

(No Model.)

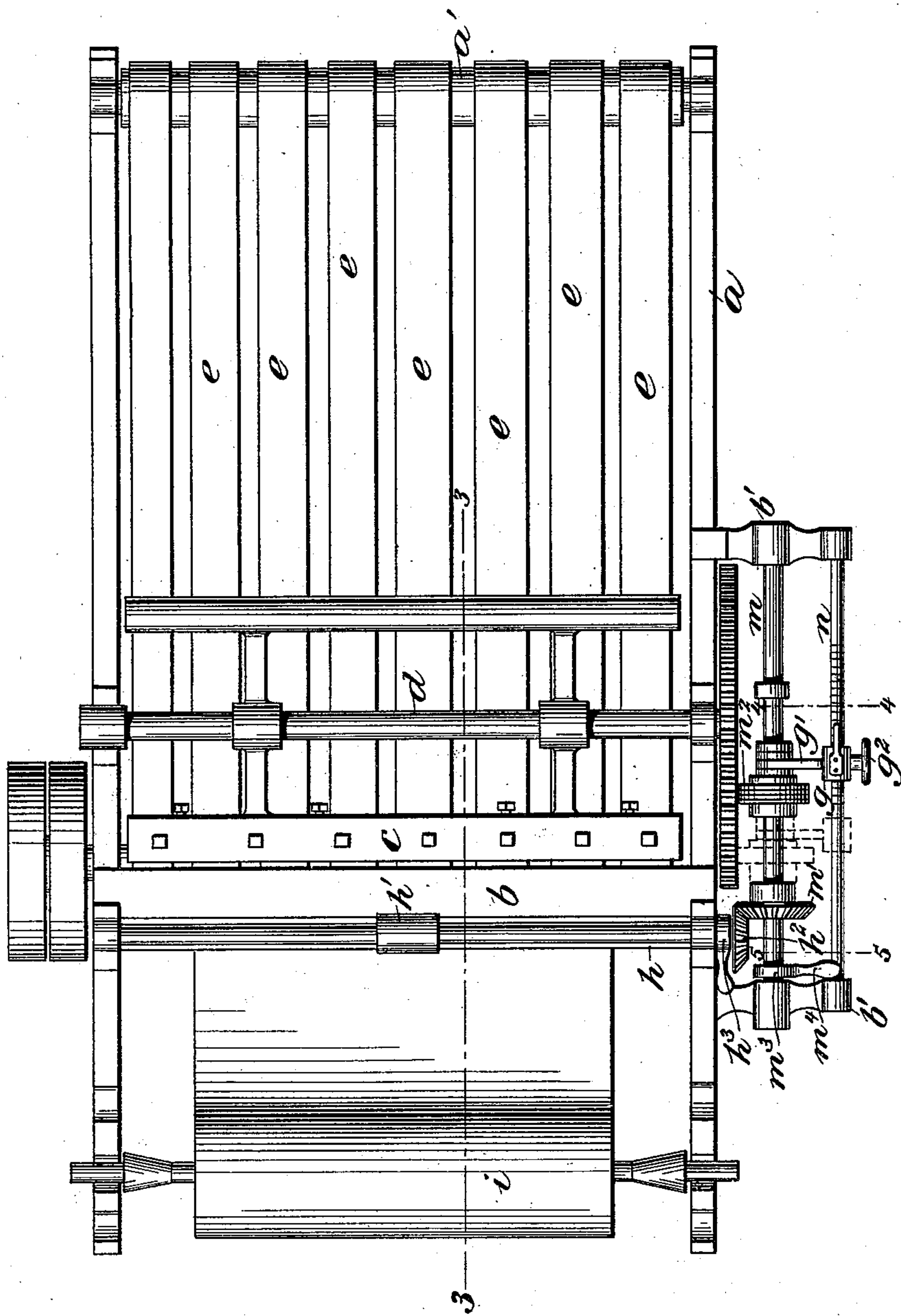
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M. D. KNOWLTON.
PAPER CUTTING MACHINE.

No. 557,400.

Patented Mar. 31, 1896.

Fig. 1.



