No. 646,959. Patented Apr. 10, 1900.

L. C. CROWELL.

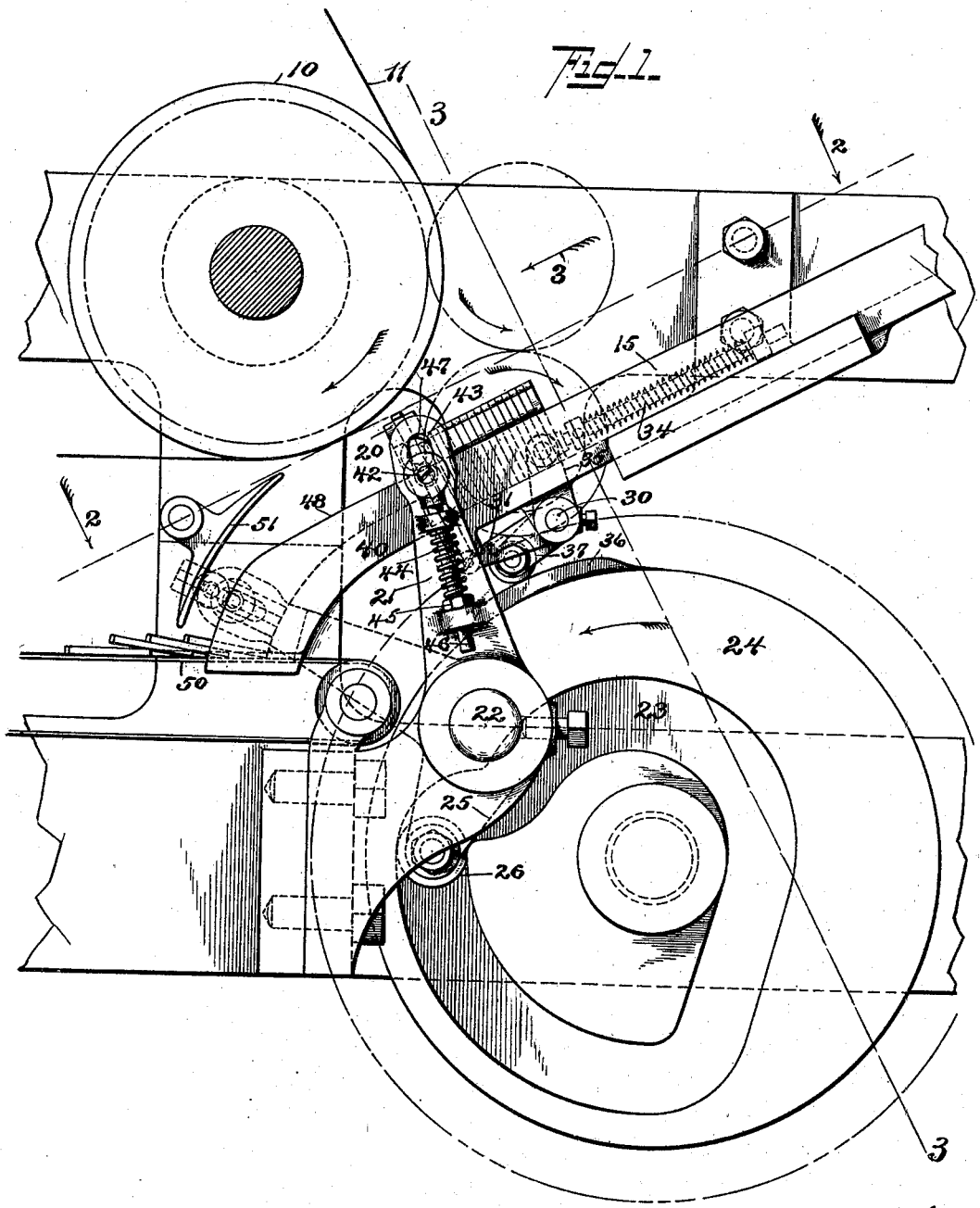
ADDRESSING MACHINE.

