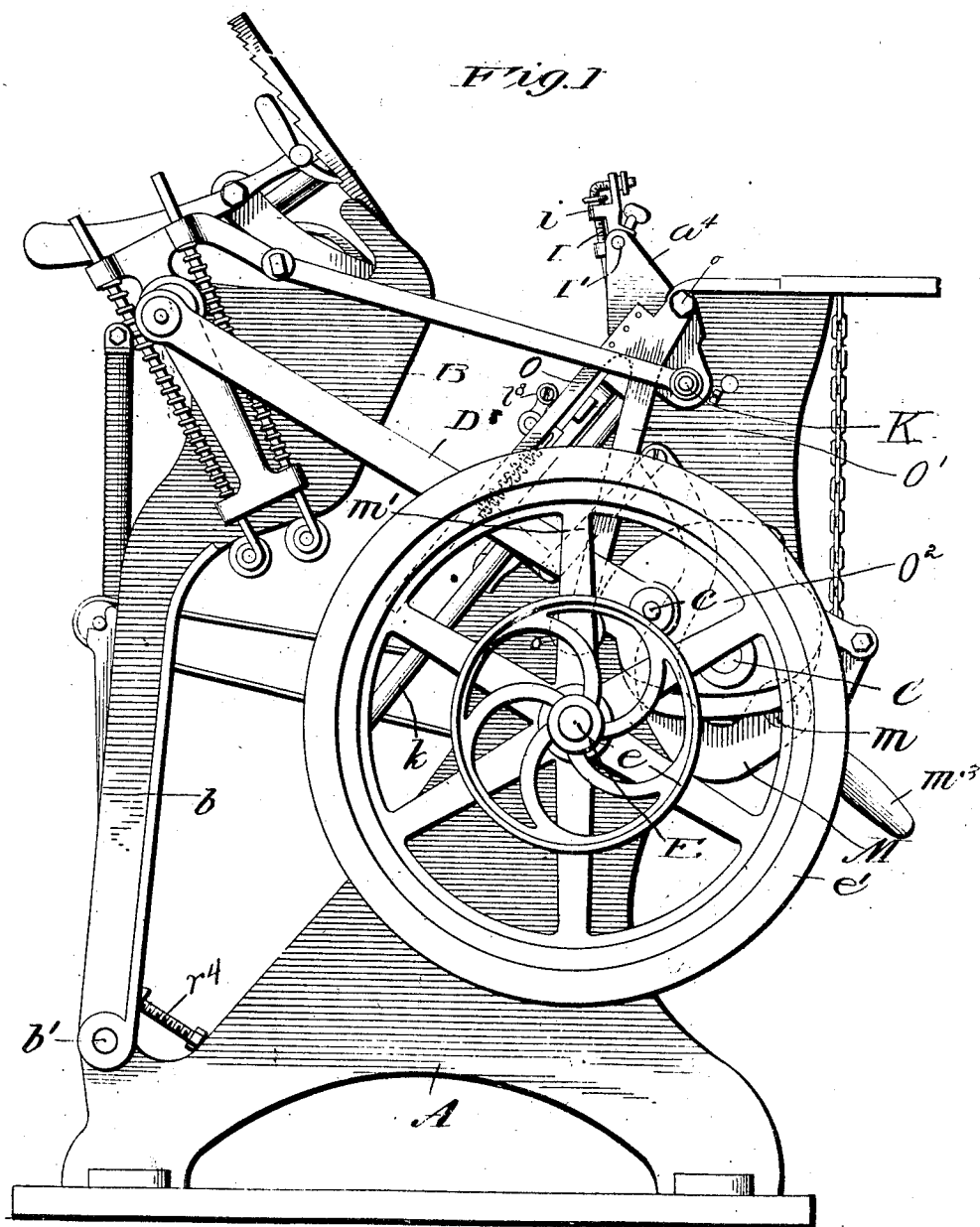


No. 819,069.

PATENTED MAY 1, 1906.

R. E. & A. KEMPER.  
PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 1



WITNESSES

WITNESSES:  
H. F. K. K. K.  
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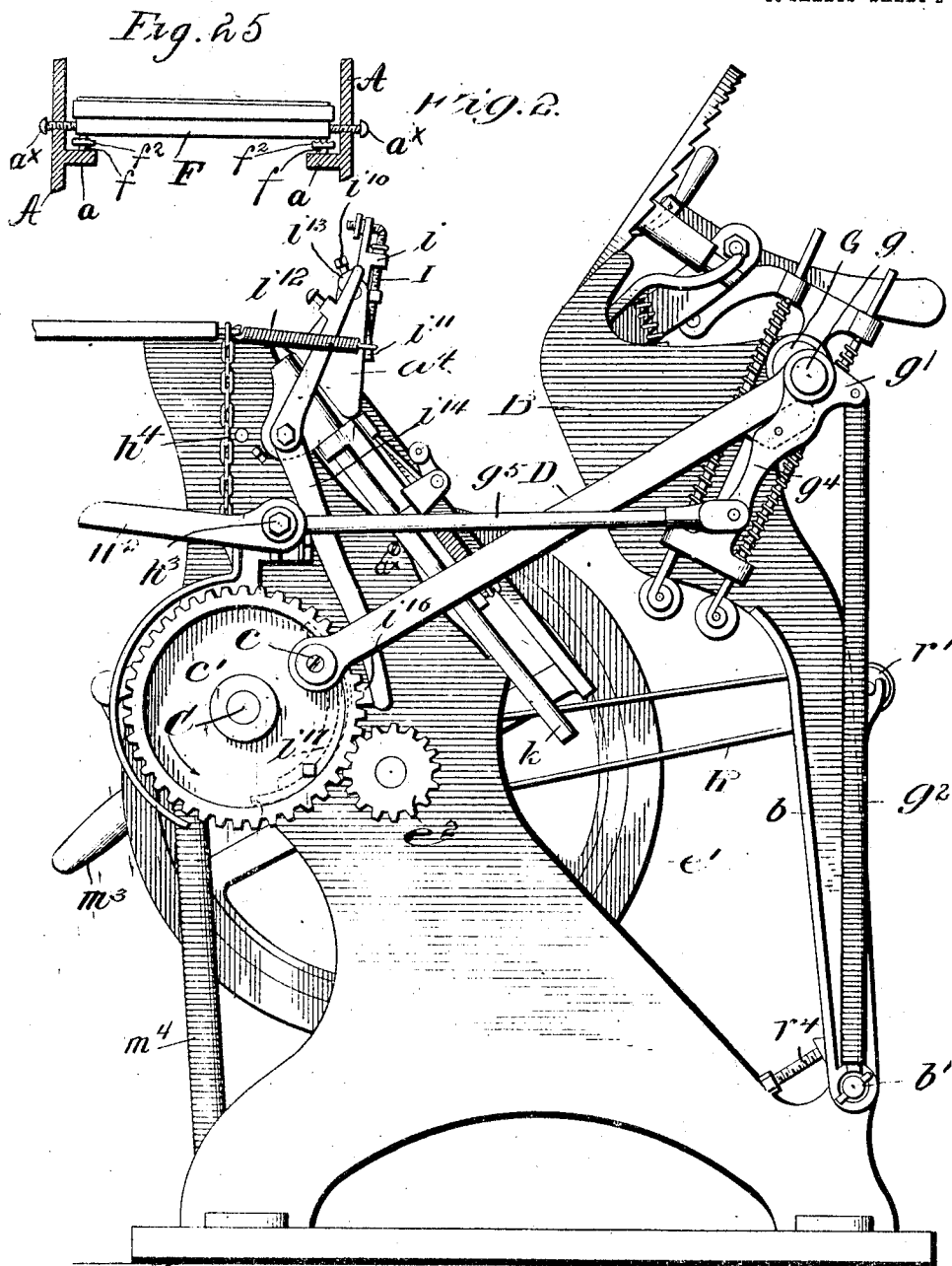
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No. 819,069.

PATENTED MAY 1, 1906.