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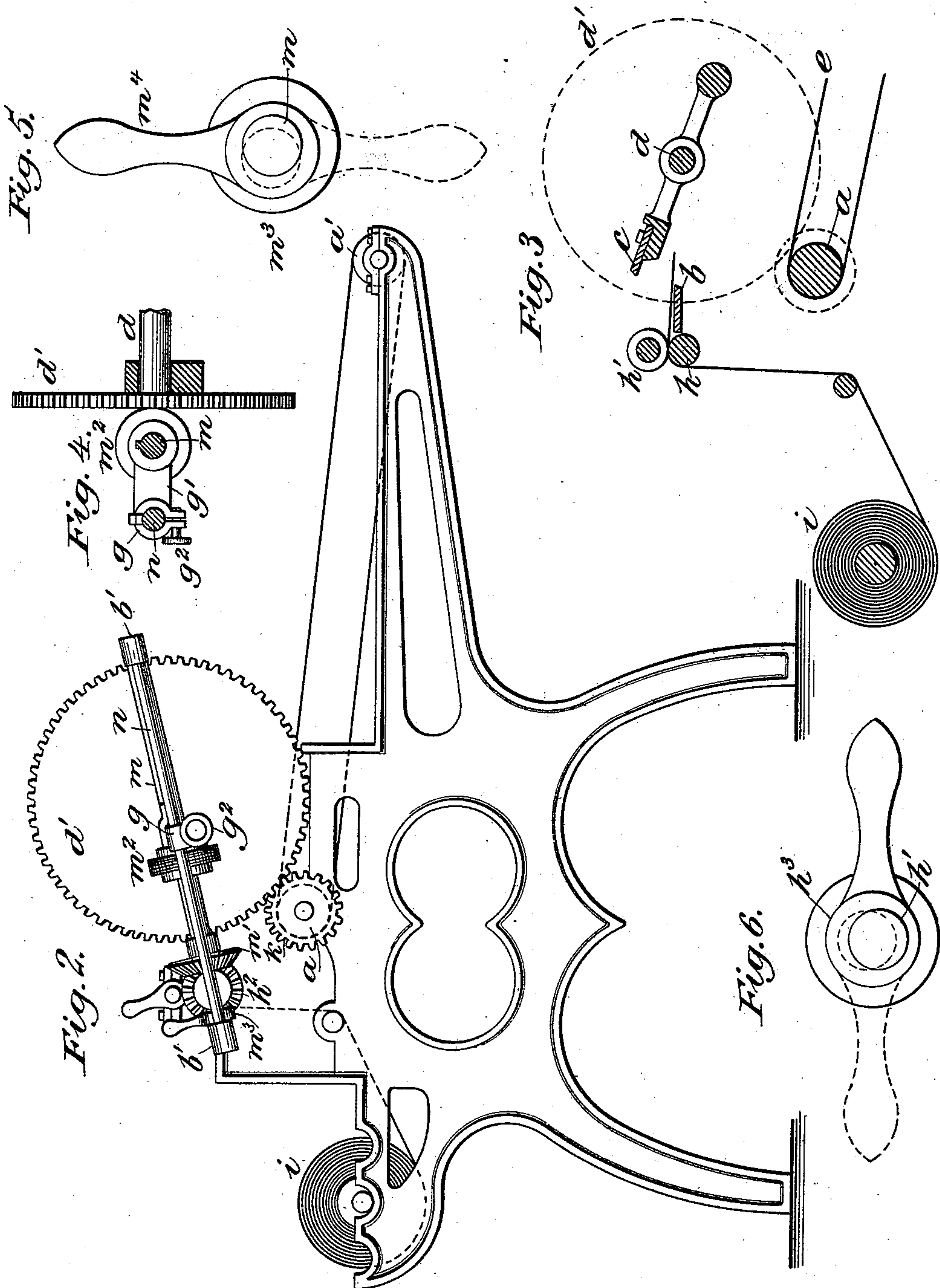
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UNITED STATES PATENT OFFICE.

MARK D. KNOWLTON, OF ROCHESTER, NEW YORK.

PAPER-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 557,400, dated March 31, 1896.

Application filed May 8, 1893. Serial No. 473,419. (No model.)

