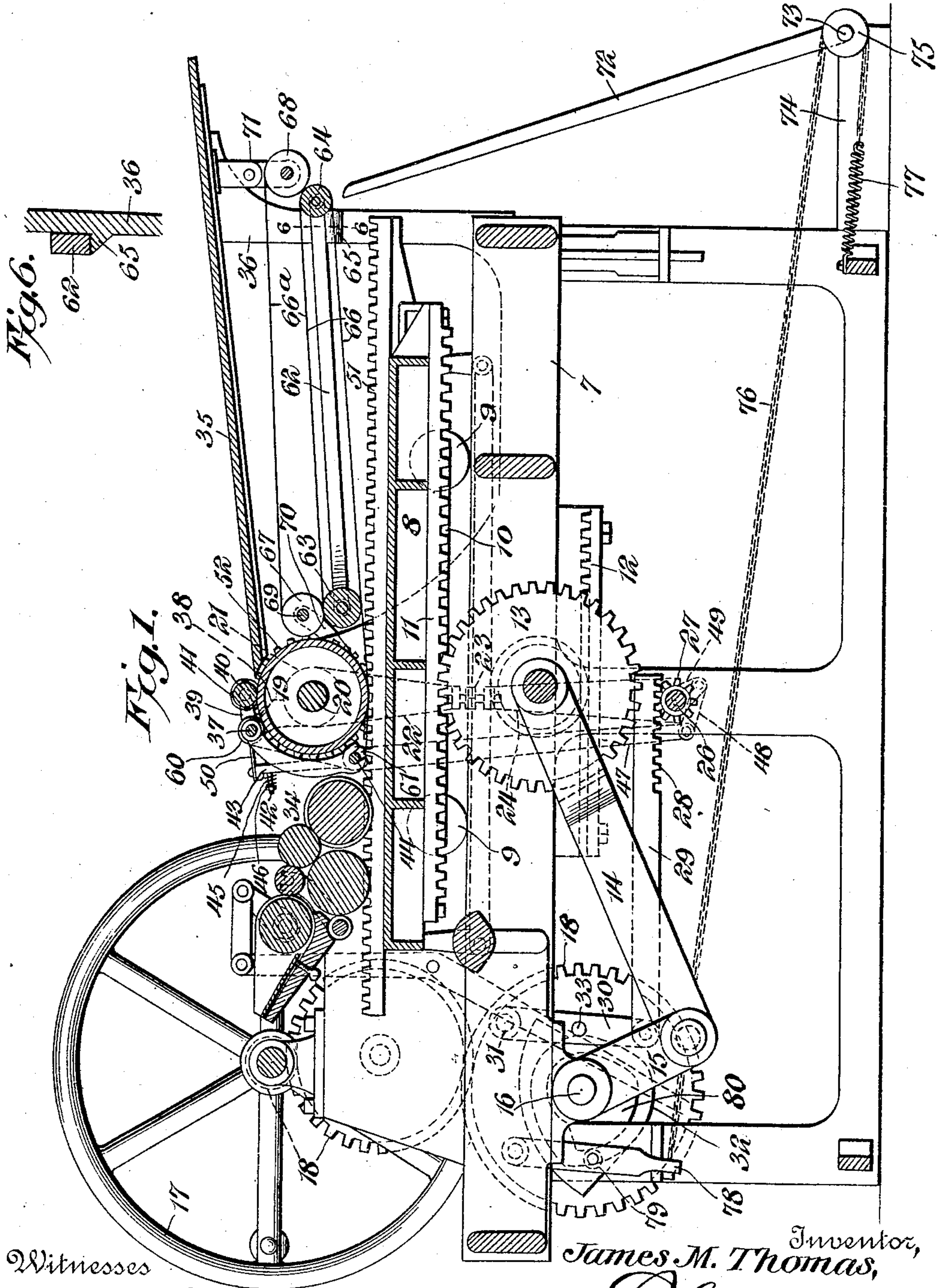


907,538.

J. M. THOMAS.
PRINTING PRESS.
APPLICATION FILED AUG. 15, 1907.

Patented Dec. 22, 1908.
3 SHEETS—SHEET 1.