(Application filed Dec. 31, 1897.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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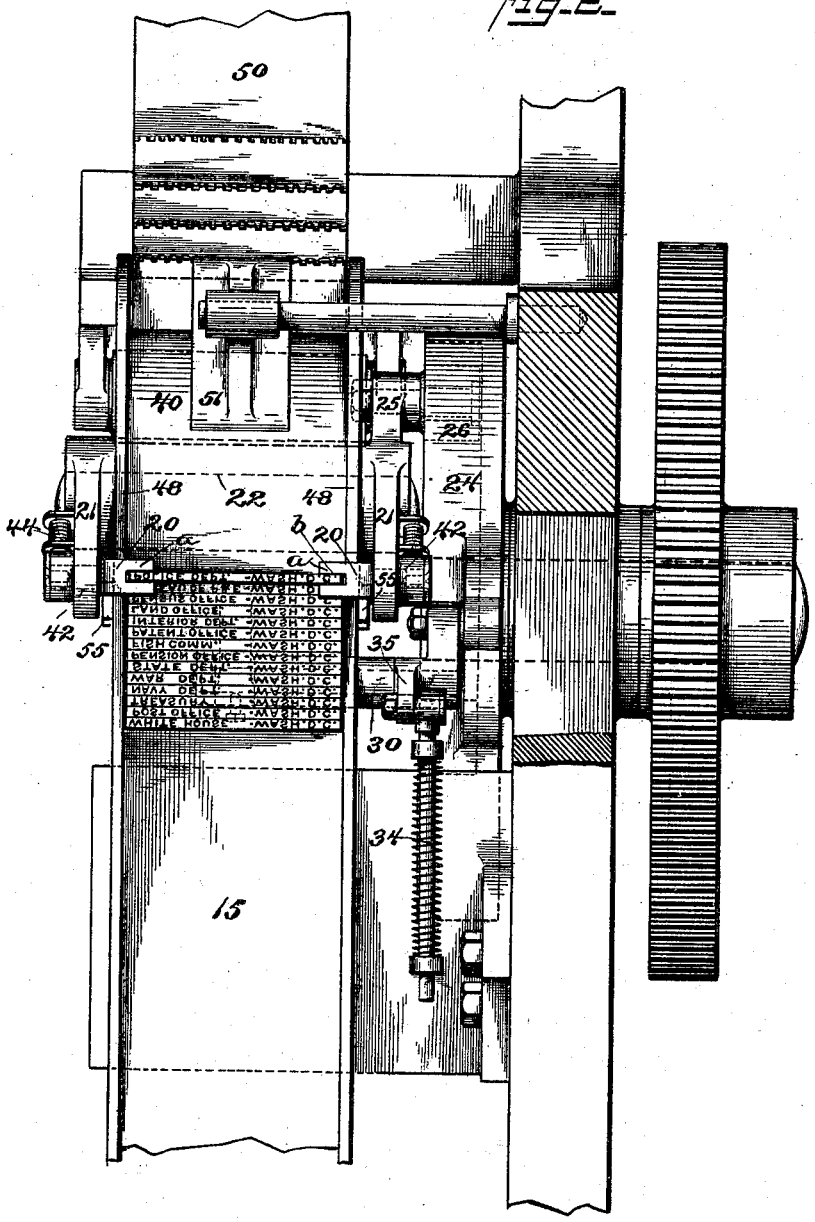
(No Model.) 4 Sheets—Sheet 2.

Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

Fig. 3.

