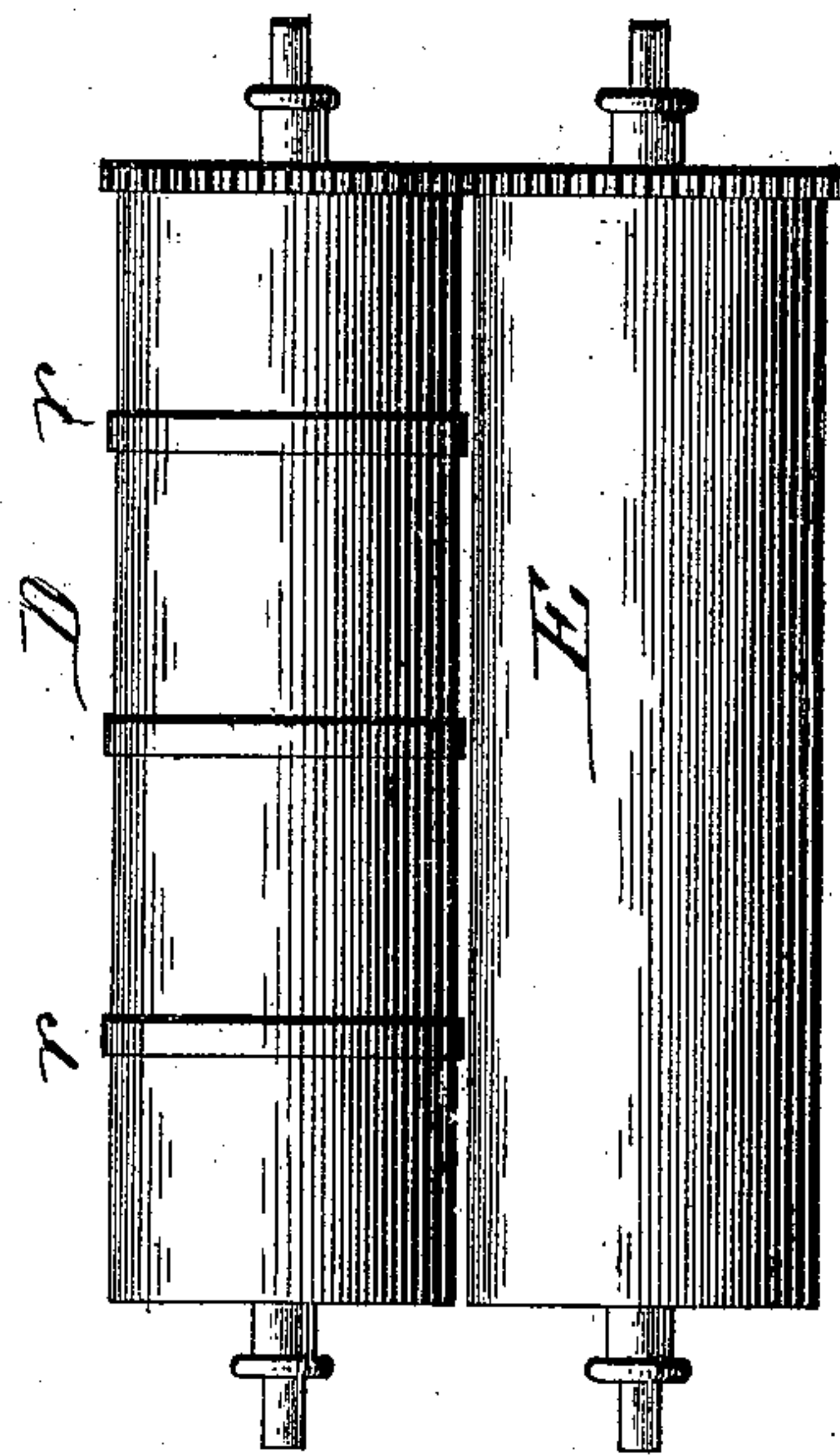
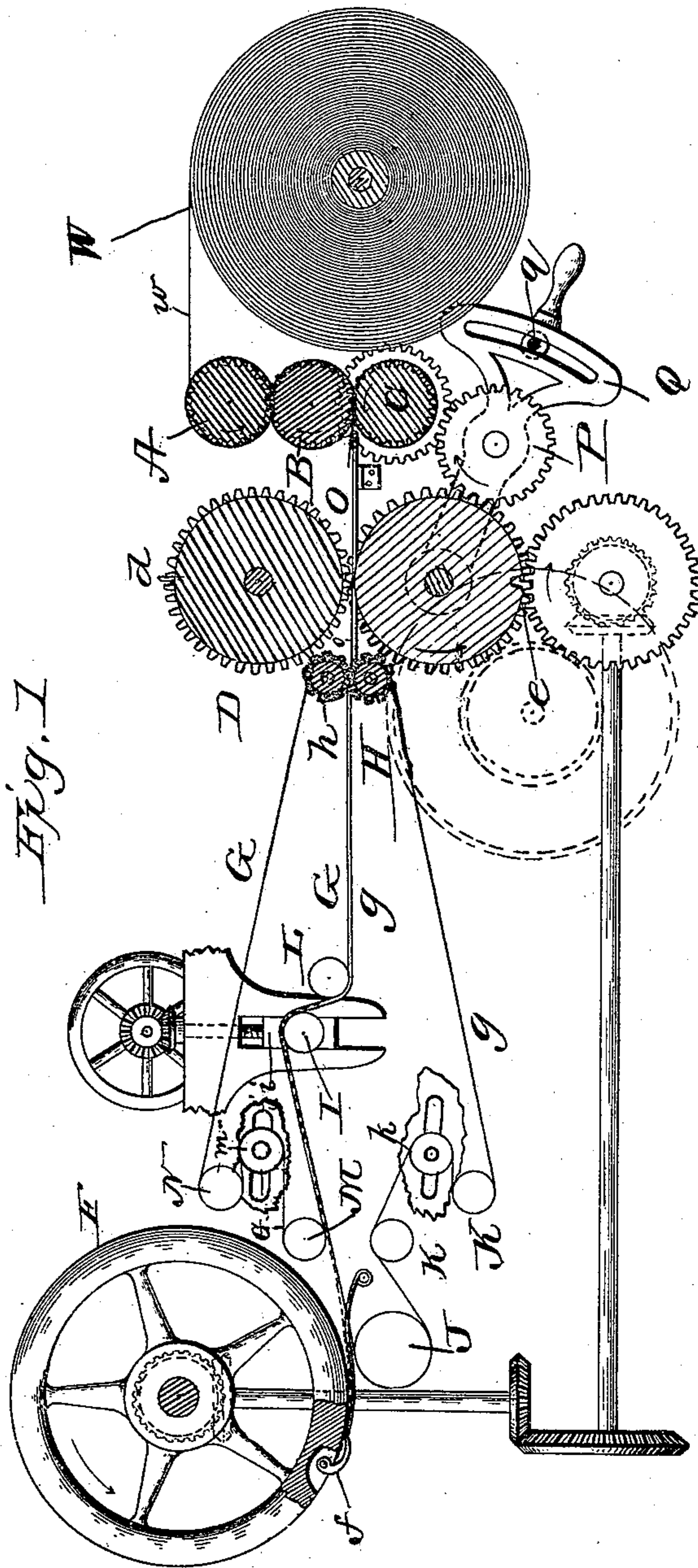


