

No. 770,649.

PATENTED SEPT. 20, 1904.

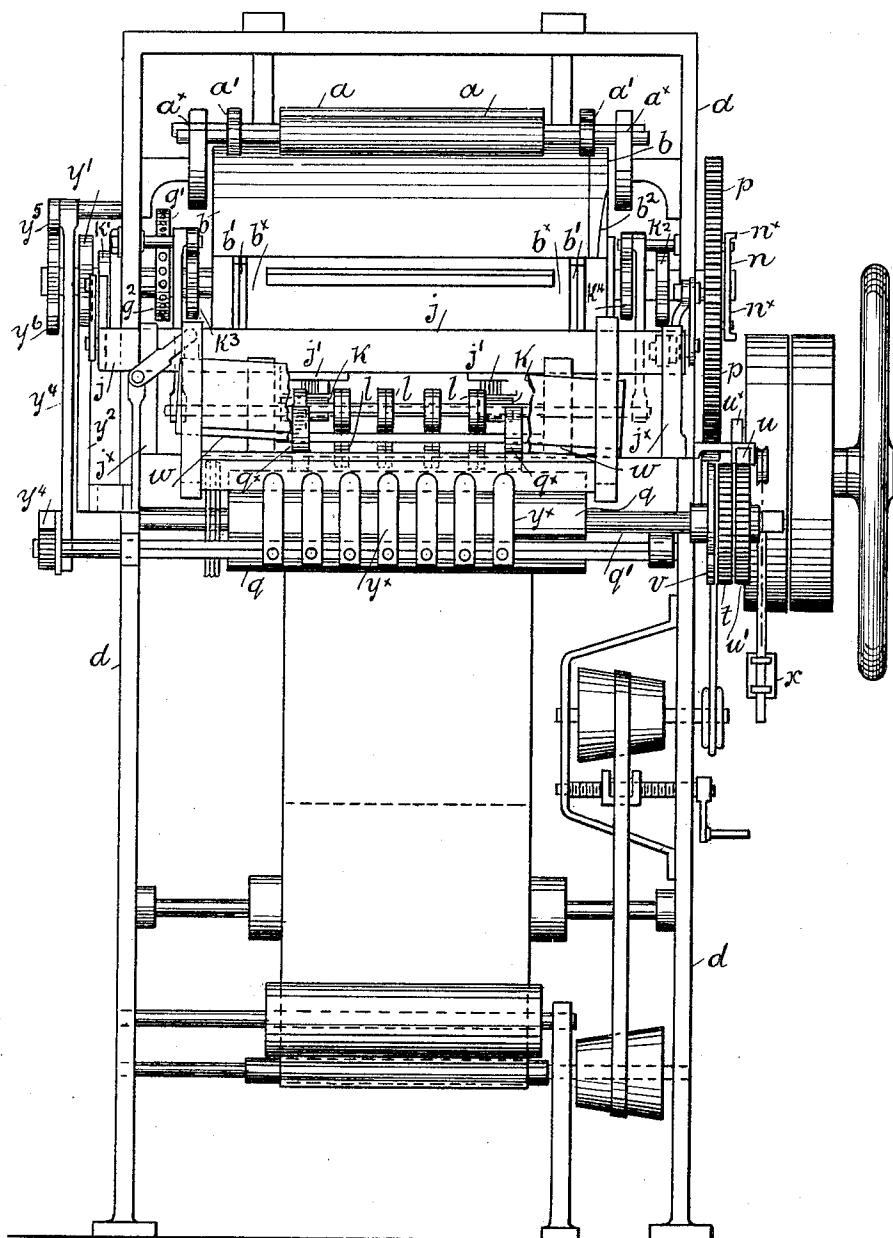
A. PARTRIDGE.
SELF FEEDING WEB PRINTING MACHINE.

APPLICATION FILED MAR. 11, 1903.

NO MODEL.