Witnesses

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James M. Thomas,

By

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Attorney

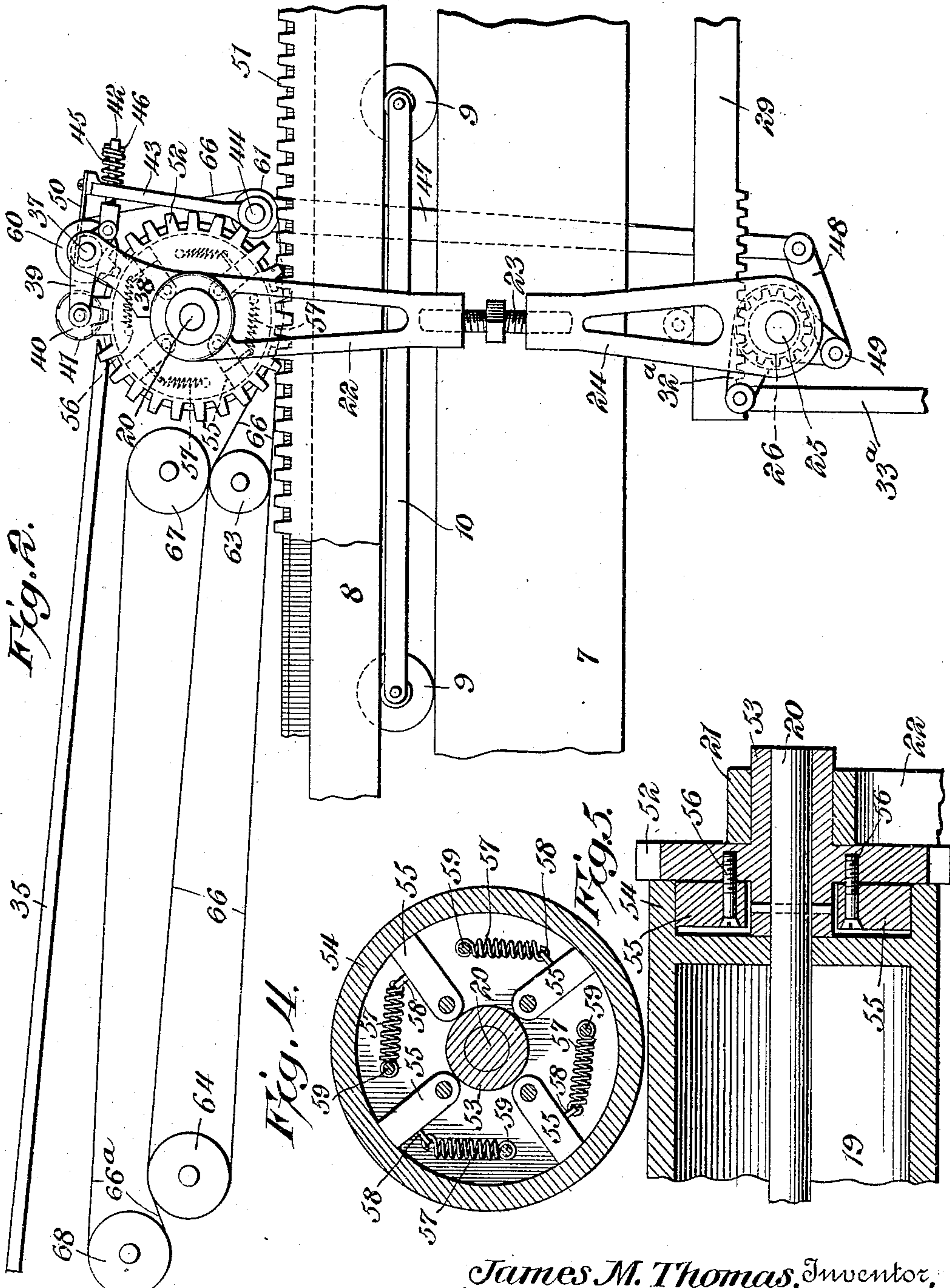
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3 SHEETS—SHEET 2.

