

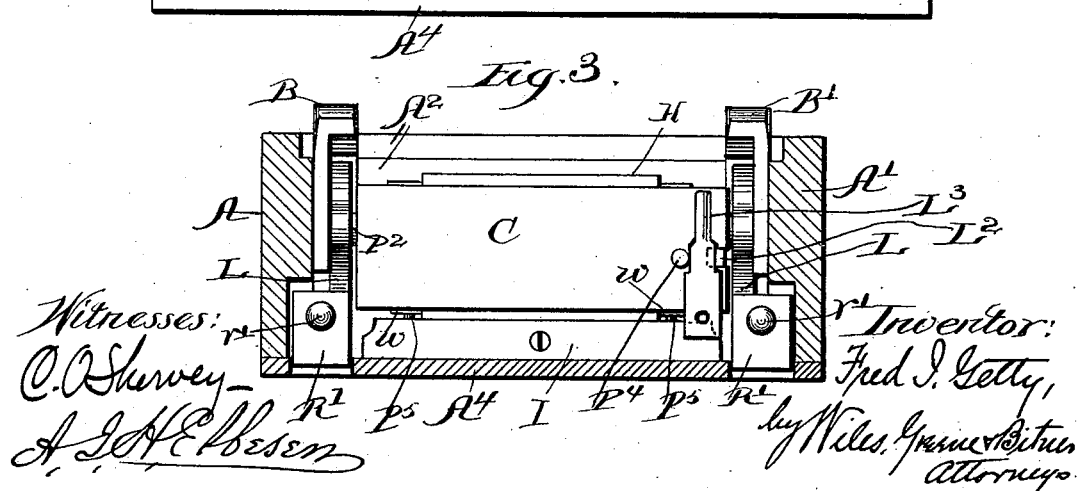
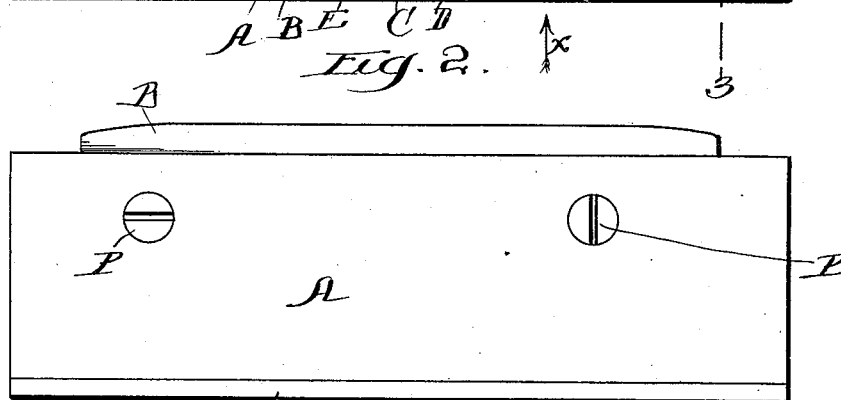
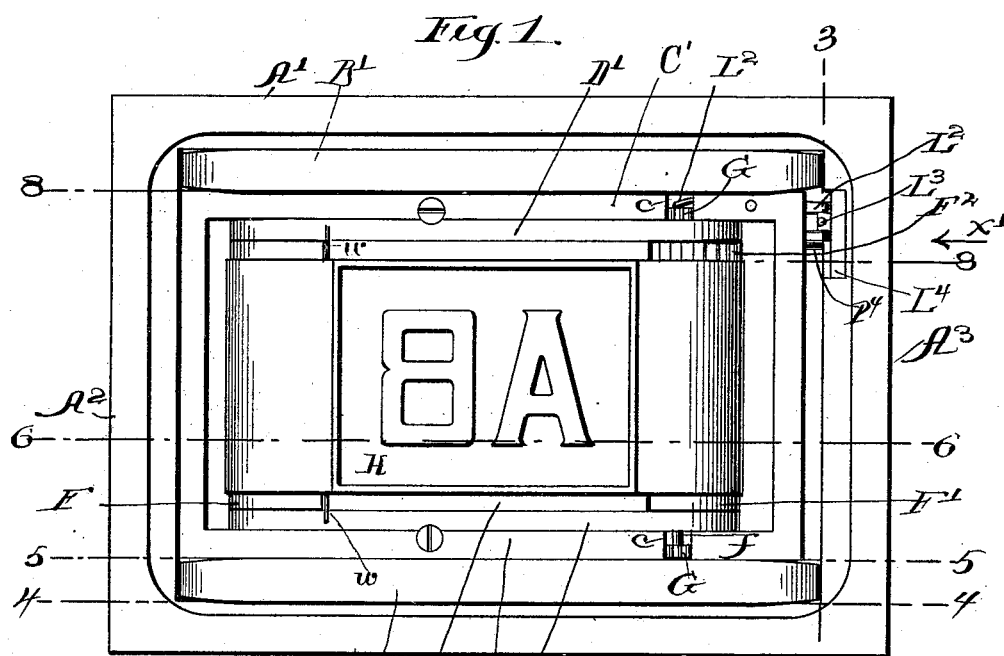
(No Model.)

