(No Model.) 2 Sheets—Sheet 1.

G. E. JONES.

Machine for Folding and Cutting Paper or other Materials.

No. 229,420. Patented June 29, 1880.

Fig. 1.

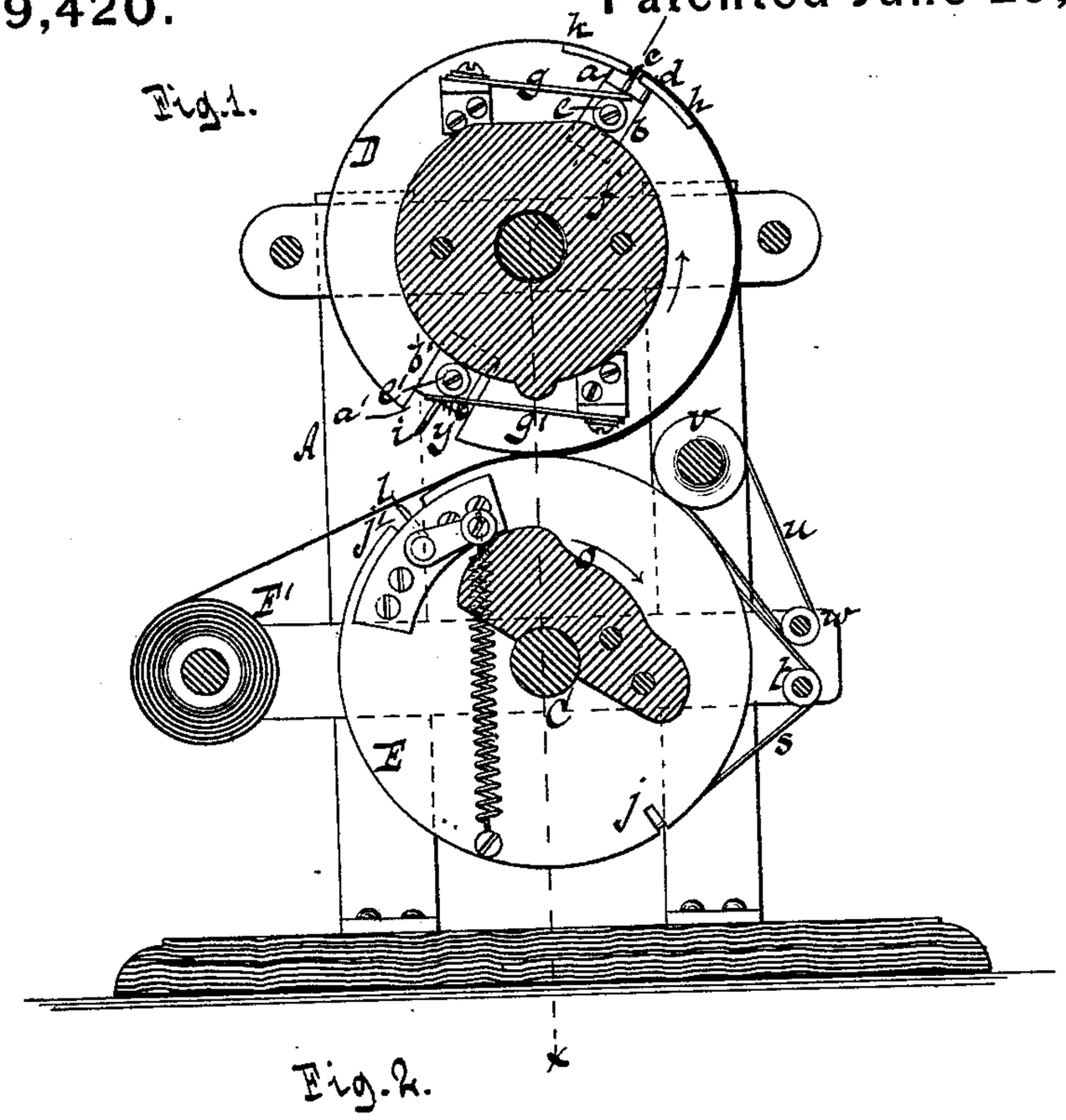
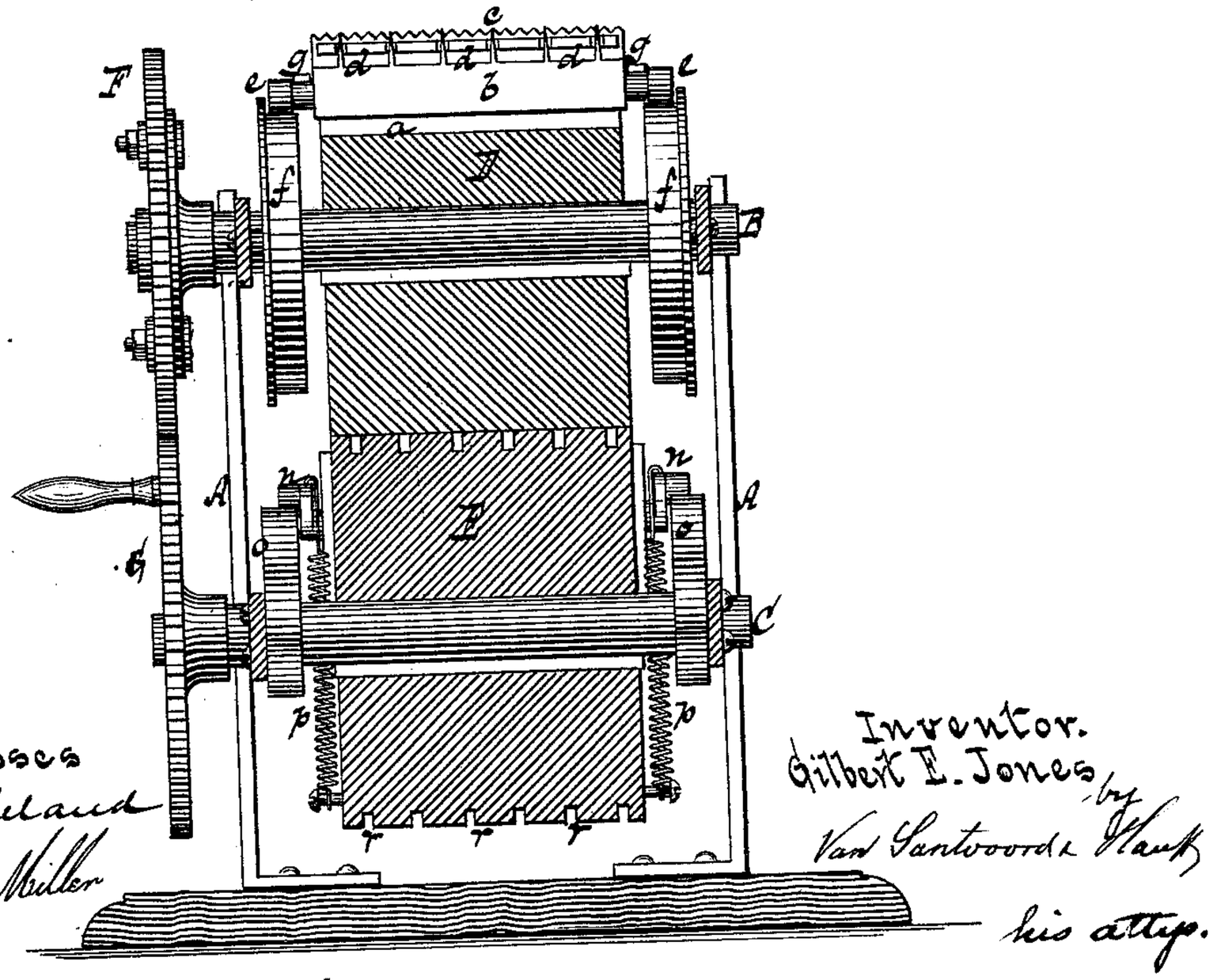


Fig. 2.