R. E. & A. KEMPER.  
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APPLICATION FILED JAN. 20, 1905.

10 SHEETS--SHEET 2



WITNESSES

W. F. Cole  
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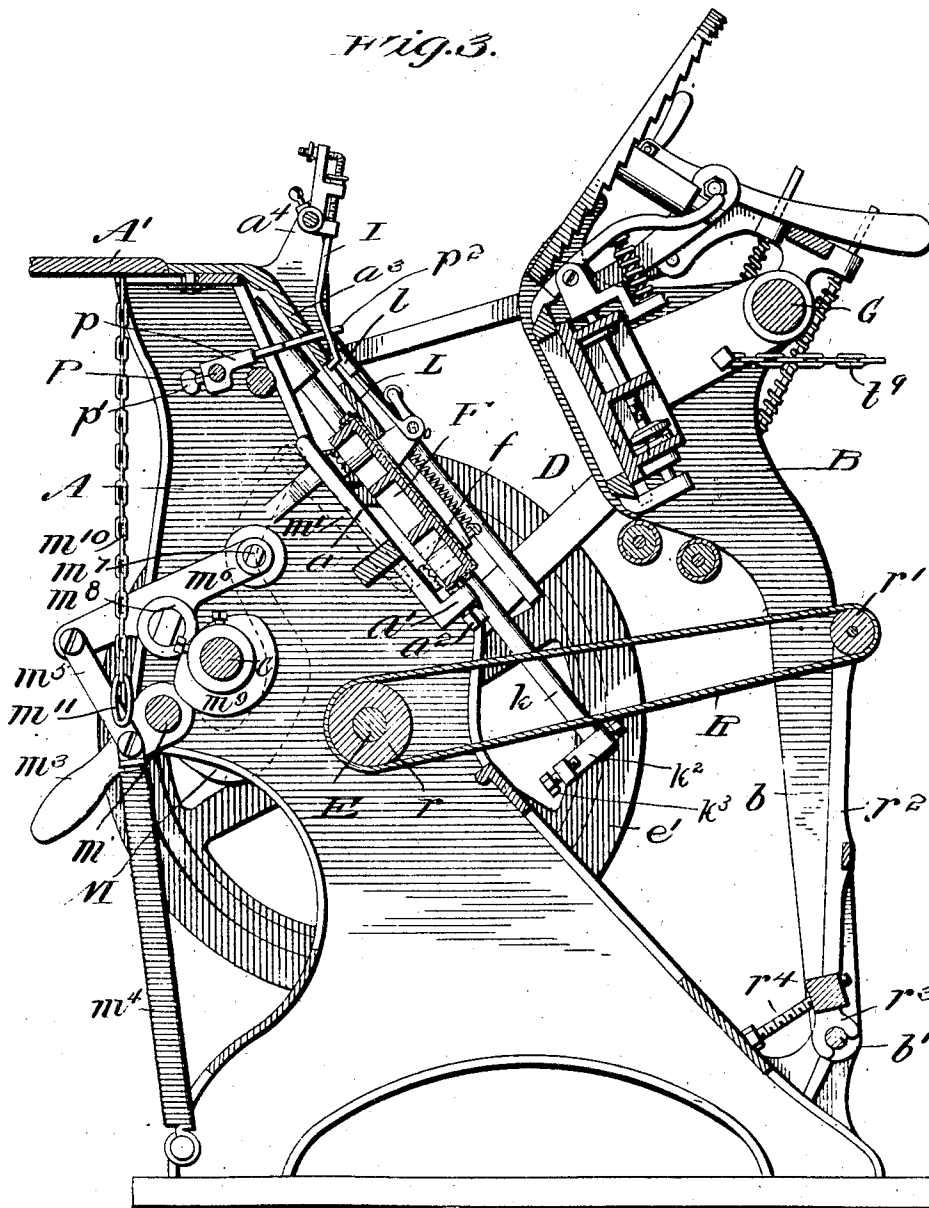
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No. 819,069.

PATENTED MAY 1, 1906.

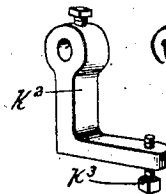
R. E. & A. KEMPER.  
PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 3.



WITNESSES:  
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*Fig 3a*



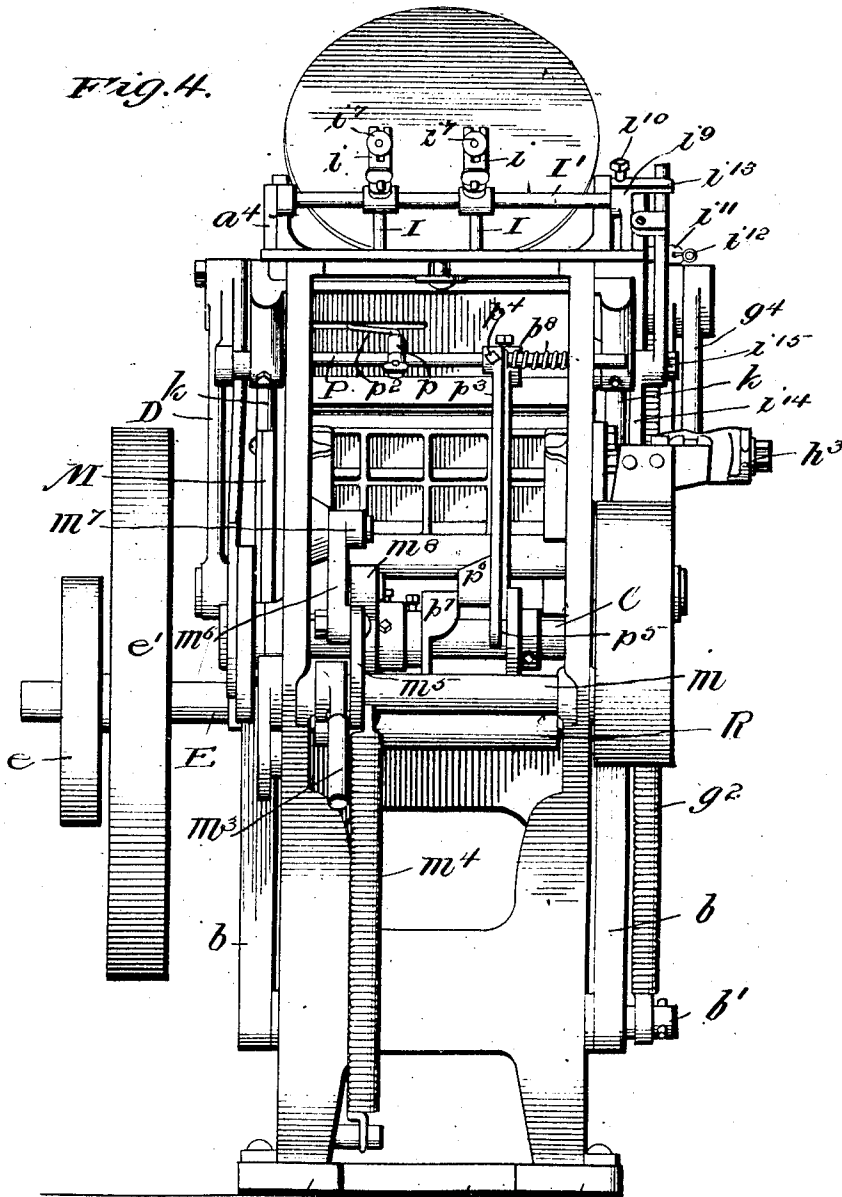
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No. 819,069.

PATENTED MAY 1, 1906.

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PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 4.



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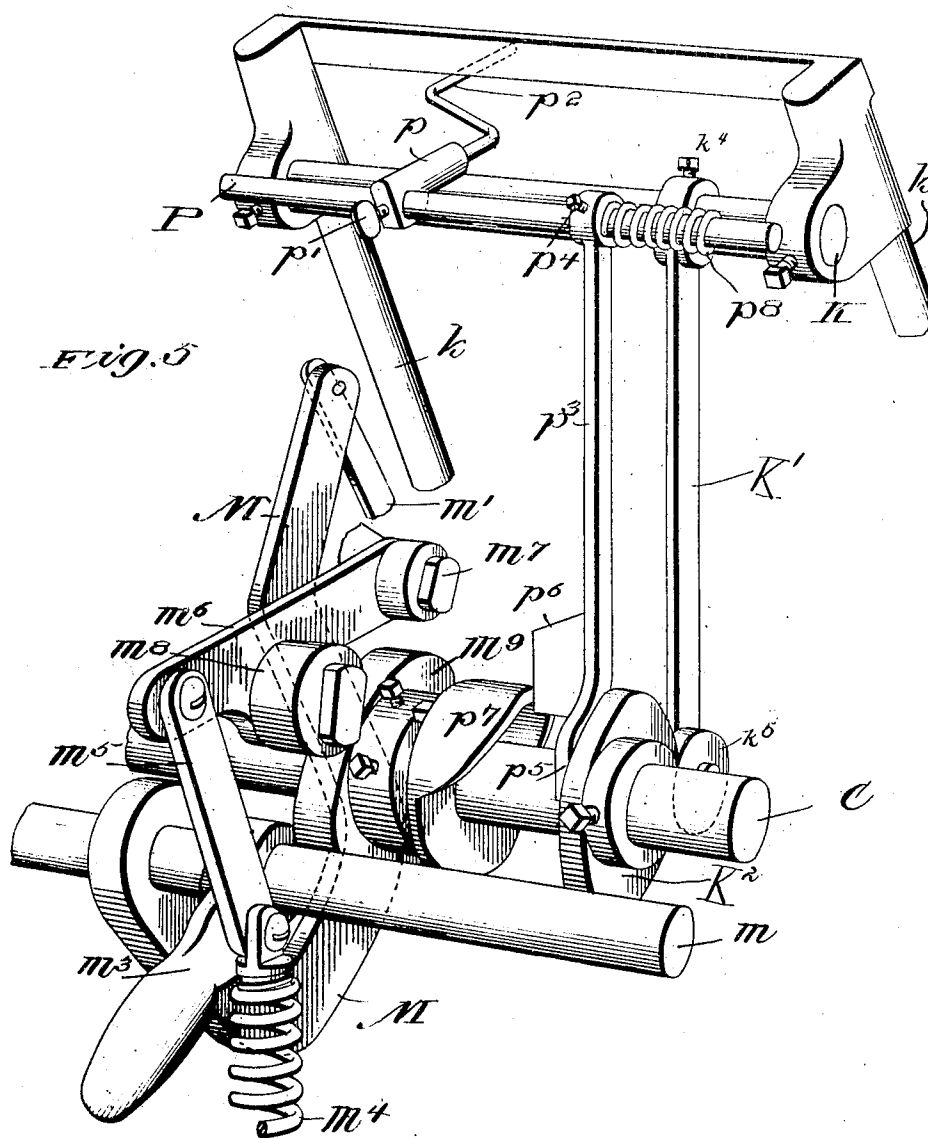
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No. 819,069.