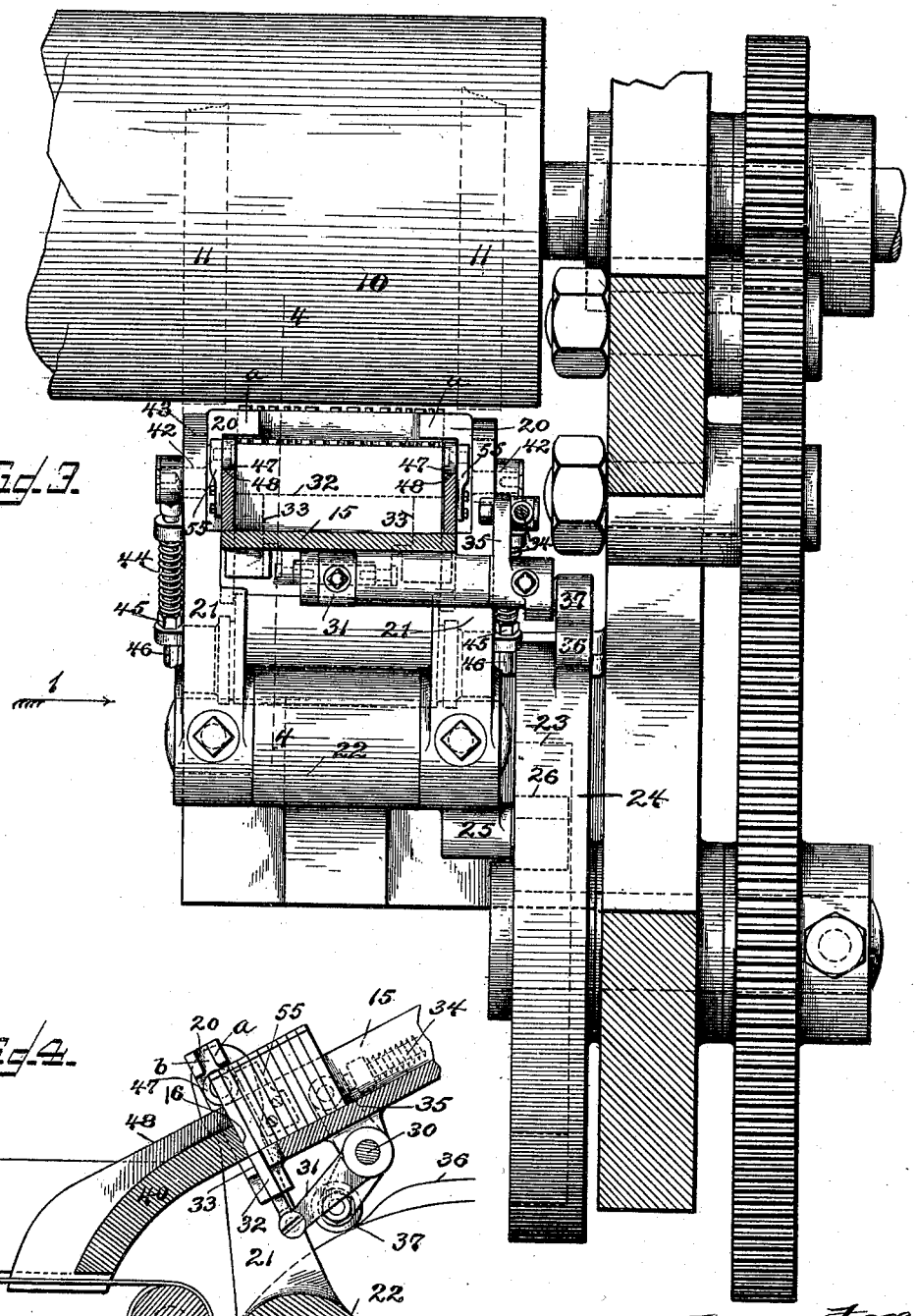
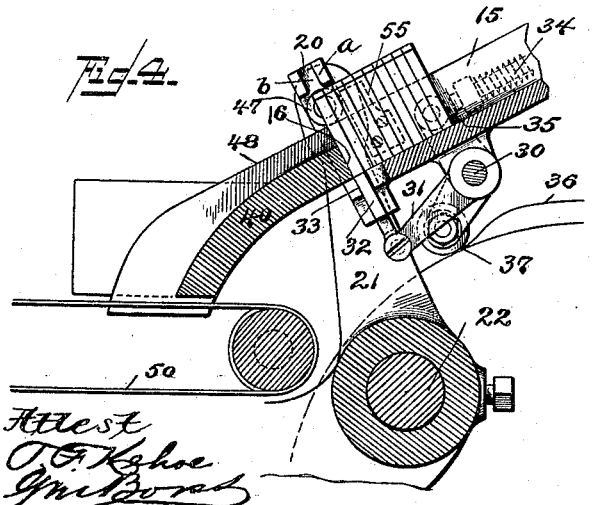


Fig. 4.



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(No Model.) 4 Sheets—Sheet 4.

Fig. 5.