Witnesses
Otto Hupfeld
William Miller

Inventor.
Gilbert E. Jones,
by Van Santvoord & Hauff
his attys.

(No Model.) G. E. JONES. 2 Sheets—Sheet 2.

Machine for Folding and Cutting Paper or other Materials.

No. 229,420. Patented June 29, 1880.

Fig. 3.

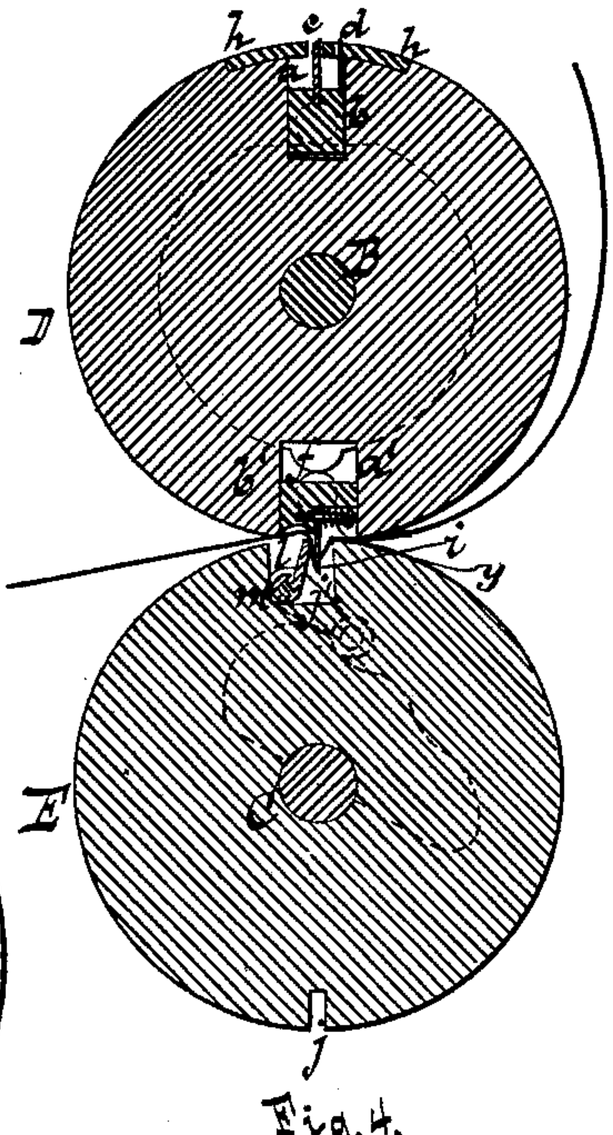


Fig. 6.