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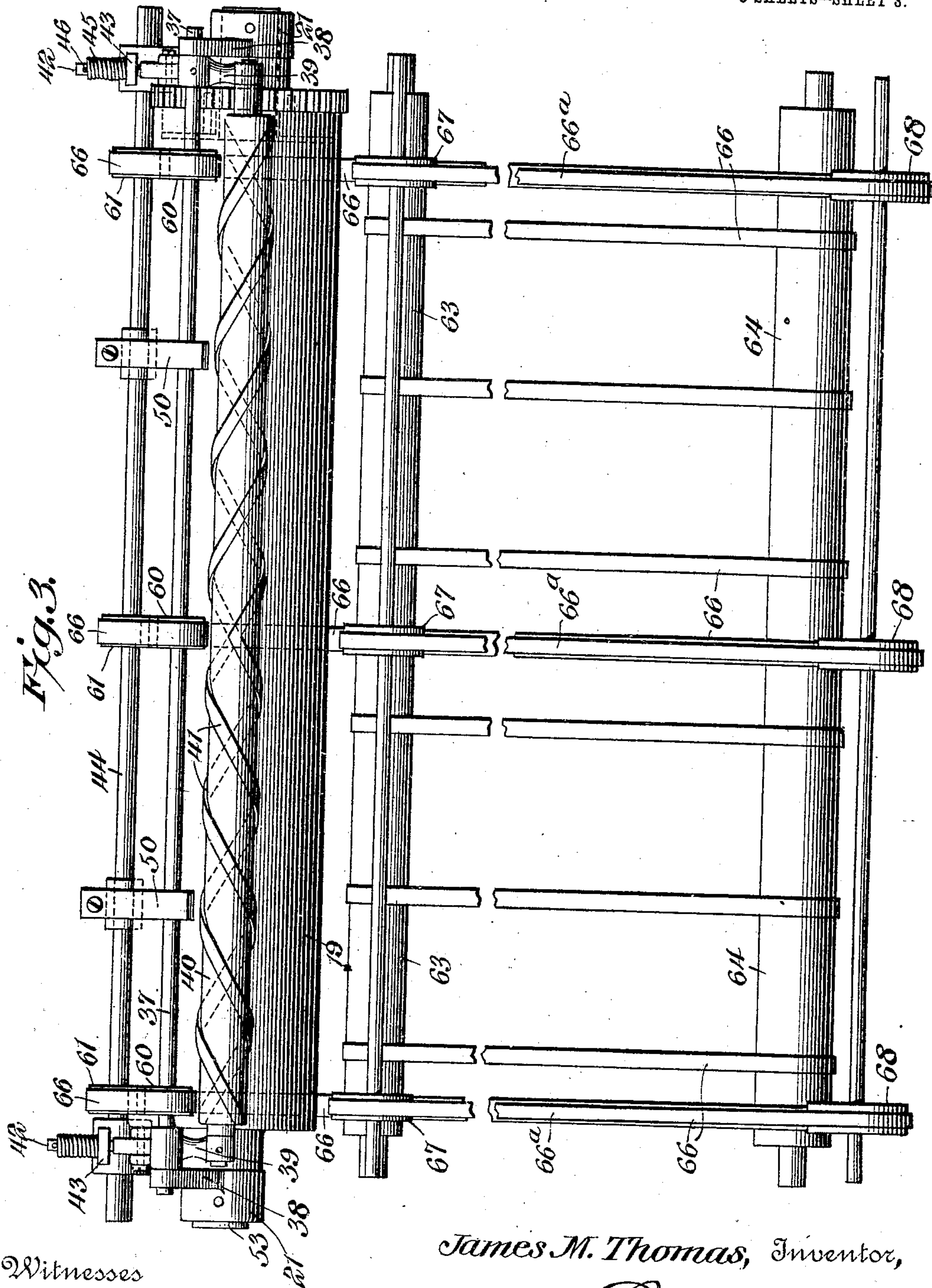
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES MORGAN THOMAS, OF ATLANTA, GEORGIA, ASSIGNOR TO SIMPLEX PRESS COMPANY,
OF ATLANTA, GEORGIA, A CORPORATION OF GEORGIA.

PRINTING-PRESS.

No. 907,538.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed August 15, 1907. Serial No. 388,660.

