

No. 813,778.

PATENTED FEB. 27, 1906.

E. M. COUCH.
PRINTING PRESS.

APPLICATION FILED OCT. 2, 1905.

3 SHEETS—SHEET 1.

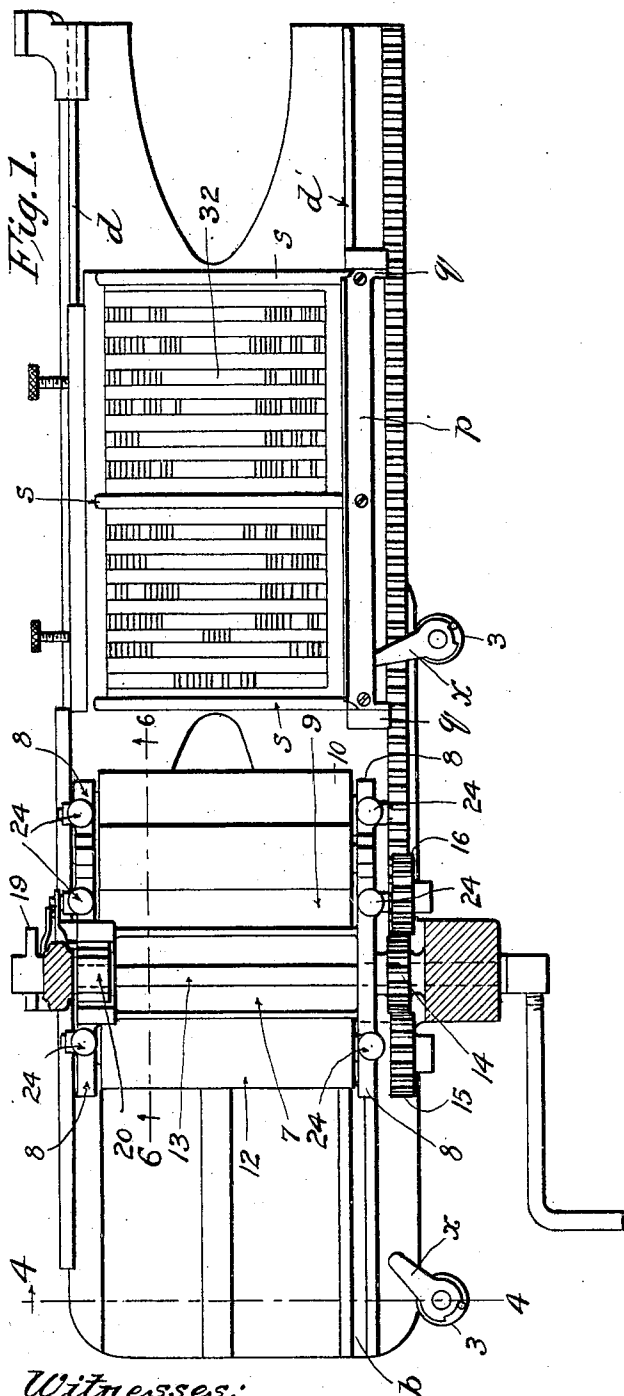


Fig. 1.

