

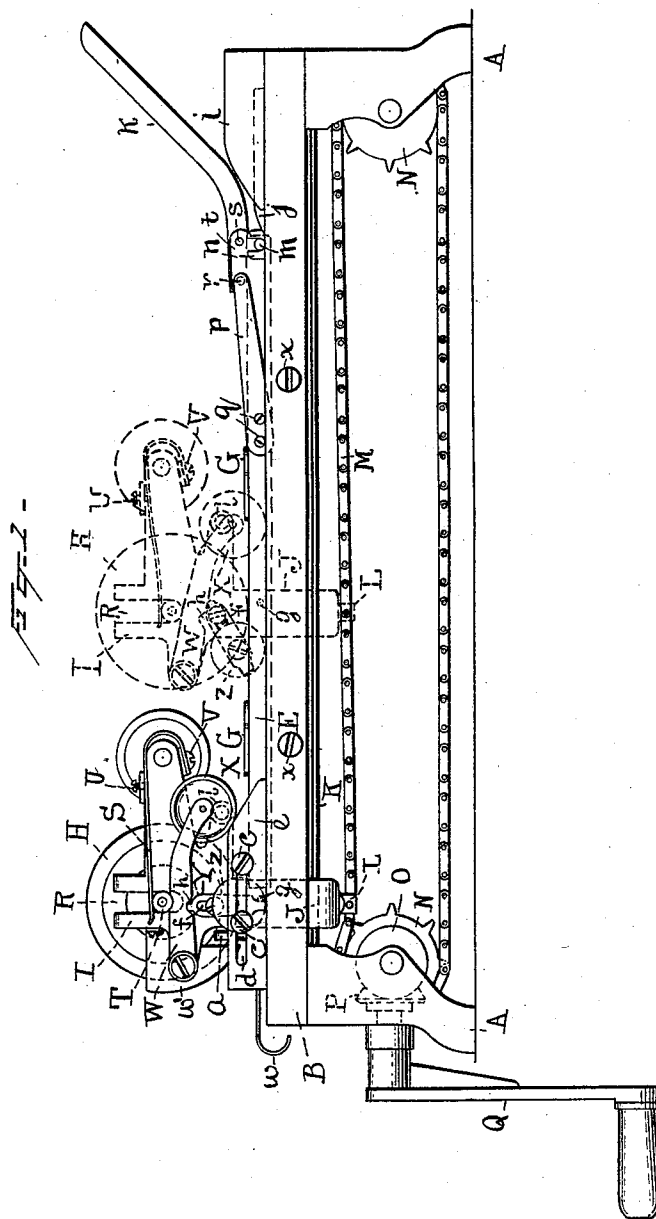
(No Model.)

4 Sheets—Sheet 1.

A. B. DICK.
STENCIL PRINTING MACHINE.

No. 538,663.

Patented May 7, 1895.



Witnesses
Norris A. Clark,
John A. Taylor.