To all whom it may concern:

Be it known that I, MARK D. KNOWLTON, a citizen of the United States, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Paper-Cutting Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention relates to that class of paper-cutting machines in which the paper is automatically fed from a roll supported thereon into position to be cut by the cutter into strips or pieces of the desired size, and has for its object to adapt such machines for cutting strips or pieces of any desired size, accurately and without waste of material, while the machine is in operation or otherwise. This object I secure by providing a cheap and simple mechanism adapted to be employed in combination with and form part of a paper-cutting machine of ordinary construction, as above referred to, whereby the speed and position of certain parts of the feed mechanism may be conveniently and accurately adjusted to regulate the size of the sheets to be cut, and also to allow the paper to be readily inserted or removed from a position between the feed-rollers, which features are essential to the easy and proper manipulation of the paper in the process of cutting the same.

Referring to the drawings, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a diagram showing a longitudinal vertical section of the feed and cutting mechanism through line 3 3 of Fig. 1. Fig. 4 is a cross-section through line 4 4 of Fig. 1. Fig. 5 is an enlarged view in cross-section through line 5 5 of Fig. 1, showing the eccentric-bearing and its operating handle or lever for shifting certain of the feed-roller-operating mechanism to and from an operative position; and Fig. 6 is an enlarged view in cross-section through line 6 6 of Fig. 1, showing a construction similar to that shown in Fig. 5 for adjusting the position of the upper feed-roller.

To explain in detail, *a* represents the main supporting-frame, which may be of any suitable construction; *b*, the stationary shear-plate; *c*, the revolving cutter; *d*, the cutter-operating shaft; *ee*, a series of endless bands

which operate over rollers *a a'* to convey the cut strips of paper or other material from the machine, and *h h'* the feed-rollers between which the paper passes from the roll (represented at *i*) to be fed or carried over the shear-plate *b* and be cut by the revolving cutter *c* into pieces of any desired size, which pieces are received on the endless bands *ee* and conveyed away. The above parts are of usual construction and not of my present invention.

The roller *a*, which in the present instance shown forms the driving-shaft, is provided with a pinion *k* thereon, which engages with a gear-wheel *d'* on the shaft *d* to communicate motion to the latter. A shaft *m* is supported in a position at one side of the disk or gear-wheel *d'*, in a line central therewith, and is supported in arms or extensions *b' b'* of the frame *a*, as more clearly shown in Fig. 1. This shaft is provided with a bevel-gear *m'* thereon, which engages with a similar gear *h'* on the lower feed-roller *h* to communicate motion to the latter, and is also provided with a friction wheel or disk *m²* thereon, which is adapted to bear upon the face of the wheel or disk *d'* to be operated thereby and rotate the connecting-shaft *m*.

The friction wheel or disk *m²* is connected with its shaft *m* by means of a spline, as more clearly shown in Fig. 4, and is longitudinally movable thereon, as shown by dotted lines in Fig. 1, in order that it may be adjusted to engage with the disk or wheel *d'* at a greater or less distance from either the center or periphery of the same and thereby regulate the speed of the shaft *m* and the connecting feed-roller *h*, as it is obvious that the position of the friction-wheel in its relation to the periphery of the engaging disk or wheel regulates its speed. The object of thus regulating the speed of the feed-roller *h* is to regulate the feed of the paper by said rollers, which, being at a greater or less speed, causes the paper to be cut into larger or smaller strips or pieces by the revolving cutter *c*, as will be obvious.

The position of the friction wheel or disk *m²* is adjusted by means of an adjusting device supported on a rod *n*, which latter is arranged substantially parallel with the shaft *m* and is supported in the arms or extensions *b' b'* of the frame *a*, as clearly shown in Figs. 1 and 2. This adjusting device consists of a

sliding head g , which is provided with an arm g' , connecting with the hub of the friction-disk m^2 and with a set-screw g^2 , which is adapted to secure the said sliding head in a stationary position on the rod after the friction-disk has been adjusted to the desired position. The rod n is provided with gage-marks, as at n' , upon its upper side, as a convenient means by which the adjusting device may be quickly and accurately adjusted to move the friction-disk to a position to obtain the desired speed of the feed-roller and thereby regulate the size of the sheets or strips of paper to be cut.

One end of the shaft m has its bearings in an eccentric m^3 , (see Fig. 5,) which is supported in one of the arms or extensions b' of the frame a and provided with a handle m^4 as a means for operating the same in a manner to adjust the position of the shaft m , as shown by dotted lines in Fig. 5, and move the friction wheel or disk carried thereby to and from engagement with the operating gear-wheel d' . By thus moving the handle or lever m^4 of the eccentric in one direction the friction-wheel is thrown into contact with the wheel or disk d' in order to be operated thereby and communicate motion to the feed-rollers, and when moved in the opposite direction, as shown by dotted lines in Fig. 5, the friction wheel or disk is moved from contact with the wheel or disk d' and the feed-rollers are stopped from movement. The paper-feeding mechanism can thus be stopped instantly at any time without stopping the machine.