(No Model.)

J. L. COX.
ROTARY WEB SEVERING MACHINE.

No. 465,428.

Patented Dec. 15, 1891.



WITNESSES

J. L. Overand.

Arthur E. Fowell.

INVENTOR

J. L. Cox

W. H. Alexander
Attorney

UNITED STATES PATENT OFFICE.

JOSEPH L. COX, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE DUPLEX PRINTING PRESS COMPANY, OF SAME PLACE.

ROTARY WEB-SEVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,428, dated December 15, 1891.

Application filed January 19, 1891. Serial No. 378,195. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. COX, of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Rotary Web-Severing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 represents a diagrammatical section of a mechanism for severing sheets of paper from a web or roll thereof. Fig. 2 is a detail view.

My present invention is an improvement in paper-cutting machinery, being especially designed for cutting sheets of paper from a web or roll thereof; and its objects are to enable the machine to be readily adjusted or set to cut sheets of paper of any desired length up to a certain size without varying the speed of the feed-rolls by simply changing one gear, and to strain the web of paper at the moment of severing thereof, so that the action of the knife is rendered certain and the web cut evenly.

The invention consists in the novel construction and combination of parts herein-after clearly described and claimed.

The invention is especially designed for use in connection with cylinder printing-machines, and is indicated in the drawings as combined with such a press.

Referring to the drawings by letters, A B C designate three calender or feed rolls of equal size and intergeared.

D E designate the cutting-rolls, mounted beside the calenders. Roll D has a longitudinal knife *d* attached to its periphery, and roll E a longitudinal groove *e*, adapted to register and coact with knife *d* in severing the web.

F designates the cylinder of the press, and *f* the gripping-fingers thereof.