Albert B. Dick Inventor
By his Attorneys Dyer & Seely

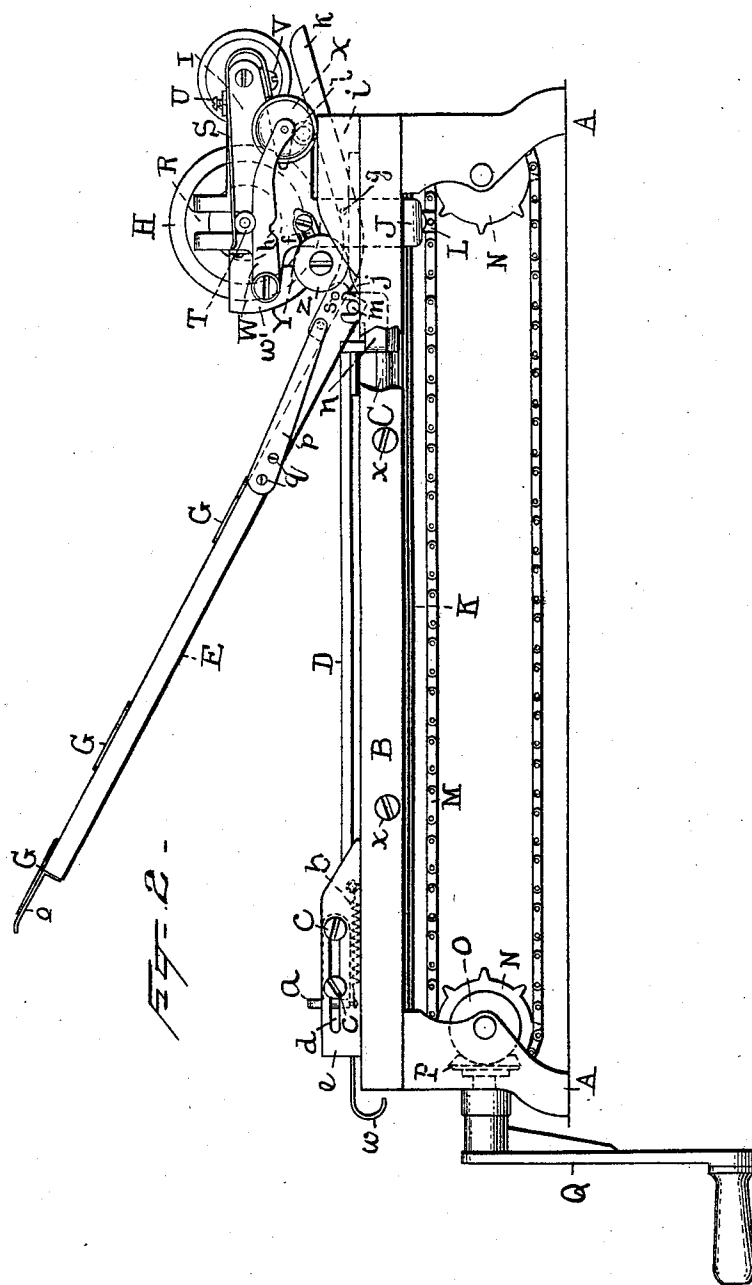
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4 Sheets—Sheet 2.

