

(No Model.)

2 Sheets—Sheet 1.

M. H. SPEAR.
PAPER FOLDING AND CUTTING-OFF MECHANISM FOR CONTINUOUS
PRINTING MACHINES.

No. 583,606.

Patented June 1, 1897.

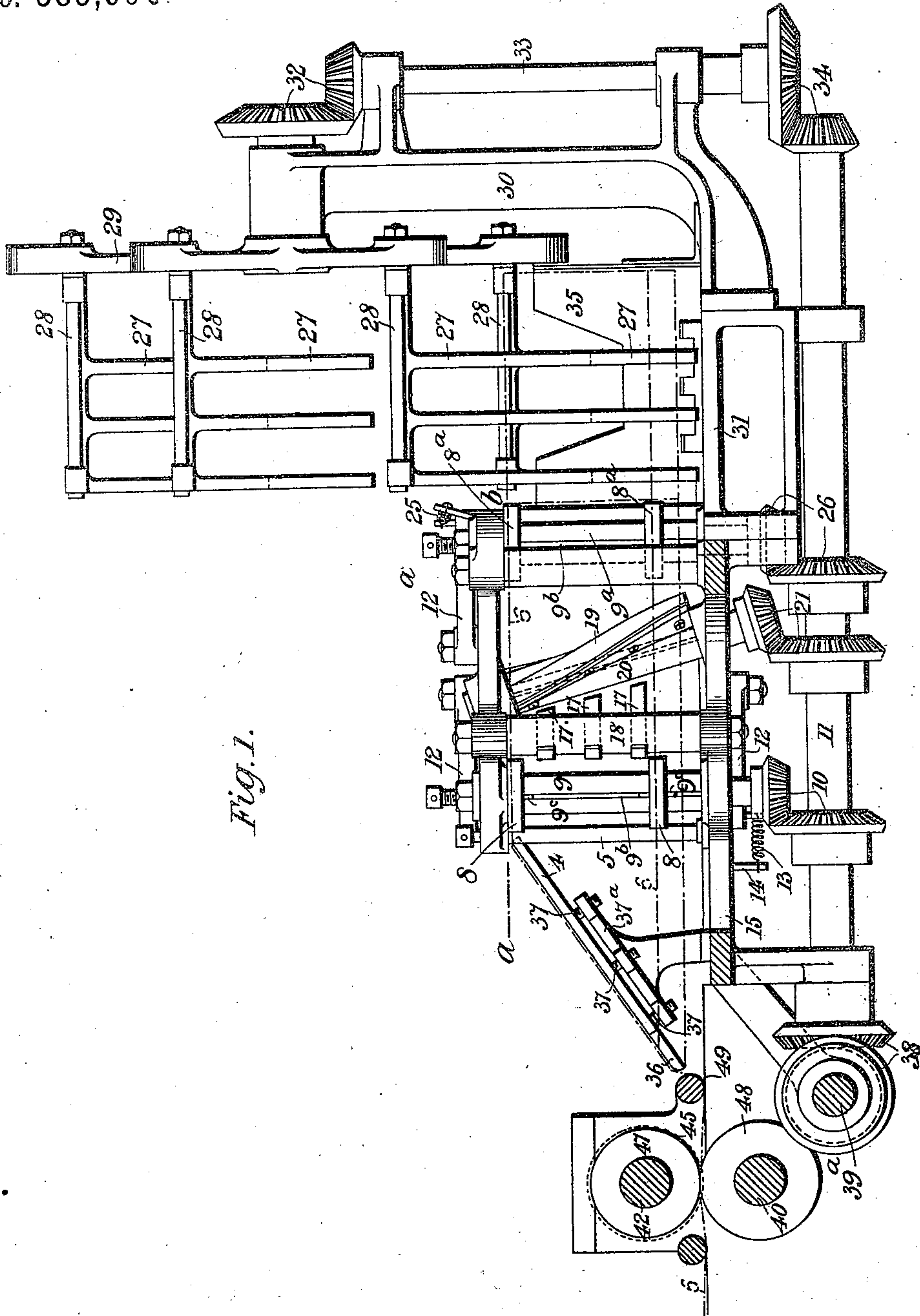


Fig. 1.

