(No Model.) 2 Sheets—Sheet 1.

A. SEDGWICK.

RULING MACHINE.

No. 387,113. Patented July 31, 1888.

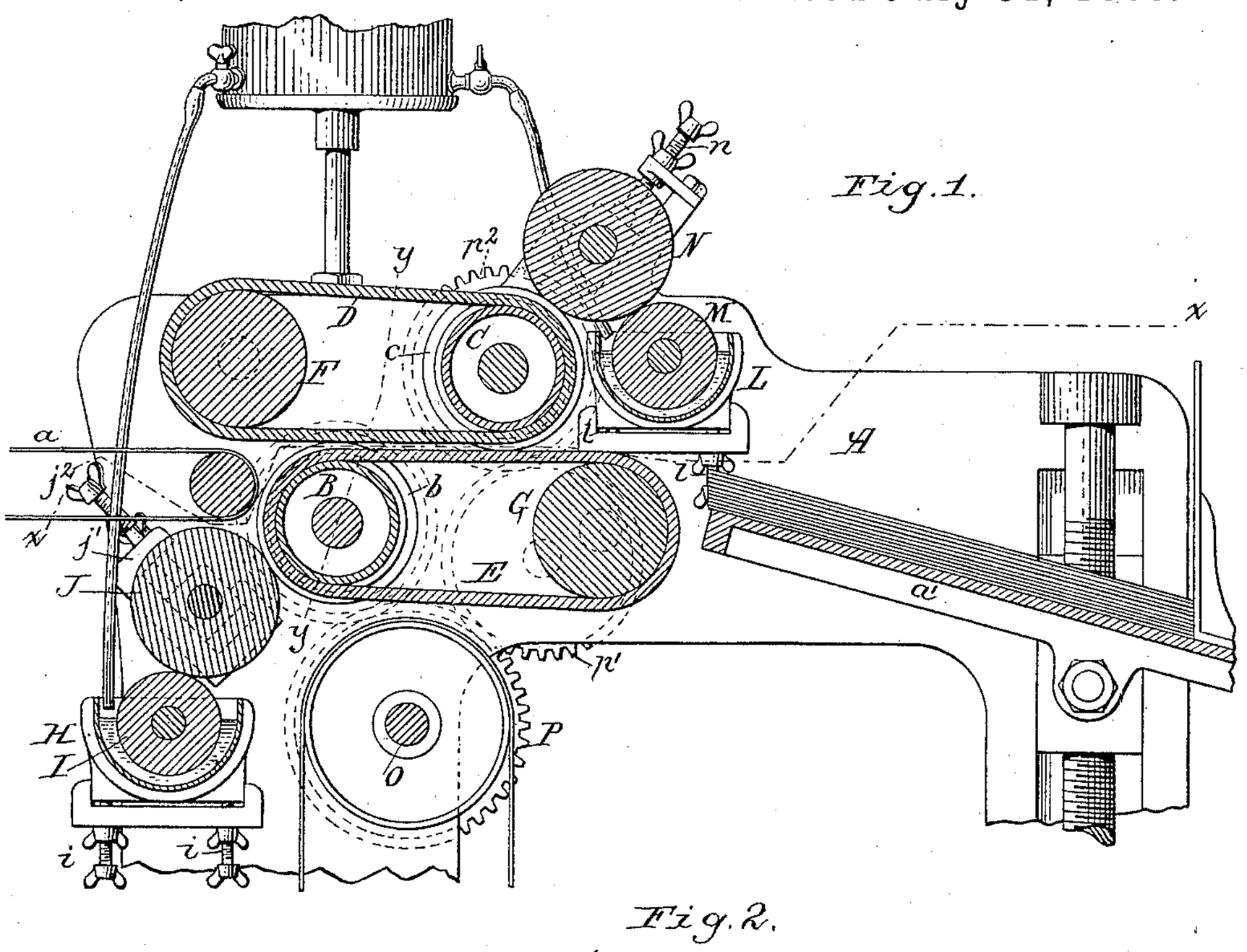

Fig. 1.