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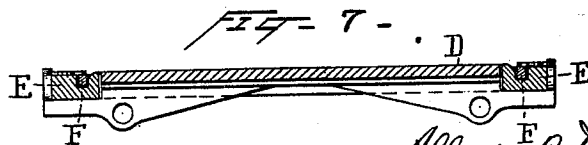
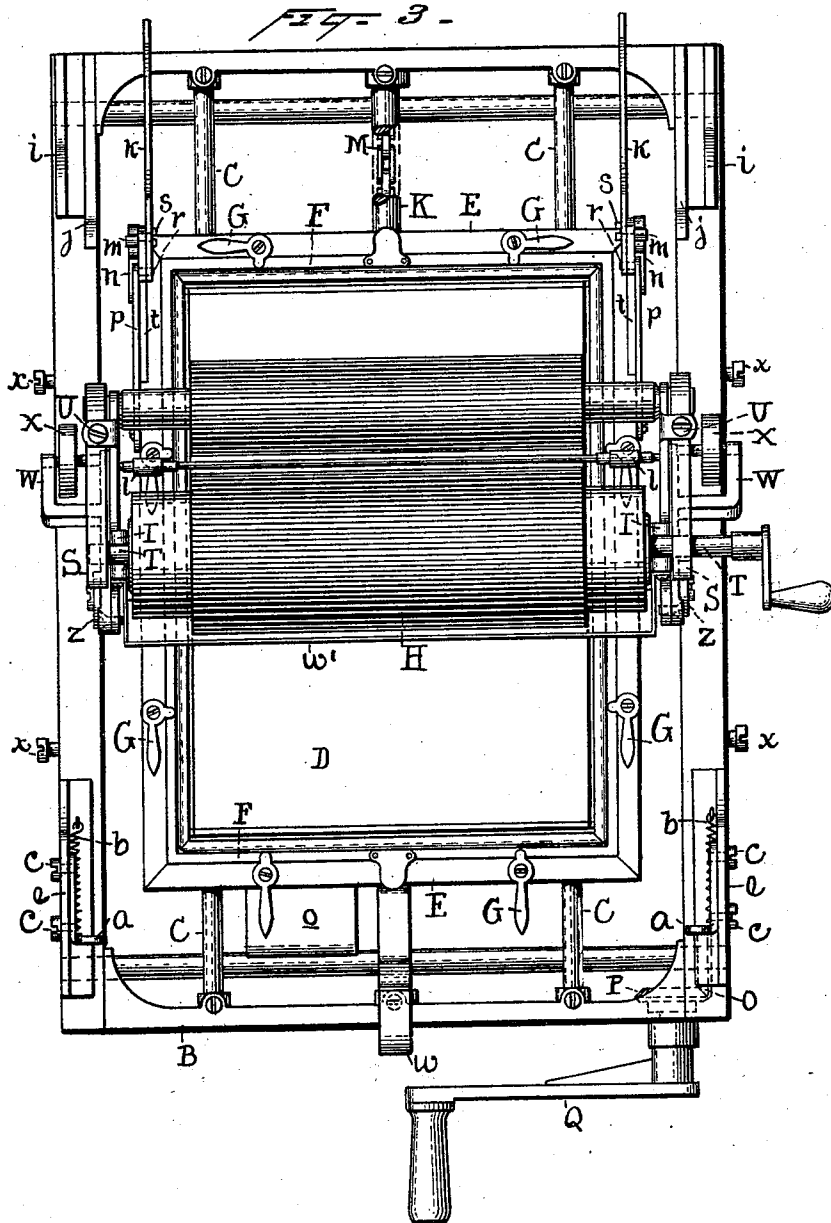
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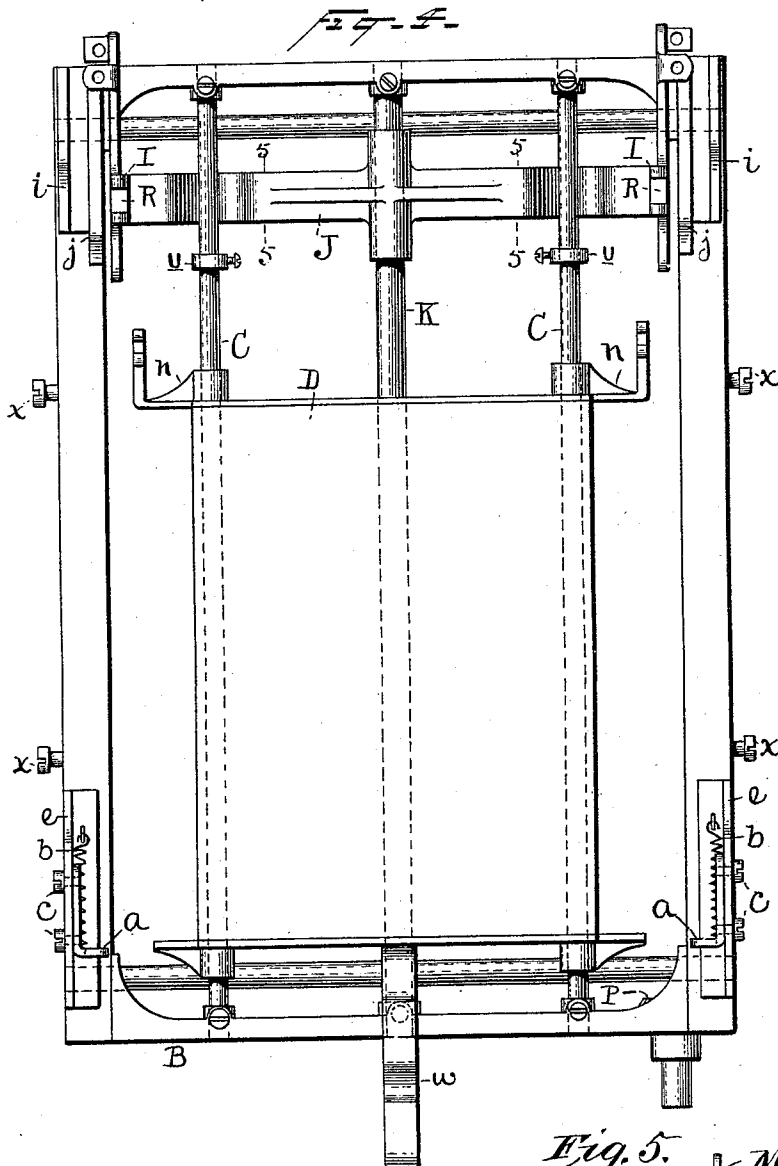
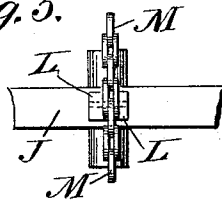
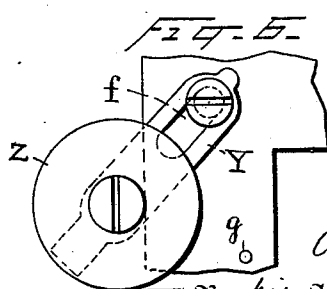


Fig. 5.