3 Sheets—Sheet 1.

F. I. GETTY.  
PRINTING BLOCK.

No. 523,307.

Patented July 17, 1894.



Witnesses:

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# UNITED STATES PATENT OFFICE.

FRED I. GETTY, OF SPRINGFIELD, ILLINOIS, ASSIGNOR TO THE NATIONAL CHROMATIC PRINTING COMPANY, OF SAME PLACE.

## PRINTING-BLOCK.

SPECIFICATION forming part of Letters Patent No. 523,307, dated July 17, 1894.

Application filed May 10, 1893. Serial No. 473,721. (No model.)

*To all whom it may concern:*

Be it known that I, FRED I. GETTY, a citizen of the United States of America, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Printing-Blocks, of which the following is a specification.

My invention relates to improvements in printing blocks, its object being to provide a practical self-inking device adapted to be set in an ordinary form of type and to print on the paper upon the impression roller an impression in any desired color, the printing surface of the device being so arranged as not to be acted upon by the inking rollers, which act upon the general surface of the form.

The device is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1, is a top plan of a device embodying my improvement. Fig. 2 is a side elevation thereof, the view being in the direction indicated by the arrow,  $x$ , Fig. 1. Fig. 3 is a view partly in end elevation, and partly in transverse vertical section, the view being in the direction indicated by the arrow,  $x'$ , and the plane of section being through the line 3—3, Fig. 1, the end wall,  $A^3$ , of the case being removed. Fig. 4 is a view partly in side elevation and partly in longitudinal vertical section, the view being in the direction indicated by the arrow,  $x$ , Fig. 1, and the plane of section being through the line 4—4, Fig. 1. Fig. 5 is a view partly in side elevation, and partly in longitudinal vertical section, the view being in the same direction as in Fig. 4, and the plane of section being through the line 5—5, Fig. 1. Fig. 6 is a longitudinal vertical section through the line 6—6, Fig. 1, the view being in the same direction as in Fig. 5. Fig. 7 is a horizontal section through the line 7—7, Fig. 5, the view being downward. Fig. 8 is a view partly in side elevation and partly in vertical section, the view being in the same direction as in Figs. 2, 4, 5 and 6, and the section being through the broken line 8—8, Fig. 1. Fig. 9 is a view similar to Fig. 5, except that in this figure the plates,  $B, B'$ , are pressed down to their lowest limit of motion, and the frame,  $C$ , is raised to its highest limit of motion, whereas in all the preceding

figures, the plates are in their highest position and the frame is depressed. In this figure also the parts beneath the frame,  $C$ , are removed in order to show the spring-actuated rod,  $R$ , at the farther side of the case.

In the views,  $A, A', A^2, A^3$  are the side and end walls respectively, of a case provided with a bottom piece,  $A^4$ , and containing and supporting all the working parts of the mechanism of my invention this case being adapted to be set in an ordinary form of type and its upper margin being preferably lower than the face of the form. Immediately within the side walls,  $A, A'$ , of the case are two vertically reciprocating plates,  $B, B'$ , having no direct connection with the walls of the case but supported in the manner hereinafter explained, and between the plates,  $B, B'$ , lies a vertically reciprocating frame,  $C$ , containing and supporting various elements of my mechanism. Between each of the plates,  $B, B'$ , and the frame,  $C$ , are two levers,  $L, L$ , lying in recesses in the inner face of the plate and swinging on pivots,  $P, P$ , set in the corresponding side walls,  $A, A'$ , of the case. Each of these levers is approximately triangular and is made up of three arms,  $l, l', l^2$ , the arms,  $l, l'$ , being at the upper edge of each lever and the pin,  $P^2$ , being very nearly on a line between them. Each of the plates,  $B, B'$ , is provided with two pins,  $P', P'$ , projecting from its inner face and pivoted in the ends,  $l, l$ , of the two corresponding levers,  $L, L$ , and each side wall of the frame,  $C$ , is provided with two projecting pins,  $P^2, P^2$ , which are pivoted in the ends,  $l', l'$ , of the corresponding pair of levers,  $L$ . The lower ends,  $l^2$ , of the pair of levers at each side are connected by a rod,  $R$ , Figs. 4 and 9, encircled near one of its ends by a collar,  $r$ , and extending at its opposite end into a yoke,  $R'$ , lying in a longitudinal slot in the bottom  $A^4$ , of the case provided with a pin,  $r'$ , entering a socket in the end wall,  $A^3$ , of the case. The rod,  $R$ , is encircled by a coiled spring,  $S$ , lying between the collar,  $r$ , and the yoke,  $R'$ , and tending to press the collar,  $r$ , the rod,  $R$ , and the lower ends,  $l^2$ , of the levers in the direction indicated by the arrow on the rod in Fig. 4. The tension of this spring may be varied by means of a set screw,  $s$ , Fig. 4, forming the

