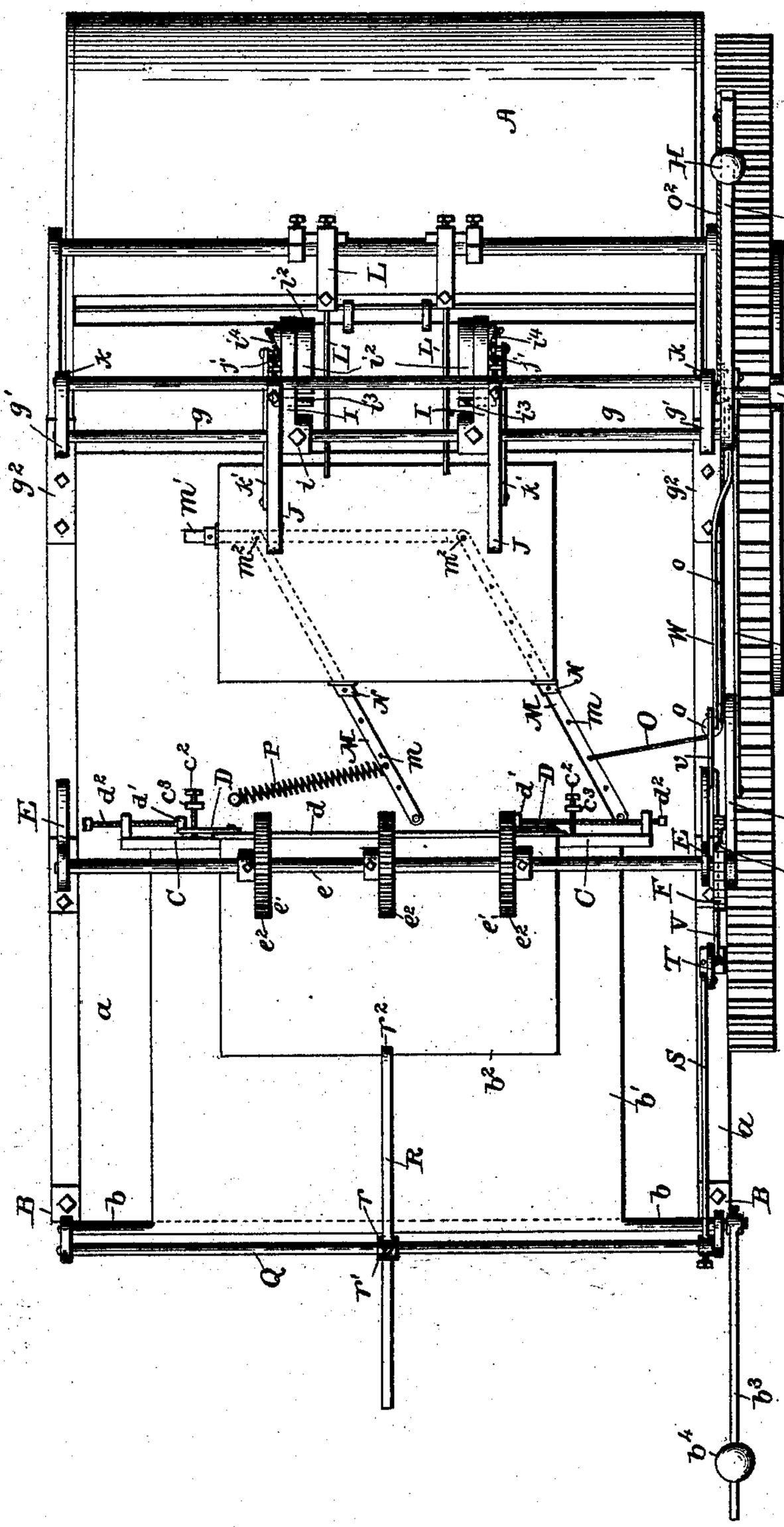
(No Model.) 3 Sheets—Sheet 1.

F. H. VAN LOOZEN.

FEEDING MECHANISM FOR PRINTING PRESSES.

