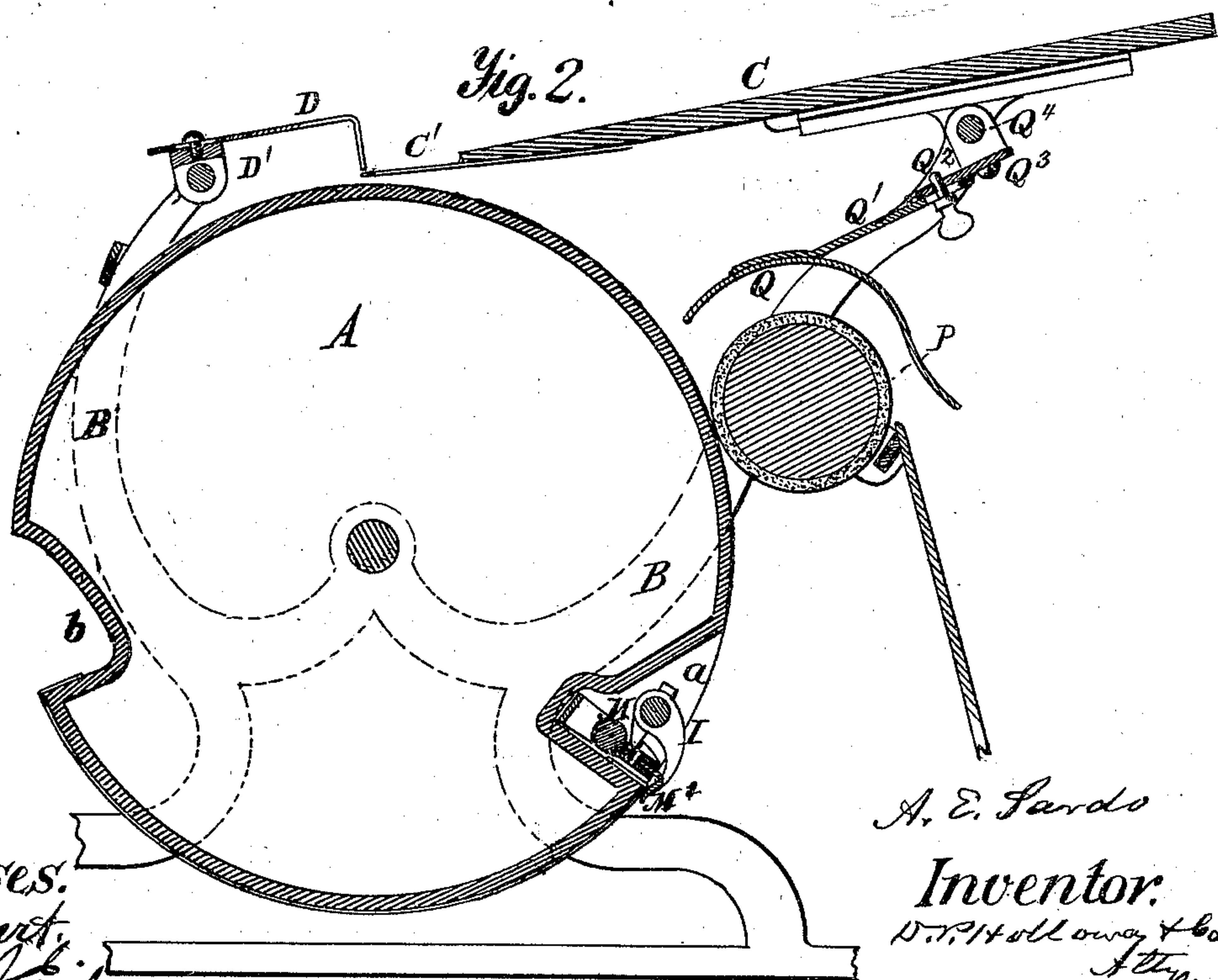
