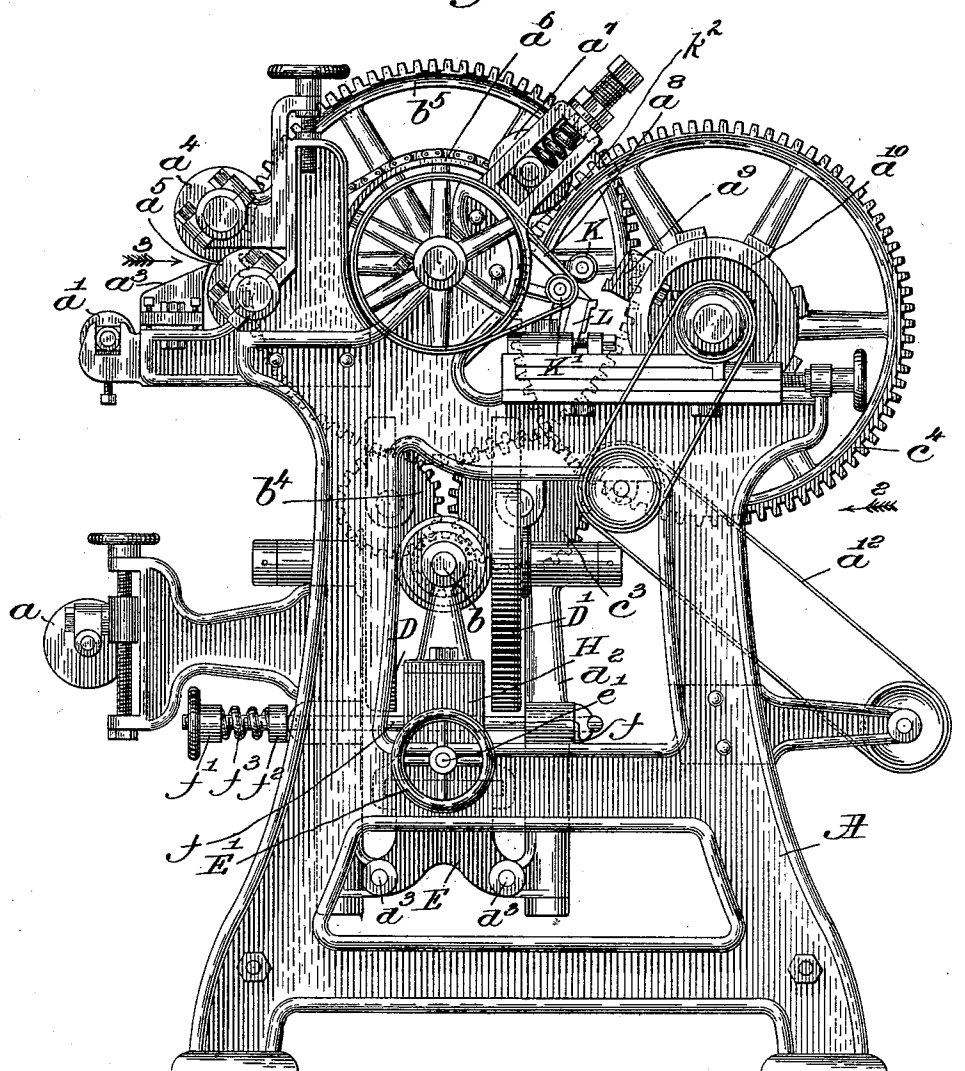
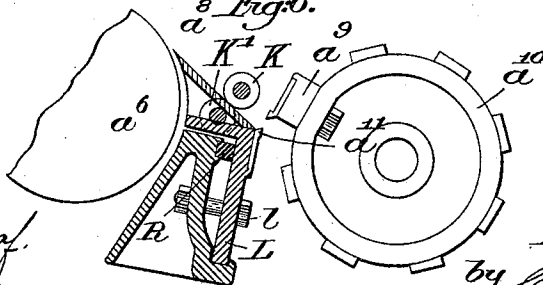


Fig. 6.