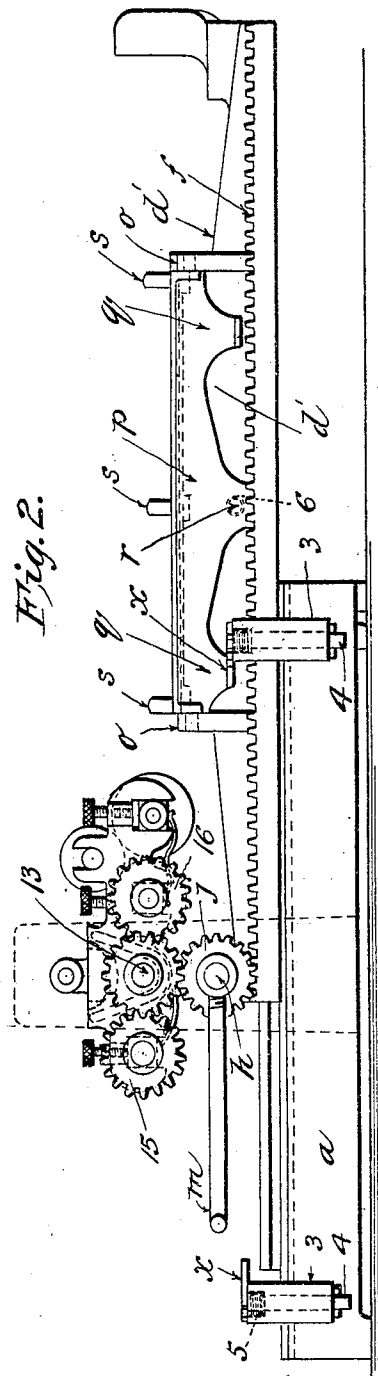


Fig. 2.

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Fig. 5.

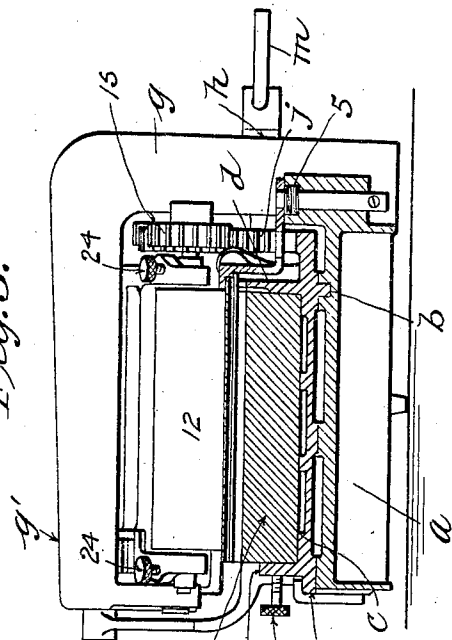
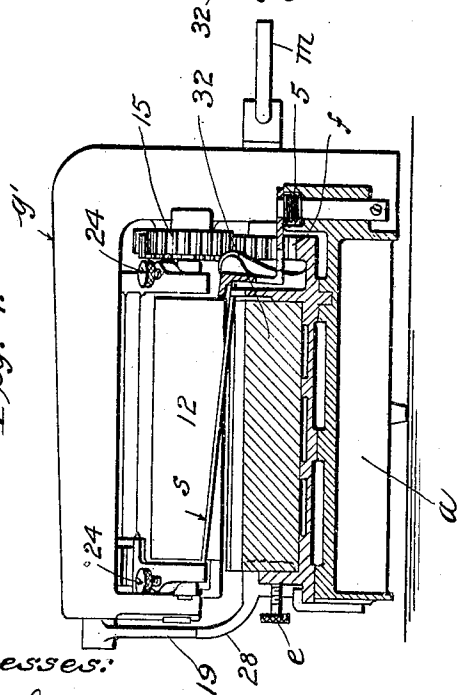


Fig. 4.