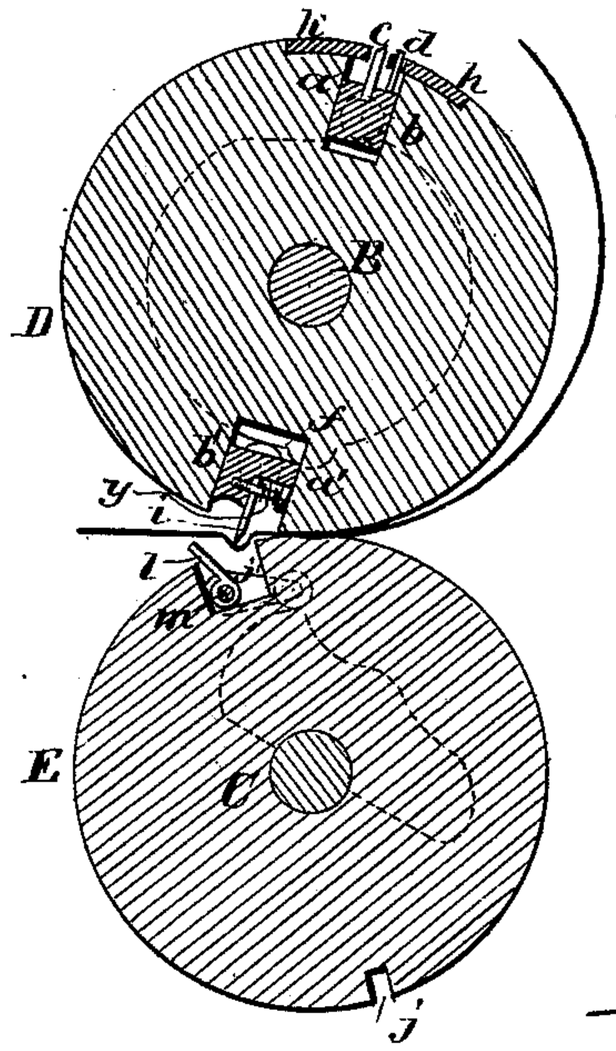


Fig. 4.

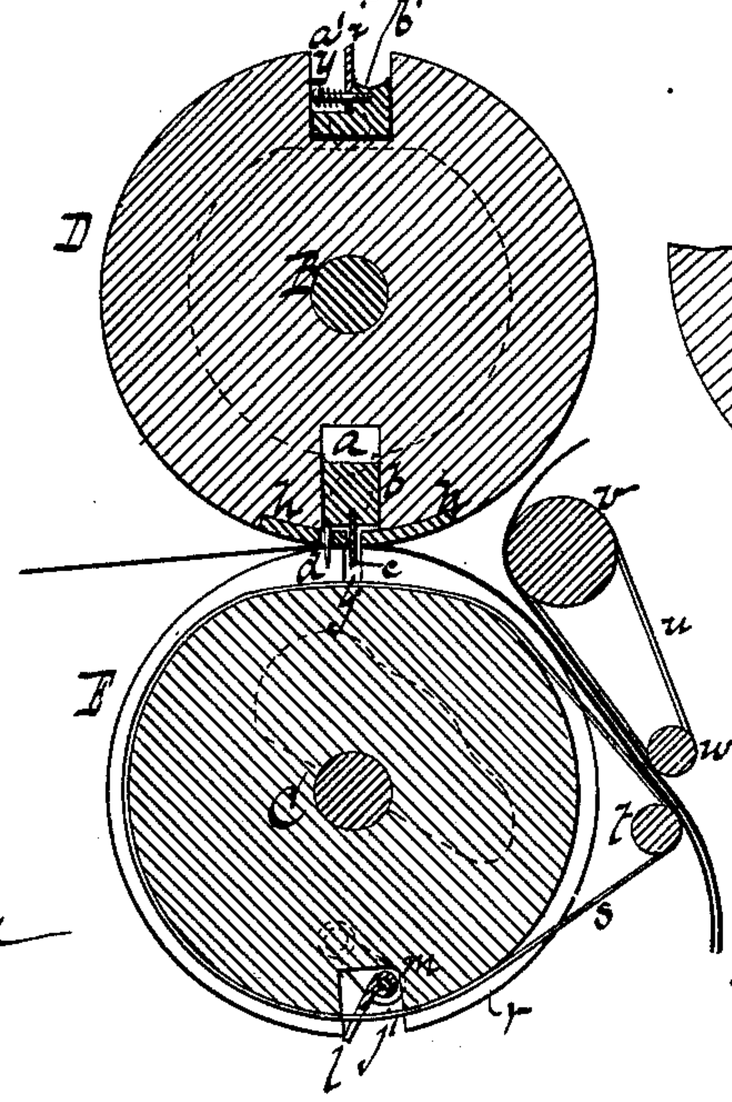
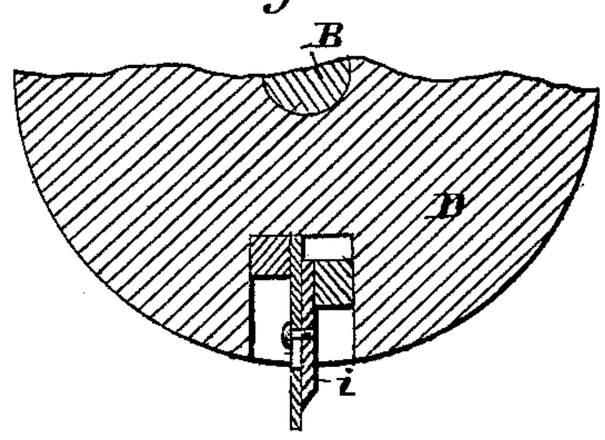