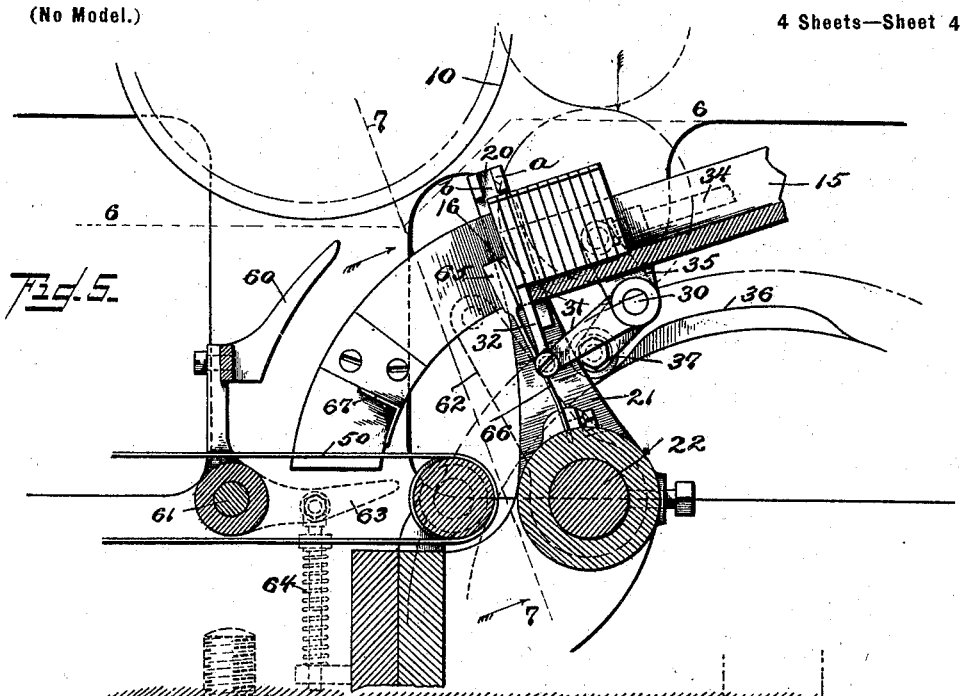


Fig. 6.

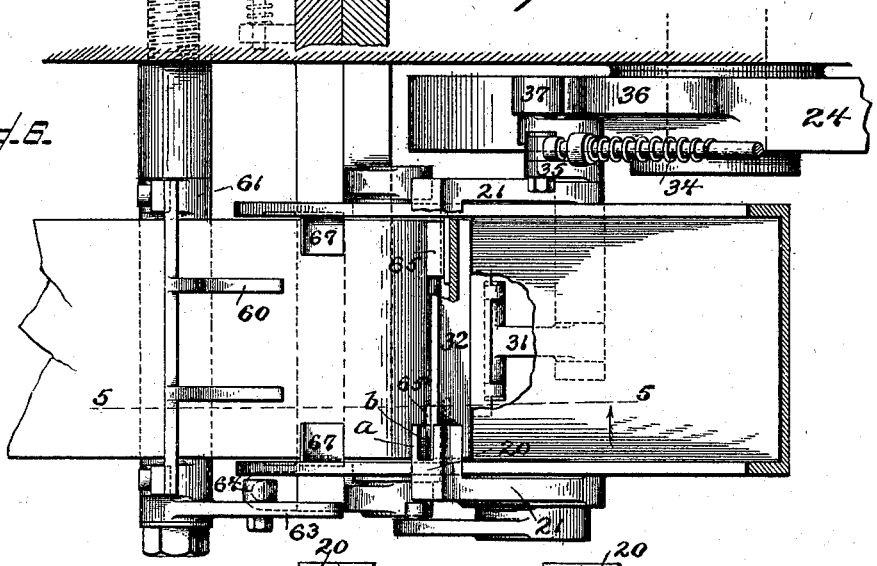
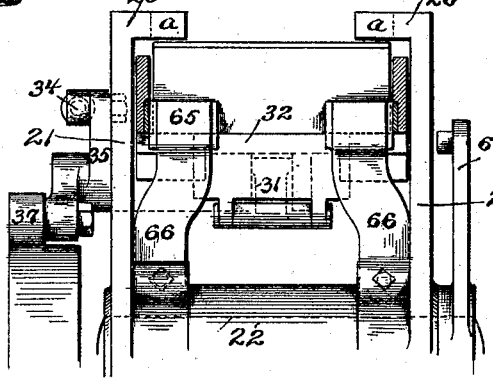


Fig. 7.



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UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF SAME PLACE.

ADDRESSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,959, dated April 10, 1900.

Application filed December 31, 1897. Serial No. 665,162. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at New York, (Brooklyn,) county of Kings, and State of New York, have invented certain new and useful Improvements in Addressing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to machines for printing on newspapers or other publications or wrappers or other articles addresses or other matter from a succession of printing-surfaces, and more particularly to such address or other consecutive printing machines of that class in which the printing-plates are advanced successively for printing by means of a reciprocating carrier, as described and claimed, broadly, in an application filed by me of even date herewith.