One end of the upper feed-roller h' is also supported in an eccentric h^3 , as more clearly shown in detail in Fig. 6, which is operated in substantially the same manner as the bearing of the shaft m , in order that the feed-roller may be either elevated to allow for the ready removal or insertion of the paper from or between the rollers, and also to stop feeding of the same at any time, as desired, or be lowered to compress the paper between the rollers for the purpose of causing it to be fed forward. This adjustment of the upper feed-roller is especially adapted for the purpose of releasing and allowing the end of the paper to be drawn from between the rollers, by reason of its own weight, when the desired number of sheets have been cut from the roll, and thus obviate any liability of waste. When further sheets are to be cut, the end of the roll or paper may be readily inserted between the feed-rollers to the proper position in relation to the cutter in such manner that when the machine is again adjusted and put in operation the paper may be fed and cut thereby without causing any waste or loss of the same, as would be the case if the end of the paper was not released from between the rolls. This feature of my invention for preventing waste of material, together with the means for accurately adjusting the machine for cutting different sizes of sheets, makes it especially desirable for use by those handling roll-paper

where various sizes and quantities of sheets are to be cut.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter, provided with a gear-wheel or disk thereon, a feed-roller, an adjustable shaft having operative connection with said feed-roller and provided with a friction-disk thereon adapted for contact with the said gear-wheel or disk to be operated thereby, and means for adjusting said adjustable shaft to and from an operative position, substantially as described and for the purpose set forth.
2. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter, provided with a gear-wheel or disk, a feed-roller, a shaft having operative connection with said feed-roller and provided with a longitudinally-adjustable friction wheel or disk thereon adapted for contact with said gear-wheel or disk, means for adjusting the position of said friction wheel or disk on its shaft, and means for adjusting the position of said shaft to move the friction-disk thereon to and from a position for contact with the gear-wheel or disk, substantially as described and for the purpose set forth.
3. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter, provided with a gear-wheel or disk, a feed-roller, an adjustable shaft having operative connection with said feed-roller and provided with a friction wheel or disk thereon adapted for contact with the gear-wheel or disk to be operated thereby, and an adjustable eccentric bearing for said adjustable shaft, substantially as described and for the purpose set forth.
4. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter, provided with a gear-wheel or disk, a feed-roller, a shaft having operative connection with said feed-roller and provided with a longitudinally-adjustable friction wheel or disk thereon adapted for contact with said gear-wheel or disk, a device for adjusting the position of said friction wheel or disk on its shaft, consisting of a sliding head located on a supporting-shaft and having connection with said friction wheel or disk to move and adjust the same, and a scale, substantially as described and for the purpose set forth.
5. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a ro-

tating shaft carrying said revolving cutter, provided with a gear-wheel or disk, a feed-roller, a shaft having operative connection with said feed-roller and provided with an adjustable friction wheel or disk thereon adapted for contact with said gear-wheel or disk, and a second feed-roller cooperating with the former, supported in an adjustable eccentric bearing, substantially as described and for the purpose set forth.

6. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter, provided with a gear-wheel or disk thereon, a feed-roller, a shaft having operative connection with said feed-roller provided with an adjustable friction-roll thereon adapted for contact with said gear-wheel or disk, means for adjusting the position of said friction-roll on its shaft, consisting of a sliding head located on a supporting-shaft and having connection with said friction-roll to move and

adjust the same, and means for adjusting and locking said sliding head on its shaft, substantially as described and for the purpose set forth.

7. In a paper-cutting machine, the combination of a stationary cutter, a revolving cutter coacting with said stationary cutter, a rotating shaft carrying said revolving cutter and provided with a friction wheel or disk secured thereon, a feed-roller, a cross-shaft supported adjacent to one end of both the cutter-shaft and the feed-roll, having operative connection with the latter and also provided with an adjustable friction-roll thereon adapted for direct contact with the friction wheel or disk on the cutter-shaft, substantially as described and for the purpose set forth.

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