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PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 5.



WITNESSES  
*H. F. Kay*  
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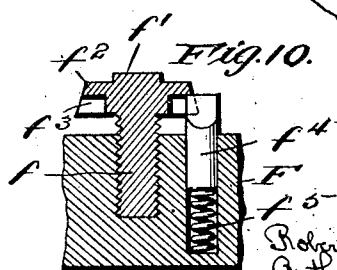
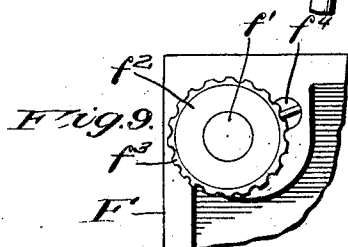
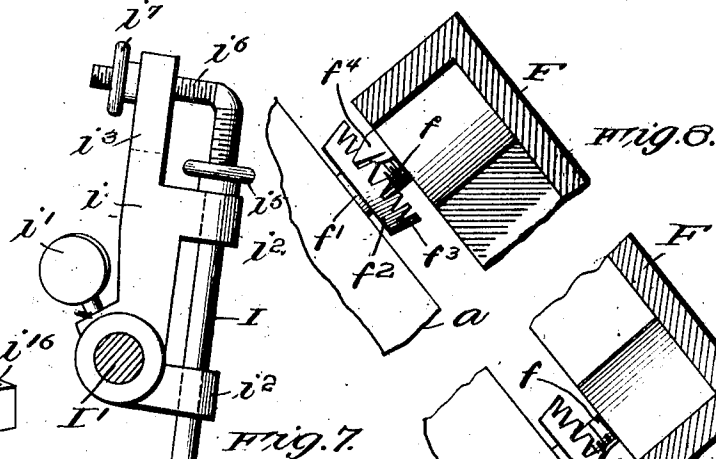
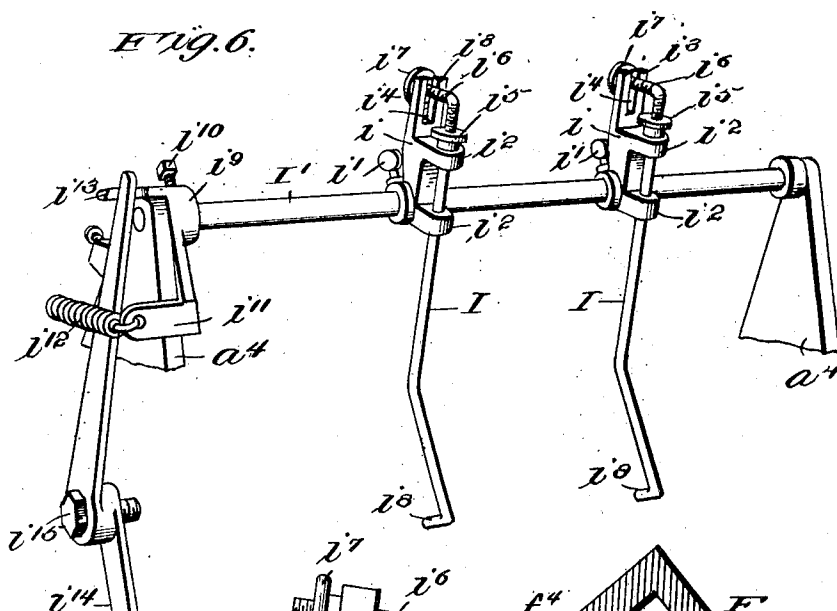
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PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 6.



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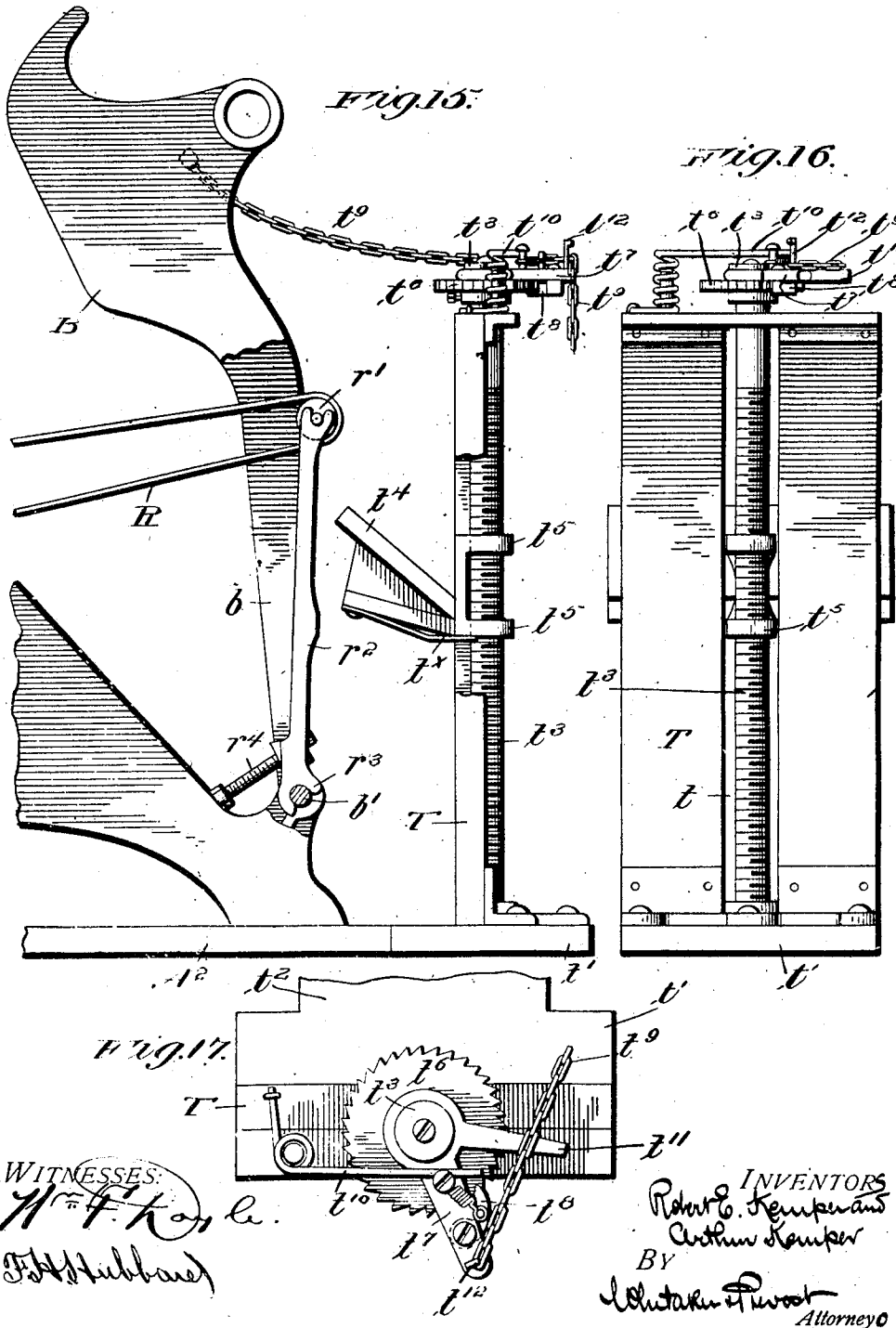


No. 819,069.

PATENTED MAY 1, 1906.