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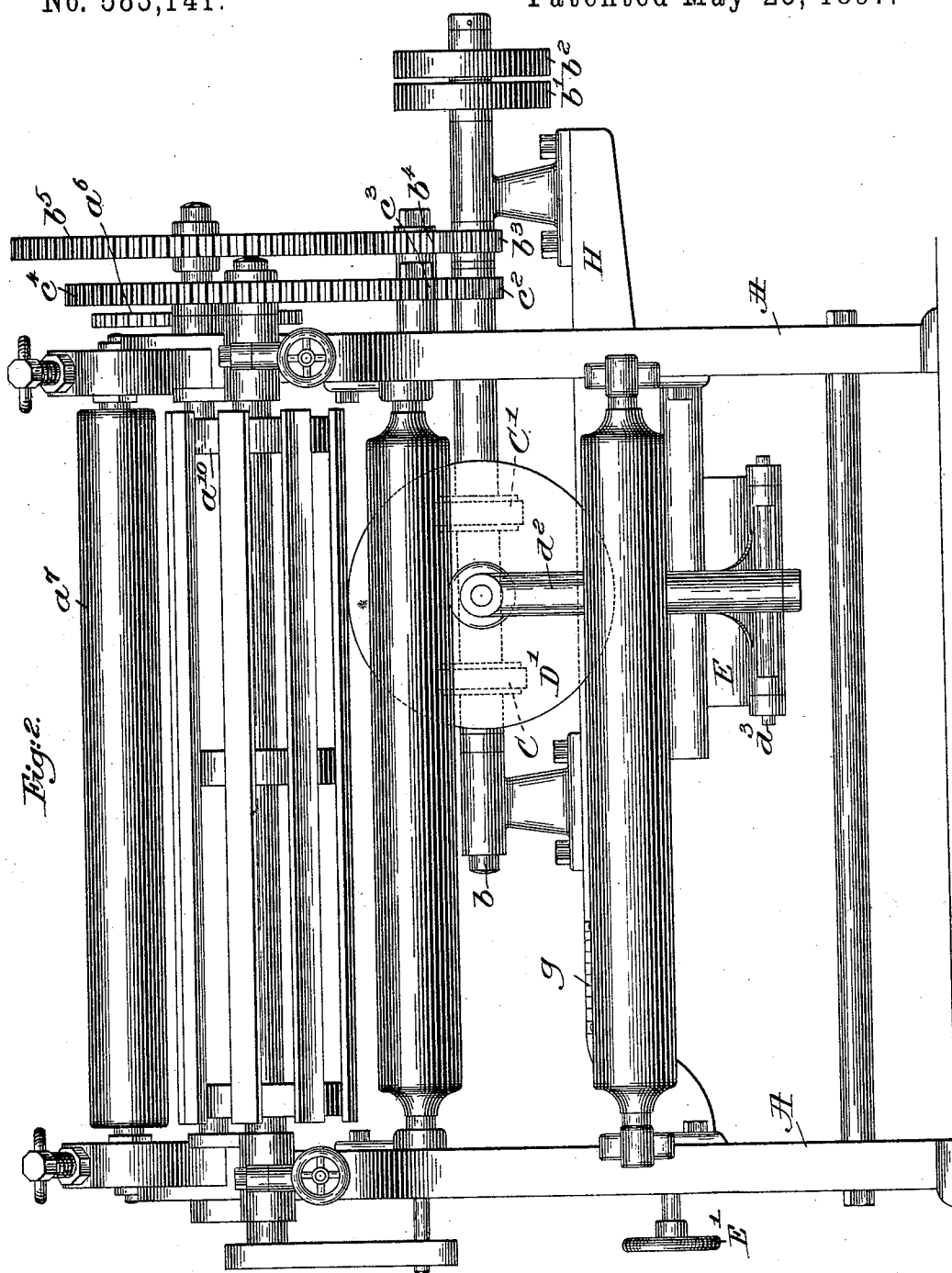
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3 Sheets—Sheet 2.

