

No. 677,735.

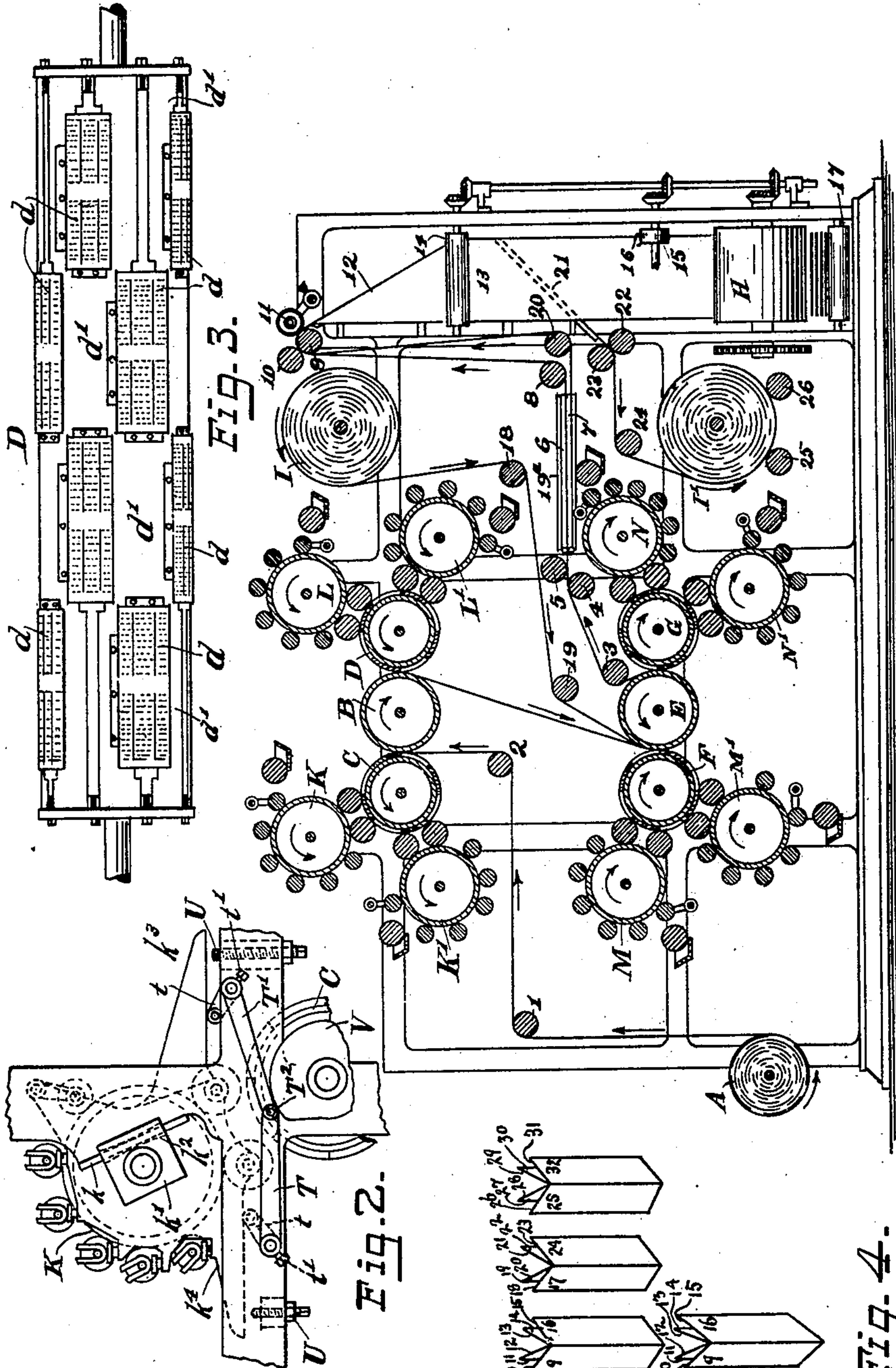
Patented July 2, 1901.

J. L. FIRM.
PRINTING PRESS.

(Application filed Jan. 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
Chas. W. Thomas.
H. L. Reynolds.

Inventor
Joseph L. Firm
By his Attorneys
Coffin & Beece.

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2 Sheets—Sheet 2.