5 SHEETS—SHEET 1.

FIG. 1



WITNESSES:

Walter Abbott

E. W. Collins

INVENTOR:

ALFRED PARTRIDGE

BY *Howden and Howden*
HIS ATTORNEYS

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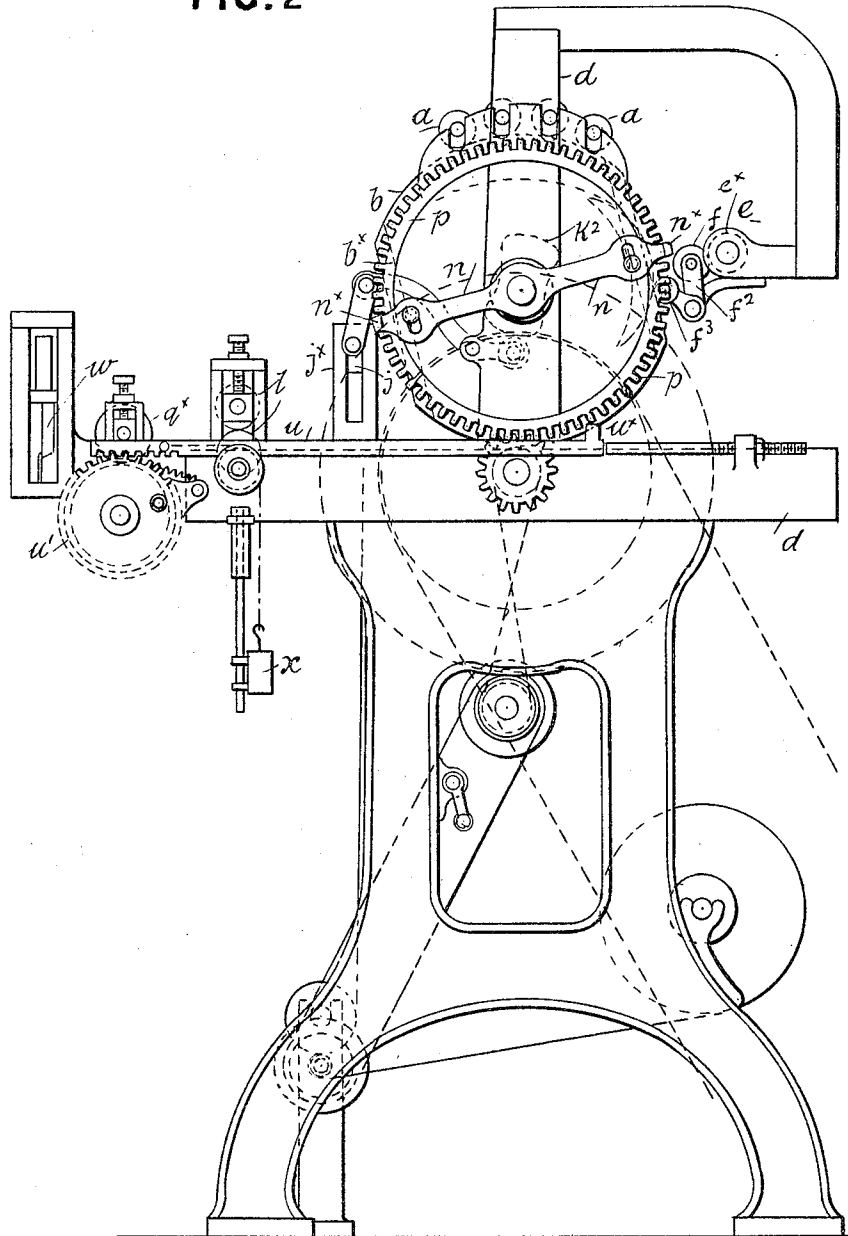
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5 SHEETS—SHEET 2.

FIG. 2



WITNESSES:

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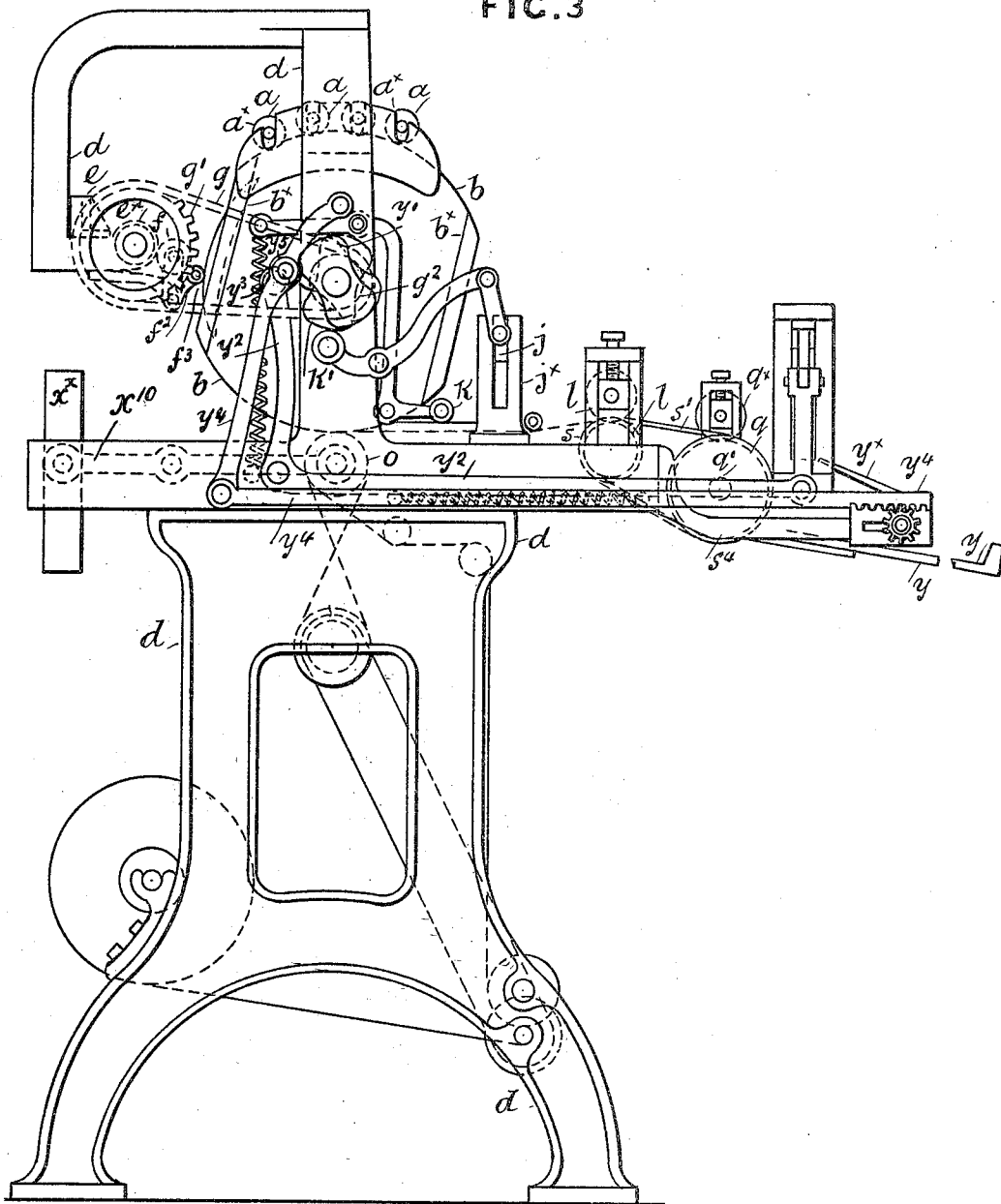
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6 SHEETS—SHEET 3.

FIG. 3



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PATENTED SEPT. 20, 1904.