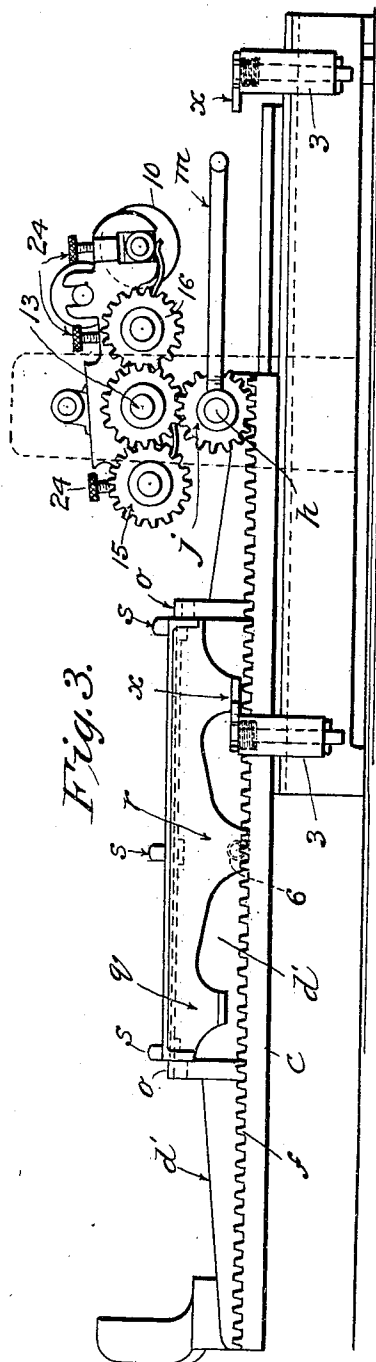


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Fig. 3.



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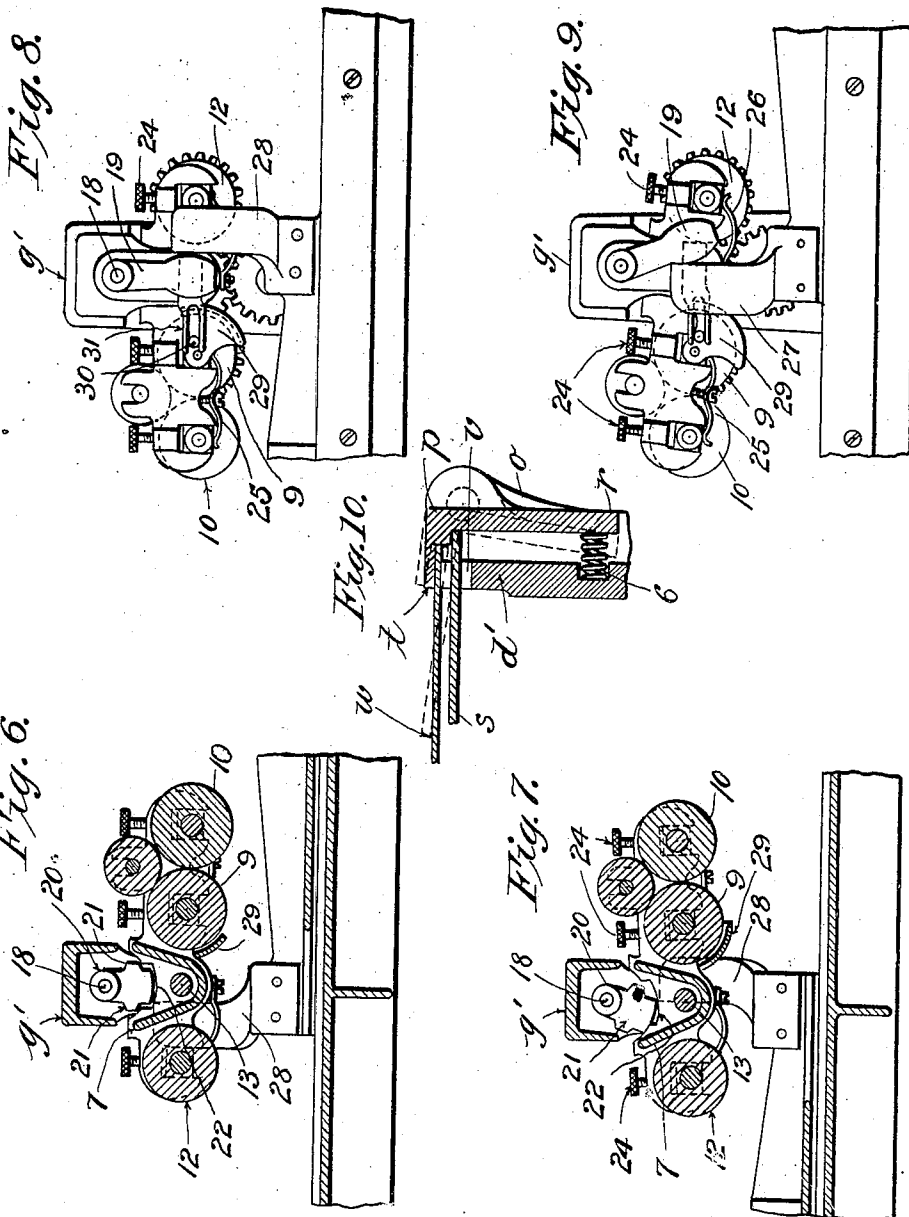
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3 SHEETS—SHEET 3.