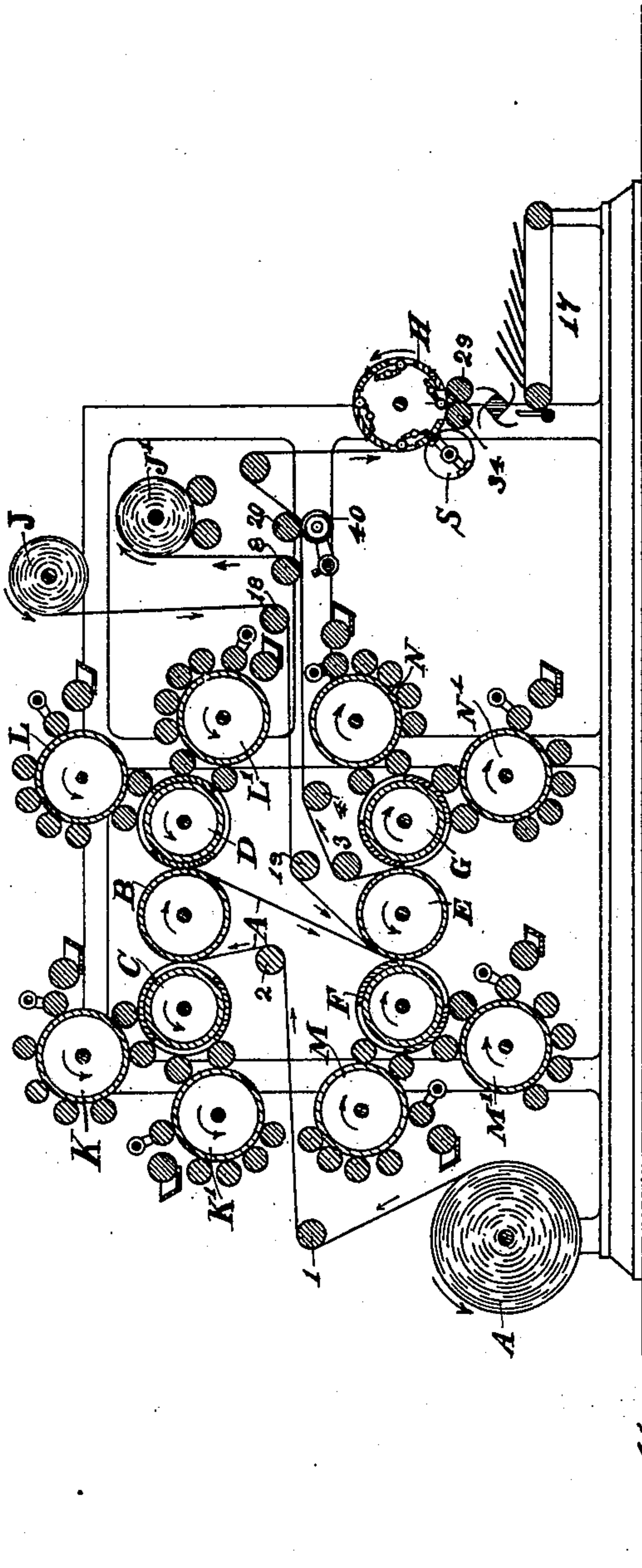
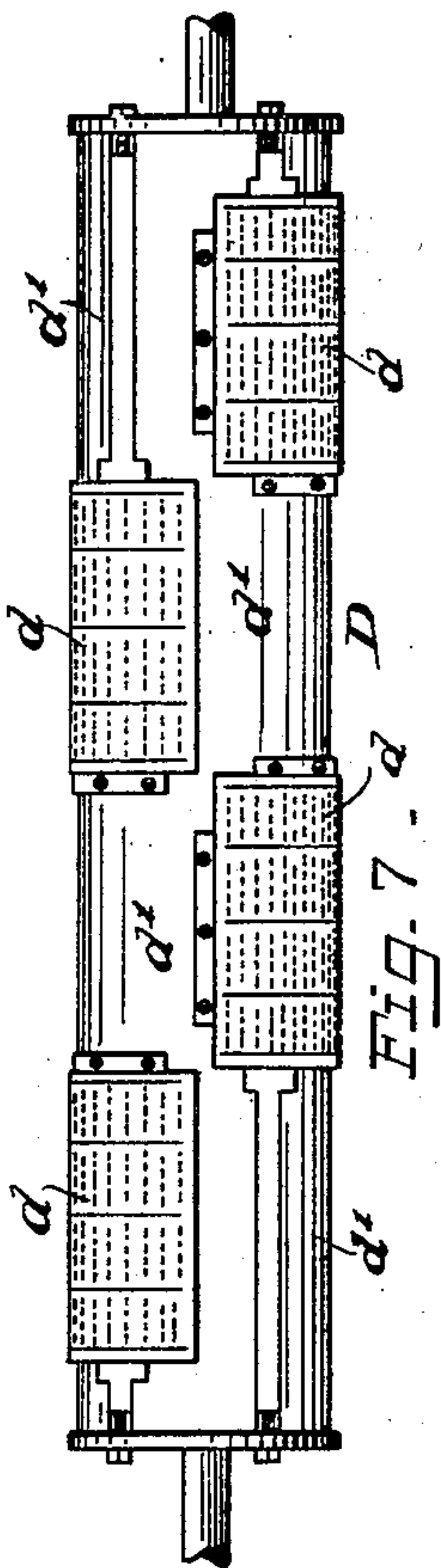