Fig. 5.



Witnesses.
Otto Hufeland
William Miller

Inventor.
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UNITED STATES PATENT OFFICE.

GILBERT E. JONES, OF NEW YORK, N. Y.

MACHINE FOR FOLDING AND CUTTING PAPER OR OTHER MATERIALS.

SPECIFICATION forming part of Letters Patent No. 229,420, dated June 29, 1880.

Application filed April 7, 1880. (No model.)

To all whom it may concern:

Be it known that I, GILBERT E. JONES, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Machines for Folding and Cutting Paper or other Materials, of which the following is a specification.

This invention relates to that class of machines for which Letters Patent of the United States were granted to me October 9, 1877, No. 196,021. In the machine described in said Letters Patent the web is folded by the action of a blade which has a dull edge and which is fixed in the direction of the radius of the cylinder carrying the same.

My present invention consists, essentially, in arranging the blade referred to to receive a reciprocating motion in the direction of the radius of the cylinder, and making it a combined folding and cutting device, as hereinafter more fully set forth.

This invention is illustrated in the accompanying drawings, in which Figure 1 shows the machine partly in side view and partly in section. Fig. 2 is a vertical longitudinal section thereof in the plane of the line *x x*, Fig. 1. Fig. 3 illustrates the operation of the folding mechanism. Fig. 4 illustrates the operation of the cutting mechanism. Fig. 5 illustrates a modification of the combined folding and cutting device. Fig. 6 illustrates the operation of the folding mechanism, showing the position of the blade when just commencing to make a fold in the paper and the position of the griper at the same instant.

Similar letters indicate corresponding parts.

The letter A designates the machine-frame, forming bearings for the shafts B C of two cylinders, D E, which revolve in superficial contact with each other, the shafts being geared together by cog-wheels F G.

In the surface of the cylinder D is a recess, *a*, into which is fitted a stock, *b*, carrying both a cutting-blade or knife, *c*, and a set of pins, *d*, so that this knife and the pins are adjacent to each other. On the opposite ends of the stock *b* are mounted roller-studs *e*, bearing on cam-plates *f f*, attached to the machine-frame, the studs being held in contact with such cam-plates by springs *g*. Over the mouth of the recess *a* are stripping-plates *h h*, between which the knife *c* works, and one of which is perforated for the passage of the pins *d*. These stripping-plates *h h* are flush with the surface of the cylinder D, and in the inner position of the stock *b* neither the cutting-edge of the knife nor the points of the pins *d* project beyond the stripping-plates.

In the cylinder D, and diametrically opposite to the recess *a*, is a second recess, *a'*, in which is situated a stock, *b'*, carrying a blade, *i*, which constitutes a combined folding and cutting device, the same having an approximately sharp edge. On the opposite ends of the stock *b'* are mounted roller-studs *e'*, (see Fig. 1,) bearing on the cam-plates *f*, on which bear also the roller-studs *e*, the roller-studs *e'* being held in contact with such cam-plates by springs *g'*. The sides of both recesses *a a'* are substantially parallel, and in certain positions of the cylinder, hereinafter described, the knife, together with the retaining-pins *d* and the blade *i*, obtains a reciprocating motion therein by the action of the cams *f* and springs *g g'*.