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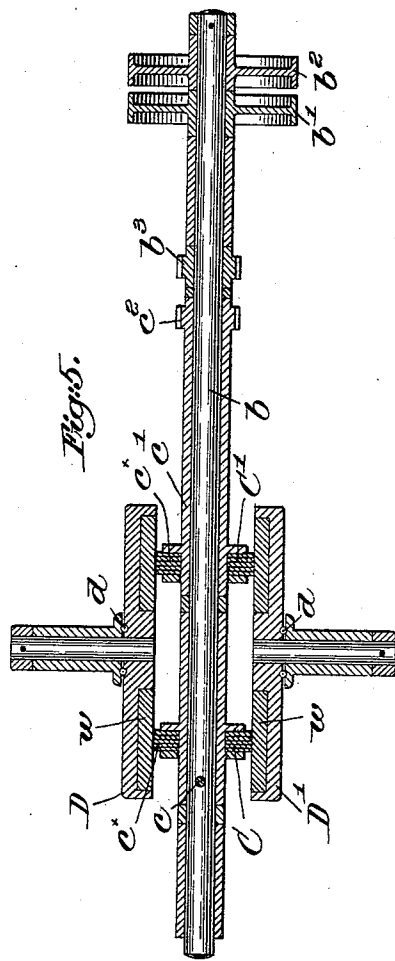
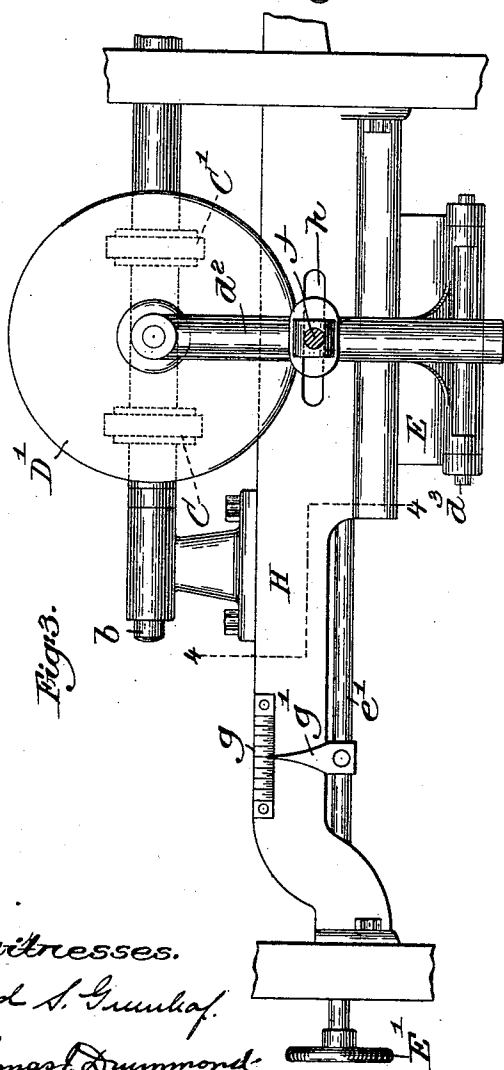
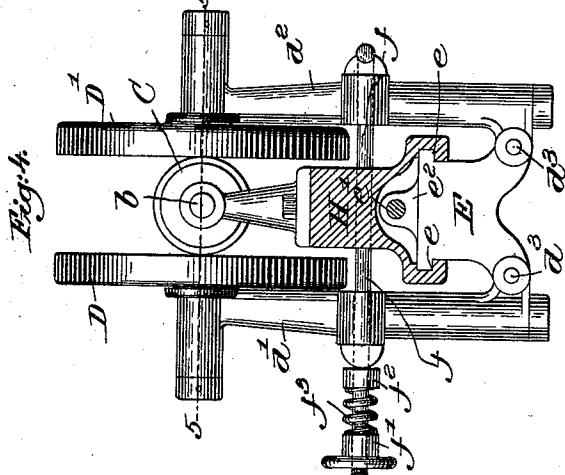
(No Model.)

P. DILLON.
PAPER CUTTER.

3 Sheets—Sheet 3.

No. 583,141.

Patented May 25, 1897.



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UNITED STATES PATENT OFFICE.

PETER DILLON, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO HENRY C. KING, OF SAME PLACE.

PAPER-CUTTER.

SPECIFICATION forming part of Letters Patent No. 583,141, dated May 25, 1897.

Application filed May 25, 1896. Serial No. 592,930. (No model.)