end wall of the socket which incloses the pin,  $r'$ , the yoke,  $R'$ , being susceptible of slight longitudinal adjustment in the slot in which it lies, and the force of the spring evidently tends at all times to raise the angles,  $l, l'$ , of all the levers and depress the angles,  $l', l$ , thereof, and thus to raise the plates,  $B, B'$ , and depress the frame,  $C$ . The plates,  $B, B'$ , may, however, be pressed down with sufficient force to rock the levers upon their pivots and overcome the force of the springs,  $S, S$ , and this movement of the plates will correspondingly raise the frame,  $C$ .

The plates,  $B, B'$ , are of such width and are so located in the case,  $A$ , that when the latter is set in a form of type, the upper margins of the two plates are above the face of the form and are in position to receive the downward pressure of the impression cylinder as the form passes under it, the plates being thereby depressed to produce the results above set forth.

Within the frame,  $C$ , and rigidly but detachably secured to its side walls are two plates,  $D, D'$ , in contact with the inner faces of the corresponding walls,  $C, C'$ , of the frame. Between the central portions of the plates,  $D, D'$ , is a block,  $E$ , having its ends recessed as shown in Fig. 6, and in these recesses lie two cylinders,  $F, F'$ , mounted on parallel arbors,  $f, f'$ , respectively, both the arbors being journaled in the plates,  $D, D'$ , and the arbor,  $f'$  being of such length that its ends project beyond the plates,  $D, D'$ , and lie in notches,  $c, c$ , in the walls,  $C, C'$ , of the frame.

The plates,  $D, D'$  and the block,  $E$ , are preferably fastened together by means of horizontal screws passing through the plates and entering the block in the manner clearly shown in Fig. 7, and the plates are detachably secured in the frame,  $C$ , for the reason that it is more convenient to assemble the plates and the parts between them before placing them in the frame.

On the ends of the arbor,  $f'$ , are rigidly mounted two pinions,  $G, G$ , each of which engages a gear-wheel,  $G'$ , lying in a recess in the outer face of the corresponding walls  $C$ , and  $C'$ , and mounted on fixed studs  $s'$ , Figs. 5 and 9, set in said walls. Each of the gear-wheels,  $G'$ , has on its outer face a rigidly attached concentric pinion,  $G^2$ , which engages a gear-wheel,  $G^3$ , mounted on a stud,  $s^2$ , set in the corresponding side walls of the case,  $C$ , and having in its outer face an annular ratchet, as shown in Figs. 7 and 9. On each of the studs,  $s^2$ , is mounted a lever,  $L'$ , formed on its inner face with an annular ratchet engaging the ratchet on the gear-wheel,  $G^3$ , the ratchet being so formed as to permit rotation of the lever,  $L'$ , with reference to the gear-wheel, in the direction indicated by the arrow on its face in Fig. 9, but not in the opposite direction. A spring,  $s'$ , encircles each of the studs,  $s^2$ , and presses the lever against the gear-wheel, thereby tending to hold the ratchets in engagement. Each of the levers,

$L'$ , has in its free end a slot which embraces a pin,  $P^3$ , on the inner face of the corresponding plate,  $B$ , or  $B'$ , and at every vertical movement of the plate, which is accompanied by an opposite vertical movement of the frame,  $C, C'$ , each of the pins,  $P^3$ , swings the corresponding lever,  $L'$ , about the stud on which it is mounted. When the plates are pressed downward, they swing the ends of the levers,  $L'$ , downward also, and the ratchet connection between the levers and the gears,  $G^3$ , permits the levers to move in this direction without rotating the gear-wheels. When the plates move upward, however, they swing the slotted ends of the levers upward and impart to the entire train of gearing,  $G^3, G^2, G' G$ , on each side of the frame,  $C, C'$ , the movements indicated by the arrows on the different gear-wheels, respectively, in Fig. 5, thus rotating the drum,  $F'$ , in the direction indicated by the arrow at its margin in Fig. 6.