To all whom it may concern:

Be it known that I, JAMES MORGAN THOMAS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Printing-Press, of which the following is a specification.

This invention relates more particularly to presses of the type disclosed in Patents Nos. 853,590 and 858,743, granted to Benjamin W. Morgan, May 14, 1907 and July 2, 1907 respectively, though there are features capable of advantageous use in other presses.

The principal object of the present invention is to provide novel, simple and effective mechanism for securing the rotation of the cylinder upon the movement of the bed in one direction and the independent movement of the bed in an opposite direction, together with the elevation of the cylinder from the bed during the latter movement.

Another and important object is to provide novel paper controlling and delivery mechanism that intimately coöperates with the cylinder in its raising and lowering movements and is actuated by the means which effects such movements.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal sectional view through the press. Fig. 2 is a side elevation of a portion of the mechanism. Fig. 3 is a plan view with the table removed. Fig. 4 is a detail sectional view through the cylinder and driving gear. Fig. 5 is a sectional view at right angles to Fig. 4. Fig. 6 is a detail sectional view on the line 6—6 of Fig. 1.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a suitable frame 7 is employed, on which a reciprocating bed 8 operates, said bed being mounted on roller supports 9, which are held in fixed relation by spacing bars 10. The bed is provided on its under side with a rack 11, and the frame has an oppositely disposed rack 12. Railroad gearing 13, meshing with the racks, has pitman connections 14 with a crank 15 mounted on the driving shaft 16. A hand wheel 17 is geared, as shown at 18 to the driving shaft 16. Consequently upon the rotation of the wheel 17, it will be evident that the bed will be reciprocated.

Coöperating with the bed, is a cylinder 19 having gudgeons 20 projecting from its ends. These gudgeons are located in bearings 21 formed upon the upper ends of upper yoke sections 22. The yoke sections 22 are connected by adjusting screws 23 to oppositely disposed lower yoke sections 24, and the sections 24 have journaled therein, crank pins 25, formed upon the ends of a rock shaft 26 that is journaled in the frame directly below the cylinder. This rock shaft has a gear wheel 27 between its ends with which a reciprocatory rack 28 meshes. The rack 28 is formed on a bar 29 having a pivotal connection with a depending swinging arm 30 pivoted at its upper end, as shown at 31 in the frame. A cam 32, carried by the driving shaft 16, has a bearing against a projection 33 on the arm. Therefore it will be evident that upon the rotation of the driving shaft 16, the rack 28 will be reciprocated. Consequently the crank pins 25 will be turned, and the cylinder will be raised from or lowered toward the bed. This mechanism is so associated with the means for reciprocating the bed that during the movement of the bed in one direction, the cylinder will be lowered and said cylinder will be raised at the completion of the movement of the bed, and will be held elevated until the bed is returned, whereupon the cylinder will be lowered, all of which, it is thought, will be evident to those skilled in the art. The shaft can also be turned by an operator at any time to elevate the cylinder, and for this purpose, an arm 32^a is fixed to said shaft and has a link 33^a connected thereto, which link is also connected to the usual treadle (not shown).

The inking mechanism is designated generally by the reference numeral 34, and is located on one side of the cylinder. On the opposite side of said cylinder is the usual paper supporting table 35, the rear end of which is mounted on standards 36 that project upwardly from the frame. Coöperating with the cylinder directly adjacent to the lower end of the table 35, is the paper controlling means. As illustrated, an upper supporting shaft 37 is mounted in brackets 38, and swinging crank arms 39 are journaled on the shaft 37. A paper engaging roller 40 is journaled in the free ends of the arms 39, and is preferably provided with ribs 41 that extend from the center of the roll in opposite directions outwardly, as clearly shown in