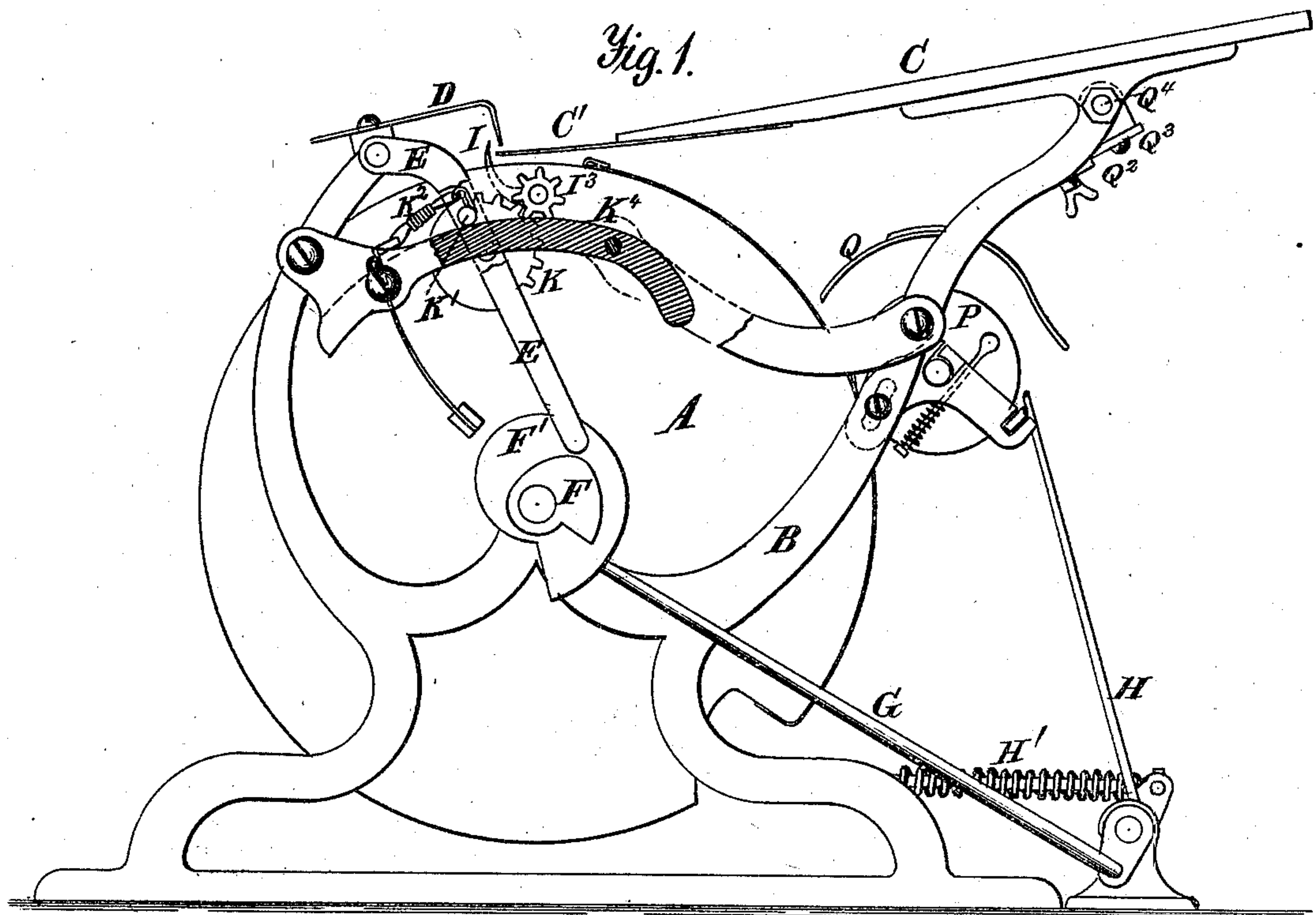