R. E. & A. KEMPER.  
PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1906.

10 SHEETS—SHEET 8.



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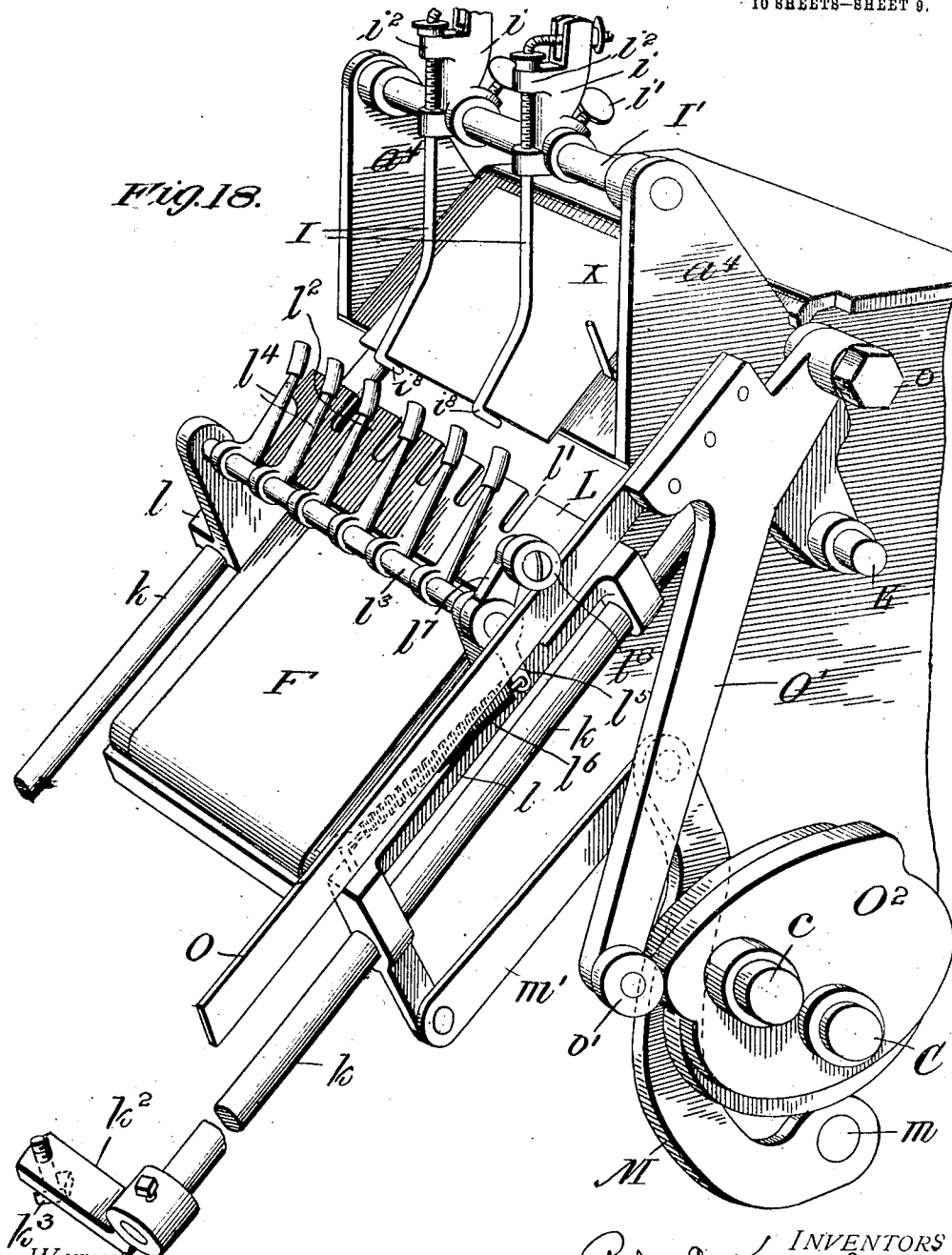


No. 819,069.

PATENTED MAY 1, 1906.

R. E. & A. KEMPER.  
PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 9.



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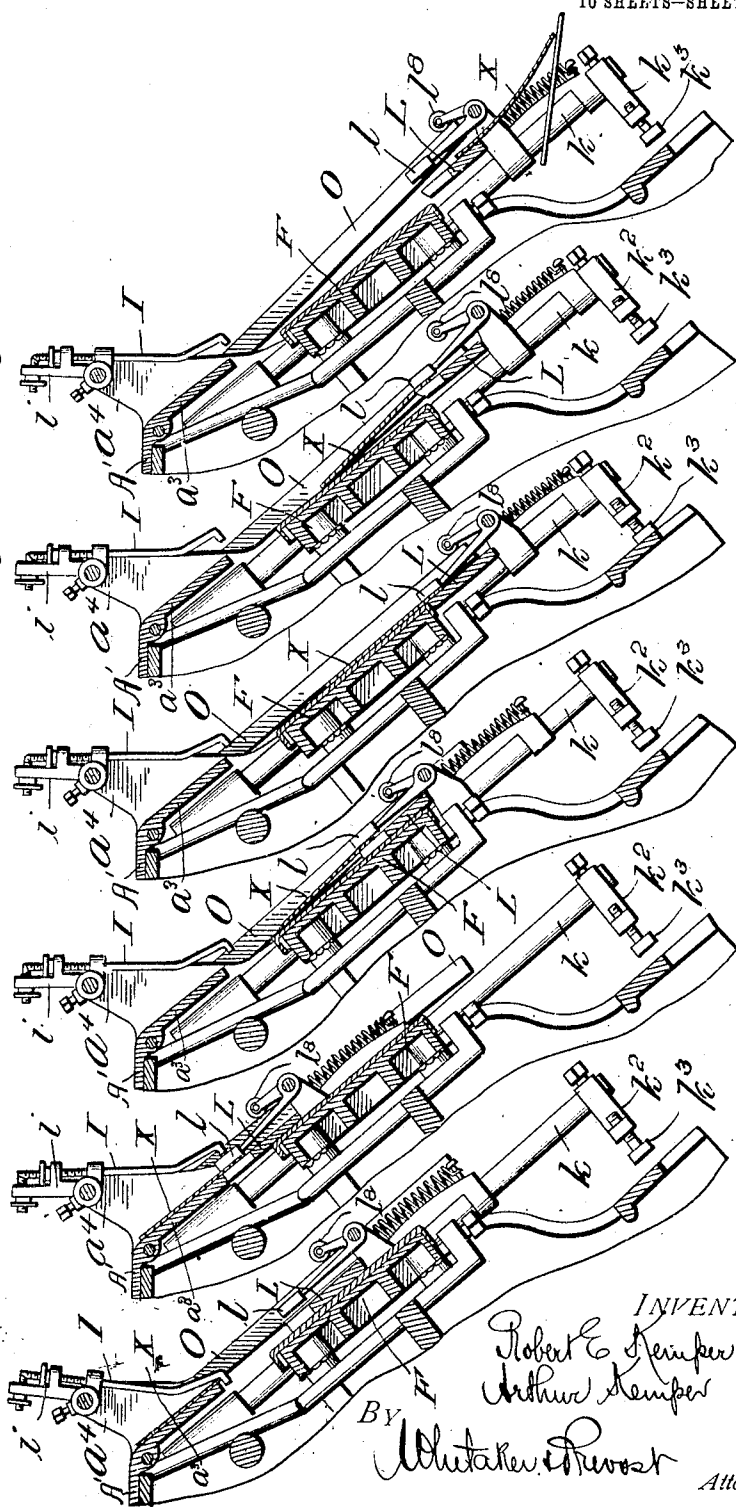
PATENTED MAY 1, 1906.

R. E. & A. KEMPER.  
PLATEN PRINTING PRESS.  
APPLICATION FILED JAN. 20, 1905.

10 SHEETS—SHEET 10.

WITNESSES:  
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Fig. 19. Fig. 20. Fig. 21. Fig. 22. Fig. 23. Fig. 24.



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# UNITED STATES PATENT OFFICE.

ROBERT E. KEMPER AND ARTHUR KEMPER, OF RENSSELAER, NEW YORK.

## PLATEN PRINTING-PRESS.

No. 819,069.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed January 20, 1905. Serial No. 241,953.

*To all whom it may concern:*

Be it known that we, ROBERT E. KEMPER and ARTHUR KEMPER, citizens of the United States, residing at Rensselaer, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Platen Printing-Presses; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention is an improvement upon the machine disclosed in our former patent of the United States, No. 763,405, dated June 28, 1904; and it consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which we have contemplated embodying our invention, and the invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 is a left side elevation of a platen printing-press embodying our invention. Fig. 2 is a right side elevation of the same. Fig. 3 is a central longitudinal sectional view of the machine. Fig. 3<sup>a</sup> is a detail of the gripper-guide-bar stop. Fig. 4 is a rear elevation of the machine. Fig. 5 is an enlarged detail perspective view of the main driving-shaft, the counter-shaft, parts carried thereby, the movable side paper-guide, and the mechanism for operating the same. Fig. 6 is a similar view of the movable bottom paper-guides and lever for operating the same. Fig. 7 is a side elevation of the upper portion of one of the bottom paper-guides, showing the devices for adjusting and securing the same. Fig. 8 is an enlarged sectional view of the platen, parts being broken away, and showing the devices for adjusting the platen to adjust the impression. Figs. 9 and 10 are respectively a bottom plan and a section of a portion of the platen and one of said impression-adjusting devices. Fig. 11 is an enlarged side elevation of a portion of the machine, showing the type-bed, operating devices therefor, and the impression-throw-off mechanism, the type-bed being shown in its open position or away from the platen, which is indicated in dotted lines. Fig. 11<sup>a</sup> is a detail of the arm for operating the eccentric impression-controlling shaft. Fig. 12 is a similar view showing the platen in closed or printing position as in making an impression.

Fig. 13 is a view similar to Fig. 12, showing the impression-throw-off mechanism operated to prevent an impression being made. Fig. 14 is a top plan view of the impression-throw-off lever and rod. Fig. 14<sup>a</sup> is a section on line 14<sup>a</sup>-14<sup>a</sup> of Fig. 14. Fig. 15 is a side elevation of a portion of the machine, showing the type-bed, endless carrier for receiving the printed sheets, and rack for receiving the sheets; said rack being operated by connections with the type-bed. Fig. 16 is a rear elevation of the said rack. Fig. 17 is a top plan view of same, showing mechanism for operating the feed-screw. Fig. 18 is a perspective view of a portion of the press, showing the platen, the reciprocating gripper, the feeding-plate, paper-retaining fingers, and side guide for the paper sheets. Figs. 19 to 24, inclusive, are detail vertical sectional views of the parts shown in Fig. 18, representing the parts in different positions and illustrating the operation thereof in feeding a sheet of paper into and through the press and discharging it therefrom. Fig. 25 is a detail sectional view showing the platen and its lateral supporting means.