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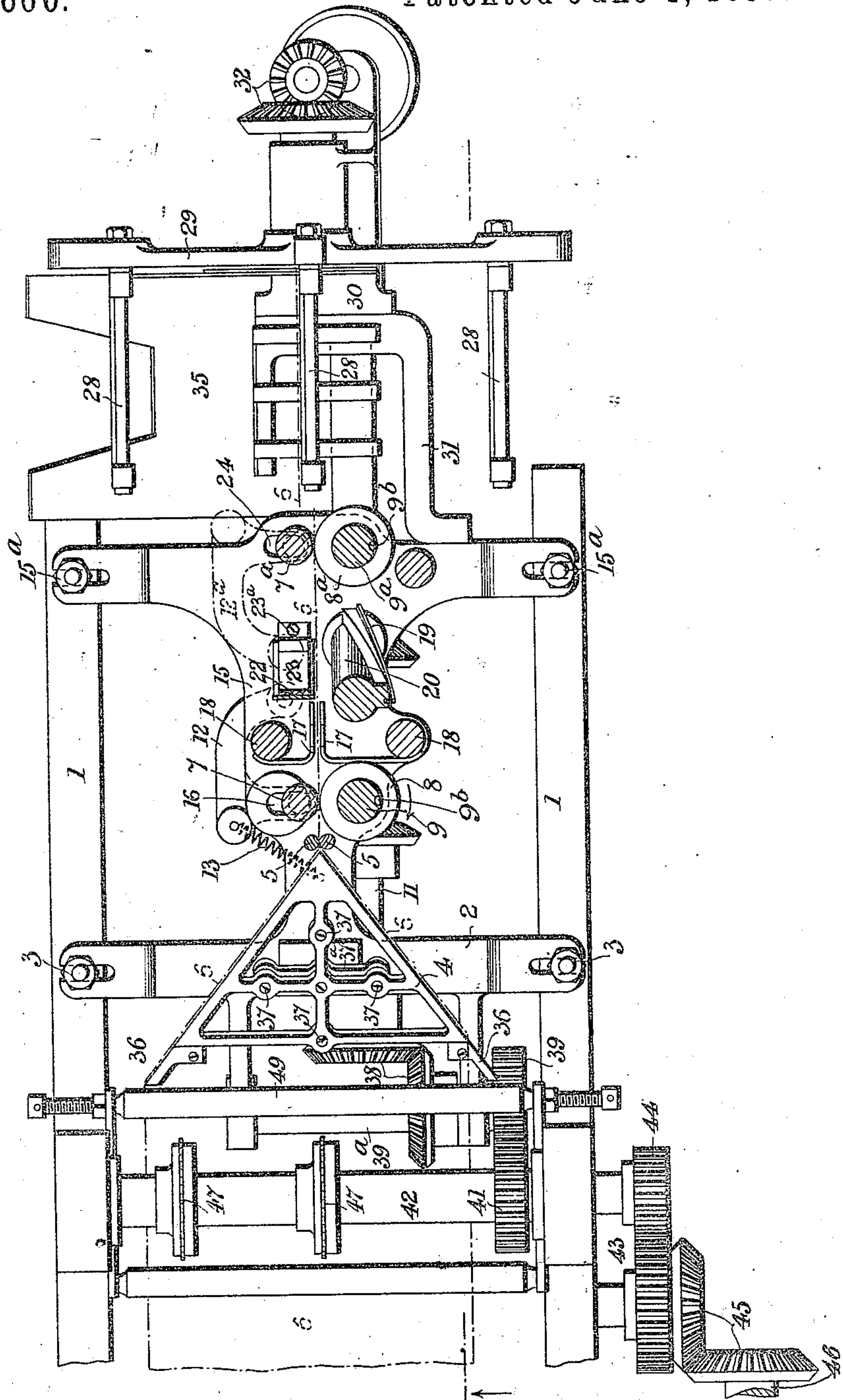
INVENTOR.
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Fig. 2.



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UNITED STATES PATENT OFFICE.

MURRAY HINCKLEY SPEAR, OF LONDON, ENGLAND, ASSIGNOR TO THE
LAMSON PARAGON SUPPLY COMPANY, LIMITED, OF SAME PLACE.

PAPER FOLDING AND CUTTING-OFF MECHANISM FOR CONTINUOUS-PRINTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 583,606, dated June 1, 1897.