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PRINTING-PRESS.

No. 813,778.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed October 2, 1905. Serial No. 280,890.

To all whom it may concern:

Be it known that I, ELBERT MILTON COUCH, a citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to improvements in hand-operated printing-presses adapted particularly for printing menu-cards, programs, and relatively small sheets of that character, the object of the invention being to provide certain improvements in the construction shown and described in the patents to A. W. Proctor, No. 772,632, dated October 18, 1904, and No. 773,766, dated November 1, 1904.

The invention consists particularly in improved means for securing the sheet to the reciprocally-actuated carriage during the printing operation, improved means for actuating the sheet-securing devices, and improvements in the construction of the frame for the impression-roll and the inking-roll, and in devices to lock this frame when it is tilted to bring one of said rolls into operative relation to the type, and a guard to swing under the ink-roll to protect the paper when the ink-roll is inoperative.

The invention is more fully illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a machine embodying the invention, a portion of the frame being cut away to more clearly show the construction of the tilting roll-frame. Fig. 2 is a side elevation of the construction shown in Fig. 1, that portion of the frame carrying the tilting roll-frame being indicated in dotted lines only. This figure and Fig. 1 show the type-carriage at the limit of its movement in one direction. Fig. 3 is a side elevation similar to Fig. 2, but showing the type-carriage at the limit of its movement in the opposite direction and shows the change in the position of the roll-frame incidental to this change of position of the type-carriage. Fig. 4 is a sectional elevation on line 4 4, Fig. 1, showing the paper-clamping devices in open position. Fig. 5 is a similar sectional elevation showing these clamping devices in closed position—that is, to hold the paper in fixed relation to the type locked in the form on the carriage. Fig. 6 is a sectional elevation taken

transversely of the roll-frame on line 6 6, Fig. 1, and showing the ink-rolls in operative position. Fig. 7 is a similar view to Fig. 6, showing the impression-roll in operative position and showing the roll-frame locked. Fig. 8 is an end elevation of the roll-frame and its support, showing the ink-roll guard out of operative position. Fig. 9 is a similar view showing the guard under the ink-roll, this view and Fig. 8 also showing the means for tilting the oscillating roll-frame. Fig. 10 is an enlarged sectional elevation of one of the ribs on the type-carriage carrying the paper-clamping device, the latter being shown in two positions.

Referring now to the drawings, *a* indicates a bed on which in suitable slideways *b* a type-carriage *c* has a sliding movement longitudinally. This type-carriage, as shown in these drawings, is provided with the longitudinally-extending ribs *d* and *d'*, located on opposite sides of the upper surface thereof, these ribs, together with the bottom of the carriage, constituting a form in which the type may be set up and locked by means of the thumb-screws *e*, the face of the type extending, of course, above the ribs. On one side of the type-carriage is a rack *f*, and an arm *g* extends vertically from one edge of the bed centrally thereof a certain distance above the bed and then over the latter horizontally at right angles to the movement of the carriage, the horizontal part being indicated by *g'*. In this arm is mounted a shaft *h*, having a gear *j* on the inner end thereof in position to mesh with said rack, the shaft being rotated by a crank-arm *m*, this construction being substantially that shown in the patent to Proctor, No. 773,776, above referred to. Thus by rotating the shaft *h* the type-carriage *c* may be run over the bed reciprocally, and as this bed passes under the arm *g g'* the type is inked when the carriage moves in one direction, and when it moves in the opposite direction the ink-roll is swung up out of the way and the impression-roll brought to bear on the type to press the paper against the latter, all as will be presently described, together with the improved means for holding the paper for locking the roll-frame and for swinging the guard for the ink-roll under the latter at the proper time.