Fig. 3. The other ends of the bell crank arms have pivoted thereto, stems 42 that slidably pass through certain of upstanding arms 43 mounted on a lower supporting shaft 44. Coiled springs 45, bearing against the rear sides of the arms 43, also bear against suitable pins 46 passed through the ends of the stems 42. The arms 43 constitute in effect the upper arms of a lever having a depending arm 47 located at one side of the frame. A link 48, pivoted to the lower end of the lever arm 47, has a pivotal connection with a crank arm 49 secured to the rock shaft 26. Secured to the upper ends of other of the arms 43, are paper stops 50. With this mechanism, it will be evident that when the rock shaft 26 is operated, the lever 43—47 will be swung. Upon the movement of the arms 43 in one direction, the roller 40 will be raised from the cylinder, while the stops 50 will be moved toward the same, and into engagement therewith. Upon the movement of the rock shaft in an opposite direction, the roller 40 will move toward the cylinder, while the stops 50 will be elevated. This mechanism is so arranged that the stops 50 will move into engagement with the cylinder and the roller 40 will be elevated therefrom upon the elevation of the cylinder away from the bed, and the reverse action will take place when said cylinder is lowered.

The bed 8 is provided at one side with a horizontally disposed rack 51, and a gear wheel 52 is in mesh with this rack. The gear wheel, as shown in Fig. 5, is loosely journaled on one of the gudgeons 20, and has a hub 53 journaled in the adjacent bearing and surrounding the gudgeon. The adjacent end of the cylinder is provided with an annular flange 54, and clutch dogs 55 pivoted, as shown at 56 to the inner side of the gear wheel 52, are movable into and out of binding engagement with the inner face of the flange 54. Springs 57, connected to the dogs, as shown at 58 and to pins 59 on the inner face of the wheel, serve to yieldingly maintain the dogs in clutched engagement.

The operation of the mechanism is substantially as follows: Assuming that the bed has completed a stroke, and is about to return, as already explained, the rock shaft 26 will be turned sufficiently to elevate the cylinder. This movement also effects the elevation of the paper engaging roller 40, and the movement of the paper stops 50 into engagement with the cylinder. In explanation of this, it will be noted by comparison of Figs. 1 and 2 that the cam will move the link 30 and consequently the rack 29 toward the delivery end of the press. As a consequence, the supports 22—24 and the cylinder will be elevated. Simultaneously the crank arm 49 will be moved toward the opposite end of the machine. This will cause a corresponding movement of the link and the

lower end of the lever 47 so that the upper arms 43 and the stops 50 will be carried into coaction with the rising cylinder. Therefore a sheet of paper placed upon the table 35, can be fed beneath the roller 40 and will be properly positioned by the stops 50. As the return movement takes place the gear wheel 52 will rotate freely because of the inclination at which the dogs 55 are set, the springs 57 moreover permitting the unclutching of the dogs. It will be obvious that the said rotation of the gear wheel during the return movements will be caused by its meshing with the rack, so that it is to be noted that the gear wheel will at all times be in mesh with the rack whether in its elevated or depressed position. As the bed reaches the limit of its return movement, and starts again on its printing stroke, the cylinder will be lowered. Simultaneously with this downward movement, the roller 40 will be brought downwardly so that the paper will be clamped between it and the cylinder, while the stops 50 will be elevated. The gear wheel 52 will now be rotated in an opposite direction, which will cause the dogs 55 to clutch the flange 54 of the cylinder, and consequently said cylinder will be rotated. This will effect the movement of the paper around the cylinder and into engagement with the forms placed upon the bed.

In order to properly direct the paper and deliver the printed sheet from the press, the following mechanism is employed. Upper and lower rollers 60 and 61 are journaled respectively on the upper and lower shafts 37 and 44, and a swinging frame 62, located beneath the table 35, is provided with other rollers 63 and 64. The rear end of the frame is supported on lugs 65 projecting from the inner sides of the standards 36. Endless tapes 66 pass about the rollers 60, 61, 63 and 64, and each tape has both stretches operating between the bed and cylinder. Other sets of rollers 67 and 68 are located over the rollers 63 and 64, the rollers 67 being mounted on a shaft 69 that is supported by brackets 70, while the rollers 68 are preferably journaled on a support 71 suspended from the table. Endless tapes 66^a operate about the rollers 67 and 68, and have their lower stretches coöperating with the upper stretches of the tapes 66. A swinging fly frame 72 is pivotally mounted at its lower end, as shown at 73, to an extension 74 of the frame 7. This fly frame includes a pulley 75 around which passes a cable 76, one end of the cable being connected to an extensible spring 77, while the other end is fastened to the lower end of a depending swinging arm 78 having a roller 79 that bears against a cam 80 fast to the driving shaft 16. The tapes 66, as will be evident by reference to Fig. 2, extend about half way around and bear against the cylinder. Consequently

