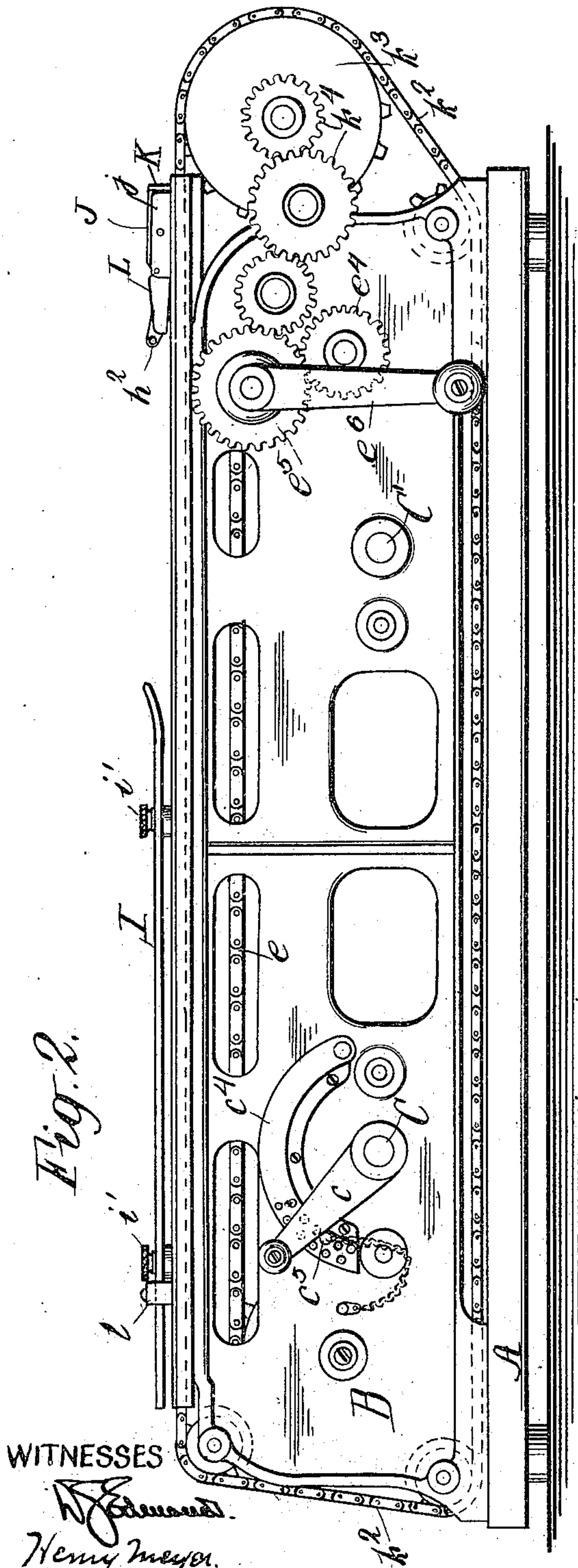




945,760.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 2.