**A. E. SARDO.**  
**SHEET DELIVERY APPARATUS FOR PRINTING-PRESSES.**  
 No. 171,178. Patented Dec. 14, 1875.



*Witnesses:*  
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Fig. 3.

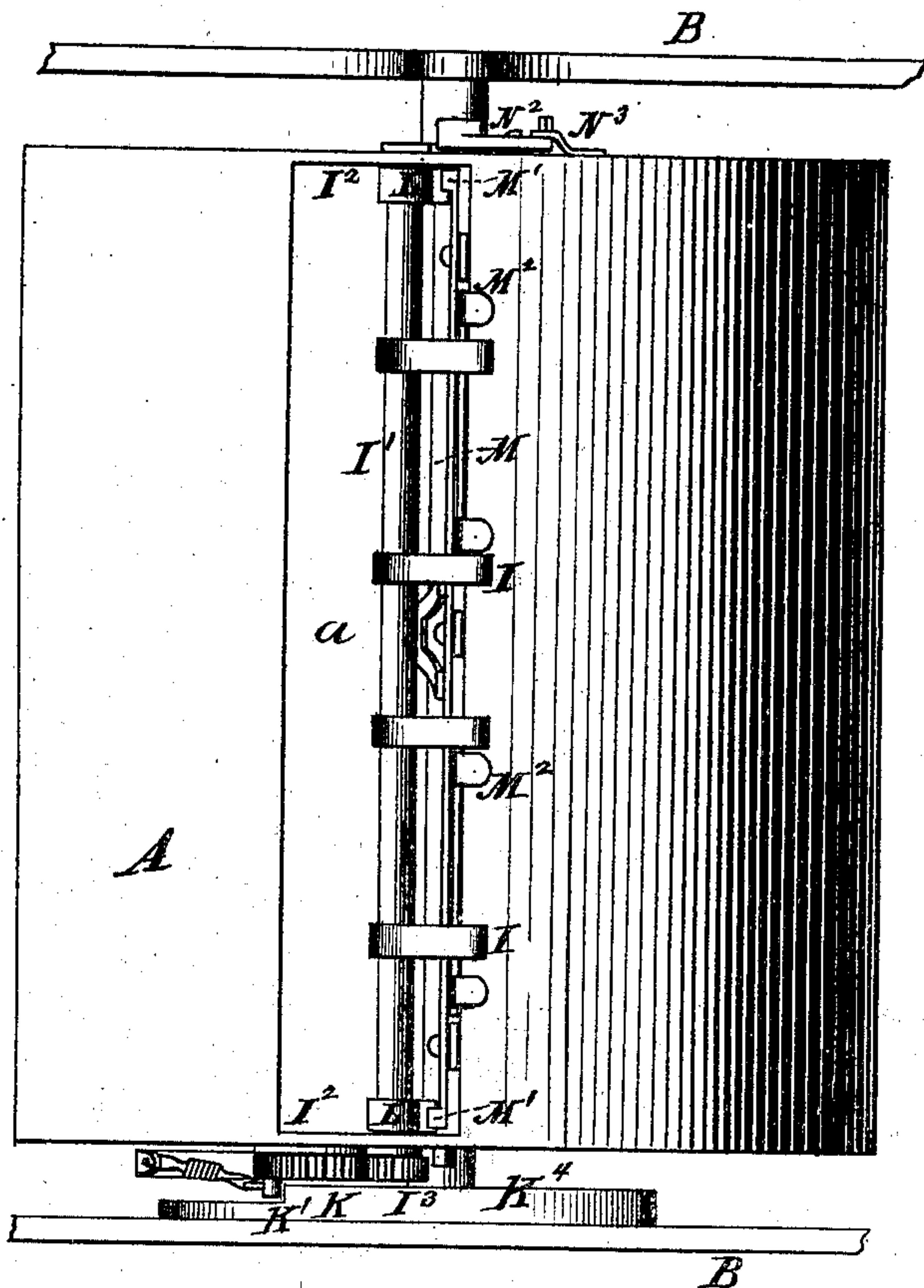


Fig. 4.