The present invention aims especially to provide an address or other consecutive printing mechanism of this class for printing from printing-plates having their printing-surfaces on the edge thereof and having, preferably, a body of considerable depth relatively to its thickness, although it will be understood that I am not to be limited to the use of plates of this form except where so specified in the claims. I have had particularly in mind and have provided a mechanism particularly well adapted to handle printing plates or slugs such as are formed by the machines known as "linotype-machines."

In a machine constructed in accordance with the present invention the printing-plates are preferably arranged side by side in a holder, in which they are advanced to bring the plates successively into position to be taken by the carrier, by which they are advanced for printing, preferably sidewise, and after a plate has been thus moved into position to be taken by the carrier it is moved from the column of plates in the holder, preferably transversely to the direction of the movement of the plates in the holder to be engaged by the carrier. The carrier is formed to engage the plates as they are thus projected from the column of plates in the holder, preferably by being provided with an opening for receiving the plate and in which it is held during the printing movement of the carrier by means of a suitable support, against which the base of the plate rests. For releasing the plate from the carrier after printing I preferably provide means whereby the plate is moved transversely to the direction in which it is being moved by the carrier out of engagement thereby.

My improved consecutive-printing mechanism may be embodied in an independent address or other consecutive printing machine, suitable feeding mechanism being also preferably provided so that the papers or other articles and the printing-plates will be advanced in proper time for causing successive plates to print on successive papers. Printing mechanism constructed in accordance with the invention is also especially well adapted to be combined with the folding-delivery mechanism of a printing-press or with other delivery mechanism, so that the papers may be addressed as they are delivered—for example, as shown in my said application filed of even date herewith.

As a full understanding of the invention can best be given by a detailed description of a preferred construction and modification embodying all the features of the invention, such a description will now be given in connection with the accompanying drawings, showing such a construction, and the features forming the invention will afterward be specifically pointed out in the claims.

In said drawings, Figure 1 is a side elevation, looking in the direction of the arrow 1 in Fig. 3, of an address or other consecutive printing mechanism constructed in accordance with the invention. Fig. 2 is a view taken on the line 2 of Fig. 1. Fig. 3 is a view taken on the line 3 of Fig. 1. Fig. 4 is a detail sectional view taken on line 4 of Fig. 3 and showing the parts in a different position from that shown in Figs. 1 and 2. Fig. 5 is a view taken on line 5 of Fig. 6, showing a modified construction. Fig. 6 is a view taken on line 6 of Fig. 5. Fig. 7 is a view taken on line 7 of Fig. 5.

Referring to the drawings and first to Figs. 1 to 4, the papers to be printed are advanced in succession about an impression-roll 10, being guided about said roll by guiding-tapes 11.