WITNESSES

*J. Edmunds.*  
*Henry Meyer.*

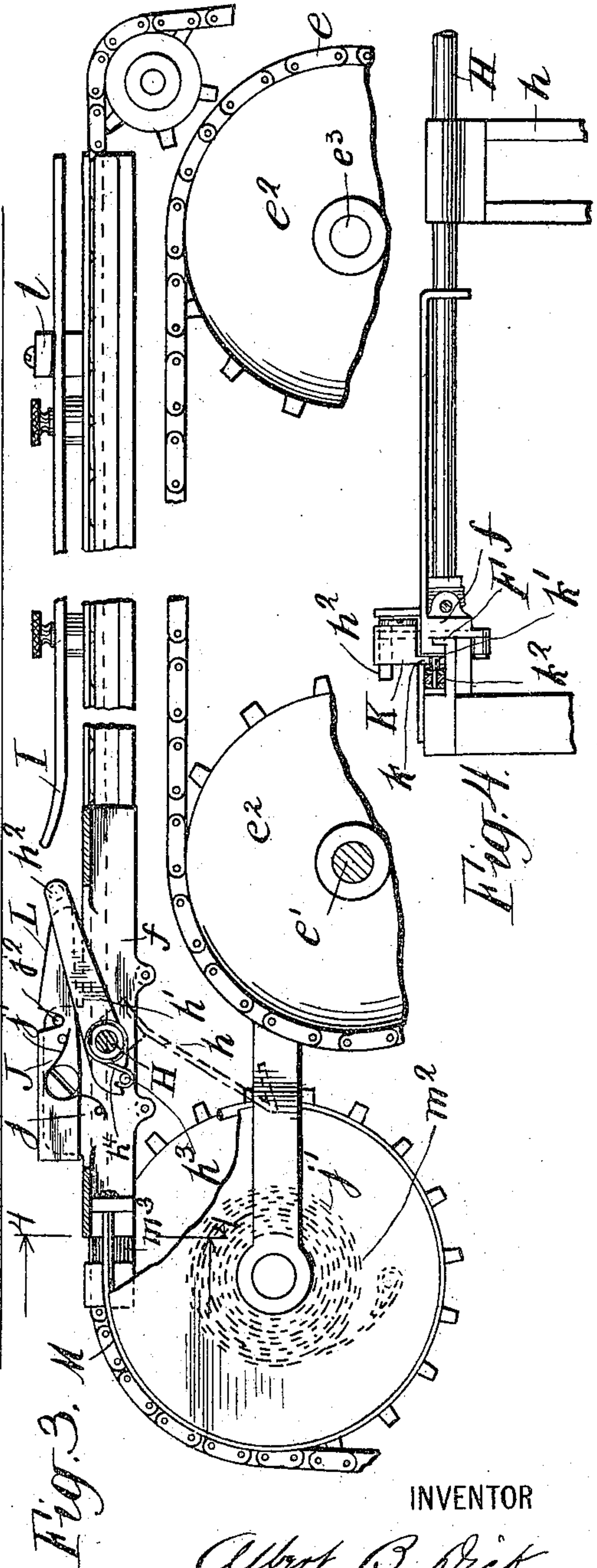


Fig. 3. M

INVENTOR

*Albert B. Dick*  
 BY *J. Edmunds.*  
 ATTORNEYS



# UNITED STATES PATENT OFFICE.

ALBERT B. DICK, OF LAKE FOREST, ILLINOIS, ASSIGNOR TO A. B. DICK COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## PRINTING-MACHINE.

945,760.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed February 9, 1909. Serial No. 476,964.

*To all whom it may concern:*

Be it known that I, ALBERT B. DICK, a citizen of the United States, residing at Lake Forest, in the county of Lake and State of Illinois, have invented a certain new and useful Improvement in Printing-Machines, of which the following is a specification.

This invention relates to printing-machines adapted for office use and so constructed that they may be run at comparatively high speed by an unskilled operator to produce prints in imitation of typewritten work.

The invention has reference more particularly to mechanism for delivering the sheets from the printing position.

The invention involves the provision of a printing-machine having a bed on which a form of type is supported, an ink-ribbon co-acting with the printing faces of the type, a rotatable pressure-roller, and means, such as endless carriers, for moving the pressure-roller in one direction therewith to effect the printing and in the other direction on the opposite side of the type-form and the bed to return the roller to initial position. In combination with these parts, a delivery device is employed adapted to reciprocate over the type-form and when moving in one direction to engage the edge of a sheet and move that sheet from the printing position. This delivery device is moved automatically during the printing operation in one direction in accordance with the movement of the pressure-roller, and during this movement a spring connected to the delivery device is put under tension; at the end of this movement the delivery device is automatically released by the member which effected the movement and is retracted to its initial position by this spring.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the machine broken away in part; Fig. 2 is an elevation; Fig. 3 is a view of the operating mechanism of the delivery device, the view being taken just inside the side-frame shown in Fig. 2; and Fig. 4 is a detail view in section on line 4—4 of Fig. 3.

Referring to these drawings, the machine consists of a base A on which are mounted side-frames B, B', disposed parallel to each

other. Extending between the side-frames and mounted for rotation in bearings formed therein, are two shafts C, C', connected together so as to operate in unison and one provided with a handle *c* for turning the two shafts. These shafts carry eccentrics upon which is mounted the bed *c'* for supporting the case *c''*, in which the type-form *c'''* is locked in the ordinary manner. An arc-shaped member *c''''* is mounted upon the side-frame B and provided with a number of holes into any one of which a pin *c'''''* may be inserted to facilitate positioning the handle *c*.

The mechanism above described permits of raising or lowering bed *c'* and the form of type thereon so as to accurately position the same, but it will be understood that any other suitable mechanism for accomplishing this purpose may be provided.