Pivotaly mounted between two upstand-

ing lugs *o* on the type-carriage is an oscillating flier-frame *p*, having located near each end thereof the downwardly-extending portions *q* outside of the rib *d'*, and a similar centrally-located projection *r*, the flier-arms *s* extending from the frame over the type in the usual manner. When the flier-arms are raised, as in the position shown in Fig. 4, the sheet of paper placed thereon can be slid back toward the frame to bring the edge of it under the overhanging lip *t* of said frame and the upper edge of the rib *d'*, all as clearly shown in Fig. 10. The upper edge of said rib *d'* is cut away, as at *v*, Fig. 10, to make room for the fliers. The sheet of paper in Fig. 10 is indicated by *w*.

Means are provided to automatically lock and release the paper from the clamping devices just described at the end of the movement of the bed *a* in either direction, and these means consist in mounting two fingers *x* (see Fig. 1) pivotally on the bed *a* in two vertically-disposed bearings 3. The fingers *x* are mounted on the ends of short studs 4, which extend through the bearings 3, and in the upper end of the latter a cavity is formed to receive a spiral spring 5, so arranged that the ends of the fingers *x* will point inwardly toward the roll-frame, a suitable stop-pin in the top of the bearing 3 serving to limit the swinging movement of these fingers. It will be noted by referring to Fig. 3 especially that these fingers are located in different horizontal planes and that the projections *q* on the flier-frame are respectively located in the same planes as these fingers *x*, the arrangement being such that each of these fingers will come into contact with that one of the projections *q* of the flier-frame which is on the farther end of the flier-frame relative to said fingers. As one of these projections approaches that one of the fingers *x* with which it is designed to engage the outwardly-turned foot on said projection will engage the end of the finger *x* and the latter will yield rotatively simultaneously with the yielding movement of the flier-frame, thus effecting the actuation of the latter without any shock.

Beneath the centrally-depending projection *r* of the flier-frame is a spiral spring 6, as shown in Fig. 10, which will be compressed when the frame is actuated, as described, to swing the fliers upward to unclamp the paper, and as soon as a new sheet has been adjusted and the type-carriage is started back the movement of the carriage out of engaging position relative to the finger *x* will permit the spring 6 by its reaction to clamp the paper again, as before described, though of course it is understood that the carriage after a sheet has been printed is run back again under the roll-frame to ink the type before another sheet is inserted. When one of the projections *q* comes in contact with one of the fingers *x*, it swings the latter to a position

nearly at right angles to the line of movement of the carriage, and therefore brings the fingers in position to hold the flier-arms in a raised position until the carriage is moved back.

The roller-frame consists of a central trough-like portion 7, substantially V shape in cross-section, as shown in Figs. 6 and 7, and having at each end thereof the arms 8, extending at right angles to the central portion thereof and located substantially in the plane of the ribs *d d'*. These arms serve as bearings for the ink-rolls 9 10 on the one side and for the impression-roll 12 on the other. A shaft 13 extends through the central portion 7 of the frame and near the bottom thereof, as shown in said Figs. 6 and 7. The roll-frame is supported in the arm *g g'* on said shaft 13, the latter extending through the sides of the frame and being supported in bearings in said arm, there being a gear 14 fixed on said shaft and meshing with the gear *j* on the shaft *h* and with the gears 15 and 16, fixed, respectively, to the shafts of the impression-roll and to the ink-roll 9. Thus whenever the crank-arm *m* is rotated the impression-roll 12 and the ink-roll 9 will be rotated in the proper direction to correspond with the movements of the type-carriage.

It has been stated that the roll-frame oscillates on the shaft 13, and this is for the purpose of permitting the ink-roll 9 and the impression-roll 12 to be alternately swung down into a position of contact with the face of the type as the type-carriage moves beneath the roll-frame, the oscillation of the roll-frame taking place automatically and being effected by the type-carriage as it reaches the limit of its movement in either direction.