Referring to the drawings, A represents the main frame of the press, which is constructed so as to support the various parts of the apparatus.

B represents the movable type-bed, which is provided with downwardly-extending arms *b b*, pivoted at their lower ends to the frame A by a cross-shaft *b'*, as shown, or by screws or bolts, as preferred.

C represents a transversely-disposed counter-shaft mounted in the frame A and provided at each side of the frame with a crank-pin *c*, connected by a link D to the type-bed, as hereinafter described, this construction causing the type-bed to swing toward and from the platen on the shaft *b'* when the shaft C is rotated. The shaft C is provided at one side of the machine with a spur-wheel *c'*, (see Fig. 2,) which carries one of said crank-pins, at the other side of the machine with a cam *O*<sup>2</sup>, which carries the other crank-pin.

E represents the driving-shaft of the machine, which carries a driving-pulley *e*, a fly-wheel *e'*, and a pinion *e*<sup>2</sup>, which engages and drives the spur-wheel *c'* on the counter-shaft.

F represents the platen, which is capable of being entirely detached from the machine and is provided with the usual or preferred means (not particularly shown herein) for clamping the usual covering of paper or card-

board thereon. Each of the side frames of the main frame A is provided on its inner face with an inclined supporting rib or web *a* for the platen, at the lower end of which is a bottom-supporting lug *a'*, through which one, two, or more adjusting-screws *a<sup>2</sup>* extends. (See Fig. 3.)

The platen F is provided at each of its four corners with independently-adjustable supports (shown in detail in Figs. 8, 9, and 10) which engage the ribs or webs *a* when the platen is in printing position, the lower edges of the platen directly engaging the ends of said screws *a<sup>2</sup>*, so that it may be adjusted vertically to a limited extent by means of said screws. The side frames of the machine are also provided with screws *a<sup>x</sup>*, (see Figs. 2 and 25,) similar to the screws *a<sup>2</sup>*, which engage the sides of the platen and hold it against lateral movement.

Each of the adjustable supporting devices above referred to consists in this instance of a screw *f*, which is fitted in a threaded hole in one corner of the platen F, said screw projecting from the lower face of the platen and being provided with a bearing-surface *f'* to engage one of the ribs or webs *a*. The screw *f* is also provided with a head *f<sup>2</sup>*, having a series of radial notches *f<sup>3</sup>* around its under face, one of which is engaged by a spring-actuated pin *f<sup>4</sup>*, mounted in a recess in the platen and provided with a spring *f<sup>5</sup>*. The periphery of the head *f<sup>2</sup>* of the screw is preferably fluted or roughened to facilitate turning it. We prefer to arrange the spring-pin *f<sup>4</sup>* beneath the head *f<sup>2</sup>* in such a manner that a portion of the outer end of the pin, which is sharpened to enter the notches of the head, shall project beyond the head, as shown in Fig. 10, so that it may be engaged by the operator and pushed into its recess to free the head *f<sup>2</sup>* and permit it to be turned.

It will be understood that each of the four corners of the platen will be provided with one of the independent adjusting devices just described, and it will thus be seen that more or less "impression" can be readily obtained by removing the platen and turning each of said adjusting devices equally in one direction or the other; also, that if the impression is weak at one point and heavy at another the platen can be adjusted by means of these screws, so as to secure a perfectly-even impression. When adjusted, said screws will be locked permanently in their adjusted positions by the spring locking or retaining pins *f<sup>4</sup>*.

It is obvious that the adjustable platen-supporting devices might be located upon the flanges or webs of the main frame instead of the platen, if desired; but the construction described is more convenient and is our preferred construction.

The type-bed is provided with a rock-shaft G, mounted in bearings therein and pro-

vided at each end with an eccentric stud *g*, to which the rear end of one of the links D is connected, and the impression-throw-off mechanism includes this rock-shaft, eccentric studs, and the following described mechanism cooperating therewith. The rock-shaft G is provided with two arms, in this instance formed on a single casting which is secured to the eccentric stud *g* at the right-hand side of the machine. One of these arms *g'* is connected with a spring *g<sup>2</sup>*, the other end of which is secured to a convenient part of the machine, in this instance to the pivotal shaft *b'* of the type-bed. (See Fig. 2.) The other arm *g<sup>4</sup>* of the said casting extends downwardly and forwardly and is pivotally connected to an impression-throw-off rod *g<sup>5</sup>*, the forward end of which passes through a guiding-aperture in the impression-throw-off lever H, pivoted at *h* to a part of the frame A. (See Figs. 2 and 14.) The frame A is provided with a bracket H' forward of the lever H, extending laterally from the frame in the same direction as the lever, and said lever H is provided with a lug *h'*, which engages the bracket on the upper side thereof and maintains said lever in a substantially horizontal position. When in this position, the said impression-throw-off lever H holds the rod *g<sup>5</sup>* in such position that its end is in line with a stop *h<sup>2</sup>*, as shown in Fig. 14, (the type-bed being in open position, as shown in Fig. 11.) The throw-off lever H is provided with an adjustable arm or knee piece H<sup>2</sup>, (see Fig. 14,) connected to the outer end of the lever by a set-screw *h<sup>3</sup>* and extending forwardly at right angles to the lever H into such a position as to be in position to be easily raised by the operator and preferably by the knee of the operator as he sits in front of the machine. By loosening the screw *h<sup>3</sup>* the adjustable arm H<sup>2</sup> can be raised or lowered to the desired position to be conveniently operated and can be fixed in the adjusted position by tightening screw *h<sup>3</sup>*. A stop is provided to limit the movement of the arm *g'* by its spring *g<sup>2</sup>*, and in this instance said stop, which is indicated at *g<sup>6</sup>*, is secured to the inner face of the casting which carries the arms *g'* and is provided with a buffer *g<sup>7</sup>*, of wood, rubber, or leather, arranged to engage the under edge of the adjacent link or draw-bar D, (see Fig. 11,) the buffer serving to prevent undue noise. This stop limits the rotation of the rock-shaft G under the influence of the spring *g<sup>2</sup>*.

The parts being in normal position, as indicated in Fig. 11, if the type-bed is moved toward the platen the first portion of the movement will bring the end of the rod *g<sup>5</sup>* against the stop *h<sup>2</sup>* (see Fig. 14) and arrest said rod, so that during the remaining portion of the forward movement of the type-bed toward the platen the said arm is held against the stop, and the lower end of the arm *g<sup>4</sup>* is prevented from moving forward,

thereby causing the rock-shaft G to turn in its bearings in the type-bed, expanding spring  $g^2$  and changing the positions of the eccentric studs to a more rearwardly position (see Fig. 12) and advancing the position of the type-bed with respect to said studs and the rear ends of the draw-bars. The result of this rocking of shaft G is to cause the type-bed to move into printing position with respect to the platen and to make an impression if the bed is provided with type. On the return of the type-bed to the position shown in Fig. 11 the spring  $g^2$  causes the parts referred to to resume their original positions, the rock-shaft turning in its bearings as the type-bed recedes until the type-bed is restored to a non-printing position with respect to the draw bars or links D D.

If it is desired to miss an impression, the operator will lift the impression-throw-off lever H by pressing upwardly with his knee on the under side of the arm  $H^2$ , (or said arm and lever may be operated by hand, if preferred,) thus lifting the rod  $g^5$  above the top of the stop  $h^2$ , Fig. 14. As the type-bed moves forward under these circumstances the rod  $g^5$  will not be arrested by the stop, but will pass over the same and slide through the aperture in the throw-off lever H, as shown in Fig. 13. Hence the rock-shaft will not be rotated to bring the type-bed into printing position, and no impression will be made, as the type-bed will stand away from the platen at the end of its forward movement sufficiently to prevent the type from touching the paper on the platen.

As long as the impression-throw-off lever is held up no impression can be made; but as soon as it is dropped at any stage of the cycle of movement of the press the next rearward movement of the type-bed will cause said rod  $g^5$  to drop behind the stop  $h^2$ , and the next forward movement of the type-bed will cause the said rod to engage said stop, causing the shaft G to rock and make an impression. If it is desired to miss a number of impressions without stopping the machine, it is desirable to hold the throw-off lever in raised position. This can be accomplished in many ways; but we have shown a supporting-chain  $h^4$ , (see Figs. 2 and 13,) secured to the frame A and provided at its free end with a ring or loop  $h^5$ , which can be slipped over the end of the arm  $H^2$  (see Fig. 13) or over the screw  $h^3$  or any other projecting part connected to the throw-off lever to hold said lever in raised position.