In the surface of the cylinder E are two recesses or sockets, *j j'*, one to receive the knife *c* and the other to receive the blade *i* of the cylinder D. In the recess *j'* is situated a griper, *l*, which is mounted on a rock-shaft, *m*, and operated by cranks *n*, in connection with cam-plates *o*, the crank-pins being held upon the faces of said cam-plates by springs *p*. The cylinder E has a series of circumferential grooves, *r*, one to each of the retaining-pins *d*, in which work a series of tapes, *s*, extending also around a roller, *t*. Adjacent to the tapes *s* is a second series of tapes, *u*, extending around rollers *v w*. The blade *i* is held in contact with its stock by a spring, *y*, which is coiled on a screw entering the stock, as clearly shown. This spring *y* allows the blade *i* to yield to the pressure of the griper *l* against it.

The web to be cut is taken from a reel, F', and as the same passes between the two cylinders D E the end thereof is pierced by the retaining-pins *d* and carried up to the position shown in Fig. 1. As the motion of the cylinders D E progresses the pins *d* recede, thereby releasing the end of the web, and at the same time the blade *i* enters the recess *j'*,

where it acts on the web, due to the blade projecting slightly beyond the periphery of the cylinder, producing therein a bight or fold, as indicated in Fig. 6. The folding action of the blade *i* takes place before the same reaches its lowest position, or is brought to the point of contact of the cylinders D E, when it is impelled by the action of the cam *f*, and thus cuts through the material.

The releasing of the web at the moment the blade *i* enters the recess *j'* enables the blade to fold the web without tearing the same. The action of the griper *l* takes place at or just prior to the impulse of the blade *i* by the cam *f*, and the griper bears against one side of such blade, so as to clamp the web against it and hold it back during the cut. When the web has been cut through the blade *i* recedes, while the griper *l* catches the web on both sides of the cut and presses the same against one edge of the recess *j'*, whereupon it delivers the web to the tapes *s*, which carry the same out away from the cylinders, as shown in Fig. 4. When the folded and cut web has been thus drawn out to a certain length the knife *c* enters the recess *j* and cuts the web, while at the same time the pins *d* catch hold of a fresh portion of the web, as indicated in Fig. 4, and the former operation is repeated.

It will be seen from this description that two separate sheets are cut from the web and laid upon each other to each action of the knife *c*.

It may be remarked that the combined folding and cutting device *i* may be constructed in two parts, as shown in the detached sectional view, Fig. 5, in which event one of said parts is made stationary, and with a blunt or unsharpened edge, while the cutting-blade is made to reciprocate on the stationary part.

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

1. The combination, in a machine for folding and cutting paper or other materials, of a knife and a set of retaining-pins arranged adjacent to each other on a revolving cylinder, a combined folding and cutting device arranged in the same cylinder, mechanism, substantially as described, for imparting a reciprocating motion to the knife, the retaining-pins, and the combined folding and cutting device, and a griper-cylinder having two recesses, one to receive the knife and the other the combined folding and cutting blade, all adapted to operate substantially as described.

2. The combination, in a machine for folding and cutting paper or other materials, of a knife and a set of retaining-pins, both secured to a common stock arranged on a revolving cylinder, a combined folding and cutting device arranged on the same cylinder, mechanism, substantially as described, for imparting a reciprocating motion to said stock and the combined cutting and folding device, and a griper-cylinder having two recesses, one to receive the knife and the other to receive the combined folding and cutting blade, all adapted to operate substantially as described.

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

GILBERT E. JONES. [L. S.]

Witnesses:
J. HERMANN WAHLERS,
E. F. KASTENHUBER.