G and *g* designate upper and lower coacting endless tapes running over proper rollers or idlers journaled in the frame of the machine (not shown) and adapted to direct the web of paper from the rolls D E to the cylinder F. The lower tapes *g* run over a roller H, beside roll E, back toward cylinder F, under a

roller L, over an adjustable roller I, mounted in adjustable bearings *i* on the frame of the press, thence to and over a roll J below cylinder F, then back over and under idler-rollers K K and a tightener-roller *k*, as indicated in the drawings, and back to roller H. The upper tapes G run from a roller *h*, parallel with and above roller H, back under roller L, up over roller I, back under a roller M beside the cylinder F, but above roll J, thence up under an idler or tightener roller *m*, and over a roller N back to roller *h*. The tapes thus travel parallel from rollers H *h* to roller M, and are adapted to carry forward the sheet or web of paper. Rollers I L are so set that the portions of the tapes moving between them are nearly at right angles to the portions between rollers H L and I M, thus making a double bend in the line of travel of the tapes where they are in contact or directly opposed, so that the sheet or web will be, in a measure, pinched or gripped by the tapes in passing between the rollers I L.

O o designate fenders for directing the web from the calenders between rolls D E and from said rolls between tapes G *g*. The rolls D and E are intergeared and travel at a uniform speed.

P designates a gear-wheel journaled on a movable bracket-arm Q, which can be fixed in any position desired by a set-screw *q*, playing through a slot in the arm or any other convenient fastening. Gear P meshes with the gear on the lower roll E and with the gear on the lower calender C, so as to drive the calenders from the rolls. The rolls are driven by gearing and shafting direct from the shaft of cylinder F, as indicated in the drawings, so that the rolls make one revolution for each revolution of the cylinder. The gear P can be removed and another gear of different size substituted, so as to change the speed of the calenders, and if the speed of the calenders is changed of course the amount of paper fed in by them between the rolls will be correspondingly altered. The bracket Q enables gear P to be shifted into engagement with the gears on the roll and calender.

The operation is as follows: The web of paper *w* is drawn from roll W between the calenders A B C, as indicated, and fed therefrom between rolls D E, the amount of paper

being fed between the rolls for each revolution thereof being regulated by the size of the gear P. As the web passes between the rolls it reaches tapes G g, and the latter are
 5 so driven as to have a speed of travel much greater than the peripheral speed of the rolls D E, and equal to the peripheral speed of the cylinder F. The tapes comb the web forward, and when its edge reaches the point
 10 between rollers I L the web is drawn taut, and at this moment the knife d coacts with groove e and cuts the web. The tapes instantly hurry the severed sheet forward to the cylinder, where it is gripped by fingers f
 15 and taken from the tapes. This operation is repeated for each sheet. The rollers I L are so located that they will always cause the web to be drawn taut by tapes G g just before the knife d comes into action, so that,
 20 though the speed of the rolls may be more than the speed of the calenders, and consequently than the speed of the web of paper fed in by the calenders, yet there will be no tearing or jerking of the web by the knife, as
 25 the tapes bring it taut before the knife acts, and they also draw forward the severed sheet out of the way of the knife.

Preferably rolls D E are of such diameter that their circumference is equal to or greater
 30 than the length of the longitudinal sheet of paper to be cut. Roll D is also provided with a series of annular felt bands r r, which serve to coax the paper forward beneath the rolls.

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

1. The combination of the calenders, the cutting-rolls beside the same provided with coaxing-bands, and the adjustable gear for
 40 driving the calenders from the rolls, substantially as described.

2. The combination of the cutting-rolls, the feed-calenders and the coaxing-tapes having

a bend in the line of travel of their contiguous portions and receiving the web from the
 45 calenders, and the adjustable gearing between the cutting-rolls and calenders, and means for accelerating the speed of the tapes, substantially as set forth.

3. The combination of the cylinder, the cutting-rolls, and the gearing for revolving the
 50 same during each revolution of the cylinder, for the purpose specified, with the calenders and the gearing between the calenders and cutting-rolls, substantially as described. 55

4. The combination of the cylinder, the cutting-rolls, and the feed-calenders driven by
 60 gearing from the rolls, with the coaxing-tapes for directing the web or sheets from the cutters to the cylinders and having a bend in the line of travel of their contiguous portions, and means for speeding said tapes, substantially as described.

5. The combination of the upper and lower
 65 tapes, the intermediate fixed and adjustable rollers for making a bend in the adjoining portions of the tapes, and the independently-adjustable tightener-rollers for the tapes, with the paper feed and cutting devices and means for speeding the tapes, substantially
 70 as and for the purpose described.

6. The combination of the feed-calenders, the cylinder, the cutting-rolls driven by gearing from the cylinder, and the intermediate
 75 tapes between the cutting-rolls and cylinder, the rollers for forming a bend in the contiguous portions of the tapes between the rolls and cylinder, and means for accelerating the speed of the tapes, substantially as described.

In testimony that I claim the foregoing as
 80 my own I affix my signature in presence of two witnesses.

JOSEPH L. COX.

Witnesses:

T. H. ALEXANDER,
 S. BRASHEARS.