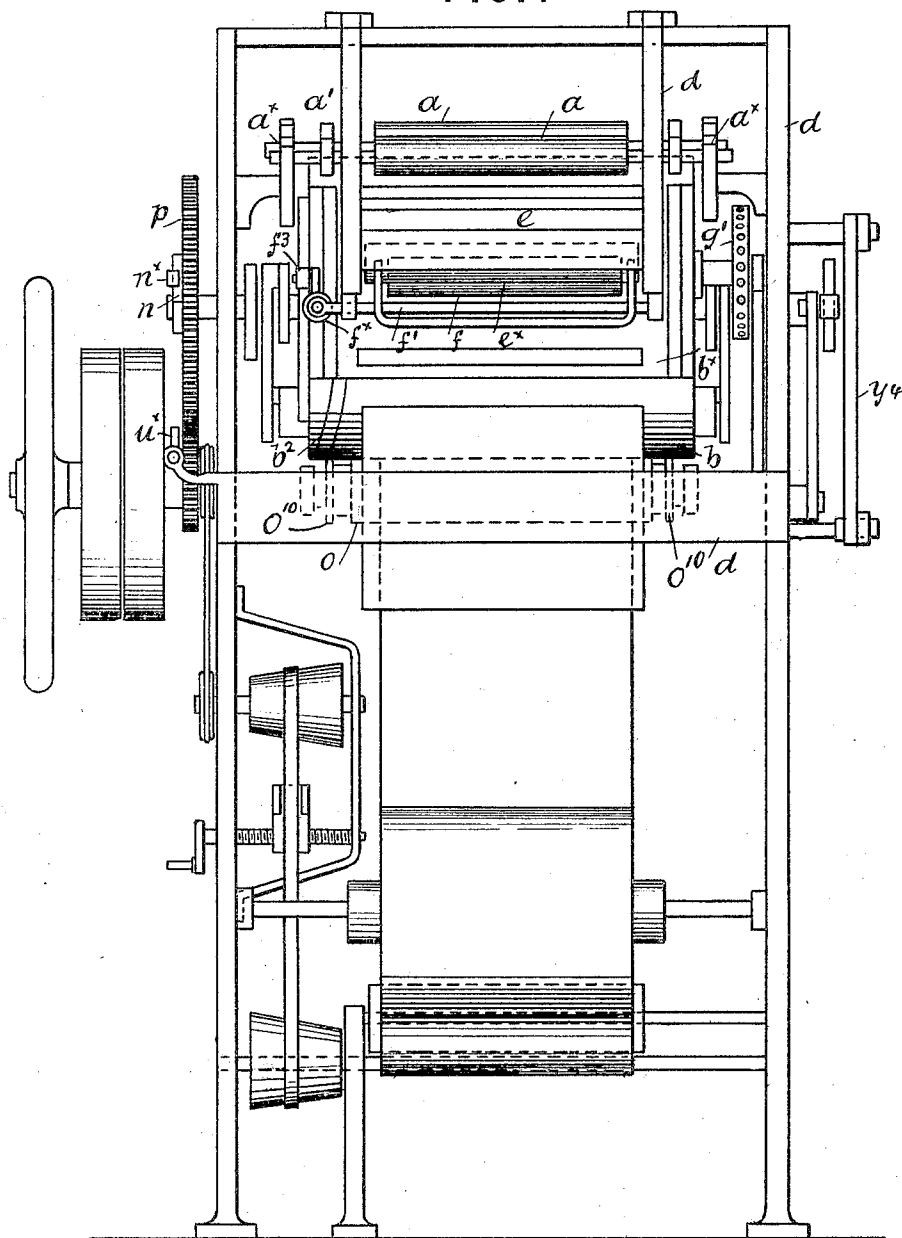
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NO MODEL.

5 SHEETS—SHEET 4.

FIG. 4



WITNESSES:

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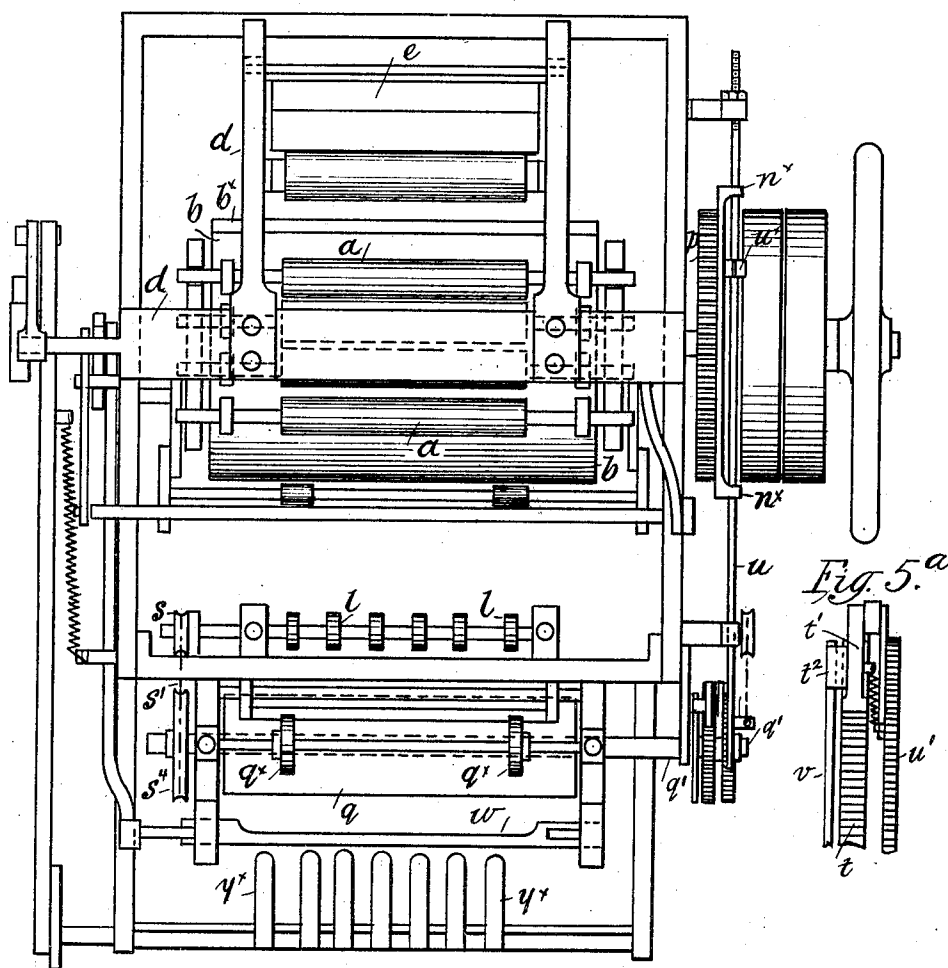
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NO MODEL.