No. 509,974. Patented Dec. 5, 1893.

FIG. 1.



Witnesses

Jas. K. McCathran

D. P. Wolhaupter.

Inventor

Fred H. Van Loozen

By his Attorneys,

C. A. Snow & Co.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

F. H. VAN LOOZEN.

FEEDING MECHANISM FOR PRINTING PRESSES.

No. 509,974. Patented Dec. 5, 1893.

FIG. 2.

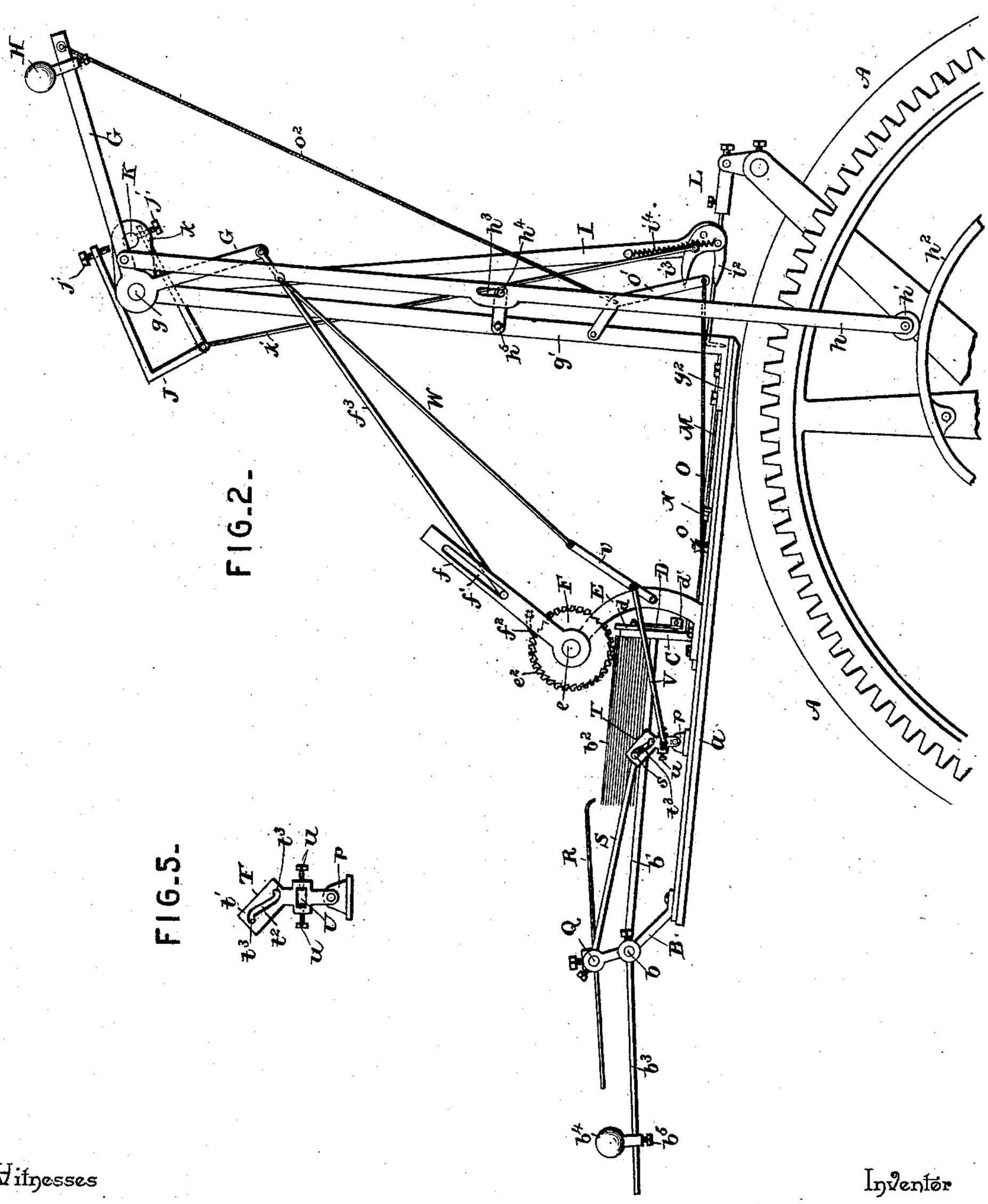


FIG. 5.

