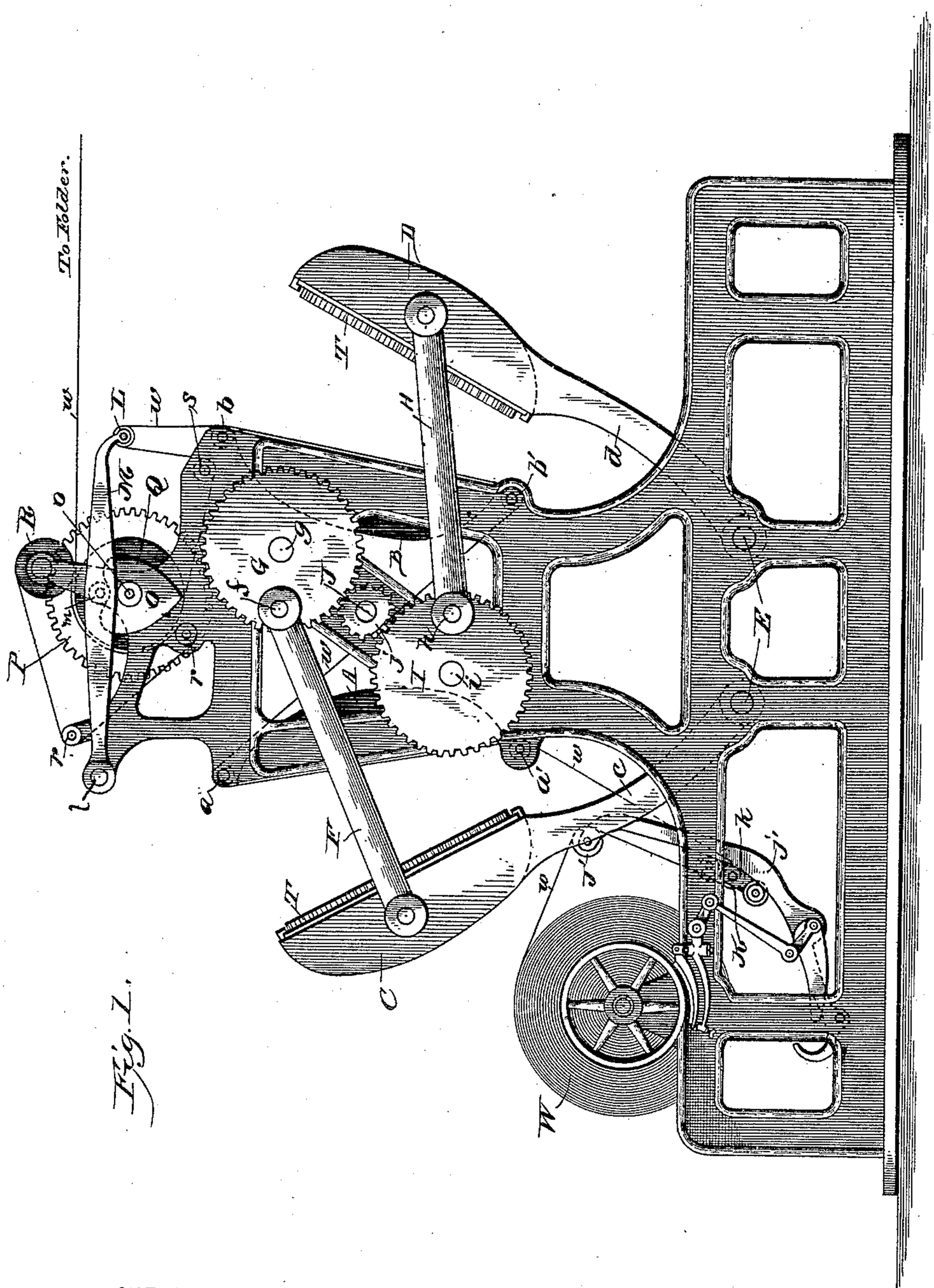
(No Model.) 2 Sheets—Sheet 1.