5 SHEETS—SHEET 5.

FIC.5



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED PARTRIDGE, OF STOCKPORT, ENGLAND.

SELF-FEEDING WEB-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 770,649, dated September 20, 1904.

Application filed March 11, 1903. Serial No. 147,352. (No model.)

To all whom it may concern:

Be it known that I, ALFRED PARTRIDGE, a subject of the King of Great Britain and Ireland, residing at 1 Carrs, Wellington street, Stockport, in the county of Chester, England, have invented a new and useful Improved Self-Feeding Web-Printing Machine, of which the following is a specification.

The improvements which form the subject of this invention relate to self-feeding web-printing machines which are automatically and intermittently self-fed from the web.

The objects of my said invention are to enable the feed to be adjusted so that it can be set to feed out a great variety of lengths and simultaneously cut, slit, and perforate the web and number with any size of figures—say up to one inch—print tickets and labels, and other like work.

In the accompanying drawings, illustrating my said invention and to which I hereinafter refer, Figure 1 is a front view, and Fig. 2 an elevation, of the right-hand side of the machine. Fig. 3 is a rear view, and Fig. 4 an elevation, of the opposite side of the machine. Fig. 5 is a plan. Fig. 5^a is an enlarged detail of the ratchets and pawl mechanism of Fig. 5.

In the views the same letters refer to like parts.

For the purpose of this invention I mount between the sides of a conveniently-formed frame, as *d*, a cylinder *b*, with one, two, or more flats *b*^x formed thereon, according to the diameter of the cylinder or the breadth of said flats. These flats may extend the full length of the cylinder and are provided with clips, fixed to the bearers *b'*, or other preferred devices for retaining electrotypes or stereotype blocks on said flats. The circular portions of the cylinder are for distributing ink on the ink-rollers *a*, two or more of which I place above said cylinder, with the ends of their spindles inserted in vertical slots *a*^x in the sides of the frame, said rollers resting on and revolving by frictional contact with the cylinder and the bowls *a'* on the bearers *b'* as the cylinder rotates. I place in the rear of the cylinder and at a little distance therefrom an ink-duct *e* and a fountain-roller *e*^x, from which ink is received onto a distributing-roller *f*, that

has both a rotary and lateral movement, the rotary movement being obtained by contact with the fountain-roller, which is connected by a chain *g* and sprocket-wheels *g'* *g*², Fig. 3, to the shaft of the cylinder, and the lateral movement by the roller *f*^x on one end of the shaft *f'*, which carries said roller, running on the cam-shaped edge *b*² of a portion of one end of the cylinder *b*. The roller *f* is placed in contact with the cylinder *b* and the fountain-roller *e*^x alternately by the action of the roller *f*³ on the end of the bell-crank lever *f*².

In front of the inking-roller there are mounted auxiliary devices, each making some kind of an impression on the web. In the case shown, first come numbering-heads, receiving their motion from a lever operated by cams on the cam-shaft, then perforating-rollers *l* of ordinary construction, shown as receiving their motion by a band *s'* from a pair of feeding or drawing rollers *q* and *q*^x, receiving their motion from a ratchet and rack operated from the bar *n* on the printing-shaft, and then there is a knife *w*, receiving its motion from a lever *y*² *y*⁴, cam-operated. These auxiliary devices may be operated in any manner known so long as they act properly in unison to insure a feed of proper length at a time substantially simultaneous with the printing and advancing of the web.