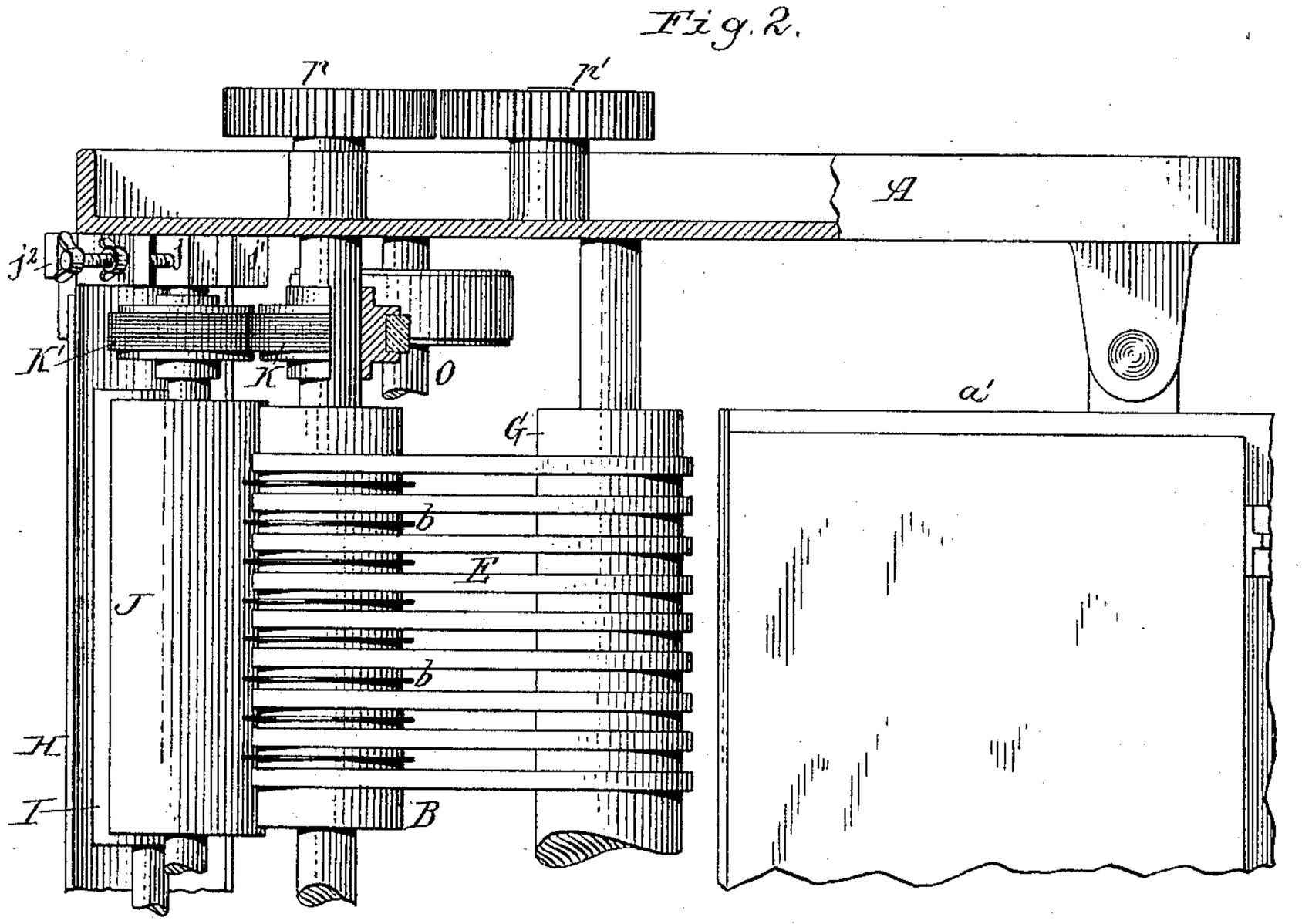

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