Application filed January 17, 1896. Serial No. 575,897. (No model.) Patented in England July 27, 1894, No. 14,459, and in
Victoria June 19, 1895, No. 12,282.

To all whom it may concern:

Be it known that I, MURRAY HINCKLEY SPEAR, a subject of Her Majesty the Queen of Great Britain, residing at London, England, have invented a certain new and useful Improvement in Paper Folding and Cutting-Off Mechanism for Continuous-Printing Machines, (for which I have obtained Letters Patent in Great Britain under date of July 27, 1894, No. 14,459, and in Victoria under date of June 19, 1895, No. 12,282,) of which the following is a specification.

My invention relates to an improvement in the paper folding and cutting-off mechanism for continuous-printing machines, or machines printing upon a continuous sheet of paper, though the mechanism may be employed apart from a printing-machine for folding a continuous sheet of paper and cutting same off into lengths.

To clearly explain my invention, I have illustrated one form of apparatus in the accompanying drawings, in which—

Figure 1 is a side elevation; and Fig. 2 is a plan, partly in section, at *a b*, Fig. 1.

The apparatus consists of a suitable framework 1, which may form part of the printing-machine. Upon this is mounted a bar 2, adjustable laterally by bolts 3 3, which bar supports a sloping triangular frame or folding-table 4, the apex of which is situated near the upper part of a pair of vertical guide-rollers 5. The paper 6 as it passes onto the frame is drawn down the sides, as will be seen by the dotted lines, so as to fold same gradually, and the folded strip so produced passes between the guide-rollers 5 and between a pair of adjustable vertical rollers 7, or, in place thereof, it may be a roller 7 and disks 8, mounted on a shaft 9, one of the rollers (or, as shown, the shaft 9) being driven by spur-gearing 10 from a shaft 11, the disks on the shaft 9 being in contact with the roller 7, (or similar disks on another shaft,) so that both a folding and a drawing action is obtained on the paper between them, the drawing action serving to pull the paper through the apparatus. To keep the rollers or disks in contact with the paper between them, one of them is carried between arms 12 12, pivoted to

the framework and drawn forward by means of a spring 13, attached to a pin 14 on the under side of the frame 15. The frame 15, in which the rollers are carried, is adjustable laterally by means of the bolts 15^a, and is slotted at 16, where the roller passes through, so that the rollers may be opened widely to pass the paper through, and the guide-rollers 5 may also be opened in the same way. These rollers or disks may have their peripheries so shaped that they may touch the paper only on either the extreme edges or on the unprinted spaces, so that there is no danger of smudging the freshly-printed paper, and where disks are employed they are preferably adjustable vertically on the shafts for the same purpose, as well as to take different widths of paper. This adjustment may consist of a groove 9^b in the shaft 9, the disks being keyed to the shaft by means of keys or wedges 9^c, engaging with the groove.

Beyond the folding-rollers are metal strips 17, which act as guides to introduce the paper to the knife or knives, such strips being secured to the distance-pieces 18, which separate the upper and lower portions of the frame 15. On the other side of the guides is the cut-off knife, which consists of a blade 19, arranged in the form of a part of a spiral around a shaft 20, which is in a slanting position, such blade rotating continuously by means of the spur-gear 21 and working against a fixed blade or shaft 22, arranged in a slanting position and having a backing-strip 23, the spiral arrangement of the knife enabling the folded paper to be cut off while traveling. The function of the backing-strip 23 is to support and strengthen the fixed blade 22, such blade being comparatively thin. The strip also affords a means of securing the blade in position, this being effected by screwing or fastening the flat flange 23^a to the upper side of the lower part of the frame 15, a similar flange serving to secure the strip and blade to the under side of the upper part of the frame 11.

After the paper has passed between the knives, but before it is severed by same, it passes between a pair of rollers (or a roller 7^a and disks 8^a on a shaft 9^a) situated at the

rear of the knife, which draw it away after it has been cut. The roller 7^a is carried by a single pivoted arm 12^a and moves in a slot 24 in the frame below a light spring 25, attached to the arm 12^a and to the upper part of the frame, serving to draw the roller 7^a toward the disks 8^a. The shaft 9^a is driven by gearing 26.