The drum has at one end a rigidly attached ratchet-wheel,  $F^2$ , which engages a spring-actuated pawl,  $p$ , pivoted in a recess in the side wall of the block,  $E$ , and adapted to prevent reverse rotation of the ratchet wheel, and the drum,  $F'$ . About the two drums,  $F, F'$ , extends an endless band,  $H$ , whose upper and lower folds are always in contact with the upper and lower plane faces of the block,  $E$ , and on this band are formed two suitable printing surfaces, each preferably adapted to cover substantially the entire upper face of the block, the spaces between the two printing surfaces at either end being substantially equal.

Beneath the frame,  $C, C'$ , is an inking pad,  $I$ , of suitable material and construction to ink either printing surface of the band,  $H$ , when pressed against it, and this pad may either be in a single piece, or in two pieces as shown in Fig. 6, the two parts of the pad being preferably supplied with inks of different colors, so that each printing face, in use, may make an impression in two colors instead of one. The gearing which actuates the drum,  $F'$ , is so arranged, and the circumference of the drum is such that during each upward movement of the plates,  $B, B'$ , and the accompanying downward movement of the frame,  $C, C'$ , the band moves through a distance equal to one half of its entire length, so that the two printing surfaces of the band come alternately into the same position on the upper face of the block,  $E$ , and are presented alternately to the paper on the impression cylinder of the press.

The gearing may be so arranged as to operate during each entire downward movement of the frame,  $C, C'$ , but I prefer to arrest the rotation of the drums,  $F, F'$ , and the consequent movement of the band,  $H$ , just before the frame reaches its lowest position, as by this arrangement any dragging of the band along the inking pad is prevented. In order to accomplish this, the pinions,  $G, G$ , and their shaft,  $f'$ , may be disconnected from

the drum,  $F'$ , at a predetermined point in the downward movement of the mechanism, and an arrangement by which this connection may be effected is shown in Figs. 6 and 7. As shown in these figures, the drum,  $F'$ , is a hollow cylinder open at one of its ends, the open end being filled, however, by a hub,  $F^3$ , formed on the ratchet wheel,  $F^2$ , and provided on its inner end with a face-ratchet as shown in Fig. 7, the hub being held in place by a set screw inserted in the wall of the drum. On the shaft,  $f'$ , is rigidly mounted a sleeve,  $F^4$ , provided with a ratchet engaging the ratchet on the hub,  $F^3$ , and a spring,  $S^2$ , encircling the shaft,  $f'$ , tends to press the sleeve and the shaft toward the hub,  $F^3$ , and maintain the engagement of the two ratchet-faces. In the side wall,  $C'$ , of the frame,  $C$ ,  $C'$ , is mounted a horizontally oscillating lever,  $L^2$ , whose inner end is in contact with the outer face of the corresponding pinion,  $G$ , the outer end of the lever being in contact with a vertical lever,  $L^3$ , Fig. 3, which is pivoted on a pin set in a plate,  $L^4$ , Fig. 7, secured in a recess in the inner face of the end wall,  $A^3$ , of the case, the lever being fastened to the removable plate,  $L^4$ , instead of being pivoted directly to the wall,  $A^3$ , simply as a matter of convenience in assembling the parts. This lever lies between the end of the lever,  $L^2$ , and a pin,  $P^4$ , set in the end wall of the frame,  $C$ ,  $C'$ , and is of less width in its upper than its lower portion.