I place on the opposite or front side of the cylinder a bar *j*, parallel thereto and whose ends are retained in vertical slots in guides *j*^x. The under side of this bar is formed so as to retain a set or sets of numbering or figure heads, as *j'*, Fig. 1, in the required position, said positions being alterable either in a forward or backward direction or laterally, according to the work to be produced. The numbering-heads receive ink from rollers *k*, which are caused to move against the cylinder *b* at the time the figures are being printed when the bar *j* is lowered by the action of cams, as *k'* *k*², on the shaft of the cylinder *d* and to come under and ink the numbers by the action of cams *k*³ and *k*⁴ when the bar *j*, containing the numbering-heads *j'*, is raised. I place in front of the aforesaid bar any required number of perforators and slitters *l*, Fig. 5, on transverse spindles, superposed

which are operated either by a cam on the shaft of the hereinbefore-described cylinder or by a band s' , connecting a pulley s^4 on the shaft of the drawing-in drum q to a pulley s on one end of the spindle carrying one of the sets of perforators and slitters, which are caused to rotate in unison by the toothed wheels $s^2 s^3$, as shown on the drawings, and place in front of these a spindle on which rollers q^x are fitted whose peripheries may be covered with leather or india-rubber and rest on said drawing-in drum or cylinder q .

I fit on one end of the shaft of the drum q , over which the paper passes in its passage to the knives w , a ratchet-wheel t , Fig. 5, which is operated by a pawl that comes into action when it has passed over a portion of the notched periphery of a disk v by dropping into the notch therein and into the teeth of the ratchet-wheel t and rotating said ratchet-wheel until on the return stroke it rises on the enlarged periphery of the disk v and slips over the teeth of the ratchet-wheel without causing movement. This is effected by one or other of the projections n^x on the ends of the lever n , fitted on the wheel p , engaging with the stop u^x on the rack-bar u , causing the wheel u' , that is loose on the shaft q' , to move round and push forward the pawl t' , which is secured to the wheel u' . When the required rotation of the drawing-in roller has been effected, a catch t^2 on the side of the pawl engages with a projection v' on the fixed plate or disk v and prevents further rotation of the drawing-in drum by raising the pawl from the teeth of the ratchet-wheel t . When the stop u^x is released from the projection n^x , the rack-bar u is drawn back by the weight x , causing the loose wheel u' to revolve and the pawl t' to slip back over the ratchet-teeth of the ratchet-wheel t . The knives w , which are arranged at the front of the machine and cut the web into sheets, are operated by a cam, as y' , in combination with the lever y^2 and the bowl y^3 . A delivery-table r is fitted to receive the finished work.

As shown in Figs. 3 and 4, the impression-roller o is mounted at one end of a centrally-pivoted lever x^{10} , which carries a weight x^x at its other end. On the shaft of the roller o two rings o^{10} are mounted of a little greater diameter than the roller. These rings ride on the curved surfaces b and keep the paper away from the inking-surfaces, but pass over the edge of the printing-forms, permitting the weight x^x to press the paper against the type, so that the paper and roller o will be rotated by contact and printing performed. The paper is fed from a roll near the bottom of the machine. As the cylinder b revolves it receives ink on its curved surfaces from the ductor-roller f , which in turn has received ink from the fountain-roller e^x . From the cylinder b the ink is delivered onto the ink-rollers a , which distribute it to the electrotypes or the like on the flats. When the paper is

printed by the blocks, it is drawn forward by the rotation of the drum q and the leather or rubber covered rollers q^x , hereinbefore named, is numbered when passing under the bar j , containing the numbering-heads j' , is slit or perforated when passing between the perforators or slitters l , is cut into sheets by the knives w at the end of the machine, and delivered onto the table y by the fliers y^x , which are operated by a cam, as y^6 , the bowl y^5 , and levers y^4 . The flat form advances the web by friction against the impression-roller necessarily at a varying speed in view of its changeable radial point of contact with the roller. Hence the paper necessarily bulges up in front of the roller; but the independent feed-rolls also pull the web forward. Now all that is necessary is that the independent feed-rolls pull the web forward with nearly as great a speed as the least speed of the form and impression roller to prevent too great bulging of the paper and after the form has ceased to rotate the impression-roller to take up what slack there may be to present a plane surface to the numbering devices. For this reason the cam upon the printing-roller shaft which actuates the feed-rollers is so constructed as to produce substantially the same feeding action as is given the paper by the printing and impression rolls when coacting to print. If other operations are required, such as placing washers on both sides of tags or labels and punching holes therein, the necessary mechanism is placed in proximity to the bar with the numbering-heads or the perforators and slitters, and each operation is arranged to be effected in turn by levers operated by cams on the shaft of the cylinder.