To all whom it may concern:

Be it known that I, PETER DILLON, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Paper-Cutters, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to improvements in paper-cutters, and has special reference to means for varying the speed of the cutter relatively to the feed of the paper, the main object of my invention being to provide means for quickly and accurately changing the speed of the cutters, so that different lengths of sheets may be cut from the web of paper as it is fed to the cutters without changing the rate of feed thereof.

In the accompanying drawings, illustrative of my invention, Figure 1 is an end elevation of a paper-cutter with my improvements applied thereto. Fig. 2 is a side elevation thereof looking at Fig. 1, toward the left, in the direction of arrow 2. Fig. 3 is a fragmentary detail, in side elevation, showing the mechanism for varying the speed of the cutter. Fig. 4 is an end elevation of the mechanism shown in Fig. 3. Fig. 5 is a horizontal section thereof on the dotted line 5 5, Fig. 4. Fig. 6 is a cross-sectional detail showing the yielding provision for the cutters.

In the present embodiment of my invention herein shown the frame A, idlers a' for directing a plurality of webs of paper between the guides a^3 , the edge-cutters $a^4 a^5$, the feed-cylinder a^6 , the pressure-roll a^7 to feed the paper along the table a^8 , the operating mechanism for the parts mentioned, and the cutter-blade a^9 and cutter-carrier a^{10} are of any usual or preferred style or pattern.

The paper is fed in the direction of arrow 3, Fig. 1, and trimmed by the edge-cutters $a^4 a^5$ and delivered continuously over the table a^8 and stationary cutter a^{11} , where it is caught and cut into sheets by the revolving cutter a^9 , the sheets being conveyed away by the carrier-belt a^{12} .

In order that different lengths of sheets may be cut from the continuously-delivered web of paper, it is necessary to vary the relative speed of the revolving cutter and the paper. In the present instance of my invention I ac-

complish this by means of a face-wheel connected with the power-shaft.

Referring to Figs. 3, 4, and 5, it will be seen that the power-shaft b , carrying the usual fast and loose pulleys $b' b^2$, has secured thereto the fast friction-wheel or drive-wheel C and the loose or driven wheel C'; the former in the present instance being shown as fixed immovably on the main shaft by means of the pin c and the latter or driven wheel C' being shown as mounted on a long sleeve c' , loose on the shaft b and provided at its outer end with the cog-pinion c^3 , the latter meshing with the gears $c^3 c^4$ to revolve the cutters a^9 . The sleeve c' may be separated from the wheel C by a washer x . The main shaft b is also provided with a cog-pinion b^3 , meshing with the gears $b^4 b^5$, for operating the paper-feeding mechanism.

Adjacent the fast and loose friction-wheels C C' and resting against the same in frictional contact therewith I have shown two face-wheels D D', having their axes perpendicular to the main shaft and being preferably provided with ball-bearings d , in order to reduce the frictional resistance to a minimum. The face-wheels are journaled in upwardly-extending brackets $d' d^2$, which are substantially similar and are hinged at their lower ends at d^3 to a carrier E. These face-wheels are held toward each other in yielding engagement against the diametrically opposite sides of the drive-wheel C and driven wheel C' by means of a tension device. The tension device is herein shown as comprising a rod f , secured in the bracket d^2 and passing through the bracket d' , its free end being screw-threaded and provided with a hand-nut f' , between which and a movable collar f^2 the tension-spring f^3 is arranged, so that by loosening or tightening the hand-nut f' the nut f^2 may be caused to bear with greater or less yielding pressure against the bracket d' , thereby correspondingly varying the frictional pressure of the face-wheels against the opposite sides of the wheels C C'.

The drive-wheel C, being fixed to the main shaft, rotates with it at the same speed and correspondingly rotates the face-wheels, the speed of rotation of the latter, however, depending upon the distance from the center of the point of contact of the drive-wheel therewith, and the face-wheel transmits its

motion to the driven wheel C', the speed of the latter being also further varied by the distance it is removed from the center of the face wheel or wheels.