An ink-ribbon D overlies the printing faces of the type *c'''*, its ends being wound on the spools *d* mounted for rotation in bearings carried by the side-frames of the machine. A pressure-roller E is adapted to coact with the page-form of type to effect the printing. This roller E is mounted for rotation in bearings formed in links of two endless chains *e*, each chain lying adjacent to one of the side-frames. A shaft *e'* is mounted for rotation in bearings formed in the side-frames and carries two sprocket-wheels *e''* on which the chains *e* run. At the other end of the machine are two stub-shafts *e'''*, on each of which is rotatably mounted a similar sprocket-wheel for one of the chains *e*. On one end of shaft *e'* is a pinion *e''''* meshing with a gear *e'''''* mounted for rotation upon a stub-shaft projecting outwardly from the side-frame B. An operating handle *e''''''* is secured to the gear *e'''''* so that by turning this handle the sprocket-wheels *e''* may be rotated and the pressure-roller E thereby moved in one direction over the type-form and in coaction with the printing faces of the type and then in the other direction below the page-form of type and the bed to return the roller to initial position.

The upper surfaces of the side-frames B, B' are formed to provide ways F upon which guides *f, f'* are adapted to slide. Extending between these guides and mounted for rotation in bearings formed therein, is a shaft H, on which is mounted a hook-shaped member *h*. Secured to one end of the shaft H is



an arm  $h'$  having a pin  $h^2$  at its outer end. The opposite end of arm  $h'$  is adapted to engage a pin  $h^3$  upon the guide  $f$  to arrest rotational movement of shaft H under the influence of a spring  $h^4$  secured at one end to shaft H and at the other to pin  $h^3$ . When the delivery device, consisting of the guides  $f, f'$ , the shaft H and the member  $h$  is moved to the right in Fig. 3, the pin  $h^2$  engages a cam surface formed on the end of a strip I mounted on the side-frame B and shaft H is thereby rocked in its bearings against the tension of spring  $h^4$ . Strip I is adapted to be adjusted in the direction of its length and for this purpose is provided with slots  $i$  through which screws  $i'$  extend.

The guide  $f$  has an upwardly extending flange  $j$ , upon which is pivotally mounted a plate J. This plate is acted upon by a spring  $j'$  to turn it in the direction to carry the edge of the plate into engagement with a pin  $j^2$  on the flange  $j$ . At its rear end, the plate J is extended laterally, as shown at K, and the end of this extension has a downwardly extending projection  $k$  (Fig. 4). This projection  $k$  is adapted to be engaged by a pin  $k'$  extending laterally from a chain  $k^2$  which runs on sprocket-wheels  $k^3$  mounted for rotation on stub-shafts extending inwardly from the side-frame B. One of these sprockets is connected by gears  $k^4$  with the gear  $e^5$ , so that the chain  $k^2$  is operated in accordance with the operation of the chains  $e$  and the pressure-roller E. At its forward end the plate J is formed to provide a cam surface L, and when the delivery device is moved to the right as shown in Fig. 3, this cam surface engages a projection  $l$  mounted upon the side-frame B and projecting over the strip I.

To the guide  $f$  is secured one end of a cord M, the other end of which is wound upon and secured to a drum  $m$  rigidly mounted on a shaft  $m'$  rotatably mounted in arms projecting from the side-frame B. A spiral spring  $m^2$  is connected at one end to the shaft  $m'$  and at the other end to a plate at the side of the drum  $m$ .

In the operation of the machine, the handle  $e^6$  is turned, thereby moving the roller E over the type-form to effect the printing, and at the same time the chain  $k^2$  is operated by means of the gearing above described. The operation of chain  $k^2$  causes the pin  $k'$  thereon to come into engagement with the projection  $k$  on the plate J and the continued movement of the chain moves the entire delivery device along with it so as to carry the hook  $h$  over the type-form. This hook engages the rear edge of the sheet which has been printed, and carries the sheet along with it until the sheet falls into a delivery-tray P. Immediately after the hook  $h$  engages the edge of the sheet and before the hook reaches the edge of the type-