Fig. 5.

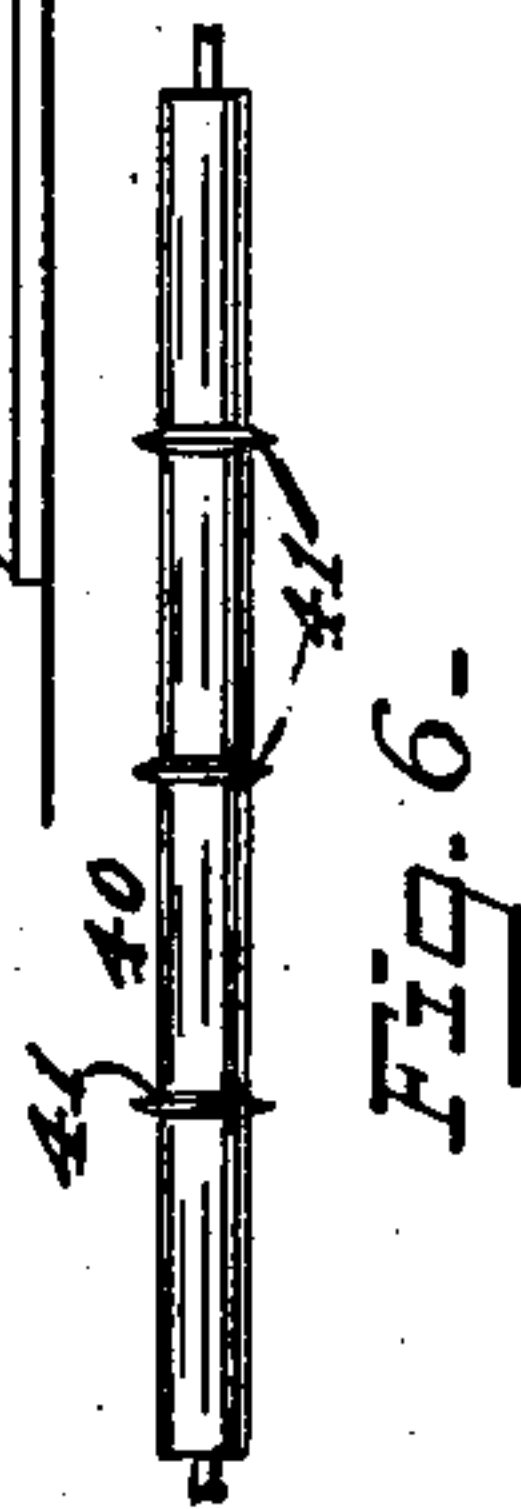


Fig. 6.

Witnesses
Chas. W. Thomas.
H. L. Reynolds.

Inventor
Joseph L. Firm
By his Attorneys
Hafford & Beebe

UNITED STATES PATENT OFFICE.

JOSEPH L. FIRM, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF SAME PLACE.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 677,735, dated July 2, 1901.

Application filed January 30, 1900. Serial No. 3,264. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH L. FIRM, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented
5 a new and Improved Printing-Press, of which the following is a full, clear, and exact description.

My invention relates to an improvement in rotary printing-presses, and more particularly to improvements in that form of press
10 shown in my patent application No. 938, filed January 10, 1900, in which the form-rollers have plates secured thereto, so as to alternate with blank spaces, the plates thus covering
15 only half of the surface of the roller and two rollers being required to print each side of the web.