J. L. COX.

PRINTING PRESS.

No. 464,857. Patented Dec. 8, 1891.



WITNESSES
F. L. Ourand
Arthur E. Dowell

INVENTOR
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Attorney

(No Model.) 2 Sheets—Sheet 2.

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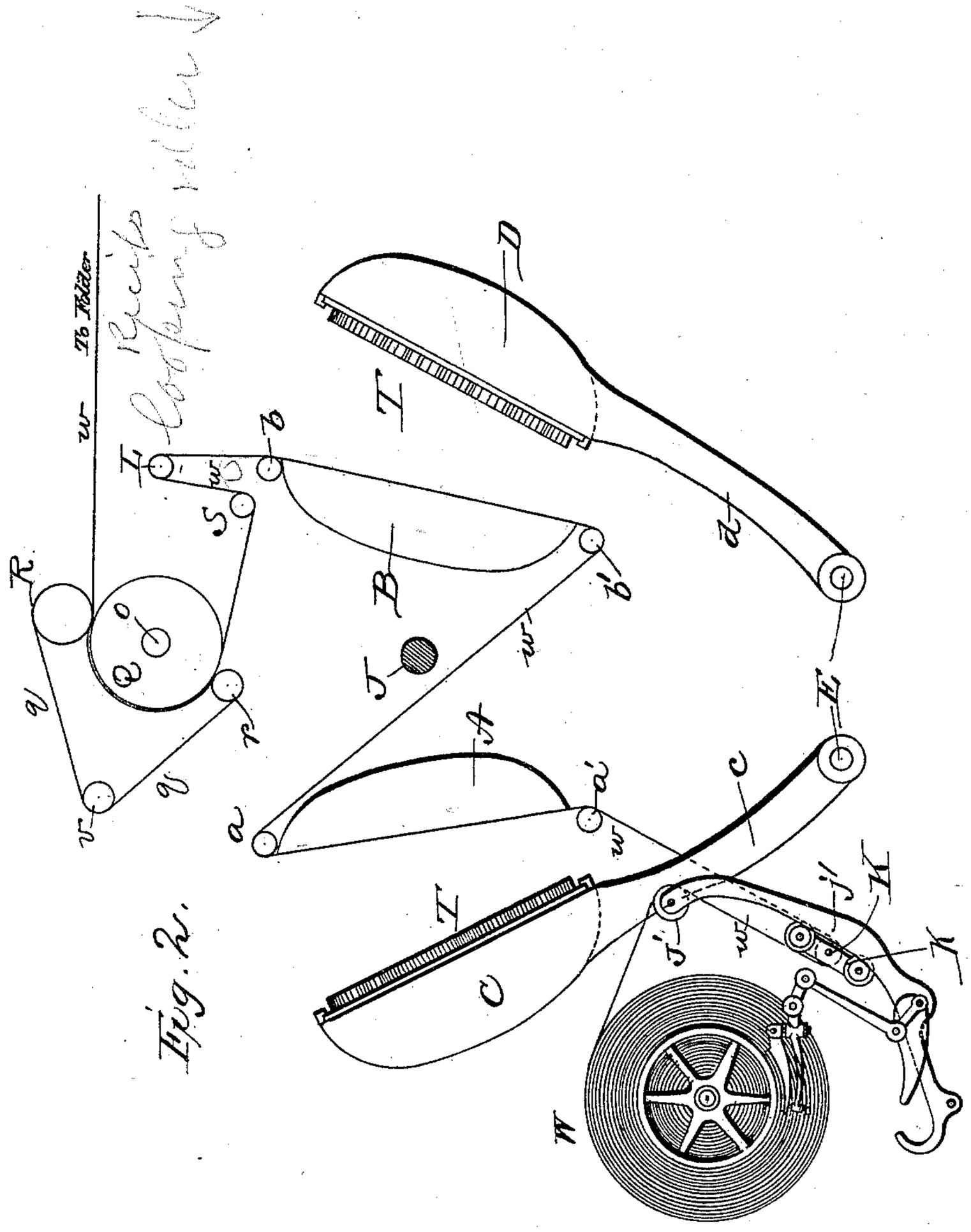

Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

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

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 464,857, dated December 8, 1891.