When the frame,  $C$ ,  $C'$ , is in its lowest position, or in a position slightly above its lowest limit, the wider portion of the lever,  $L^3$ , lies between the pin,  $P^4$ , and the end of the lever,  $L^2$ , and the outer end of the lever,  $L^2$ , is therefore pressed outward, and its inner end pressed inward with sufficient force to overcome the spring,  $S^2$ , and disconnect the ratchet-face of the sleeve,  $F^4$ , from the ratchet-face on the hub,  $F^3$ . When the parts are in this position, the gearing rotates without affecting the drum, and the band,  $H$ , has, therefore, no longitudinal movement during the last part of the downward movement of the frame,  $C$ ,  $C'$ , and the parts within it. As soon as the frame has moved upward a short distance from its lowest position, the outer end of the lever,  $L^2$ , reaches the thinner or narrower portion of the lever,  $L^3$ , and is free to swing inward, its inner end being at the same time pressed outward by the force of the spring,  $S^2$ , and the shaft,  $f'$ , being again connected with the drum, so that rotation of the gearing may again rotate the drum. When the lever,  $L^2$ , and pin,  $P^4$ , in their upward movement, reach the narrower portion of the lever,  $L^3$ , the latter swings about the pivot in its lower end and moves toward the pin,  $P^4$ , thereby increasing the range of lateral movement of the lever,  $L^2$ , as compared with that which it would have if the lever,  $L^3$ , were rigidly fastened to the end wall of the case instead of being allowed to oscillate upon a pivot. From this description and explanation, it will be seen

that as the plates,  $B$ ,  $B'$ , move downward, the frame,  $C$ ,  $C'$ , and the parts within it rise, the drums,  $F$ ,  $F'$ , being stationary with reference to the frame; and that during the reverse movement of the parts, the drums,  $F$ ,  $F'$ , rotate, and the band,  $H$ , moves longitudinally until the downward movement of the block is nearly finished when the drums become stationary, and the band is pressed directly down upon the inking pad.

In order to arrest the movement of the band at exactly the right place and guard against any error from the momentum of the drums, I have found it advisable to provide the band with laterally projecting pins, or wires,  $w$ , Figs. 1 and 6, which are adapted to strike suitably placed pins,  $P^5$ , Figs. 3 and 6, set in edges of the pad and adapted to be struck by the wires,  $w$ , when the block,  $E$ , is approximately at the lowest limit of its movement.

The case which contains the working parts of my device is the same as that shown in my prior application, Serial No. 443,500, and the plates,  $B$ ,  $B'$ , the frame,  $C$ ,  $C'$ , and the rocking levers connecting the case, the frame and the plates are all substantially the same, and in the same relation to each other as the corresponding parts of the device shown and described in that application. Those elements of the mechanism shown and described herein constitute, therefore, in themselves no part of my present invention, though they co-operate with the novel elements to make up a practical working device.

It is evident that as the plates,  $B$ ,  $B'$ , move up and down at the same time and at the same rate, they might be rigidly connected without altering their function or operation, and it may be found desirable to connect their ends by transverse plates making up with them a rigid frame. The upper edges of this frame may, if desired, be ornamented in any suitable manner in order to print a design in ink of the same color as that which is applied to the type of the form in which the block is set, and, in fact, the upper edge of the frame may be detachable and may be formed with letters or other characters adapted to print an advertisement, which may be changed by removing such upper portion and replacing it by another having a different design or different characters. The inking pad which is shown in two parts may evidently be made up of any number of different parts held together in any suitable manner and adapted to supply inks of any number of different colors to the printing surfaces of the movable band.

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

1. In a printing block of the class described, the combination with a suitable case, of a vertically reciprocating frame supported within the case, an endless band mounted on suitable supports within the frame, means for supplying ink to said band at one point in its

length, and means for imparting longitudinal movement to the band about its supports, the frame when in one position being adapted to press the exposed fold of the band against a suitably supported sheet and produce an impression thereon.

2. In a printing block of the class described, the combination with a case adapted to be set in a form of type, of a vertically reciprocating frame supported within the case, an endless band mounted on suitable supports within the frame, an inking-pad secured within the case and means for imparting longitudinal movement to the band about its supports, the frame being adapted when at one limit of its movement to press one face of the band against said inking pad, and when at the opposite limit of its movement to bring the opposite face of the band into the plane of the upper face of the form in which the block is mounted.

3. In a printing block of the class described, the combination with a case adapted to be set in a form of type, of a vertically reciprocating frame supported within the case, an endless band mounted on suitable supports within the frame and provided with printing characters, an inking pan secured in the case and means for imparting longitudinal movement to the band, the vertical movement of the frame being adapted to bring the opposite faces of the band alternately into contact with the inking pad and into the plane of the face of the form, and the longitudinal movement of the band being adapted to present different parts of its surface successively to the inking-pad and bring them into the plane of the face of the form.