The printing-plates from which the successive impressions are to be made are arranged side by side in a plate-holder 15, in which they are advanced sidewise to bring the successive plates into position to be engaged by the carrier by which they are advanced singly for printing. Any suitable means may be employed for thus advancing the plates in the holder; but I prefer to arrange the holder inclined substantially as shown, so that the plates will be advanced by gravity, a suitable stop, as 16, being provided for limiting the forward movement of the plates in the holder when the foremost or end plate has been moved into proper position to be engaged by the carrier. The carrier, as here shown, is formed of two carrying-arms 20, carried by two rock-arms 21, carried by a rock-shaft 22 and extending one on each side of the pathway of the plates, the carrying-arms 20 having inwardly-projecting ends *a*, provided with plates receiving and holding slots *b*. The shaft 22 is rocked to give the carrier its forward-and-backward oscillating movements by means of a cam-groove 23 in a cam-disk 24, the shaft 22 having an arm 25, which carries a roll 26, running in the cam-groove 23. The ends *a* of the carrying-arms 20 project inwardly at such a distance from the shaft 22 that as the carrier moves to its receiving position, as shown in Fig. 1, the ends *a* will move over the outer face of the printing-plates as they lie in the holder, and the movement of the carrier is stopped when in position with the slots *b* of the carrier-arms over the end plate in the holder. Mounted beneath the plate-holder 15 is a rock-shaft 30, which carries an arm 31, to the end of which is pivoted the lower end of a plunger 32, which moves between guides 33 for raising the end plate in the holder into the slots *b* of the carrying-arms 20. The plunger is held in its retracted position, as shown in Fig. 4, by a spring-rod 34, engaging an arm 35 on the shaft 30, the upper edge of the plunger when in this position being beneath the lower edge of the end plate in the holder when said end plate has been advanced into position against the stop 16. The shaft 30 is rocked to throw the plunger by means of a cam 36 on the cam-disk 24, which engages a roll on an arm 37, carried by the shaft 30, the cam 36 being positioned so as to throw the plunger while the carrier is in its receiving position, as shown in Figs. 1 and 4. By this movement of the plunger the end printing-plate in the holder is raised or projected from the position shown in Fig. 4 to that shown in Figs. 1 and 3, the edges of the printing-plate entering the slots *b* of the carrying-arms. A printing-plate having been thus entered into the grasp of the carrier as the carrier begins its forward movement the printing-plate will be moved onward with the carrier sidewise and its printing-face carried into contact with the paper as the latter is being advanced about the impression-roll 10. In order to hold the printing-plates in position in the carrying-arms during the printing movement of the carrier, a support is provided for the base of the plate to rest on as it is advanced by the carrier, this support being formed, as shown in Figs. 1 to 4, by a bottom guide 40, extending, preferably, substantially circumferentially about the shaft 22, over which support or guide 40 the base of the printing-plate runs as the plate is carried onward during the printing movement of the carrier. The end of this guideway 40 forms the stop 16 for limiting the movement of the printing-plates in the holder 15, the face of the guide at the end toward the holder being above the face of the bottom of the holder a distance about equal to the distance the end plate in the holder is projected by the plunger 32. The plunger having been thrown to project the end plate into the grasp of the carrier is held in its projected position by the cam 36 to sustain the plate until the printing movement of the carrier commences, when the base of the plate moves from the plunger to the guide 40. Side guides 41 are also preferably provided to form a guideway through which the printing-plates are advanced from the holder by the carrier on its printing movement. The carrying-arms 20 are connected to the arms 21, so as to be capable of moving radially thereof, preferably by means of pins 42, which extend through radial slots 43 in the arms 21, and the carrying-arms are held in their normal or retracted position, as shown in full lines in Fig. 1 and as shown in Figs. 2, 3, and 4, by means of springs 43, bearing on collars 45 on rods 46, connected to the ends of the pins 42. The carrying-arms 20 also carry each a running wheel or roll 47, which as the carrier oscillates runs on ways 48, formed by the upper edges of the side guides 41, and these side guides 41 beyond the printing-point are extended outwardly from the bottom guide 40, so as to extend eccentrically to the shaft 22, so that as the movement of the carrier continues after the plate has been moved past the point of contact with the paper passing about the impression-roll 10 the carrying-arms will be moved outward by means of the rolls 47, running on the ways 48, until when the carrier has reached the position shown by dotted lines in Fig. 1 the carrying-arms will have been moved clear of the printing-plate, and the printing-plate thus released will be free to drop from the carrier. The printing-plates thus released by the carrier may be received by a suitable receptacle; but preferably conveying-belts 50 are provided for receiving the plates as they are released by the carrier. In order to prevent the plate from moving with the carrying-arms as they are moved for releasing the plate, a guide 51 is preferably provided for engaging the plates to hold them against the bottom guide 40 or substantially so. The carrying-arms 20 in the construction shown in these figures are preferably pivoted, as on the pins 42, this pivotal connection of the

carrying-arms with the rock-arms 21 providing for movement of the carrying-arms into alinement with the printing-plates in the holder when the carrier is in engaging position, as is desirable when the relation of the parts is such that the end printing-plate in the holder does not stand radially of the center about which the carrier oscillates, as is the case in the construction shown in Figs. 1 to 4. For the purpose of thus throwing the carrying-arms into alinement with the end printing-plate in the holder when the carrier is in position to engage said plate, stops 55 are provided, which stops as the carrier nears the end of its return movement engage the pivoted carrying-arms to bring said arms into alinement, as stated, the arms being turned on the pins 42 against the tension of the spring 44, which in connection with the running wheels 47, bearing on the ways 48, tend to hold the carrying-arms in position substantially radially of the center of oscillation of the carrier.