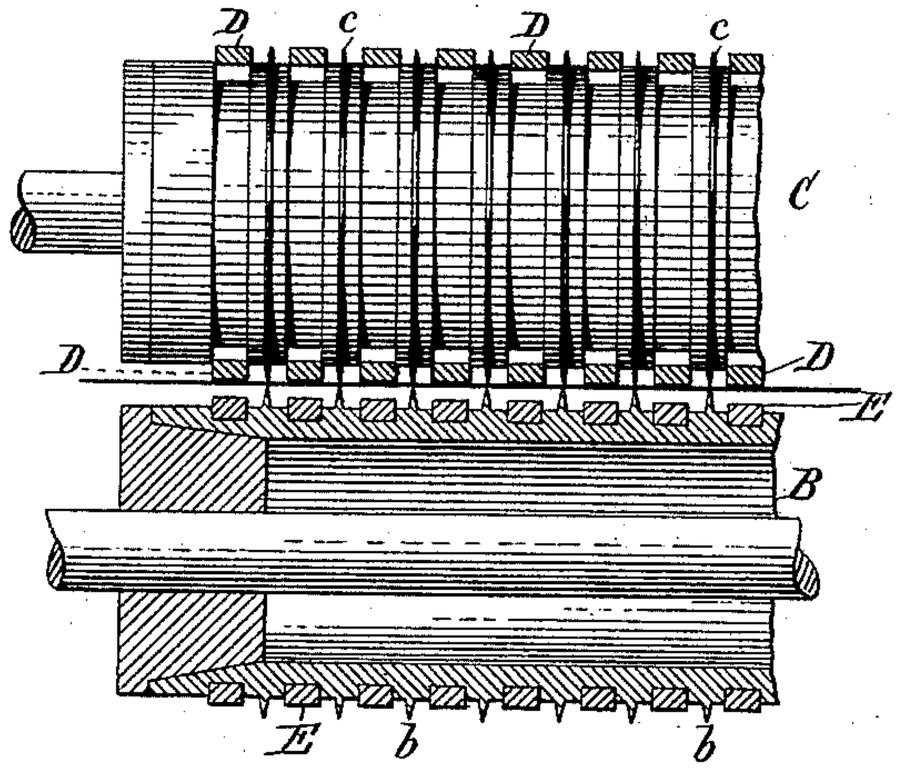
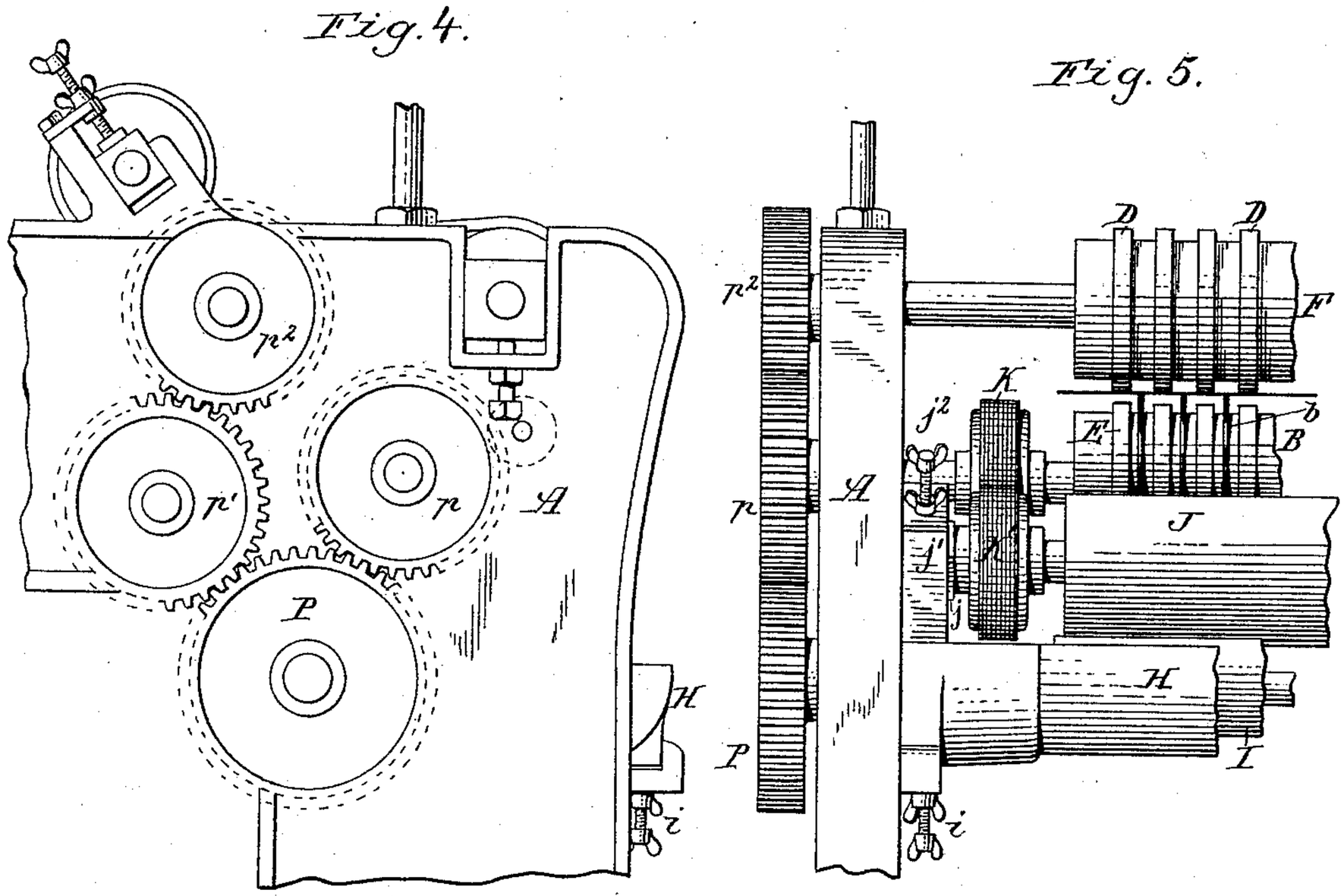