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John R. Taylor.

Albert B. Dick Inventor

By his Attorneys *Dyer & Seely*

UNITED STATES PATENT OFFICE.

ALBERT B. DICK, OF CHICAGO, ILLINOIS.

STENCIL-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 538,663, dated May 7, 1895.

Application filed September 5, 1894. Serial No. 522,160. (No model.)

To all whom it may concern:

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

The present invention relates to that class of stencil printing machines which are known as automatic, wherein, instead of using a hand roller for inking the stencil, a printing roller is employed, operated directly by mechanical means.

The object of the present invention is to secure a simple and durable machine, which shall be economic of construction and which will produce highly satisfactory prints, while prolonging the life of the stencil, which ordinarily will be a coated paper sheet stenciled in any appropriate manner.

In carrying out my invention, I provide a stationary printing platen and a printing roller which traverses the face of said platen and which preferably is in contact with the platen while traversing it only in one direction. This printing roller is carried by a carriage, which preferably is attached to the mechanism imparting movement to it at a point substantially coincident with the central line of travel, and is guided on such line of travel, whereby a certain freedom of movement is given to the carriage and consequently the printing roller carried by it, so that some play will occur between the printing roller and platen, thereby permitting a certain amount of self adjustment between the two. Preferably the mechanism for imparting movement to the traveling carriage is a sprocket chain attached to a point on the longitudinal axis of the carriage and is operated by sprocket wheels receiving motion from a suitable arrangement of gears operated by a crank, which when turned in one direction propels the carriage along the platen, and when turned in the other direction reverses the travel of the carriage without obliging the operator to travel with the carriage. The arrangement of sprocket chain and wheels allows some flexibility of movement, and may in that

sense be somewhat superior to a worm and nut, although the latter would answer the purpose to a considerable extent and save the operator moving with the carriage.

The elevation of the printing roller above the surface of the platen in traveling in one direction, is effected by providing an arm tripped into a position by a stop, incline plane or other device on the frame of the machine whereby the said arm will elevate the shaft of the printing roller above the platen, and a lock in the nature of a dog or other catch, likewise operated by a device on the frame for locking said arm in the elevated position. Preferably the said elevating arm at its loose end is provided with a small wheel, as also is the locking dog, so that said parts will travel without undue friction over the frame of the machine; also, the locking dog preferably is carried on the printing frame by a slotted connection whereby it more readily is adapted to be elevated into a vertical position, which is the locking position, and preferably also this locking dog is thrown into the vertical or locking position by a spring-pressed contact piece, which will follow up the said dog after it has thrown the same into the vertical position to insure its retention in the elevated position until the elevating arm or lever has passed off its elevating plane at one end of the machine.

Many other features of improvement will be hereinafter disclosed and more specifically pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a machine embodying my improvements, showing the printing-carriage in dotted lines about midway of the machine and in full lines at the end of its path of travel in one direction. Fig. 2 is an elevation similar to Fig. 1 with the carriage shown at the other end of the machine, certain of the parts being broken away and the stencil-carrying frame being shown raised in the position it occupies when an impression sheet is to be placed thereunder or removed. Fig. 3 is a plan view with the printing-carriage about midway of the machine. Fig. 4 is a plan view of the frame of

the machine with the stencil-frame and inking-roller removed. Fig. 5 is an inverted plan view of a part of the frame for the traveling carriage, taken between the lines 5 5 and 5 5, Fig. 4. Fig. 6 is a detail of the locking-dog, and Fig. 7 is a cross-section showing in detail the arrangement of the stencil-frame.

The frame of the machine is preferably rectangular in shape, and is provided with suitable legs A which sufficiently raise the top B of the frame from the table or other surface on which the machine is placed to permit of the introduction of the mechanism for imparting motion to the printing carriage between the table and frame top. Two rods C, C pass from one end of the frame to the other, and upon these rods is mounted the printing platen D. This printing platen is of any usual material, and when the machine is used for printing from a paper stencil, the platen is provided with a pivoted two-part frame for holding the stencil. This frame is similar in substantial particulars to that shown in Letters Patent granted to me May 28, 1889, No. 404,034, for a frame for holding copying plates, and comprises a part E of the same shape as the printing platen and adapted to fit around the same so as to be practically on the same level, and a part F, which is simply a metallic rectangular frame entering a groove in the part E. These two parts are held together by suitable fasteners G. A stencil sheet is arranged so that the edges of the same may be forced by the part F into the groove in the part E, when, by turning the fasteners G, the two parts are clamped together and consequently the stencil is held taut.