Witnesses

Jas. K. McCathran

D. P. Wolhaupter.

Inventor

Fred H. Van Loozen

By his Attorneys,

C. A. Snow & Co.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

F. H. VAN LOOZEN.

FEEDING MECHANISM FOR PRINTING PRESSES.

No. 509,974. Patented Dec. 5, 1893.

FIG-3-

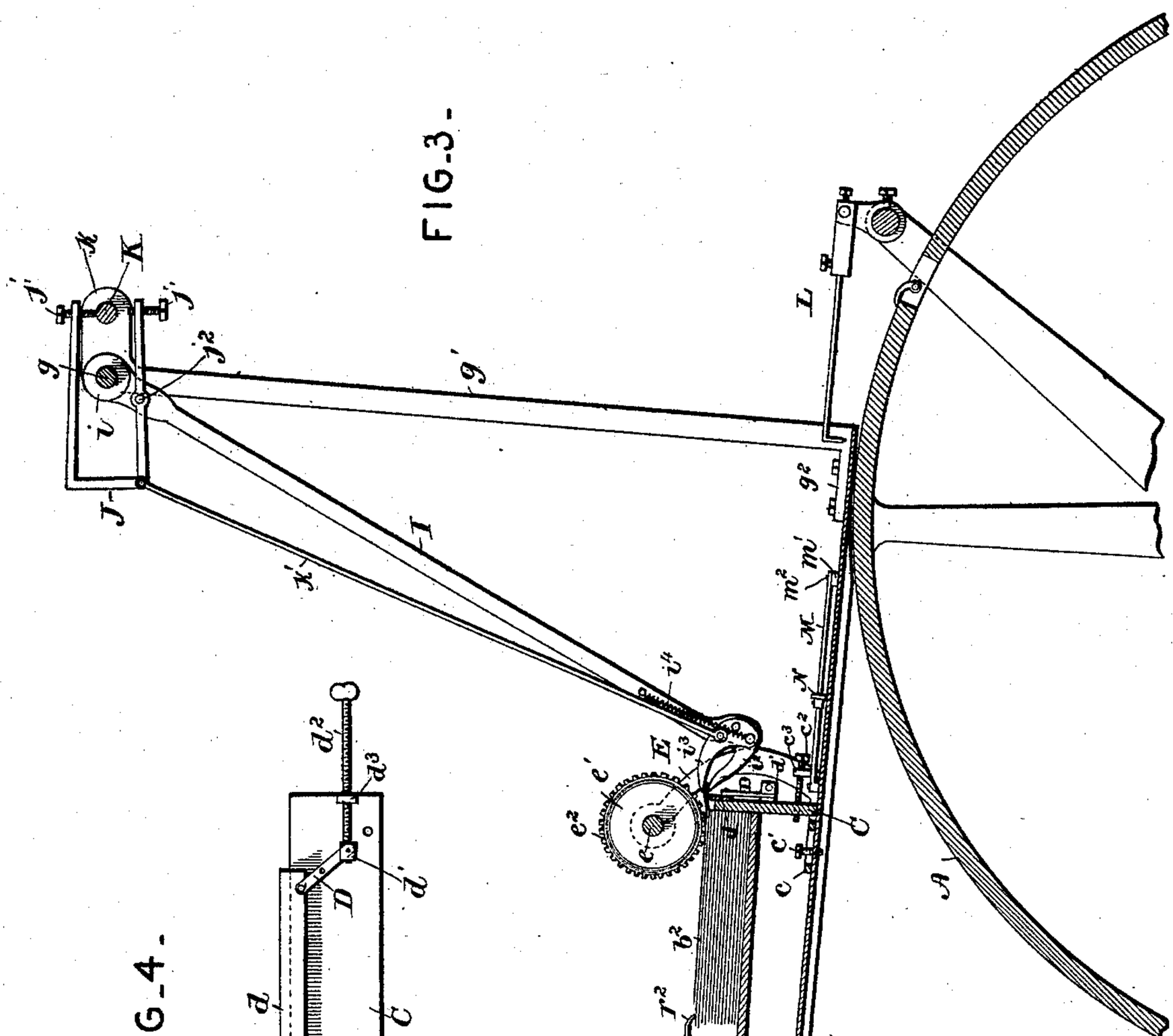
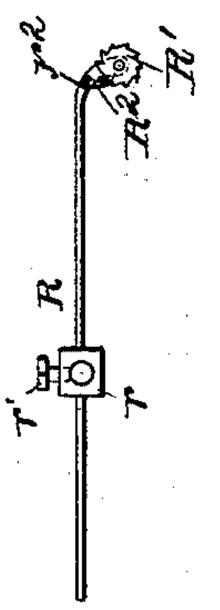