Fig. 4.

Fig. 5.



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A. Sedgwick Inventor.
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UNITED STATES PATENT OFFICE.

ALONZO SEDGWICK, OF POUGHKEEPSIE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO D. H. BURRELL & CO., OF LITTLE FALLS, NEW YORK.

RULING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 387,113, dated July 31, 1888.

Application filed November 3, 1887. Serial No. 254,153. (No model.)

To all whom it may concern:

Be it known that I, ALONZO SEDGWICK, of Poughkeepsie, in the county of Dutchess and State of New York, have invented new and useful Improvements in Ruling-Machines, of which the following is a specification.

This invention relates to that class of ruling-machines which are provided with revolving disks or rings to which the ink is applied and which form the lines upon the paper.

The objects of my invention are to improve the mechanism by which the paper is supported while receiving the impression and by which it is carried past the ruling-disks, and to improve the inking mechanism.

My invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal section of a ruling-machine provided with my improvements. Fig. 2 is a horizontal section in line *x x*, Fig. 1. Fig. 3 is a fragmentary vertical cross-section in line *y y*, Fig. 1. Fig. 4 is fragmentary side elevation of the machine. Fig. 5 is a fragmentary front elevation of the machine.

Like letters of reference refer to like parts in the several figures.

A represents one of the side frames of the machine, *a* the tapes by which the paper is conveyed to the ruling mechanism, and *a'* the table which receives the ruled paper.

B represents the lower ruling-cylinder, arranged transversely at the front end of the machine and provided with suitable ruling rings or disks, *b*, which may be rigidly secured side by side to the surface of the cylinder, as shown in the drawings.

C represents the upper ruling-cylinder, arranged rearwardly of the lower cylinder, B, and above the same, and provided with ruling rings or disks *c*.

D represents the upper endless impression-bands, arranged above the lower ruling-cylinder, B, and opposite the spaces between the ruling-rings *b* thereof, as represented in Fig. 3.

E represents the lower endless impression-bands, arranged below the upper ruling-cylinder, C, opposite the spaces between the ruling-rings *c* thereof.

F represents a plain-faced roller arranged forwardly of the lower ruling-cylinder, B, and above the same, and carrying the front portions of the upper impression-bands, D. G represents a similar plain-faced carrying-roller around which pass the rear portions of the lower impression-bands, and which is arranged in rear of the upper ruling-cylinder, C, and below the same. The upper impression-bands, D, run around the upper ruling-cylinder, C, between the disks *c* thereof, and the lower impression-bands, E, run around the lower ruling-cylinder, B, between the disks *b* thereof. The bands are driven by the ruling-cylinders, and the carrying-cylinders F and G are revolved by the bands.

The paper enters from the feed tapes *a* between the disks *b* of the lower ruling-cylinder, B, and the upper impression-tapes, D, receives the impression on its lower side, passes on to the upper ruling-cylinder, C, opposite where it is supported by the lower bands, E, and is finally delivered beyond the lower carrying-roller, G. The impression-bands support the paper on both sides of each ruling-disk and are separated one from the other by an intervening free space, which permits the paper to yield slightly as it receives the impression, thereby enabling the rotating ruling disks or rings to form unbroken fine lines. The endless impression-bands, which are preferably formed of rubber, present straight supporting-surfaces, whereby the paper is supported for a considerable distance in front and in rear of the point of impression, and are capable of yielding slightly, and adapt themselves to any slight inequalities in the ruling-disks or paper. The ruling-cylinders are preferably provided with grooves in which the impression-bands run, as represented in Fig. 3, whereby the bands are prevented from coming in contact with the ruling-rings and becoming inked. When the ruling-cylinders are removed and cylinders of a different pattern are substituted, the impression-bands are quickly adjusted to the new pattern by simply being placed between the ruling-disks, while the plain-faced carrying-rollers require no change, but answer for all patterns.