The folded and cut off sheets upon emerging from the last rolls are knocked away by means of loose flyer-arms 27, hung on horizontal rods 28 from a plate-disk or arms 29, mounted on a bracket 30, attached to a frame 31, secured to the frame 15. The arms or disk 29 is driven by spur-gearing 32 from a shaft 33, driven by gears 34 from the shaft 11, the arms 27 knocking the sheets into a receptacle 35 as they are cut off.

The folding frame or table 4 may be enlarged, so as to be adapted to different widths of paper, by means of adjustable ear-pieces 36, which may be removed and changed as desired, and means may be provided for adjusting the table in various directions, so that the paper travels correctly over same. One means of adjustably holding the table may consist of the screws 37, which are screwed into the supporting-frame 37^a, the raising or lowering of these screws effecting a tilting of the table in the desired direction, so that the paper runs truly over same.

The bar 2 provides for a lateral adjustment of the table, as stated. The shaft 11 is driven by spur-gearing 38, which is driven in turn by gear 39 on shaft 39^a, an intermediate gear on shaft 40, (which is not shown,) a gear 41 on shaft 42, gears 43 and 44, the latter being also on shaft 42, and spur-gearing 45, driven from the main shaft 46. The shaft 42 may have perforating-disks 47, working against plain disks 48 on shaft 40, for the purpose of perforating the paper passing between them, if such is required. The paper 6 passes under a loose roller 49 before it reaches the folding-table.

What I claim is—

1. In a paper folding and cutting machine, the combination with the main frame, of an inclined triangular folding-table, a supplementary slotted frame supported on the main frame, and adjustable laterally with respect to the folding-table, two or more pairs of rollers supported upon the supplemental frame, each of said pairs of rollers comprising a stationary roller, and means for rotating the same, and a movable roller adapted to move in the slots of the supplemental frame toward and from the fixed roller, arms pivotally mounted upon said frame carrying the movable rollers, and cutting mechanism intermediate the pairs of rollers, substantially as described.

2. In a paper folding and cutting machine, the combination with the main frame, of an inclined triangular folding-table, a supplementary slotted frame supported on the main frame, and adjustable laterally with respect

to the folding-table, two or more pairs of rollers supported upon the supplemental frame, each of said pairs of rollers comprising a stationary roller, and means for rotating the same, and a movable roller adapted to move in the slots of the supplemental frame toward and from the fixed roller, arms pivotally mounted upon said frame carrying the movable rollers, a spiral cutter intermediate the pairs of rollers, and means for rotating the cutter, substantially as described.

3. In a paper folding and cutting machine, the combination with the main frame, of a supplemental frame supported thereon provided with slots, rollers fixedly mounted on the supplemental frame, and means for rotating the same, spring-actuated arms pivotally supported upon the supplemental frame, rollers carried by said arms and adapted to move in the slots of the supplemental frame toward the fixed rollers, cutting mechanism intermediate the pairs of fixed and movable rollers, and guides intermediate the fixed and movable rollers and the cutting mechanism, substantially as described.

4. In a paper folding and cutting machine, the combination with the main frame, of a supplemental frame supported thereon and provided with slots, a roller fixedly mounted on the supplemental frame and means for rotating the same, spring-actuated arms pivotally supported upon the supplemental frame, a roller carried by said arms and adapted to move in the slots of the frame toward the fixed roller, cutting mechanism adjacent the fixed and movable rollers, and guides intermediate said cutting mechanism and rollers, substantially as described.

5. In a paper folding and cutting machine, the combination with the frame, of a folding-table, a supplemental frame supported upon the main frame and adjustable with respect to the folding-table, a shaft mounted on the supplemental frame, means for rotating the shaft, disks carried by the shaft and adapted to be adjusted longitudinally thereon, a movable roller and means for moving it toward the disks, and cutting mechanism, substantially as described.

6. In paper-folding mechanism, the combination with the feeding-rollers, of a rotatable frame having its axis transverse to the axes of the feed-rollers, means for rotating the frame, rods projecting at an angle therefrom and arms loosely mounted upon the rods and adapted to move transversely across the path of movement of the paper as it emerges from the feed-rollers, substantially as described.

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

MURRAY HINCKLEY SPEAR.

Witnesses:

W. M. HARRIS,

GEO. J. B. FRANKLIN.