upon the operation of the cylinder, the tapes will be moved and the sheet after being carried between the bed and cylinder will be moved between the tapes 66 and 66^a. From these tapes, the printed sheet will drop upon the fly frame 72, and inasmuch as this fly frame will be periodically operated through the mechanism described, the sheet will be finally delivered thereby from the press.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a printing press, the combination with a reciprocatory bed, of a rack carried thereby, an intermittently rotated cylinder movable toward and from the bed, a gear wheel meshing with the rack and movable with the cylinder toward and from the bed, means for moving the cylinder and gear wheel away from the bed while maintaining the gear wheel at all times in mesh with the rack, and automatic clutch mechanism for transmitting motion from the gear wheel to the cylinder to start and effect the rotation thereof, said mechanism releasing the cylinder whenever the gear wheel is rotated in one direction by the rack and immediately connecting the cylinder thereto when the gear wheel starts to rotate in an opposite direction, the operation of the clutch mechanism being controlled by the movement of the gear wheel.

2. In a printing press, the combination with a reciprocatory bed, of a rack carried thereby, an intermittently rotated cylinder movable toward and from the bed, a gear wheel meshing with the rack and movable with the cylinder toward and from the bed, means for moving the cylinder and gear wheel away from the bed, while maintaining the gear wheel at all times in mesh with the rack, and automatic friction clutch mechanism for transmitting motion from the gear wheel to the cylinder, said mechanism automatically clutching the gear to the cylinder to start the rotation of the cylinder whenever said cylinder is in coaction with the bed and said bed is moved in one direction and automatically releasing the cylinder from the gear wheel whenever the cylinder and gear wheel are elevated and the bed is moved in an opposite direction, the operation of the clutch mechanism being controlled by the movement of the gear wheel.

3. In a printing press, the combination

with a reciprocatory bed, of a rack carried thereby, a cylinder rotatable during the movement of the bed in one direction and stationary during the movement of the bed in an opposite direction, such cylinder being movable toward and from the bed and having a gudgeon, a gear wheel loosely journaled on the gudgeon and movable toward and from the bed with the cylinder, said gear wheel at all times being in mesh with and rotated in opposite directions by the rack, clutch mechanism for automatically connecting the gear wheel to the cylinder to start and effect the rotation of the cylinder whenever said gear wheel is rotated in one direction, and automatically releasing the cylinder from the gear wheel whenever the said gear wheel is rotated in an opposite direction, the operation of the clutch mechanism being controlled by the movement of the gear wheel, and means for raising and lowering the cylinder.

4. In a printing press, the combination with a reciprocatory bed, of a revoluble cylinder coacting with the bed and having gudgeons at its ends, means engaging the gudgeons for elevating and lowering the cylinder, a rack carried by the bed, a gear wheel loosely journaled on one of the gudgeons and meshing with the rack, the adjacent end of the cylinder being provided with an annular flange, clutch dogs pivoted to the gear wheel and movable into and out of coaction with the flange, and springs engaging the dogs for normally holding them in coaction with said flange.

5. In a printing press, the combination with a reciprocatory bed, of a rack carried thereby, a cylinder rotated during the movement of the bed in one direction and stationary during the movement of the bed in an opposite direction, said cylinder being movable toward and from the bed and having a gudgeon, a gear wheel loosely journaled on the gudgeon and movable toward and from the bed with the cylinder, said gear wheel at all times being in mesh with and rotated in opposite directions by the rack, friction clutch mechanism for automatically connecting the adjacent portions of the gear wheel and cylinder to start the rotation of said cylinder whenever the gear wheel is rotated in one direction and automatically releasing the cylinder from said gear wheel whenever the said gear wheel is moved in an opposite direction, and means engaging the gudgeon for raising and lowering the cylinder and gear wheel.