I claim as my invention—

1. A printing-machine for printing on a continuous web, having an impression-roller and a printing-form, means for intermittently bringing said roller and form close together to feed the web, in combination with intermittently-actuated auxiliary devices and an intermittent feeding means for feeding said continuous web after it has been fed from the printing-form and impression-roller.

2. A machine for printing from a rotating cylinder, with flat printing-forms, comprising an impression-roller and means to move it into position against the forms when said forms are adjacent thereto, whereby the impression-roller is rotated, so that printing will be performed and the web advanced, in combination with an auxiliary device for leaving an impression on the web after printing, and an independent means for feeding the paper forward into position to be operated upon by said auxiliary device, substantially as described.

3. A machine for printing and performing additional operations after printing on one continuous web, comprising a printing-surface, and an impression-surface, the latter adapted

to be intermittently operated by frictional contact while printing, in combination with an independent device adapted to advance the printed web to deliver it to said auxiliary devices, substantially as described.

4. A printing-machine having auxiliary devices for operating on a continuous web after printing, comprising a printing-cylinder having flat forms, an impression-cylinder and means to press it against said forms to cause it to be rotated thereby, in combination with an independent feeding device adapted to feed the printed web to the auxiliary devices, and means to operate said devices, substantially as described.

5. A printing-machine having auxiliary devices for operating on a continuous web after printing, comprising a printing-cylinder having a flat form, and an inking-surface, an impression-cylinder yieldingly mounted, and means to press it against the form but not against the ink-surfaces, in combination with auxiliary devices and independent feed-rollers adapted to advance the paper intermittently, substantially as described.

6. A machine comprising a rotating printing-roller with a flat form, and an inking-surface, a yieldingly-mounted impression-roller, adapted to be frictionally rotated by the printing-roller, and a rack operated by the printing-cylinder, in combination with auxiliary devices, and independent feeding means therefor operated by said rack, substantially as described.

7. A machine comprising a rotating printing-roller with a flat form and an inking-surface, a yieldingly-mounted impression-roller adapted to be frictionally rotated by the printing-roller, and a rack operated by the printing-cylinder, in combination with numbering devices, feed-rollers and independent feeding means adapted to draw the web as it comes from the impression-roller under the numbering devices, substantially as described.

8. A machine comprising a rotating print-

ing-roller with a flat form, and an inking-surface, a yieldingly-mounted impression-roller adapted to be frictionally rotated by the printing-roller, and a rack operated by the printing-cylinder, in combination with numbering devices, an inking-roller therefor, independent feeding-rollers, a ratchet therefor, a rack to operate the ratchet, cams and levers operated by said shaft, to actuate said numbering device, ink-roller and ratchet, substantially as described.

9. A machine comprising a rotating printing-roller with a flat form, and an inking-surface, a yieldingly-mounted impression-roller adapted to be frictionally rotated by the printing-roller, and a rack operated by the printing-cylinder, in combination with cams and projections on the printing-shaft, independent feed-rollers, plate *v*, a ratchet, and a rack therefor operated by said projections, a numbering device and an ink-roller and levers therefor operated by said cams, substantially as described.

10. A machine comprising a rotating printing-roller with a flat form, and an inking-surface, a yieldingly-mounted impression-roller adapted to be frictionally rotated by the printing-roller, and a rack operated by the printing-cylinder, in combination with cams and projections on the printing-shaft, independent feed-rollers, plate *v*, a ratchet, and a rack therefor operated by said projections, a numbering device and an ink-roller and levers therefor operated by said cams, perforating-rollers, a knife, and levers, the knife operated in conjunction with the aforesaid independent feeding device, substantially as described.

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

ALFRED PARTRIDGE.

Witnesses:

THOS. PRESCOTT,
JNO. HUGHES.