Application filed January 19, 1891. Serial No. 378,196. (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 Printing-Presses; 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 is a side elevation of my improved web-perfecting printing-press. Fig. 2 is a diagrammatical longitudinal sectional view illustrating the travel of the web through the press.

My present invention is an improvement in web-printing presses; and its object is to provide a simple perfecting-press, wherein the impressions can be taken from the type-forms direct and no type or impression cylinders are employed.

The invention consists in the novel construction and combinations of parts for operating the type-form carriers and shifting or feeding the web through the press, all of which will hereinafter be clearly described and claimed.

Referring to the drawings by letters, A B designate two opposite outwardly-facing platens secured centrally and transversely in the frame of the press, and substantially parallel, but preferably set so that they incline toward each other from top to bottom.

a a' and *b b'* are web-guide rollers journaled in the frame of the press at the upper and lower ends of the platens, respectively.

C D designate type-form holders or carriers exterior to and opposite the platens A B, respectively, and each supported on arms *c d*, which are pivoted or journaled at their lower ends on transverse shafts or lugs E, attached to the frame so that the carriers can be moved up to and away from the platens A B. Carrier C is operated by pitmen F, connected to their ends and to wrist-pins *f* on gear-disks G, fixed to the outer ends of a shaft *g*, journaled in the frame, and carrier D is similarly operated by pitmen H, connected to their ends and to wrist-pins *h* on gear-disks I, fixed on the ends of a shaft *i*, journaled in the frame below shaft G, as shown. The gear-disks are driven by meshing with pinions *j* on a driven shaft J, journaled in bearings in the frame and lying immediate shafts *g i*. As shown, the said shafts are located between the platens. The carriers are adapted to have type-forms T T secured to their inner faces, as indicated in the drawings, and they are inclined so that the type are not horizontal nor liable to drop out, and, further, the arm-pivots of the carrier-supports are so located in relation to the inclination of the platens that the type on the forms will be brought squarely and truly against the platens when the carriers are brought inward.

W designates the roll of paper, mounted in proper bearings on the frame below carrier C.

J designates a web-guide roller journaled on the upper ends of upwardly-inclined track-irons *j*, attached to the frame, and K is a governor-roller carried by a car *k* running on said irons, and which is adapted to contact with and operate a brake mechanism indicated in the drawings, so as to control the revolution of the roll of paper. This governor-roller and brake form no part of present invention in the peculiar construction thereof, and are fully described in my patent, No. 370,321, of September 20, 1887.

Other devices might be used to form a compensating-loop of paper between the roll and platen A.

L designates a looping-roller located above platen B and journaled in the ends of oscillating levers M, which are pivoted at their other ends on a transverse shaft or lugs *l* on the frame above platen A, and *m m* are friction-rollers attached to said levers about centrally thereof and bearing upon and supported by cams O, mounted on the ends of a shaft *o*, journaled in the frame and driven by a gear P, meshing with gear-disk G, and Q designates a delivery-roll on said shaft, and *q q* a series of endless tapes coacting with said roll and running over a triangularly-arranged set of rollers and driver R *r r*, journaled in the frame, as shown. The gears should be arranged so as to raise or lower roller L once during each reciprocation of the carriers.