It will thus be seen without further detailed description of the operation that the printing-plates in the holder 15 are successively projected by the plunger 32 transversely of the column of plates in the holder into engagement by the carrier, then advanced sidewise by the carrier for printing, and then advanced beyond the impression-roll 10 and released from the carrier and deposited on the conveying-belts 50, the carrier after each forward printing movement returning to engaging position for the next plate in the holder, the plates in the holder having in the meantime been fed forward to bring the end plate into position to be projected in turn by the plunger 32 and then advanced by the carrier for printing.

In the modified construction shown in Figs. 5, 6, and 7 the carrying-arms 20, having the plate receiving and holding slots *b*, are rigidly secured to or formed integral with the arms 21 on the rock-shaft 22, and the plates are released from the carrier after printing by being moved inwardly and clear of the slots *b* in the inwardly-extending ends *a* of the carrier by means of a movable guide 60, carried by a rock-shaft 61, which is rocked to throw the guide by means of a tappet-arm 62, carried by the shaft 22, engaging a tappet-arm 63, carried by the shaft 61, when the carrier has moved to the position in which the plate is to be released, a spring-rod 64 being provided to bear against arms 63 to hold the guide 60 in its normal position, as shown in Fig. 5. In the construction shown in these views also the plates are supported in the carrier during its printing movement by means of a support 65, moving with the carrier instead of being moved over a stationary support, as shown in Figs. 1 to 4. As shown, the support 65 is carried by a spring-arm 66, secured to the hub of the arms 21, which arm 66 tends to hold the support in supporting position—that is, with its outer face in position to be engaged by the base of a printing-plate carried by the carrier—but which permits the support to be moved backward and forward relatively to the carrier for the receiving and discharging of the printing-plates, as will now be described. As the carrier returns for the end printing-plate in the holder, which lies against the stop 16, and just before it reaches its receiving position, as shown in Fig. 5, the support 65 will be engaged by the stop and will be held thereby in the position shown in Fig. 5, while the movement of the carrier continues. Then as the carrier begins its printing movement after the end printing-plate has been projected by the plunger 32 into the grasp of the carrier, as before described, the support 65, under the tension of the spring arm 66, will remain in contact with the stop 16 until the base of the printing-plate has been carried over the stop onto the support, and then the support, being in its normal supporting position, will move with the carrier as the plate is advanced for printing and as it is further advanced beyond the impression-roll. Before the guide 60 is moved to engage the printing plate to release it from the carrier and before the forward movement of the carrier ceases, the support 65 is engaged by stops 67, carried by the side guides, so that as the movement of the carrier then continues the base of the plate will be moved beyond and clear of the support, thus leaving the plate free to be moved inwardly by the guide 60 for its discharge from the carrier onto the conveying-belts 50.

It will be understood that I am not to be limited to the exact construction shown for the purpose of illustrating the invention and to which the foregoing description has been mainly confined, but that the invention includes various changes and modifications therein within the claims.

The term "paper" is used in the claims to include all articles for printing on which the invention may be found applicable.

What I claim is—

1. The combination of a printing-plate holder, a reciprocating carrier for carrying the printing-plates successively from the holder and into printing position, and means for raising the end plate in the holder independently of the other plates in the holder for engagement by the carrier, substantially as described.

2. The combination of a printing-plate holder, a reciprocating carrier for carrying the printing-plates successively from the holder longitudinally of the column of plates in the holder and into printing position, and means for moving the end plate in the holder transversely to the column of plates in the holder into the grasp of the carrier, substantially as described.

3. The combination of a printing-plate holder, a pivoted carrier, means for oscillating the carrier to carry successive plates at successive oscillations from the holder longitudinally of the column of plates in the holder

and into printing position, and means for moving the end plate in the holder transversely to the column of plates in the holder into the grasp of the carrier, substantially as described.

4. The combination of a holder for holding printing-plates having edge printing-surfaces and arranged side by side, a reciprocating carrier for carrying successive printing-plates at successive reciprocations sidewise from the holder and into position for printing from the edge printing-surfaces, and means for moving the end plate in the holder edgewise into the grasp of the carrier, substantially as described.

5. The combination of a pivoted carrier, means for oscillating the carrier to advance successive printing-plates at successive oscillations from the holder for printing, and means for securing the movement of the plate carried by the carrier radially of the carrier for delivering the plate from the carrier after printing, substantially as described.

6. The combination of a holder for holding printing-plates side by side, a pivoted carrier, means for oscillating the carrier to advance successive printing-plates at successive oscillations from the holder sidewise for printing, means for moving the end plate in the holder transversely to the column of plates in the holder for engagement by the carrier, and means for securing the movement of the plate carried by the carrier radially of the carrier for delivering the plate from the carrier after printing, substantially as described.