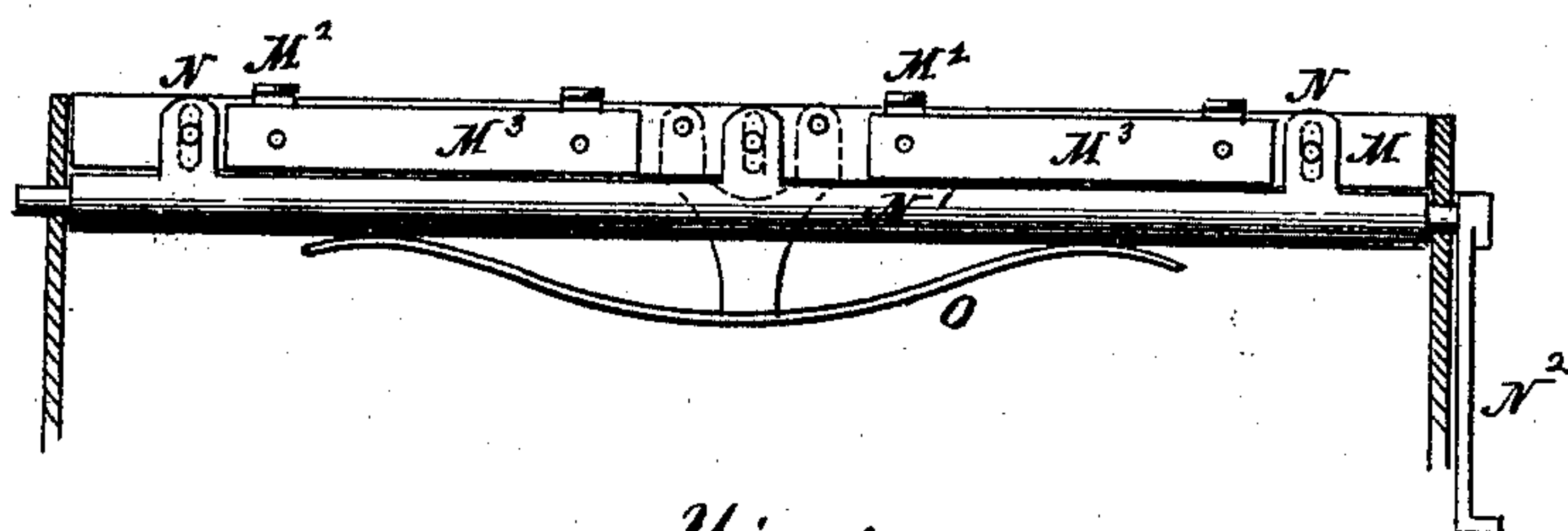
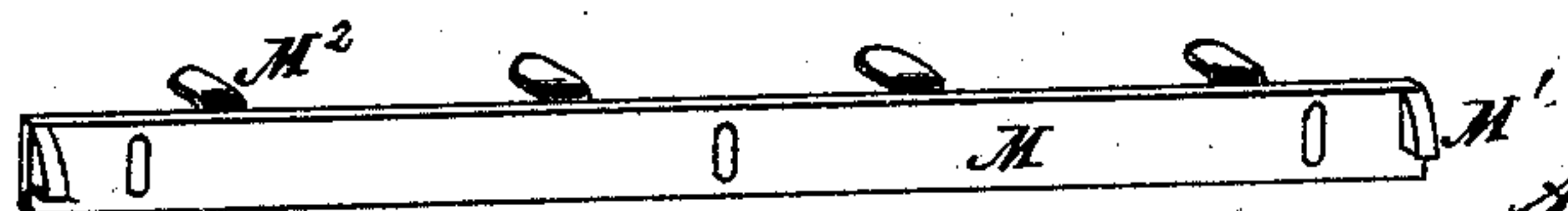


Fig. 5.



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# UNITED STATES PATENT OFFICE.

ALBERT E. SARDO, OF WASHINGTON, D. C., ASSIGNOR OF ONE-HALF HIS  
RIGHT TO JOHN A. IVES & BRO., OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN SHEET-DELIVERY APPARATUS FOR PRINTING-PRESSES.

Specification forming part of Letters Patent No. **171,178**, dated December 14, 1875; application filed  
July 26, 1875.

*To all whom it may concern:*

Be it known that I, ALBERT E. SARDO, of Washington, in the District of Columbia, have invented a new and useful Improvement in Sheet-Delivery Apparatus for Printing-Presses, of which the following is a specification:

In the annexed drawings, making part of this specification, Figure 1 is an end elevation of the cylinder. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a plan view. Fig. 4 is an elevation, showing the throw-off points, and the points by which the make-ready sheets are fastened to the cylinder. Fig. 5 is a perspective view of the throw-off points, and plate to which they are attached.

The same letters are employed in all the figures in the designation of identical parts.

A is the cylinder, of the usual form, with recesses at *a* and *b*, between which the make-ready sheets are extended. It turns in bearings on the frame B. The sheets to be printed are placed on the table C, from which they are fed one at a time onto the plates C', resting against the stops D, until seized by the grippers, when the stops D are raised, and the sheet is drawn onto the cylinder. The stops D are adjustably attached to blocks fastened by set-screws onto the shaft D', which turns in bearings on the frame B. The shaft D' has on its overhung end a lever, E, the weight of which bears down upon the stops D, the lower end resting on a cam, F, on the cylinder-shaft. The form of this cam is such that as it revolves it will raise the lever E and stops D the instant that the nippers seize the edge of the sheet, and hold them up until the sheet is drawn onto the cylinder, when the stops immediately fall upon the spring-plates C'. To permit the exact adjustment of the cam it is fastened to the shaft by a set-screw. Another cam, F', is cast in one piece with the cam F. It is used to raise the fly, which it does by means of the rod G, which bears against the edge of the cam, and is fastened to a crank-arm on the shaft of the fly H. When the cam turns until the angle of the cam F' frees the rod G the spring H' throws the fly, the inclined surface of the cam immediately begin-