4. In a printing block of the class described, the combination with a case adapted to be set in a form of type, of a vertically reciprocating frame lying within the case, two suitably journaled parallel drums lying within the frame, a block lying between said drums, an endless band extending about said drums and over said block, an inking-pad secured in the case below said band, and means substantially as shown and described for rotating one of said drums and imparting longitudinal movement to the band, the vertical movement of the frame in one direction being adapted to press the lower face of the band against the pad and its movement in the other direction being adapted to bring its upper face into the plane of the face of the form.

5. The combination with the case, A, A', of the frame, C, C', supported within the case, means substantially as shown and described for giving the frame a vertical reciprocation, the drums, F, F', and block, E, supported in the frame, the endless band, H, extending about the block, E, and drums, F, F', the inking-pad, I, secured below the band, and means substantially as shown and described, whereby the downward movement of the frame C, C', rotates the drums and imparts longitudinal movement of the band.

6. The combination with the case, A, A', of the vertically reciprocating plates, B, B', the vertically reciprocating frame, C, C', means substantially as shown and described connecting the plates and the frame and insuring their reverse movement, the drums, F, F', mounted within the frame, the band, H, extending about the drums, and gearing substantially as shown and described interposed between the plates, B, B', and frame, C, C', and adapted to be operated by the reverse movement of the plates and the frame and thereby to rotate one of said drums and impart longitudinal movement to the band.

7. The combination with the case, A, A', plates, B, B', frame, C, C', and means substantially as shown and described connecting the case, the plates and the frame, and securing reverse movement of the plates and frame, of the drums, F, F', supported in the frame, the band, H, extending about the drums, a train of gearing substantially as shown and described connected with one of said drums, and a lever connected with one element of said train of gearing by a ratchet or its equivalent, and adapted to be oscillated by the reverse movement of the plates and the frame, said lever by its connection with said train of gearing being adapted to operate it when swung in one direction, but not when swung in the other, whereby the movement of the frame in one direction, but not in the other, may operate said gearing and rotate one of said drums.

8. The combination with the case, A, A', plates, B, B', frame, C, C', and means substantially as shown and described connecting said parts and securing reverse movement of the plates and frame, of the drums, F, F', mounted in the frame, the band, H, extending about said drums, the train of gearing, G, G', G<sup>2</sup>, G<sup>3</sup>, adapted to rotate one of said drums, the lever, L', connected by a ratchet with one of the gears of said train and engaging one of the plates, B, B', whereby the reverse movement of the plates and the frame, C, C', swings the lever, the swinging of the lever in one direction being adapted to operate the gears and rotate the drum and thereby to impart longitudinal movement to the band, H.

9. The combination with the case, the frame, C, C', supported in the case and means for imparting vertical reciprocation to the frame, of the shafts, *f*, *f'*, journaled in the frame, the drum, F, mounted on the shaft, *f*, the drum, F', mounted loosely on the shaft, *f'*, the band, H, extending about the drums, a ratchet rigidly mounted on the shaft and normally in engagement with a corresponding ratchet on the drum, but adapted to be disengaged from it by longitudinal movement of the shaft, a train of gearing connected with the shaft, means substantially as shown and described, whereby the movement of the frame in one direction operates said gearing and rotates said shaft, and means for moving said shaft lon-

gitudinally at a predetermined point in the movement of the frame, and thereby disconnecting the shaft from the drum.

10. The combination with the case, the  
5 plates, B, B', the frame, C, C', and means for imparting reverse vertical movement to the plates and frame, of the shafts, *f*, *f'*, journaled in the frame, the drum, F, mounted on the shaft, *f*, the drum, F', mounted loosely on  
10 the shaft, *f'*, the band, H, extending about the drums, gearing substantially as shown and described connected with the shaft, *f'*,  
15 idly mounted on the shaft, *f'*, and normally in engagement with a corresponding ratchet on the drum, but adapted to be disengaged from it by longitudinal movement of the shaft, the lever, L<sup>2</sup>, pivoted to the frame and having  
20 one of its ends in contact with the end of the

shaft, and the lever, L<sup>3</sup>, impinging upon the opposite end of the lever, L<sup>2</sup>, and adapted, when the frame reaches a predetermined point in its movement, to actuate the lever, L<sup>2</sup>, and disengaging the shaft from the drum; 25 substantially as shown and described.

11. The combination with the case, the vertically reciprocating frame, C, C', the drums, F, F', the band, H, the inking-pad, I, and means substantially as shown and described 30 for imparting longitudinal movement to the band, of pins, P<sup>5</sup>, set in the inking-pad and transverse wires, *w*, set in the band and adapted to strike the pins, P<sup>5</sup>, and insuring the arrest of the band in proper position for its op- 35 eration.

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