A' represents the feeding-table, of any desired size and form, said table being horizontally disposed and having a downwardly-inclined portion  $a^3$  arranged in a plane substantially parallel with the face of the platen. The sheets to be printed are fed upon this inclined face  $a^3$ , and when so fed the lower edge of each sheet is engaged by inwardly-bent ends of bottom guides or retaining-fingers

I I, the construction of which is best illustrated in Figs. 6 and 7. At each side of the inclined portion  $a^3$  of the feeding-table is a bearing-lug  $a^4$ , and in said lugs is mounted a rock-shaft I' for operating the bottom guides or retaining-fingers I I. Upon said rock-shaft I' we provide two bracket-castings  $i$ , having bored apertures fitting said rock-shaft and provided with set-screws  $i^7$ , by means of which said brackets may be secured in adjusted positions rotatively with respect to the rock-shaft and also longitudinally thereon. Each of said bracket-castings is provided on its rear face with perforated ears or lugs  $i^2$   $i^2$  and on its upper end with a vertically-disposed lug  $i^3$ , provided with a vertical slot  $i^4$ .

The retaining-fingers I I are preferably formed of round metal rods bent into proper form, and each of said fingers is passed through the perforated ears  $i^2$  of one of said bracket-castings and is provided above the same with a threaded portion engaged by an adjusting-nut  $i^5$ . Above this threaded portion just referred to the finger I is bent forwardly, as at  $i^6$ , so as to pass through the slot  $i^4$  in lug  $i^3$ , and said forwardly-bent portion is threaded and is provided with a nut  $i^7$  in rear of the lug  $i^3$ . The lower ends of said retaining-fingers are provided with bent portions  $i^8$ , which are adapted to engage the lower edges of the sheets. By reference to Figs. 6 and 7 it will be seen that said fingers I I can be accurately adjusted vertically by first loosening the nut  $i^7$  and then turning the nut  $i^5$  to raise or lower the finger, after which the nut  $i^7$  is again turned up to securely lock the fingers in their adjusted positions.

At one end the rock-shaft is provided with an adjustable collar  $i^9$ , having a set-screw  $i^{10}$  for clamping it adjustably thereon, and said collar is provided with a stop-arm  $i^{11}$ , bent laterally to engage the shaft-supporting lug  $a^4$  and limit the movement of the rock-shaft I' under the influence of a spring  $i^{12}$ , which is secured in this instance to the stop-arm  $i^{11}$  and to a portion of the feeding-table, as shown in Fig. 2. The collar  $i^9$  is also provided with a trip-arm  $i^{13}$  in the path of the upper end of a lever  $i^{14}$ , pivoted at  $i^{15}$  to the frame and having its lower end provided with an offset portion  $i^{16}$  to engage a cam  $i^{17}$ , carried by the large gear-wheel  $c'$  and shown in dotted lines in Fig. 2. This cam is timed to operate lever  $i^{14}$  at the proper time, so as to move the fingers I I away from the feeding-table and release the sheet of paper after the reciprocating gripper hereinafter referred to has gripped the same.

We also provide a laterally movable and adjustable side guide for engaging a lateral edge of the sheet when it is placed upon the inclined face  $a^3$  of the feeding-table and moving the sheet laterally into such position that the type will be printed thereon in proper position.

sition to secure the desired side margins, the top and bottom margins being secured by a proper adjustment vertically of the fingers I I, as previously described. The construction and operation of this side guide are best illustrated in Fig. 5, reference being also had to Fig. 3 and Fig. 4 in connection therewith.

P represents a longitudinally-movable rod arranged transversely in the machine beneath the table A' and mounted in guiding-apertures in the side frames of the machine-frame. Upon this rod is fitted a sliding block *p*, having an aperture fitting said rod, so that it may be moved longitudinally thereof, and provided with a set-screw *p'* for securing it in any position to which it may be adjusted. The block *p* is provided with a rearwardly-extending arm *p<sup>2</sup>*, which projects through a transverse slot in the inclined portion *a<sup>2</sup>* of the feeding-table and forms the side paper-guide. The rod P is also provided with a downwardly-extending arm *p<sup>3</sup>*, preferably having its upper end bored to fit over said rod and adjustably secured thereto by a set-screw *p<sup>4</sup>*, and the lower end of said arm is preferably provided with a guiding-yoke *p<sup>5</sup>*, adapted to straddle the counter-shaft C, and a lateral flange or web *p<sup>6</sup>*, which engages a side cam *p<sup>7</sup>* on the said counter-shaft. The operation of this side cam moves the arm *p<sup>3</sup>* and the rod P in one direction transversely of the machine, and the said arm is held against the cam and moved (with rod P) in the opposite direction by a spring *p<sup>8</sup>*, interposed between one side of the frame A of the machine and the arm *p<sup>3</sup>* and encircling the rod P, as shown in Figs. 4 and 5.

By setting the block *p* in the required position the side guide *p<sup>2</sup>* may be made to engage a sheet of any desired width and move it to the required position to afford the desired width of lateral margins when the sheet is fed and printed, as hereinafter described.

We employ a reciprocating gripper for taking the sheet from the retaining-fingers I I, above described, after it has been adjusted laterally by the movable side guide and carrying it into printing position upon the platen and then delivering the printed sheet upon an endless carrier or delivery belt. The construction of the gripper is substantially identical with that described and shown in our former patent before referred to.

K represents a transverse rock-shaft mounted in the side portions of the main frame A and carrying two downwardly-extending inclined guide-bars *k k*, upon which the gripper is arranged to slide or reciprocate.

The gripper (see Fig. 18) consists of a plate L, provided at each end with a slide *l*, engaging one of the guide-rods *k* and having its upper edge provided with vertically-arranged slots *l'*, into which the ends *i<sup>2</sup>* of the retaining-fingers I may project, and providing between said slots a series of rigid fingers *l<sup>2</sup>*. The

guides *l* for the gripper-plate are provided with bearings, in which is mounted a transverse rock-shaft *l<sup>3</sup>*, carrying a plurality of upwardly-extending movable gripping-fingers *l<sup>4</sup>*, the ends of which are conveniently inclosed in short sections of rubber tubing, which are slipped over them, as shown, or otherwise provided with pads of elastic or cushioning material to give them a firm grip on the paper without marring the sheets. These gripping-fingers are arranged on the rock-shaft so as to overlie the rigid fingers *l<sup>2</sup>* of plate L and are rigidly secured to the rock-shaft. The rock-shaft *l<sup>3</sup>* is provided at one end (at the right, Fig. 18) with an arm *l<sup>5</sup>*, to which is attached one end of a spring *l<sup>6</sup>*, the other end of which is connected to a part of the adjacent guide *l*, said spring serving to normally press the movable gripping-fingers *l<sup>4</sup>* down upon the rigid fingers *l<sup>2</sup>* of plate L. The rock-shaft *l<sup>3</sup>* is also provided with an operating-arm *l<sup>7</sup>*, which carries a friction-roll *l<sup>8</sup>*.

For convenience of reference we term the rock-shaft K and guide-bars *k k*, previously described, the "swinging gripper-frame," and the gripper is adapted, as will be seen, to be reciprocated up and down on this frame. This frame is normally in such a position that the gripper in its up and down movements will pass over the top of the platen, and we provide mechanism for lowering and raising the swinging gripper-frame when the gripper is at its lowest position to enable the gripper to lay the paper sheet carried thereby evenly upon the platen immediately before the impression is made and to raise the sheet from the platen immediately after the impression is made to allow air to get beneath the paper sheet, so as to facilitate its delivery from the press and prevent its adhering to the platen.

The following mechanism is provided for reciprocating the gripper up and down on the swinging gripper-frame: *m* represents a rock-shaft mounted transversely in the main frame and provided outside thereof at one end of said shaft with a curved arm M, the outer end of which is connected by a link *m'* to the gripper, (see Figs. 1, 3, and 5,) as in our former patent. The rock-shaft *m* is provided with an operating-arm *m<sup>2</sup>*, having its outer end in the form of a handle, and to this arm is connected a spring *m<sup>4</sup>*, the other end of which is connected to the main frame near the bottom thereof. A link *m<sup>5</sup>* is also connected at one end to the arm *m<sup>2</sup>* and at its other end to the free end of a lever *m<sup>6</sup>*, pivoted at *m<sup>7</sup>* to a stud secured to the main frame, and said lever is provided with a friction-roll *m<sup>8</sup>*, which engages a cam *m<sup>9</sup>* on the counter-shaft C, being held in engagement therewith by the tension of spring *m<sup>4</sup>*. This cam is so formed and timed (being adjustably secured to the shaft by set-screws, as shown) that it will elevate the free end of lever *m<sup>6</sup>*, causing the link *m<sup>5</sup>* to draw the arm

$m^3$  upward, thereby rocking shaft  $m$  and depressing the outer end of arm  $M$  and moving the gripper downward over the platen to carry the sheets into printing position thereon, the parts being returned to normal position by means of the spring  $m^4$ . When it is desired to move the gripper down into its lowest position, as in taking out the platen to make "ready," or in case it is desired to feed sheets by hand upon the platen instead of automatically the operator can effect this result by raising the arm  $m^3$  by means of its handle, and said arm may be held in its raised position by means of a chain  $m^{10}$ , secured to the under side of the feeding-table or to the main frame  $A$ , (see Fig. 3,) and provided conveniently at its lower end with a loop or ring  $m^{11}$  to be slipped over the handle portion of arm  $m^3$ , or said arm  $m^3$  may be secured in raised position by other means, if desired. The cam  $m^5$  for reciprocating the gripper is located on the counter-shaft, as before stated, and preferably inside of the side frames of the machine, and we find that the construction just described enables the gripper to be operated very smoothly with an entire absence of jar or noise when running at high speed.