FIG-4-

FIG-6-



Witnesses

Jas. K. McCathran

D. P. Walbampter.

Inventor

Fred H. Van Loozen

By his Attorneys,

C. A. Snow & Co.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRED HENRY VAN LOOZEN, OF CLEVELAND, OHIO.

FEEDING MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 509,974, dated December 5, 1893.

Application filed October 20, 1892. Serial No. 449,457. (No model.)

To all whom it may concern:

Be it known that I, FRED HENRY VAN LOOZEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Feeding Mechanism for Printing-Presses, of which the following is a specification.

This invention relates to printing presses; and it has for its object to provide improvements in the feeding devices thereof used in connection with cylinder presses.

To this end the invention primarily contemplates certain improvements upon my former patent of May 17, 1892, No. 474,884, whereby the mechanisms disclosed in this patent are improved upon and added to in order to render the feeding devices more efficient and complete.

With these and other objects in view which will readily appear to those skilled in the art as the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a top plan view of a paper feeding mechanism arranged in position upon the press, as contemplated by this invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical longitudinal sectional view of the same illustrating the parts in a different position from that illustrated in Fig. 2. Fig. 4 is a detail elevation and end view of the sheet support front end plate. Fig. 5 is an enlarged detail view of the movable bracket or plate. Fig. 6 is a detail view of a modified form of the sheet retaining arm.

Referring to the accompanying drawings, A represents the cylinder of an ordinary cylinder printing press, arranged above which in its usual position is the ordinary inclined feed table *a*, to the top of which at or near its rear end on opposite sides thereof is secured the opposite bearing brackets B.

Journaled at each end in the opposite bearing brackets B, intermediate of their ends is the leaf shaft *b*, to which is secured the rear end of the movable leaf sheet-support *b'*, upon which is designed to be placed the sheets of paper b^2, which are to be fed one at a time to the cylinder A of the press. The paper b^2, supported by the leaf *b'*, is normally counterbalanced by means of the weight arm b^3, secured to one end of the shaft *b*, and carrying the adjustable weight b^4, which can be adjusted on said arm b^3, by means of the set screw b^5, in order to sufficiently overbalance the leaf so as to hold the paper into contact with the paper separating devices to be hereinafter described.

Arranged transversely across the feed table B, at the front end of the leaf *b'*, is the longitudinally adjustable front end plate C. The said front end plate is arranged so that the front edges of the paper when placed upon the leaf will rest thereagainst in order to allow the top sheet to be fed over the upper edge of the plate, and the latter is provided with the rearwardly extending slotted lugs or feet *c*, adapted to receive the set screws *c'*, over which they slide, in order to provide for the longitudinal adjustment of the same by means of the adjusting set screws c^2, working through adjacent lugs c^3, and engaging the said plate C, to provide for such adjustment.

Pivotally secured to the front face of the plate C are the opposite adjusting levers D, to the upper ends of which is pivotally secured the horizontal extension plate *d*, while the lower ends thereof are provided with the threaded bearings *d'*, receiving the inner ends of the adjusting screw d^2, working through the end lugs d^3, at opposite ends of the plate C, and providing means for raising and lowering the extension strip or plate *d*, above and below the upper edge of the front end plate C, to accommodate the said plate to the quantity of paper upon the leaf, and also to provide for the proper adjustment with respect to the thickness of the sheets to be fed.