My invention comprises certain novel features, which will be hereinafter described,
20 and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

25 Figure 1 is a longitudinal sectional elevation. Fig. 2 is a detail elevation showing the mounting for the movable inking devices by which they are shown out of action when desired. Fig. 3 is an enlarged plan view of one
30 of the form-cylinders, showing the plates in position thereon. Fig. 4 shows the manner of assembling the different sheets or signatures. Fig. 5 is a longitudinal sectional elevation of a slightly-modified construction.
35 Fig. 6 shows in detail the slitting-roller, and Fig. 7 shows one of the form-cylinders on an enlarged scale.

One of the objects sought to be secured by my improved mechanism is to provide a rotary
40 press which is especially adapted to printing magazines and similar matter in which illustrations and printed matter are placed upon alternate pages or in which certain of the pages require more inking than others;
45 and to secure this I provide duplicate inking mechanisms for each form-cylinder and means whereby said inking mechanisms may be removed from contact with the form-cylinders at times and different forms be there-
50 by differently inked.

Referring to Fig. 1, a roll of paper is shown

at A, which supplies the web being printed upon. Two sets of printing mechanisms are shown, the upper set consisting of a central impression-cylinder B and the two form-cylinders C and D, arranged upon opposite sides
55 of the impression-cylinders. These form-cylinders are arranged after the manner shown in Figs. 3 and 7, the plates d being made to alternate with blank spaces d' , so as
60 to cover only half of the surface of the cylinder. With this construction it is necessary to use two form-cylinders to print the same side of the web, the plates of one cylinder
65 printing in the spaces left blank between the plates of the other cylinder. These plates may be made of such width as to form four, six, or eight subdivisions in the periphery of the cylinder, as desired. In fact, any even
70 number of plates might be used, although as a rule eight plates would be as many and four as few as would ordinarily be desired.

Beneath the lower set of printing mechanisms is grouped a second set, consisting of the impression-cylinder E and form-cylinders F
75 and G, arranged in substantially the same manner as described in the upper set. The form-cylinder C is provided with two sets of inking mechanisms K and K', the cylinder D being similarly provided with inking mechanisms L and L', the cylinder F with inking
80 mechanisms M and M', and the cylinder G with inking mechanisms N and N'. The inking mechanisms K', L', M', and N' are fixed in position—that is, when in use are in constant contact with their particular form-cylinders. The inking mechanisms K, L, M, and N are, however, mounted so as to be movable
85 toward and from their respective form-cylinders, so that they may be moved out of contact therewith whenever desired. There are various ways in which this result may be secured, the mechanism shown in detail in Fig. 2 being given simply as an illustration of how
90 this result may be accomplished. In this construction the inking mechanism is mounted within a frame which is provided at each end with a slot k^2 , which engages a flange or guide
95 k , carried by the press-frame, said guide extending in such a direction that the frame of the inking mechanism when moved thereon
100 will move toward or from the form-cylinder.

The slot k^2 and guide k may be so constructed that they are a close fit, permitting no rocking movement thereon. It would, however, under some circumstances be desirable to permit a slight rocking movement of the inking mechanism, and, in fact, the rocking movement of the inking mechanism may be solely relied upon for moving the same into and out of contact with the form-cylinder, if desired.

This result may be secured in many different ways, the means herein shown consisting in making the slot k^2 larger at its ends than in the center, as clearly shown in Fig. 2, so that the printing mechanism may have a rocking movement upon the slide k , as well as a reciprocating movement toward and from the form-cylinder.

The frame which carries the inking mechanism is herein shown as provided with two arms or toes k^3 and k^4 , which rest upon rollers carried by one end of two bell-crank levers, which consist of long arms T and T' and short arms t , which latter carry the rollers which bear against the under surface of the toes k^3 and k^4 of the frame of the inking mechanism. The two arms of these levers are made adjustable relative to each other by means of a set-screw t' , by which one of the arms is secured to the pivot-pin. By adjusting the position of the two arms of the lever, or, which would secure the same result, by adjusting the length of the short arm the time of beginning the lift of the inking mechanism may be controlled. In some cases it may be necessary or desirable to lift one side of the inking mechanism before the other, in which case the arm controlling this side of the inking mechanism would be adjusted so as to strike the bottom of the toe or arm k^3 or k^4 , as the case may be, before the opposite arm. The drop of the inking mechanism or its approach toward the form-cylinder is controlled by means of the adjusting-bolts U , which engage the lower sides of the arms or toes k^3 and k^4 . The cam-roller T^2 , which is mounted upon the ends of the long arms T' and T of said levers, engages with a cam V , which is carried by the shaft of the form-cylinder. This cam may be otherwise mounted to secure the same result; but securing the cam to the shaft of the form-cylinder is the simplest manner of mounting it. In any event the action of the cam should be timed to correspond with that of the form-cylinder.