The roll-frame-tilting mechanism is constructed as follows: In the end of the arm *g'* is a short shaft 18, which extends through said arm, as shown in Figs. 1, 6, and 7, and on the outer end of the shaft is fixed a downwardly-extending arm 19, and on the inner end thereof is a downwardly-extending arm 20, provided with a shoulder 21 on each edge thereof somewhat above the lower end of the arm, the central portion 7 of the frame having a recess 22 therein, which conforms in outline to the lower end of said arm 20. When the latter, as in Fig. 6, is located in this recess 22, it permits the ink-rolls 9 and 10 to drop down, swinging on the shaft 13, into a position which will bring their peripheries into the path of movement of the type-surface, the ink-rolls resting on the type-surface by gravity, the rolls being free to swing upwardly. It will be seen, however, that when the arm 20 is swung in the opposite direction to the position shown in Fig. 7 the lower end thereof striking against the border of the recess 22 will cause the roll-carriage to oscillate on its shaft 13, raising the inking-rolls and depressing the impression-

roll to bring the latter into contact with the type-surface as the carriage moves beneath it; but in this case the end of the arm 20, swinging out of the recess 22, as it does, and against the edge of said recess, locks the carriage in position, whereby a definite pressure may be applied to the impression-roll, this roll, as well as the inking-rolls, being adjustable in their bearings by means of thumb-screws 24, provided for each bearing.

As shown in Figs. 8 and 9 particularly, it is seen that two springs 25 and 26 are applied to the under side of the arms 8 of the roll-frames and bear against the journals of the ink-rolls and the impression-rolls, respectively, the screws 24 referred to serving to adjust these rolls in one direction and the springs in the opposite direction, as permitted by the adjustment of the screws 24.

The arm 20, which operates the roll-frame in the manner described, is actuated by the contact of upstanding arms 27 and 28, secured to opposite ends of the sliding carriage, with the arm 19, which is mounted on the outer end of the same shaft which carries the arm 20.

Whenever the inking-rolls are swung away from the type-surface, the movement of the roll-frame is naturally limited, and to prevent the contact by any possibility of the paper with the ink-roll 9, which is nearest the type-surface, a swinging guard 29 is provided for this roll and is supported on the axis of said roll. Offset from the axis on which the guard swings is a pin 30, which is fixed in the end of said guard and extends outwardly therefrom in position to enter between the ends of a fork 31, which is fixed on the arm 9, as shown in Figs. 8 and 9, the slot in the end of the fork being horizontal. As shown in Fig. 8, when the ink-rolls are swung downwardly in operative position relative to the type the pin 30 being held against movement by its engagement with the fork 31 tends to swing the guard 29 toward the horizontal position; but when these ink-rolls are swung upwardly, as shown in Fig. 9, this engagement of the pin 30 with the fork operates to swing the guard down under the ink-roll 9, interposing it thus between said roll and the paper.

The ink-rolls have not been particularly described herein, for they are in all respects constructed like ordinary ink-rolls. The impression-roll is made of somewhat harder material.

In operation the type (represented by 32) having been set in the form on the carriage the latter will be run toward the right-hand end of the bed, as shown in Fig. 1, thereby depressing the ink-rolls. Then by means of the crank-arm *m* the carriage will be moved to the left under the ink-rolls, which roll over the surface thereof, the flier-arms *s* being disposed below the surface of the type and

held in that position by the spring 6, as shown in Figs. 5 and 10. As the carriage approaches the left-hand end of the bed the outwardly-turned foot of the projection *q*, which is located on the rear end of the carriage, will strike the fingers *x* at the left-hand end of the bed, and thereby cause the flier-arms to be raised, swinging the lip *t* of the bar *p* away from the upper edge of the rib *d'*, which leaves a space for the introduction of the edge of the paper, which will be supported by the arm *s*. The movement of the carriage to the left effects a change in the position of the roll-frame and causes the impression-roll to be lowered and the ink-rolls to be raised. The carriage is now started back to the right, the initial movement thereof serving to effect the release of the frame *p* and the clamping of the paper between the lip *t* and the upper edge of the rib *d'*, the flier-arms extending one under each end of the paper and one under the center. As the carriage moves under the impression-roll the latter rolls over the type, pressing the paper against the latter, and upon the arrival of the carriage again to the position shown in Fig. 1 the frame *p* will again be oscillated to release the paper, the ink-rolls having been swung downwardly by the action of the carriage, as described. The type is now again run under the ink-rolls, and the operation just described is repeated.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a printing-press a reciprocating type-carriage and a suitable bed therefor, a flier-frame having arms to receive the paper, said frame being pivotally supported on the carriage and constituting with a part of the latter a clamp for the paper, means operative near the end of the movement of the carriage in either direction to actuate the flier-frame to release the paper, and an ink-roll and impression-roll supported above the type-carriage, together with means operated by the movements of the carriage to alternately bring said rolls into operative relation to the type on the carriage.