At opposite sides of the table A, are secured the opposite bearing arms E, which are curved over the upper edge of the front end plate C, and support the horizontal roller or disk shaft *e*, moving in bearing at each end of said arms and carrying the regularly spaced sheet separating rollers or disks *e'*. The said rollers or disks *e'*, are keyed upon the shaft *e*, at regular intervals thereon directly above the leaf sheet support and the paper thereon, and the same are provided with the serrated or notched rubber tires e^2, that are always in contact with the top sheet of paper, owing to the over-

balancing of the weight b^4, and are therefore always in the proper position, when rotated, to firmly grasp the top sheet of paper and slide the same over the upper edge of the front end plate C, into a position to be grasped by the carriers which take the same to the cylinder of the press. An operating ratchet disk F, is secured to one end of the shaft *e*, alongside of the swinging pawl arm *f*, which latter is provided with a longitudinally disposed slot *f'*, and which carries the pawl f^2, engaging the teeth of the ratchet disk and adapted to rotate the same, together with the rubber tired separating disk or rollers, when the said pawl arm is swung in one direction by means of the rod f^3, working at one end in the slot *f'*, of said pawl arm or lever, and connected at its other end to one arm of the bell crank lever G, which receives its motion from the cylinder of the press as hereinafter described.

The bell crank lever G, is fixedly secured to one end of the horizontal shaft *g*, journaled at the upper ends of the opposite uprights *g'*, secured to the front end of the table by rearwardly extending feet g^2, as fully illustrated in the drawings. The other arm of the bell crank lever G, accommodates the adjustable weight H, which tends to normally rotate the shaft *g*, toward the sheet separating devices described, and therefore normally tends to throw the other arm of the bell crank to which the rod f^3 is connected, rearwardly, and therefore operates the separating disk when the cylinder of the press leaves the said lever free to operate in this manner. Movement is communicated to the bell crank lever G, through the medium of the downwardly extending operating bar *h*, to the lower end of which is secured the anti-friction roller *h'*, which extends into the path of the cam-casting or frame h^5 which is secured to one end of the cylinder A, and is designed to intermittently operate the bar *h*, as described in my former patent. The said operating bar *h*, is provided at an intermediate point therein, with the combined limiting and guide slot h^3, which receives the anti-friction roller h^4, at one end of the off-standing bracket h^5, secured to one of the opposite side uprights *g'*. This construction provides means whereby the downward movement of the operating bar *h*, under the tendency of the weighted arm of the bell crank lever, is arrested to prevent the carriers controlled by said bell crank from moving too far rearwardly, as will be readily apparent, and as is fully explained in my former patent.

Adjustably secured to the upper horizontal or transverse shaft *g*, are the swinging carrier arms I, provided at their upper ends with the collars *i*, embracing the shaft and longitudinally adjustable thereon by means of the set screws *i'*. The said swinging carrier arms I, terminate at their lower ends in the flat curved stationary jaws i^2, over which work the movable spring actuated jaws i^3, constructed as described in my former patent and having connected therewith the springs i^4, which are connected to the arms I, and cross the pivots of the movable jaws so as to hold the latter onto the stationary jaws to clamp the paper between both jaws until released by the mechanism now to be described, and analogous to that for which I have already received a patent.