Traveling over the printing platen, which is stationary, is a carriage carrying a printing roller H and certain other mechanism, the function of which will be hereinafter explained. This carriage is composed of a box I at each end, connected by a cross-bar J passing beneath the printing platen and sliding over the guide rod K whereby the height of the machine is reduced and the carriage adequately guided. This cross-bar is also provided with a teat L, to which is fixed a link of a sprocket chain M passing over sprocket wheels N, N driven by the bevel gears O, P from the handle or crank Q, whereby by the movement of the handle, the sprocket chain and the printing carriage with its rollers, is caused to traverse the printing bed in any direction governed by the crank Q.

The arrangement of sprocket chain and wheels shown permits of some latitude of movement between the printing roller and platen, whereby the former may adjust itself to the latter, and thereby an uneven bearing upon the stencil sheet is avoided.

The printing roller H before referred to has its bearings in slots R in the traveling carriage, a spring S bearing upon the shaft T of the printing roller at each end, said spring being designed to hold the printing roller to

its bearing, and being adjustable as to tension by means of a set-screw U, the spring itself being secured to the end pieces T, as shown in Figs. 1 and 2, by a set-screw V.

It being the preferred mode to operate the machine herein described so that ink shall be applied to the stencil while the carriage is traveling in one direction only, to the end that the life of the stencil may be prolonged and to avoid heavy inking, I have provided devices for controlling the position of the printing roller. These devices are preferably carried in part by the boxes in which the roller is journaled and in part on the side pieces of the frame of the machine. The parts carried by the boxes are an elevating arm hung so as to pass beneath the shaft of the printing roller, the outer end of which arm is moved upward by an incline or its equivalent on the frame of the machine, thereby elevating the shaft of the printing roller and consequently the printing roller itself, and a dog brought into action at one end of the path of travel of the printing carriage so as to force the elevating arm into its highest position and lock it there, and at the other end to be dropped out of the locked position, thereby permitting the said elevating arm to return to its lower position. Preferably the said dog is brought into its locking position by striking against a spring-pressed piece, and is tripped out of its locking position by an incline on the frame. In the drawings I have shown both the locking dog and the elevating arm provided with rollers whereby their operation is facilitated and friction reduced. The movable arm is lettered W, and carries a roller X. The locking dog is lettered Y and its roller Z. The spring-pressed pieces are lettered *a*, and, as shown, are movable against the force of the coil spring *b*, being guided by screw-pins *c*, *c* projecting through a slot *d* in a vertical flange *e* rising from the frame. The mechanism is arranged so that the roller Z carried by the dog Y strikes against the movable spring-pressed piece *a*, and the continued travel of the carriage of course tends to bring the dog into a vertical position, said dog being provided with a slotted connection *f*. A pin *g* projects from the boxes I, so that the movement of the dog Y imparted by contact with the spring-pressed piece *a* will not be too great. As shown in Fig. 1 in full lines, the spring-pressed piece has just forced the dog into the vertical position, or rather, into a position slightly inclined from the vertical, the upper part of the dog resting in a notch *h*, as shown more clearly in Fig. 2, whereby the arm W is locked and the printing roller elevated, as shown in Fig. 1 in full lines. At the other end of the path of travel of the printing carriage are provided devices for disengaging the dog and swinging arm. These devices are in the form of two inclined planes, one for the roller X and the other for the roller Z, that for the roller X be-

ing of greater pitch than that for the roller Z, whereby the arm W is swung away from the dog, the similar incline over which the roller Z passes co-acting to effect the release by throwing the dog into a more inclined position, although by making the incline for the roller X of greater pitch, the incline for the roller Z might be dispensed with. The incline for the roller X is lettered *i*, and that for the roller Z is lettered *j*.