7. The combination of a pivoted carrier, means for oscillating the carrier to advance successive printing-plates at successive oscillations for printing, means for moving the printing-plates radially of the carrier into the grasp of the carrier, and means for bringing papers into contact with the plates as they are advanced by the carrier, substantially as described.

8. The combination of a pivoted carrier having a plate-holding slot for receiving a printing-plate moved radially of the carrier, means for oscillating the carrier to advance successive printing-plates at successive oscillations for printing, and means for bringing a paper into contact with the plate held by the carrier, substantially as described.

9. The combination of a pivoted carrier having a plate-holding slot for receiving a printing-plate moved radially of the carrier, means for oscillating the carrier to advance successive printing-plates at successive oscillations, a support for the plate as it is advanced by the carrier, and means for bringing a paper into contact with the plate held by the carrier, substantially as described.

10. The combination of a holder for holding printing-plates side by side on their bases, a carrier for advancing the printing-plates successively from the holder sidewise for printing, means for raising the plate to be advanced by the carrier into the grasp of the carrier, and means for supporting the plate in the carrier as it is advanced by the carrier, substantially as described.

11. The combination of a holder for holding printing-plates having edge printing-surfaces and arranged side by side on edge, a carrier for advancing the printing-plates successively from the holder sidewise for printing, means for raising the plate to be advanced by the carrier into the grasp of the carrier, and means for supporting the plate in the carrier as it is advanced by the carrier, substantially as described.

12. The combination of a holder for holding printing-plates side by side on their bases, a carrier for advancing the printing-plates successively from the holder sidewise for printing, and means for raising the plate to be advanced by the carrier into the grasp of the carrier, substantially as described.

13. The combination of a carrier for carrying a printing-plate into printing position, a support moving with the carrier for the printing-plate as it is advanced by the carrier, and means for moving said support transversely to the direction of movement of the plate from the carrier for releasing the plate after printing, substantially as described.

14. The combination of a carrier for carrying a printing-plate into printing position, a support moving with the carrier for the printing-plate as it is advanced by the carrier, means for moving the plate transversely to the direction in which it is moved by the carrier for releasing the plate after printing, and means for moving the support out of the way of the plate as it is thus moved for releasing, substantially as described.

15. The combination of a carrier for advancing a printing-plate for printing, a support moving with the carrier for the printing-plate as it is advanced by the carrier, and means for moving said support transversely to and out of the path of the plate as it is moved into the grasp of the carrier, substantially as described.

16. The combination of a carrier for advancing a printing-plate for printing, a support moving with the carrier for the printing-plate as it is advanced by the carrier and arranged to move transversely to the path in which the plate moves from the carrier, said support being held in operative position under yielding tension, substantially as described.

17. The combination of a printing-plate holder, a pivoted carrier, and means for oscillating the carrier to advance successive printing-plates at successive oscillations from the holder and into printing position, and a delivery-belt for receiving the plates from the carrier, substantially as described.

18. The combination of the printing-plate holder 15, stop 16, a carrier for advancing the plates from the holder for printing, transversely-movable support 65, and plunger 32

for moving the end plate in the holder clear of the stop 16 and into the grasp of the carrier, substantially as described.

19. The combination with a carrier for advancing printing-plates for printing having a movable support 65, of the stop 67 and reciprocating guides 60, substantially as described.

20. The combination of the printing-plate holder 15, pivoted arms 21 provided with inwardly-extending portions having plate-holding slots *b*, plunger 32, means for actuating the plunger 32 to move a printing-plate into the grasp of the slots *b*, and means for oscillating the arms 21 to advance the plate for printing, substantially as described.

21. The combination of a carrier for advancing printing-plates for printing having a transversely-movable support 65, and the stop 67, substantially as described.

22. The combination of a carrier for advancing printing-plates for printing having a transversely-movable support 65, the stops 16, and means for feeding the printing-plate into the carrier when the support has been moved by engagement with the stop, substantially as described.

23. The combination of a carrier for advancing printing-plates for printing having a transversely-movable support 65, the stop 16, means for feeding a printing-plate into the carrier when the support has been moved by engagement with the stop 16, and the stop 67, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:
A. L. KENT,
T. F. KEHOE.