The following mechanism is employed for elevating and depressing the swinging gripper-frame: The rock-shaft  $K$  is provided (between the side frames of the press, as best seen in Fig. 5) with a downwardly-extending arm  $K'$ , secured thereto adjustably by a set-screw  $k^4$  and provided at its lower end with a friction-roll  $k^5$ , engaging a cam  $K^2$  on the cam-shaft  $C$ , as clearly shown in Fig. 5. This cam is also adjustably secured to the shaft  $C$  by a set-screw and is accurately timed so as to allow the swinging frame to fall immediately after the gripper has reached its lowest position and to raise the said frame by means of arm  $K'$  and rock-shaft  $K$  as soon as the impression has been made.

The following mechanism is provided for opening and closing the gripper proper by raising or lowering the movable gripper-fingers  $I$ .  $O O'$  represent a bell-crank lever pivoted to the main frame at  $o$ , (see Figs. 1 and 18,) the arm  $O$  of which is adapted to engage the friction-roll  $I^8$  on the operating-arm  $I^7$ , which operates the rock-shaft  $I^3$  and gripping-fingers  $I^4$ . The other arm  $O'$  of this lever extends downwardly and is provided with a friction-roller  $o'$  at its lower end, which engages a cam  $O^2$ , the weight of the arms holding the roll in engagement with said cam. The cam  $O^2$  is mounted on the cam-shaft  $C$  and is so timed as to raise the lever-arm  $O$  when the gripper is at its highest position, thus rocking the rock-shaft  $I^3$  and lifting the fingers  $I^4$  to allow them to pass over the paper, and the cam then allows the fingers  $I^4$  to lower upon the paper and clamp it between them and the rigid fingers of plate  $L$ . The cam  $O^2$  is also constructed to permit

the arm  $O$  to fall and rise with the swinging gripper-frame when the gripper is at its lowest position, as previously described, and, finally, to raise the arm  $O$ , thereby lifting the gripper-fingers  $I^4$  and allowing the printed sheet to fall through the gripper and be discharged. The cam  $O^2$  also for convenience carries one of the crank-pins  $c$  for operating the movable type-bed, as previously described.

The various operations of the gripper previously described in feeding a sheet of paper are shown consecutively in Figs. 19 to 24, inclusive, for greater clearness. In Fig. 19 the paper sheet  $X$  to be printed is shown placed upon the downwardly-inclined feeding-plate  $a^3$  of the table  $A'$  and held in that position by the retaining-fingers  $I I$ , the bent portions of which engage its lower edge, while the movable side guide  $p^2$  previously described adjusts the paper laterally to the desired position. At this time the gripper is moving upward over the platen, and it continues to so move until it reaches its highest point, when the stationary fingers of the plate  $L$  pass beneath the paper and the movable fingers (which are held open by cam  $O^2$ , as just described) pass above the paper. The cam  $O^2$  then permits the movable fingers  $I^4$  to fall and clamp the lower edge of the paper upon the rigid fingers, and immediately thereafter the retaining-fingers  $I I$  are lifted clear of the paper by the mechanism previously described. Fig. 20 shows the parts in this position. Fig. 21 shows the gripper after it has started to move downward over the platen  $F$ , carrying the paper with it. After reaching its lower position the whole swinging frame and the gripper is lowered by cam  $K^2$ , as previously described, so as to bring the plate  $L$  of the gripper flush with the platen and lay the paper evenly upon the platen, as shown in Fig. 22. The impression is then made, and immediately thereafter as soon as the movable type-bed has started to recede from the platen the swinging gripper-frame and gripper are raised, as shown in Fig. 23, to lift the sheet (now printed) away from the platen to allow air to get beneath it and facilitate its delivery. The cam  $O^2$  now operates on arm  $O'$  and raises arm  $O$  to such an extent as to lift the movable gripping-fingers and allow the sheet to fall through the gripper upon the delivery-apron or conveyer  $R$ , hereinafter described. The gripper is then moved upwardly with the movable gripping-fingers raised, and the operation is repeated in feeding another sheet.

$R$  represents the delivery-belt, upon which the printed sheets are permitted to fall from the gripper after the impression of the type is made and which delivers them from the machine. The belt is carried at one end by a drum or roller  $r$ , mounted on the main or driving shaft  $E$  of the machine, and the other

end of the said belt is carried by the roller  $r'$ , mounted in the upper end of an adjustable frame  $r^2$ , the lower end of which is pivotally connected to the main frame. In this instance said adjustable frame is provided at its lower end with yokes  $r^3$ , which pivotally engage the transverse shaft or rod  $b'$ , upon which the oscillating type-bed is mounted, and said frame is provided with an adjusting-screw  $r^4$ , engaging a portion of the main frame for moving it rearwardly, so as to secure the necessary tension of the belt R.

In the rear of the delivery-belt is arranged a receiving-rack for the printed sheets having a vertically-movable supporting-shelf which is operated directly from the press and preferably, as shown, from the oscillating type-bed. This rack consists of a vertically-disposed supporting-frame T, provided with a vertical guiding-slot  $t$  and supported by a base  $t'$ .  $t^2$  is a vertically-disposed feeding-screw mounted in bearings at the top and bottom of the frame T in rear of the slot  $t$ .  $t^4$  is a receiving-shelf or support provided with ears  $t^5$   $t^5$ , extending through the slot  $t$  and loosely engaging the feeding-screw  $t^2$  and also provided with a spring-plate  $t^6$ , Fig. 15, which engages the threads of the screw and causes said shelf to be moved vertically by revolving said screw. The said screw is provided at its upper end with a ratchet-wheel  $t^7$ , secured thereto, and with a pivoted arm  $t^8$ , loosely mounted thereon and provided with a pawl  $t^9$ , engaging said ratchet-wheel. A chain (or other flexible connection) is secured to the oscillating type-bed, and the arm  $t^8$  is provided with a hook-shaped stud  $t^{12}$ , to which said connection may be adjustably secured by slipping one of the links over the same, as shown, so that when the type-bed moves forward to make an impression it will tighten the said flexible connection and move said arm  $t^8$ , thus moving the ratchet-wheel one or more teeth, as desired.  $t^{10}$  is a spring for returning the arm  $t^8$  to its normal position, and  $t^{11}$  is a lateral arm secured to the arm  $t^8$  for holding the chain or flexible connection  $t^9$  out of engagement with the ratchet-wheel and pawl when it is slack. The construction just described is so arranged that when the press is in operation the sheets after being printed are delivered by the belt R to the shelf  $t^4$  one upon another, and each oscillation of the type-bed causes the screw to be operated the distance predetermined by the adjustment of the chain  $t^9$  with respect to the arm  $t^8$ , thereby gradually lowering said shelf as the printed sheets accumulate thereon, so that the top sheet of the pile upon the shelf  $t^4$  remains always at substantially the same level. After removing a pile of sheets from the shelf the latter can be raised to its original position by simply moving it upward, the spring-plate  $t^6$  slipping readily over the threads as the shelf is moved in an upward direction.

It is desirable to adjust the movement of the swinging gripper-frame toward and from the platen (as previously described) to accommodate adjustments of the platen, so that when the paper sheets are laid on the platen, as shown in Fig. 22, the plate L of the gripper shall always be flush with the face of the platen. The swinging gripper-frame moves downward by gravity when permitted by its cam  $K^2$ , and in order to adjust or regulate the amount of this movement toward the platen without altering or interfering with the cam we conveniently provide one (or both) of the guide-rods  $k$  of the swinging gripper-frame with an adjustable stop to engage a part of the main frame and limit adjustably the downward movement of the frame. In this instance the stop is constructed as shown in Figs. 3 and 3<sup>a</sup> and is applied to only one of the guide-bars  $k$ . This stop consists of a bracket-casting  $k^2$ , having a hole in its upper end engaging the guide-bar  $k$  adjacent to its lower end and secured thereto by a set-screw. The other end of said bracket is provided with an angular foot provided with an adjusting-screw  $k^3$ , which strikes a part of the frame A of the machine when the cam permits the guide-bars to move in a direction toward the platen, thus limiting the downward movement of said bars and the gripper carried thereby. By adjusting the screw  $k^3$  the exact position into which the gripper will be moved by the lowering of the guide-bars  $k$  can be accurately adjusted and may be varied whenever the adjustment of the platen makes it desirable.

What we claim, and desire to secure by Letters Patent, is—

1. In a platen printing-press, the combination with the movable type-bed and stationary platen-supporting devices, of a platen removable bodily from the press, and a plurality of adjustable devices projecting from the rear face of the platen and connected therewith having portions at their outer ends adapted to rest upon said platen-supporting devices, whereby said platen can be removed and said adjustable devices adjusted while it is disassociated from the press, substantially as described.

2. In a platen printing-press, the combination with the movable type-bed and stationary platen-supporting devices, of a platen removable bodily from the press, and a plurality of adjusting-screws engaging the rear face of said platen and projecting therefrom, said screws having portions at their outer ends adapted to rest upon said platen-supporting devices, whereby said platen may be entirely removed from the press, and said screws adjusted, substantially as described.