Arranged at the upper ends of the swinging arms I, are the approximately horizontally arranged **U**-shaped frames J, which are pivoted centrally to the lower one of their parallel arms as at j^2, to the upper ends of the carrier arms, and are adapted to straddle or embrace the horizontal or transverse shaft *g*. The said **U**-shaped frames J, are adapted to move in an approximately horizontal position, and receive at the ends of their parallel arms the adjusting screws *j'*, passing therethrough and adapted to have their inner ends in a position in close proximity to the parallel off-standing rod K. The parallel off-standing rod K, is secured in the outer ends of the off-standing arms *k*, at the upper ends of the uprights *g'*, and forms a stop for the ends of both arms of the **U**-shaped frames J, in order to open and close the grippers or jaws, carried by the swinging arms I, through the connecting links *k'*, pivotally connected to the rear ends of the frames J, supported thereby, and to the movable jaws i^3. Now it will be apparent that when the shaft *g*, is rotated to swing the grippers or jaws toward the paper support, one of the adjusting screws of the **U**-shaped frames will at the proper moment contact with the rod K, and thus hold the frame stationary, while the arms I, continue to move and cause the links *k'*, to press the movable jaws onto the stationary jaws, which have by this time passed under the projecting sheet of paper, so that the reverse swing of the arms I, carries the sheet of paper to the ordinary paper guides L, arranged at the front end of the feed table above the cylinder in the usual manner. When the grippers or jaws reach the said paper guides the other set screw of the **U**-shaped frame contacts with the stop rod K, and thereby causes the upper movable jaws to release the sheet of paper, so that the same can be shoved farther into the guides L, by means of the sheet adjusting devices employed in connection with the carrier just described.

As illustrated in the drawings, the arrangement of the off-standing stop rod K, and the approximate horizontal position of the **U**-shaped frames, provide a construction whereby the swinging arms I are allowed to travel farther before dropping the sheet at the guides, so that the sheet adjusting devices now to be described can come into play at the proper moment. This is due to the fact that the uppermost set screw *j'*, contacts with the rod quicker than the lower of said screws.

Pivotally secured at one end to the table *a*, and flat thereon directly in front of the front

end plate C, are the approximately horizontally swinging sheet adjusting arms M, provided with a series of adjustment perforations m and connected at their free ends by the connecting bar m'. Adjustably secured to the swinging adjusting arms M, by means of the set screws m^2, are the shouldered or flanged gages N, which are adapted to bear against the rear edge of the separated sheet of paper, after the same has been carried to its point of releasement by the carriers, so as to adjust such sheet closer to the guides and to hold the same in such position until the carriers have commenced their rearward travel to obtain another sheet. Secured at one end to one of the swinging sheet adjusting arms M, is the operating chain or cord O, passing over the pulley o, at one edge of the table a, and connected at its other end to the lever o', pivotally secured at one end to one of the side uprights g'. A main operating cord or chain o^2 is connected to the lever o', and to the weighted arm of the bell crank lever G, so as to provide means, by the movement of said bell crank, to push the gages against the sheet to be adjusted. Now, it will be readily seen that when the carriers have carried the sheet to a point adjacent to the guides and released the same at such point, the cord or chain o^2, has in the mean time tightened and through the medium of the auxiliary cord or chain O, straightened out the sheet adjusting frame to move the gages against the sheet of paper, as already described, and on the other hand when the grippers or carriers move back toward the leaf sheet support, the main cord or chain o^2 loosens and allows the sheet adjusting frame to be drawn back in its normal position by means of the retractile spring P, secured to one of the arms M, of the frame, and to the table a, so as to place the said frame in a position ready to adjust the next succeeding sheet.

Journaled in the upper ends of the opposite bearing brackets B, above the leaf shaft b, is the retainer shaft Q, upon which is adjustably mounted the sheet retainer arm R, adapted to be raised and lowered by the rocking of said shaft. The said sheet retainer arm R, is provided with the collar r, mounted to slide on the shaft Q, and be adjusted tight thereon in any position by means of the set screw r', in order to adjust the retainer arm according to the size paper being fed from the leaf sheet support b'. The said sheet retainer arm is provided with a down-turned end r^2, which is adapted by the rocking of the shaft Q, in one direction, to be pressed down onto the rear edge of the pile of paper or sheets on the leaf, simultaneously with the separation of the top sheet of paper by the friction disks or rollers in order to hold the paper firm upon the leaf to prevent any sheet but the top sheet from leaving the leaf and passing over the upper edge of the front end plate C.