The outer surfaces of the impression-bands are below the peripheries of the ruling disks

or rings, whereby the paper is permitted to come in contact with the latter at a short distance in front of the point of impression and wrapped around a portion of the ruling-rings, whereby a better impression is obtained. The paper is confined between the upper and lower impression-bands in passing from the first ruling-cylinder to the second ruling-cylinder, and is thereby prevented from changing its direction of movement.

H represents the lower ink-fountain, I the ink-roller journaled in the same, and J the intermediate roller which conveys the ink from the ink-roller I to the rings of the lower ruling-cylinder, B. The ink-fountain is made vertically adjustable on the frame of the machine by set-screws *i*. The intermediate roller, J, is journaled in bearings *j*, which are made adjustable in oblique ways *j'* on the frame of the machine by set-screws j^2.

K K' represent friction gear-wheels secured, respectively, to the shaft of the lower ruling-cylinder and the shaft of the intermediate roller, J, and whereby the intermediate roller is driven from the ruling-cylinder. The friction gears K K' relieve the pressure between the disks of the ruling-cylinder and the intermediate roller and avoid the necessity of forcible contact between these rollers, which is necessary when the intermediate roller is driven by contact with the ruling-disks, and which causes injury to the intermediate roller by the formation of grooves or indentations in the same. The proper contact of the rollers and friction-gears is easily established by adjusting the ink-fountain and the intermediate roller.

L represents the upper ink-fountain, made vertically adjustable by set-screws *l*.

M represents the ink-roller, journaled in the fountain L; N, the intermediate roller, made adjustable by oblique set-screws *n* and driven from the upper ruling-cylinder, C, by friction-wheels, (not shown in the drawings, but similar in construction to the wheels K K'.)

O represents the horizontal main shaft of the machine, provided with a gear-wheel, P, from which power is transmitted to the ruling-cylinders B and C by gear-wheels *p p' p²*.

I claim as my invention—

1. The combination, with a ruling-cylinder provided with ruling disks or rings, of a series of traveling impression-bands arranged opposite the spaces between the ruling disks or rings and forming straight supporting-surfaces in front and in rear of the point of impression, said bands being unsupported at the point of impression, substantially as set forth.

2. The combination, with two ruling-cylinders provided with ruling disks or rings and arranged one in rear of the other in the direction in which the paper moves through the machine and on opposite sides of the paper, of two series of impression-bands arranged opposite the spaces between the ruling rings or disks and two carrying-rollers which support said bands, one roller being arranged in advance of the front ruling-cylinder and the other roller in rear of the second ruling-cylinder, substantially as set forth.

3. The combination, with a ruling-cylinder provided with ruling disks or rings, of an intermediate roller running in contact with the ruling disks or rings and adjustable toward and from the same, and an ink-fountain provided with an ink-roller running in contact with the intermediate roller, said ink-fountain being adjustable toward and from the intermediate roller, substantially as set forth.

4. The combination, with a ruling-cylinder provided with ruling disks or rings and a roller running in contact with said disks or rings and supplying the same with ink, of friction-wheels mounted upon the shafts of said roller and of the ruling-cylinder and operating as revolving stops, whereby the approach of said roller to the ruling-disks is limited and the pressure between the said roller and the ruling disks or rings is relieved, substantially as set forth.

5. The combination, with a ruling-cylinder provided with ruling disks or rings, of an ink-fountain provided with an ink-roller, an intermediate roller running in contact with the ink-roller and the ruling disks or rings, and gear-wheels mounted upon the ruling-cylinder and the intermediate roller, whereby the latter is driven from the ruling-cylinder, substantially as set forth.

Witness my hand this 28th day of October, 1887.

ALONZO SEDGWICK.

Witnesses:
J. I. WAKELEE,
E. W. CUNDY.