3. In a platen printing-press, the combination with the movable type-bed and stationary platen-supporting devices, of a platen removable bodily from the press and a plu-



reality of adjusting-screws engaging the rear face of said platen and projecting therefrom, said screws having portions at their outer ends adapted to rest upon said platen-supporting devices, whereby said platen may be entirely removed from the press, and said screws adjusted, and a locking device for each of said screws arranged eccentrically thereto, substantially as described.

4. In a platen printing-press, the combination with the main frame, provided at each side with an inclined platen-supporting web, and adjustable devices for supporting the lower edge of the platen, of the movable type-bed, and a platen removable bodily from the press having its rear face provided with a plurality of adjusting-screws, having end portions adapted to engage said webs, when the platen is in printing position, and lateral adjustable screws extending through the main frame, and arranged to engage the sides of the platen to prevent lateral movement thereof, substantially as described.

5. In a platen printing-press, the combination with the main frame provided with platen-supporting devices, and the movable type-bed, of the platen, independent adjusting-screws secured to and projecting from said platen and adapted to engage said platen-supporting devices, each of said screws being provided with a circular portion provided with locking-notches, and a movable locking device for engaging said notches, substantially as described.

6. In a platen printing-press, the combination with the main frame provided with platen-supporting devices, and the movable type-bed, of the platen, independent adjusting-screws secured to and projecting from said platen and adapted to engage said platen-supporting devices, each of said screws being provided with a circular portion provided with locking-notches, and a spring-actuated locking-pin for engaging said notches, substantially as described.

7. In a platen printing-press, the combination with the main frame provided with webs or flanges for supporting the platen, and the reciprocating type-bed, of a platen provided with a plurality of independent adjusting-screws engaging the platen at separated points and projecting therefrom and adapted to engage said supporting webs or flanges, each of said screws being provided with a circular portion provided on the face adjacent to the platen with a series of radial notches, and a spring-actuated locking-pin located in a recess in said platen adjacent to each of said screws for engaging said radial notches thereof, substantially as described.

8. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, a shaft for operating said type-bed, and connections between said shaft and type-bed including draw-bars, of an impression-

throw-off mechanism comprising a shaft rotatably mounted in the type-bed and provided with eccentric portions engaging said draw-bars, an arm for oscillating said shaft, a spring connected with said shaft for maintaining the type-bed in non-printing relation with said draw-bars; a rod connected to said arm, a stop on the main frame for engaging said rod and causing the said shaft to rotate when the type-bed moves toward the platen, a movable throw-off lever for engaging said rod and lifting it out of engagement with said stop, substantially as described.

9. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, a shaft for operating said type-bed, and connections between said shaft and type-bed including draw-bars, of an impression-throw-off mechanism, comprising a shaft rotatably mounted in the type-bed and provided with eccentric portions engaging said draw-bars, an arm for oscillating said shaft, a spring connected with said shaft for maintaining the type-bed in non-printing relation with said draw-bars, a rod connected to said arm, a stop on the main frame for engaging said rod and causing the said shaft to rotate when the type-bed moves toward the platen, a throw-off lever having an aperture loosely engaging said rod, for lifting it out of engagement with said stop, whereby said rod will be reciprocated through said aperture and the said spring will hold said shaft in position to cause the type-bed to miss an impression, substantially as described.

10. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, a shaft for operating said type-bed, and connections between said shaft and type-bed including draw-bars, of an impression-throw-off mechanism comprising a shaft rotatably mounted in the type-bed and provided with eccentric portions engaging said draw-bars, an arm for oscillating said shaft for maintaining the type-bed in non-printing relation with said draw-bars, a rod connected to said arm, a stop on the main frame, for engaging said rod and causing the said shaft to rotate when the type-bed moves toward the platen, a movable throw-off lever for engaging said rod and lifting it out of engagement with said stop, and mechanism for securing said lever and rod in such position to permit the type-bed to miss a number of impressions, substantially as described.

11. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, a shaft for operating said type-bed, and connections between said shaft and type-bed including draw-bars, of an impression-throw-off mechanism, comprising a shaft rotatably mounted in the type-bed and provided with eccentric portions engaging said draw-bars, an arm for oscillating said shaft, a spring connected with said shaft for

maintaining the type-bed in non-printing relation with said draw-bars, a rod connected to said arm, a stop on the main frame for engaging said rod and causing the said shaft to rotate when the type-bed moves toward the platen, a movable throw-off lever for engaging said rod and lifting it out of engagement with said stop, and an operating-arm for said lever adjustably connected thereto, substantially as described.

12. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, a shaft for operating the same and draw-bars connecting said shaft with said type-bed, of a shaft mounted in said type-bed engaging said draw-bars and provided with eccentric portions, a spring connected to said shaft for partially rotating it in one direction, a stop for limiting the movement of said shaft, a buffer for said stop, means for operating said shaft in the opposite direction when the type-bed is moved toward the platen, including a rod engaging a stop on the main frame, and a throw-off lever for lifting said rod out of engagement with said stop, substantially as described.

13. In a platen printing-press, the combination with the main frame, of an oscillating type-bed, operating devices therefor including draw-bars, a shaft connecting said draw-bars with the type-bed and provided with eccentric portions, an operating-arm secured to said shaft, a spring connected to said shaft for partially rotating it in one direction, a stop on said operating-arm provided with a buffer for engaging one of said draw-bars to limit the rotation of said shaft under the influence of said spring, a rod connected to said arm and normally engaging a stop on the main frame and a throw-off lever for lifting said rod out of engagement with said stop, substantially as described.

14. In a platen printing-press, the combination with the platen and movable type-bed, of a reciprocating gripper for feeding the sheets over the platen between said platen and the type-bed, a rock-shaft mounted in the main frame, an arm secured thereto and connected to said gripper, an operating-arm connected to said rock-shaft, a cam-shaft provided with a gripper-operating cam, a pivoted lever, having a part engaging said cam, a connection between said lever and the operating-arm on said rock-shaft and a spring for returning the gripper-carriage operatively connected with the rock-shaft, substantially as described.

15. In a platen printing-press, the combination with the platen, the movable type-bed, a feeding-table and a movable gripper for taking the sheets from said table and carrying them over the platen, of a transversely-extending rock-shaft, a block mounted thereon and adjustable rotatively and longitudinally thereon, said block being provided on

one face with perforated ears, and on another face at an angle to the first-mentioned face, with a slotted projection, of a bottom guide and retaining-finger having a portion passing through said ears, and provided with an adjusting-nut; and having an angular portion above said nut extending through said slotted projection and provided with a clamping-nut and means for tripping said rock-shaft, substantially as described.

16. In a platen printing-press, the combination with the platen, the movable type-bed, a feeding-table and a movable gripper for taking the sheets from said table and carrying them over the platen, of a laterally-movable side guide for moving the paper laterally on the table, a longitudinally-movable rod carrying said guide, an arm secured to said rod and provided with a cam-engaging portion and a rotating cam for engaging said arm and moving said rod and side guide substantially as described.

17. In a platen printing-press, the combination with the platen, the movable type-bed, a feeding-table and a movable gripper for taking the sheets from said table and carrying them over the platen, of a laterally-movable side guide for moving the paper sheets laterally on the table, a longitudinally-movable spring-actuated rod to which said guide is adjustably secured to vary the feed of the paper, an operating-shaft for said guide, provided with a cam, and an arm adjustably secured to said rod at one end and having its other end provided with a guiding-yoke engaging said shaft and a lateral cam-engaging portion, substantially as described.

18. In a platen printing-press, the combination with the platen and movable type-bed, of a gripper adapted to move across the platen between it and the type-bed, mechanism for moving the gripper toward and from the plane of the platen, to lay the paper sheet upon the platen and an adjustable stop for limiting the movement of the gripper in a direction toward the platen, substantially as described.

19. In a platen printing-press, the combination with the platen and movable type-bed, of a gripper adapted to be moved across the platen between it and the type-bed, guide-bars for said gripper, means for moving said guide-bars to move the gripper toward and from the plane of the platen, and an adjustable stop secured to one of said guide-bars, for engaging a stationary part to limit the movement of the gripper in a direction toward the platen, substantially as described.

20. In a platen printing-machine, the combination with the platen and movable type-bed, of a gripper adapted to be moved across the platen between it and the type-bed, means for adjusting the platen with respect to the type-bed, mechanism for moving the

gripper toward and from the plane of the platen, and an adjustable stop for limiting the movement of the gripper in a direction toward the adjustable platen, substantially  
5 as described.

21. In a platen printing-press, the combination with the platen and movable type-bed of a gripper adapted to be moved across the platen between it and the type-bed,  
10 guide-bars for said gripper, means for moving said guide-bars to move the gripper toward and from the plane of the platen, and an adjustable stop comprising a bracket secured to

one of said guide-bars and provided with an adjusting-screw adapted to engage a stationary part, to limit the movement of the gripper in a direction toward the platen, substantially as described. 15

In testimony whereof we affix our signatures in the presence of two witnesses.

ROBERT E. KEMPER.  
ARTHUR KEMPER.

Witnesses:

GEORGE G. KEMPER,  
C. G. KEMPER