Fixedly secured to one end of the retainer shaft Q, is the swinging arm S, the free end of which is provided with the stud or roller s, working in the movable or rocking bracket or plate T. The said bracket or plate T, is pivoted at its lower end to the lug p, secured to the feed table, and is provided at its upper end with the head t', in which is formed the angle or diagonal slot t^2, having curved ends t^3, said slot t^2, being designed to receive the stud at one end of the swinging arm S, so that by the rocking of said bracket or plate, the said arm is moved up and down to throw the retainer arm R, above and onto the sheets of paper. The bracket or plate T, is also provided with the transverse slot U, below the angle or diagonal slot therein, and into each end of which, through the edges of the bracket, work the opposite adjustable screws u. Playing between the inner ends of said adjusting screws within said transverse slot, is the studded end of the link V, the other end of which is pivotally connected to the lever v. The lever v, is pivoted at its lower end to one of the opposite arms E, while to the upper end thereof is connected the operating rod or bar W, which is also connected to the rod f^3, controlling the swinging pawl arm f, to operate the sheet separating disks or rollers. Now, it will be readily seen that as the weighted arm of the bell crank lowers, motion is communicated directly to the sheet separating disks through the medium of the pawl lever and the rod f^3, thereby causing the top sheet of paper to be drawn out over the upper edge of the front end plate. This movement also pushes the rod W, and communicates motion through the lever v, and the link V, to the bracket or plate T, which is moved rearwardly by the studded end of said link striking one of the screws u, at the ends of the transverse slot in said plate. The rocking of the plate T, causes the stud s, to travel in the diagonal slot thereof and thereby swing the arm S, downward, which causes the retainer arm R, to be pressed down onto the sheets of paper, while the separated sheet is being carried to the guides L. While the carriers are carrying the separated sheet to the guides, the bracket or plate T, is caused to rock in an opposite direction and therefore lifts the arm S, and therefore raises the retainer arm from the sheets of paper.

From the foregoing description it is thought that the operation of the herein-described feeding mechanism will be quite clear, in view of my former patent. The grippers or jaws and the means for operating the same, as well as the operation of the separating disks or rollers, are so timed in their movements as to operate in the manner herein described, while at the same time the additional mechanisms claimed in the present application, to wit, the sheet adjusting and retaining devices are designed to operate at the prescribed moments herein described and set forth, and all of these various parts are

controlled or actuated directly from the cylinder of the machine.

In order to provide means for positively holding the sheets of paper and to slightly assist in moving the top sheet toward the carriers, I sometimes employ a modified construction of the retainer arm as illustrated in detail Fig. 6 of the drawings. In this figure the down-turned end r^2 of the retaining arm R, carries a small ratchet wheel R′ loosely journaled thereon and adapted to be engaged in one direction by the drop pawl R^2, pivoted at one end to said down-turned end r^2.

In certain kinds of paper it is necessary to provide a more positive retainer than simply a down-turned end, and it will be readily seen that when the arm R, is moved in one direction to press the ratchet wheel onto the pile of paper, the said ratchet wheel slightly turns to gain a hold on said paper to prevent the same from moving, but as the ratchet wheel is lifted from the paper, it is held stationary by the pawl which therefore causes the paper to rise slightly with the ratchet wheel and as it disengages itself therefrom to move a trifle toward the front end plate.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a feed mechanism for printing presses, the combination of a pivoted and counterbalanced sheet holding leaf, a longitudinally adjustable front end plate, arranged in front of said leaf to form an end rest for the front edges of the sheet, an adjustable extension plate mounted on the front end plate, and separating and carrying devices, substantially as set forth.

2. In a feeding mechanism for printing presses, the combination of the counterbalanced sheet holding leaf, a front end plate adjustably arranged in front of said leaf and having an extension, separating devices arranged above the leaf to separate the sheets one at a time, swinging carriers adapted to carry the separated sheets to the press cylinder, and an automatically horizontally swinging sheet retainer working over and onto the unseparated sheets, substantially as set forth.