5 By changing the relative position of the face-wheels and the wheels C C', so that one or both of the latter shall be brought nearer or farther away from the center of the face-wheels, the speed of the driven wheel C' relatively to the main shaft *b* will be correspond-
10 ingly changed. In order, therefore, to vary the relative position of the wheels as stated, I have mounted the carrier E in ways *e* in the under side of a guide-hanger H beneath and
15 parallel to the power-shaft *b*. A rod *e'*, having at its outer end a hand-wheel E', is mounted in the frame A and is provided at its inner end with threads in engagement with a lug *e*² on the carrier E, whereby the latter may be
20 quickly and accurately moved one way or the other in the guideway of the hanger H. The latter is provided with an elongated slot *h* to receive the rod F in order to permit the necessary movement thereof when the face-wheels
25 are reciprocated by the mechanism just described. A gage *g* and pointer *g'* are suitably provided in order to indicate to the operator the relative change in movement of the cutter and feeding apparatus, or, in other words, to
30 indicate the lengths of the sheets being cut. While I have herein shown two face-wheels, in order that one may counterbalance and support the other, yet I desire it to be understood that one of these may be omitted within
35 the scope of my invention; also, while I have shown the wheels C C' as relatively immovable lengthwise on the main shaft it is obvious that either one or both may be movable thereon; also, it is within the scope of my invention to
40 provide either or both of these wheels otherwise connected with the main shaft than as herein shown; also, the face-wheels may be mounted in stationary bearings and the relative movement desired may be secured by
45 moving either or both of the friction-wheels. Proper gripping frictional action between the surfaces of wheels C C' and D D' is secured by providing the latter with annular inset
50 pieces of wood *w w* and the former with leather surfaces *c*^x, as shown.

In order that the paper may be fed with extreme precision and accuracy to the cutters, I have provided the auxiliary feed-rolls K K',
55 mounted on the table *a*⁸, closely adjacent to the cutters, so as to firmly feed the paper at that point. These rolls are driven by suitable means, here shown as a belt *k*².

A further provision is shown in detail in Fig. 6, the object thereof being to permit a
60 relative yielding of the movable cutter *a*⁹ and the fixed cutter *a*¹¹ in case the paper should get wedged between the two, or for any reason it should be necessary in order to avoid accident that one cutter should yield laterally to the other. In the present instance the
65 stationary cutter *a*¹¹ is mounted in the support L, which rests loosely at its lower end on

the frame of the machine and is limited as to its outward adjustment by suitable means, as
by the bolt *l*, the upper portion thereof being
70 held yieldingly against the head of the bolt *l* by means of one or more springs or rubber cushions R. When, therefore, it becomes
necessary in the operation of the machine for
the cutter-blade *a*¹¹ to move away from the
75 cutter-blade *a*⁹, this yielding cushion R permits the required movement.

My invention is not restricted to the particular details thereof as herein shown, inas-
much as many changes may be resorted to
85 without departing from the spirit and scope of my invention.

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

85 1. The combination with a paper-cutter, and means to feed the paper thereto, of a power-shaft, a drive-wheel fast on said shaft, a power-transmission face-wheel in frictional engagement with said drive-wheel, and a
90 driven wheel loose on said shaft, said driven wheel being driven by said face-wheel and connected with and to operate said cutter, and means to change the relative positions of the said wheels for varying the relative speed
95 of the cutter, substantially as described.

2. In a paper-cutter, a power-shaft, two wheels respectively fast and loose thereon, two opposing face-wheels in frictional engage-
100 ment with said two wheels, independent journal-brackets in which said face-wheels are mounted, a carrier on which said brackets are pivoted, and means to reciprocate said carrier longitudinally of said shaft, substantially as
105 described.

3. In a paper-cutter, a power-shaft, a drive-wheel carried thereby, two opposing face-wheels in frictional engagement with the
drive-wheel, a driven wheel driven by said
face-wheels, brackets for the face-wheels, a
110 carrier to which said brackets are independently pivoted, and means to hold said brackets yieldingly together, substantially as described.

4. In a paper-cutter, a power-shaft mounted
115 in fixed bearings, a drive-wheel fixed thereon, and a driven wheel loose thereon and provided with an extension having means for gearing with and to operate the cutter, two
opposing face-wheels in frictional engage-
120 ment with said drive-wheel and driven wheel, brackets in which said face-wheels are journaled, a carrier for said brackets and on which they are pivoted, a guide-hanger having ways
in which said carrier is mounted, and means
125 to reciprocate the latter in said ways, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER DILLON.

Witnesses:

HENRY C. KING,
GEO. H. MAXWELL.