In operating a machine of this character the plates for the pages which require additional ink to properly print them would be grouped in longitudinal lines upon the form-cylinder and might also be grouped circumferentially—that is, the plates which would require heaviest inking would be placed adjacent to each other both longitudinally and circumferentially. The cam V , which controls the lift of the auxiliary inking mechanism, would be so constructed as to lift said auxiliary inking mechanism while the plates which require only ordinary inking are pass-

ing beneath the same and would then drop the auxiliary inking mechanism while the plates which require the heavy inking are passing beneath. The web which proceeds from the roll A passes over a guide-roll 1, beneath the guide-roll 2, and then about the impression-cylinder B , where it is printed upon one side by the form-cylinders C and D . It then passes downward and about the impression-cylinder E of the other set of printing mechanisms, being printed upon its opposite side by the form-cylinders F and G .

In connection with the printing mechanism I have also shown offsetting and folding mechanisms, which, however, are not herein claimed, the same being made the subject of claims in applications Serial No. 938, filed January 10, 1900, and Serial No. 6,138, filed February 23, 1900. The offset-web is inserted as a roll I , from which the web leads over guide-rollers 18 and 19 and about impression-cylinder E with the printed web with which it travels until it reaches turning bars and rollers 6, 7, and 19^a, by means of which the offset-web is transferred to the opposite side of the printed web. It is then led over roller 20, and then with the printed web between rollers 9 10, where it may be slit with the printed web by slitters 11. Both webs pass over folders 12 and between rollers 13 14, when both webs are partially opened out by bars 21 and the offset-web passed between rollers 22 23, over guide-roller 24, and rolled up as roll I' , said roll being shown as supported and turned by rollers 25 26. In Fig. 5 the offset-web is shown as simply passing from roll J to roll J' over the impression-cylinder E and suitable intervening guide-rollers.

The form-cylinders shown in Fig. 5, it will be noticed, differ from those shown in Fig. 1 by reason of the fact that those in Fig. 5 are divided into four circumferential sections each of which is of a width to accommodate one plate, while those shown in Fig. 1 are divided into eight circumferential sections each of a width to accommodate a single plate. This, however, makes no difference in the principle of their action. The plates shown on the roller in Fig. 7, which are like those shown in Fig. 5, have the columns extending circumferentially of the roller instead of longitudinally thereof, as shown in Fig. 3. This is, however, a matter which will be determined for each particular case. With the construction of press shown in these drawings magazine-work and other printing in which certain of the pages require much heavier inking than others may be successfully accomplished, as the plates requiring the heavier inking may be supplied with the necessary ink without supplying the other plates with the same amount.

I do not wish to limit myself to the exact arrangement of inking mechanisms previously described, as in practice all of the inking mechanisms would probably be constructed adjustable after the plan shown in Fig. 2 and

such of these as are desired to maintain in constant use would be thrown out by loosening the screws *t'* or in any other convenient manner. The length of the period of application and of disuse may vary as desired and the periods of use of the two sets may overlap or alternate as desired, the same being controlled by the design of the operating-cams.

I claim—

10 1. In a printing-press, the combination with a form-cylinder, of an inking device therefor movable into and out of action, levers engaging said inking mechanism to move it and composed of two adjustable members, means
15 for actuating said levers in time with the form-cylinders, substantially as described.

20 2. In a printing-press, the combination with a form-cylinder, of an inking device therefor movable into and out of action, levers engaging said inking mechanism to move it and composed of two adjustable members, and means for actuating said levers in time with

the form-cylinders and adjustable stops limiting the return of said inking mechanism, substantially as described.

25 3. In a printing-press, the combination with a form-cylinder, of an inking mechanism therefor mounted to have a rocking movement to clear it from the form-cylinder, means for rocking said inking mechanism, and adjustable stops limiting the movement of said mechanism toward the form-cylinder, substantially as described.

35 4. In a printing-press the combination with a form-cylinder of two inking mechanisms therefor and means for alternately applying ink to alternate and different segments of the form-cylinder by means of alternate inking mechanisms.

JOSEPH L. FIRM.

Witnesses:

H. L. REYNOLDS,
CHAS. J. RATHJEN.