3. In a feeding mechanism for printing presses, the pivoted and counterbalanced sheet leaf, a longitudinally adjustable front end plate arranged in front of said leaf to form an end rest for the front edges of the sheets, adjusting levers pivoted at their centers to the front of said front end plate and provided at their lower ends with threaded bearings, a horizontal extension plate pivoted to the upper ends of said levers, adjusting screws arranged at opposite ends of the end plate and engaging said threaded bearings to adjust said extension plate, and means for feeding the sheets of paper from over the upper edge of the end plate to the cylinder of the press, substantially as set forth.

4. In a feeding mechanism for printing presses, the combination with an automatic table or leaf feed for feeding sheets one at a time; of the opposite uprights, a rock shaft journaled in the upper ends of said uprights, swinging carriers mounted on said shaft and having movable gripper jaws, a transverse stop-rod off-standing laterally from and parallel with said rock shaft, in the same horizontal plane therewith, approximately horizontally arranged U-shaped frames pivoted centrally upon the lower of their parallel arms to the swinging carriers and having at their ends adjusting screws arranged to contact with opposite upper and lower sides of said stop rod to limit the movement of said frames, links connecting the closed ends of said frames with the movable jaws of the carriers, a weighted lever mounted upon one end of the rock shaft to move the same in one direction, and means for moving said shaft in the other direction, substantially as set forth.

5. In a feeding mechanism for printing presses, the combination with the feed table the automatic table or leaf feed and the swinging carriers; of a horizontally swinging sheet adjusting frame connected with the carrier mechanism, and moving horizontally on said feed table substantially as set forth.

6. In a feeding mechanism for printing presses, the combination with a flat feed table an automatic feed for feeding sheets one at a time; of a horizontally swinging sheet adjusting frame moving flat on said feed table and having adjustable gages adapted to work behind and adjust the single sheets after releasement from the main feeding devices, and means for operating said adjusting frames, substantially as set forth.

7. In a feeding mechanism, for printing presses, the combination of an automatic leaf feed operated intermittently, swinging carriers, means for actuating said carriers and the automatic leaf feed, a spring actuated swinging sheet adjusting frame pivoted at one end to the feed table of the press, flanged gages adjustably secured to said frame, and flexible connections connecting the swinging adjusting frame to said actuating lever, and means for actuating said lever, substantially as set forth.

8. The combination of the counterbalanced sheet support, rubber tired disks arranged over said support to separate the top sheet of paper, swinging carriers for the separated sheet, a rock shaft mounted over one end of the sheet support, a sheet retainer arm laterally adjustable on said rock shaft, adjustable operating devices for said rock shaft and means for operating the disks, carriers, and said adjustable operating devices simultaneously, substantially as set forth.

9. The combination with an automatic table feed for feeding sheets one at a time and car-

rying devices for said sheets; of a rock shaft arranged over the table feed and having a sheet retainer arm, a movable bracket or plate having an angle and a transverse slot, a swinging arm fixedly secured at one end to said rock shaft and working at its other end in the angle slot of said bracket, and means for simultaneously operating the feeding and carrying devices and said bracket, substantially as set forth.

10. In a feeding mechanism for printing presses, the combination of the counterbalanced sheet support, separating friction rollers arranged above the sheet support, ratchet devices for operating said rollers, carriers, connections between the carrier mechanism and said ratchet devices, a rocking sheet-retainer arranged over the sheet support, a movable bracket or plate pivotally supported from its lower end and provided with an angle slot having curved ends and a transverse slot below said angle slot, adjusting screws working in opposite ends of the transverse slot, an operating link having a studded end working in said transverse slot of the bracket between the inner ends of said screws and connected with the ratchet devices of said rollers, and a swinging arm connected at one end with the rocking sheet retainer and having a stud at its other end working in said angle slot, substantially as set forth.

11. In a feeding mechanism for printing presses, the combination with the feeding, carrying and adjusting devices and suitable mechanism, of an oscillating sheet retainer arm, having an outer down-turned end, a paper contacting ratchet wheel loosely journaled on said down-turned end, and an adjacent pawl engaging said ratchet wheel, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRED HENRY VAN LOOZEN.

Witnesses:
H. H. PRATT,
G. E. PLUMB.