The stencil frame is automatically raised so as to permit an impression sheet to be placed on the printing platen, as shown more clearly in Fig. 2, by the contact of the inclined arms *k* secured to the stencil frame, which arms, by passing under and in contact with the cross-bar *l* carried by the traveling carriage, will be depressed and thereby the stencil frame, which is pivoted by the pivot *m* to two pieces *n*, *n* carried on the printing platen, the pieces being best shown in Fig. 4, is swung on its pivot into the elevated position shown in Fig. 2. This stencil frame is provided with a projecting plate *o*, to assist in lifting the stencil frame and the inclined arms *k* are held in their inclined position relatively to the stencil frame by means of the spring arm *p* secured to the side of the frame at *q* and carrying a pin *r* which snaps into a hole at the inner end of the frame *k*, said arm itself being pivoted at *s* to the plate *t* carried by the side of the stencil frame.

The printing platen is made adjustable on its supporting rods C, C, as shown in Fig. 4, its position in one direction being regulated by the stops *u* adjusted by set-screws on said rods C. At the other end, the platen is provided with a handle *w*. The object of this provision is to remove the printing platen and its stencil frame away from the roller during the operation of re-inking, a shield *w'* being provided around the printing roller for the same object, that is, to avoid soiling the hands. At the sides of the main frame are screw-studs *x* on which may be hung shelves to receive the impression sheets before and after printing.

The operation of the machine will be readily understood it being simply necessary to state that the crank Q, when rotated in one direction, causes the traveling carriage to traverse the printing platen and to ink the stencil sheet laid over the same. A reversal of the crank causes the carriage to travel in the opposite direction, and such reversal taking place at the end of the path of travel, it will be apparent that the device for elevating and locking the printing roller in its elevated position will have been brought into play, and on the return or reverse movement, said roller will be out of printing relationship to the platen.

What I claim is—

1. The combination in a printing apparatus of a stationary platen, a traveling carriage carrying the inking roller, a cross-bar form-

ing a part of the carriage and extending beneath the platen, a guide rod along which said cross-bar slides, a sprocket chain connected to said carriage at a point substantially coincident with its central line of travel, and mechanism for driving the same, substantially as set forth.

2. In a printing apparatus, the combination with a stationary platen, of a traveling carriage composed of a box at each end for receiving the shaft of the inking roller, a cross-bar connecting said boxes and passing beneath the platen a guide rod along which said cross-bar slides and mechanism for driving the said carriage connected to said cross-bar, beneath said guide rod substantially as set forth.

3. The combination in a printing apparatus of a platen, a traveling carriage, an inking roller loosely carried thereby, an arm pivoted to said carriage adjacent to the shaft of the inking roller, a trip on the frame of said apparatus against which the free end of said arm acts, whereby the pivoted arm is brought into operative relation to the shaft of the inking roller and the latter is elevated independently of its carriage, and a lock for locking said arm in the elevated position, substantially as set forth.

4. The combination in a printing apparatus of a platen, a traveling carriage, an inking roller loosely mounted therein, a loose arm pivoted to said carriage and passing transversely beneath the shaft of the inking roller, an inclined plane on the frame of the apparatus over which the free end of said loose arm passes and whereby it is elevated into operative relation to the inking roller, and a lock for locking said arm in the elevated position, substantially as set forth.

5. The combination in a printing apparatus of a platen, a traveling carriage, an inking roller loosely mounted therein, an elevating arm pivoted to said carriage, the free end of which extends transversely beneath the spindle of the inking roller, means for bringing said arm into operative relation to the inking roller, a locking dog connected to said carriage by a slotted connection, and means for operating the said dog, substantially as set forth.

6. The combination in a printing apparatus of a platen, a traveling carriage, an inking roller loosely mounted therein a pivoted arm, a trip for elevating said arm, a lock comprising an arm attached to the carriage by a slotted connection and a stop on the frame for throwing the locking arm into substantially a vertical position whereby the same will lock the elevating arm substantially as set forth.

7. The combination in a printing apparatus of a platen, a traveling carriage, an inking roller loosely mounted therein a pivoted elevating arm on said carriage a locking dog connected by a slotted connection with the said carriage a roller carried by said locking dog

and a spring-pressed stop for said dog, substantially as set forth.

8. The combination in a printing apparatus of a platen a traveling carriage, an inking
5 roller loosely mounted therein a pivoted elevating arm carried thereby, a locking dog also carried thereby, an incline at each end of the frame over which said elevating arm passes a spring-pressed piece at one end for the lock-

ing dog and an incline at the other end for the same, substantially as set forth. 10

This specification signed and witnessed this 24th day of August, 1894.

ALBERT B. DICK.

Witnesses:

EUGENE CONRAN,
JOHN R. TAYLOR.