form, the pin  $h^2$  engages the cam surface on the strip I and is depressed thereby, thus raising the hook  $h$  above the plane of the printing faces of the type. Immediately after the delivery of the sheet has been accomplished, the cam surface L on the plate J engages the projection  $l$  and the plate is rocked on its pivot thereby, against the tension of the spring  $j'$ . This rocking movement of plate J is sufficient to raise the projection  $k$  above the pin  $k'$  so that the delivery device is released by the pin. During all this movement of the delivery device, the drum  $m$  has been rotated, thereby putting the spring  $m^2$  under tension, and as soon as the delivery device is released by pin  $k'$  it is drawn back to its initial position by the spring  $m^2$  acting through the drum  $m$  and cord M. When the delivery device reaches its initial position, its movement is arrested by a buffer  $m^3$ . The position of pin  $k'$  upon chain  $k^2$  is such with reference to the position of roller E on chains  $e$  that the movement of the delivery device is begun immediately after the pressure-roller E has effected the printing of a sheet, and the delivery device is moved to deliver the sheet and then returned to its initial position while the pressure-roller E is returning to its initial position below the page-form of type and the bed therefor.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an endless carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, means for causing said carrier to engage said device and move the same, means for automatically operating said device to disengage it from said carrier, and means for returning said device to initial position, substantially as set forth.

2. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an endless carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, means for causing said carrier to engage said device and move the same, means for automatically operating said device to disengage it from said carrier, and a spring put under tension during the movement of said device and adapted to return the device to initial position when it is released, substantially as set forth.

3. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an end-



less carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, a projection on said carrier adapted to engage said device and move the same to deliver a sheet, means for operating said device to cause it to disengage said projection automatically, and means for returning said device when released to initial position, substantially as set forth.

4. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an endless carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, a projection on said carrier, a movable member on said delivery device adapted to be engaged by said projection to move said device and cause it to deliver a sheet, and means for positively operating said movable member to carry it away from said projection, substantially as set forth.

5. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an endless carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, a projection on said carrier, a movable member on said delivery device adapted to be engaged by said projection to move said device and cause it to deliver a sheet, means for positively operating said movable member to carry it away from said projection, and a spring put under tension during the movement of said device and adapted to return the same to initial position, substantially as set forth.

6. In a printing-machine, a bed, a form of type thereon, a platen, means for moving the same in coaction with the type, an endless carrier movable in accordance with the movement of said platen, a delivery device movable over the type-form and adapted to engage a sheet and deliver the same, means for causing said carrier to engage said device and move the same, means for automatically disengaging said device from said carrier, means for returning said device to initial position, and means for moving said delivery device relatively to the plane of the type faces immediately after it engages a sheet, substantially as set forth.

7. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means,

a delivery device, means for causing said last-named flexible carrier to move said device over the type-form to cause it to deliver a sheet, and means for returning said device to initial position, substantially as set forth.

8. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means, a delivery device, means for causing said last-named flexible carrier to move said device over the type-form to cause it to deliver a sheet, means for disengaging said device from said carrier, and a spring put under tension during the movement of said device and adapted to return the same to initial position, substantially as set forth.

9. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means, a delivery device, means for causing said last-named flexible carrier to move said device over the type-form to cause it to deliver a sheet, means for moving said device relatively to the plane of the type faces immediately after it engages a sheet, and a spring for returning the device to initial position, substantially as set forth.

10. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means, a projection thereon, a delivery device adapted to slide over the type-form and deliver a sheet therefrom, a member on said device engaged by said projection, means for causing said member to disengage said projection, and means for returning said device to initial position, substantially as set forth.

11. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means, a projection thereon, a delivery device adapted to slide over the type-form and deliver a sheet therefrom, a member on said device engaged by said projection, means for moving said



member to cause it to disengage said projection, and a spring connected to said device and adapted to return the same to initial position, substantially as set forth.

- 5 12. In a printing-machine, a bed, a form of type thereon, a roller, flexible carriers on which said roller is rotatably mounted, means for operating said carriers to move the roller in one direction in coaction with the  
10 type and in the other direction on the other side of the type and bed, a flexible carrier actuated by said operating means, a projection thereon, a delivery device adapted to  
15 therefrom, a member on said device engaged

by said projection, means for moving said member to cause it to disengage said projection, a spring connected to said device and adapted to return the same to initial position, and means for moving said delivery 20 device relatively to the plane of the type-faces immediately after it engages a sheet, substantially as set forth.

This specification signed and witnessed this 8th day of February, 1909.

ALBERT B. DICK.

Witnesses:

S. O. EDMONDS,

I. McINTOSH.