The pitmen, gears, &c., are duplicated at each side of the machine. The web of paper *w* is taken from roll W over roller J′, looped down under roller K, up to roller *a*′, thence over the face of platen A to roller *a*, then down in rear of and between platens A B, to and under rollers *b*′, up over the face of platen B to roller *b*, then looped over roller L, down under roller S, journaled in the frame above platen B, and to the delivery rolls and tapes, as indicated. The operation is simple. After the web is threaded through the press, as described, and looped over roller L while the latter is elevated, the carriers C D are moved inward, and at the same time the roller L is lowered to such a degree and in such time that enough paper is paid off from the loop to enable the delivery mechanism to deliver web continuously after impression, but prevents any web being withdrawn from the roll, or rather over the platens, until the roller L is moved upwardly, which is not until the impression has been completed. After the impression the carriers move outward and at the same time roller L is raised, and it, together with the continuous action of the delivery, draws the web through the press sufficiently to bring a fresh portion of the web into position for printing. The looping-roller K prevents any slack of the web getting in the press between it and the looping-roller and always maintains a uniform tension on the web. The delivery mechanism might be made positive, if desired—that is, coacting feed-rolls might be used; but I prefer the tapes, as they can be more delicately adjusted, and they "comb" the web constantly forward without danger of tearing or breaking it. It will be observed that the face of the web imprinted on platen A is immediately turned down behind the platen and up against the face of platen B, so that by simply arranging the platens parallel and directing the web first over the face of one platen, then down between the platens, and immediately up over the face of the other platen the opposite sides of the web are brought into position for receiving registering impressions and the register can be produced simply and quickly without any twist of the web, and there is only a straight length of web between the platens. This enables me to dispense with any positive infeed for the paper, if desired, and to make the looping and delivery devices perform the offices of feed devices also. The web-operating devices are so adjusted that the amount of the web fed forward or the length of web moved between the forms after each impression is equal to the length of an impression and proper margins top and bottom. As, however, the perfecting-impression on the web does not immediately follow after the first impression, the total forward movement of the web from the point of the first impression to the point of the second impression, directly registering therewith, is a multiple of the length of paper required for each impression plus the necessary margins, this being necessary in order that the impressions on the opposite sides of the web shall be directly opposed to allow the web to be afterward properly cut and folded.

The type-forms should be inked after each impression, preferably by mechanical means, which, however, do not form an essential part of present invention, and hence is not shown or described herein.

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

1. In a printing-press, the combination of two substantially parallel platens, two type-carriers coacting therewith, and a delivery mechanism with a looping-roller for looping the web after it has been finally imprinted before it reaches the delivery, substantially as and for the purpose specified.

2. The combination, in a perfecting printing-press, of two oppositely-facing platens, two oppositely-facing form-carriers coacting therewith, and a delivery mechanism with means, substantially as described, for conducting a web of paper successively between the platens and carriers and to the delivery, and a roller for looping the web between the last platen and the delivery, substantially as set forth.

3. In a web-printing press, the combination of a platen and a form-carrier coacting therewith and a paper-delivery mechanism with a looping-roller adapted to loop the web between the platen and delivery mechanism and to throw off the loop during the impression and to assist in drawing forward the web after the impression, substantially as set forth.

4. The combination, in a web-perfecting printing-press, of two reciprocating form-carriers, two independent platens, a paper-delivery, and a positively-actuated looping-roller with means, substantially as described, for feeding a web of paper between the first platen and carrier, then between the platens, then between the second platen and carrier, and over the looping-roller to the delivery, substantially as set forth.

5. The combination of the oppositely-facing platens, the oppositely-facing form-carriers coacting therewith, and the delivery mechanism with the guide and looping rollers for directing the web, substantially as specified.

6. The combination of the form-carriers, the oppositely-facing platens intermediate and coacting with said carriers, and the delivery mechanism with the web-looping roller L, the levers M, and cams for actuating the same to raise and lower the roller once for each reciprocation of the form-carriers, substantially as described.

7. The herein-described web-perfecting printing-press, consisting of two oppositely-

facing platens, two exterior movable form-carriers coacting with said platens, web-guide rollers for directing the web between one carrier and platen, then between the platens, and then between the last platen and carrier, a paper-web delivery, an idler-roller or governor for looping the web between the paper roll and first platen, and a positively-actuated looping-roller for looping the web between the last platen and delivery, substantially as described.

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

JOSEPH L. COX.

Witnesses:
T. H. ALEXANDER,
S. BRASHEARS.