ning to raise it, and when raised it is held by the circular portion of the cam until it has received the sheet from the cylinder, when it is again thrown. The sheet is taken from the table by the grippers I, adjustably attached to the shaft I', which has its bearings in the plates I<sup>2</sup>, placed across the ends of the recess *a*. On the overhung end of the shaft I' is a pinion I<sup>3</sup>, which engages the teeth of the segment-wheel K. On this wheel is a stud-pin, K<sup>1</sup>, and link K<sup>2</sup>, by which it is connected to the spring K<sup>3</sup>, the tension of which retracts the wheel K, and holds down the grippers, whenever the stud-pin is free from the cam-plate K<sup>4</sup>, which is so placed and shaped that it will strike the stud-pin and raise the grippers as soon as the edge of the sheet has passed the roller, and hold them up until they are needed to seize another sheet as they pass the points of the springs C'. On the ends of the shaft I', inside the plates I<sup>2</sup>, are collars L, attached to the shaft, and having short arms projecting. These are to operate the throw-offs. A plate, M, is fastened by set-screws passing through slots in the points N, in such position as to stand radially to the cylinder in the recess *a*. On the ends of the plate M are spring-catches M<sup>1</sup>, which will yield to the arms L as they are turned down, and engage them as they are raised, so as to project the throw-offs M<sup>2</sup> radially. The latter are attached to the plates M<sup>3</sup>, and riveted to the plate M. The points N are attached to the shaft N<sup>1</sup>, and are used to support the plate M, as set forth, and also to hold one edge of the make-ready sheets on the cylinder, the other edge being attached to the radial face of the recess *b*, in the usual manner. The arm N<sup>2</sup> on the shaft N<sup>1</sup> is confined by a notch-plate, N<sup>3</sup>, but may be detached therefrom and used to turn the points N away from the radial face of the notch *a* whenever the make-ready sheets are to be attached or detached. The spring O, placed in the recess *a*, draws down the throw-offs whenever freed by the arms L. The sheet, when released by the grippers, is held by the roller P, and, in order to take up the excess of ink and prevent smearing, the face of the roller is covered with felt or woollen cloth. The roller and the stop for the fly are



both attached by boxes, which admit of their easy removal. When the edge of the sheet has passed the roller it is thrown outwardly by the projection of the throw-off, so as to pass under the edge of the curved adjustable guides Q, which are fastened to arms Q<sup>1</sup>, attached by a knuckle-joint, or other swiveling connection, to other arms, Q<sup>3</sup>, secured adjustably upon a transverse rod, Q<sup>4</sup>. The jointed arm permits the guides to be readily turned aside to permit the removal of the roller, and give the workman ready access to the cylinder.

Instead of making the roller in one piece it will be advantageous sometimes to make it in sections, as, in printing posters and other work with very heavy displayed lines, the rollers should run between the heavy lines.

The points N, resting against the radial face of the recess a, act as a guide to control the vertical throw of the throw-offs. An equivalent mode of operation would be to cause it to move on guides attached to the end plate of the recess.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The throw-offs M<sup>2</sup>, attached to the plate M, in combination with the arms on the shaft I<sup>1</sup>, by which they are projected, substantially as set forth.

2. In combination with the throw-offs, ra-

dially projected, the points N, which hold the make-ready sheets, and at the same time serve as guides for the throw-offs, substantially as set forth.

3. In combination with the shaft N<sup>1</sup> and points N, carrying the throw-off points, and plates to which they are attached, the lever N<sup>2</sup>, for confining and releasing the make-ready sheets, substantially as set forth.

4. In combination with the sliding throw-offs, and arm for projecting them, the spring O, for instantly retracting them, substantially as set forth.

5. In combination with the cylinder, and with the sheet-delivering apparatus, the roller P, covered with felt or cloth, and acting against the surface of the sheets, substantially as set forth.

6. In combination with the roller, the guides Q, constructed so as to direct the sheet downwardly onto the fly, and adjustable jointed arms, which may be turned to one side out of the way, substantially as set forth.

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

A. E. SARDO.

Witnesses:

SAML. C. MILLS,  
M. W. LOUIS.