2. In a printing-press, a reciprocating type-carriage, a bed therefor, an oscillatory roll-frame pivoted to said support having an inking-roll and an impression-roll located at opposite sides of the center of oscillation of the roll-frame, means operated by the movements of the carriage to tilt the frame to bring said rolls alternately into operative relation to the type, and a device to lock the roll-frame against oscillation when tilted in one direction, together with a flier-frame on the carriage constituting, with a portion of the latter, a paper-clamp, and means operated by the movements of the machine to actuate said frame at the limit of the movement of the carriage in either direction.

3. In a printing-press, a reciprocating type-

carriage, a bed therefor, an oscillatory roll-frame pivoted to said support having an inking-roll and an impression-roll located at opposite sides of the center of oscillation of the roll-frame, means operated by the movements of the carriage to tilt the frame to bring said rolls alternately into operative relation to the type, and a device to lock the roll-frame against oscillation when tilted in one direction, together with a movable guard for the ink-roll actuated by the movements of the roll-frame to swing under the inking-roll when the impression-roll is in operative position, and vice versa.

4. In a printing-press, a reciprocating type-carriage, and a suitable bed therefor, said carriage having ribs extending longitudinally thereof between which the type may be secured, a flier-frame pivotally supported on one of said ribs and having arms thereon extending toward the opposite rib, and means operable near the limit of movement of the carriage in either direction to swing the flier-frame toward and from said rib to clamp or release the paper, in combination with an inking-roll and an impression-roll supported above the type-carriage, and actuated by the movements of the latter to bring them alternately into operative relation to the type on the carriage.

5. In a printing-press, a reciprocating type-carriage, and a suitable bed therefor, said carriage having ribs extending longitudinally thereof between which the type may be secured, a flier-frame pivotally supported on one of said ribs and having arms thereon extending toward the opposite rib, said flier-frame having projections thereon extending below the pivotal point of the latter, a finger rotatable on a vertical axis supported on the bed in position to contact with one of said projections on the flier-frame near the limit of movement of the latter in either direction, whereby the flier-frame will be oscillated in

its bearings to release the paper at the proper time.

6. In a printing-press, a suitable bed having an overhanging arm, a type-carriage on the bed movable reciprocally under said arm, an oscillatory roll-frame supported on said arm, comprising a trough-shaped central portion and rectangularly-disposed end portions, an ink-roll and an impression-roll being supported in the latter on either side of the center of oscillation of the frame; a shaft extending through the end of the overhanging arm, and a short arm depending from opposite ends of the shaft, the inner arm being arranged to engage the roll-frame, the outer arm being actuated by contact with a projection on the bed whereby near the limit of movement of the carriage in one direction the roll-frame may be tilted to bring the ink-roll or the impression-roll into operative relation with the type on the carriage, together with means to adjust the ink-roll and impression-roll in their bearings.

7. In a printing-press, a reciprocating type-carriage, a bed therefor, an oscillatory roll-frame pivoted to said support having an inking-roll and an impression-roll located at opposite sides of the center of oscillation of the roll-frame, means operated by the movements of the carriage to tilt the frame to bring said rolls alternately into operative relation to the type, together with a guard for the ink-roll supported to swing on the axis of the latter, a forked member rigidly supported in proximity to the end of said roll, said guard having a pin therein to engage said fixed fork whereby the oscillatory movements of the roll will effect the swinging of said guard in and out under the roll.

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