6. In a printing press, the combination with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder, a paper engaging roller movable toward and from the cylinder, and means operated by the cylinder moving means for

placing yielding tension on the roller and moving said roller into coaction with the cylinder.

7. In a printing press, the combination
5 with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder, a paper engaging roller movable toward and from the cylinder, a spring connected to the roller for moving the same into
10 coaction with the cylinder, and means operated by the cylinder moving means for periodically placing yielding tension on the spring.

8. In a printing press, the combination
15 with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder, a paper engaging roller movable toward and from the cylinder, a swinging support for the roller, a spring having a connection with the support, and a lever operated by the raising and lowering means and bearing against the spring to place tension on said spring.

9. In a printing press, the combination
25 with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder including a rock shaft, a paper engaging roller movable toward and from the cylinder, and means operated by the rock
30 shaft for moving the roller on the movement of the cylinder.

10. In a printing press, the combination
with a bed, of a cylinder coacting therewith, a movable support, a roller mounted on the
35 support and movable into and out of coaction with the cylinder, mechanism for effecting the movement of the cylinder, a lever actuated by said mechanism, and connections between the lever and support including a
40 spring for placing yielding tension on the support.

11. In a printing press, the combination
with a bed, of a cylinder cooperating with the bed, mechanism for effecting the move-
45 ment of the cylinder toward and from the bed including a rock shaft, a lever actuated by the rock shaft, a bell crank lever having a stem slidably engaged with the lever, a spring mounted on the stem and having a
50 bearing against the lever, and a roller mounted on the bell crank and movable into and out of coaction with the cylinder.

12. In a printing press, the combination
with a bed, of a cylinder movable toward and
55 from the bed, means for thus moving the cylinder, including a rock shaft, a lever periodically operated by said rock shaft, and a paper stop mounted on and actuated by the lever, said stop being movable into and out
60 of coaction with the cylinder.

13. In a printing press, the combination
with a bed, of a cylinder movable toward and from the bed, means for thus moving the cylinder including a rock shaft, a lever ful-
65 crumed between its ends, means operated by

the rock shaft and engaged with one arm of the lever for swinging said lever, and a paper-stop mounted on and actuated by the other end of the lever, said stop swinging into and out of coaction with the cylinder. 70

14. In a printing press, the combination
with a bed, of a cylinder movable toward and from the bed, means for thus moving the cylinder, a stop movable into and out of coaction with the cylinder, a movable support
75 for the stop, means actuated by the cylinder moving means for moving the support, and a paper engaging roller movable into and out of coaction with the cylinder and moved by said support for the stop. 80

15. In a printing press, the combination
with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder including a rock shaft, a paper
85 stop movable into and out of coaction with the cylinder, and means operated by said rock shaft for moving the stop into coaction with the cylinder on the movement of the cylinder away from the bed.

16. In a printing press, the combination
90 with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder including a rock shaft having a crank arm, a lever operated by the crank arm, and a paper stop carried by the lever
95 and movable into and out of coaction with the cylinder.

17. In a printing press, the combination
with a bed and cylinder, of mechanism for moving the cylinder toward and from the
100 bed, a roller movable toward and from the cylinder, a swinging support for the roller, a lever for operating the support, and a paper stop carried by the lever and movable into and out of coaction with the cylinder. 105

18. In a printing press, the combination
with a bed, of a cylinder movable toward and from the bed, mechanism for thus moving the cylinder including a rock shaft, a lever having an eccentric connection with the rock
110 shaft, a paper stop carried by the lever and movable into coaction with the cylinder upon the movement of said cylinder away from the bed, a roller movable out of coaction with the cylinder upon the movement of said
115 cylinder away from the bed, and operative connections between the roller and the lever.

19. In a printing press, the combination
with a reciprocatory bed, of a cylinder movable toward and from the bed, means for
120 effecting said movement of the cylinder, including a rock shaft, a paper supporting table located on one side of the cylinder, upper and lower shafts located on the opposite side of the cylinder, an actuating lever
125 connected to the lower shaft and to the rock shaft, said lever having arms provided with paper stops each movable into and out of coaction with the cylinder, supporting arms journaled on the other shaft, a paper engag- 130

ing roller supported by the arms, connections between the arms and the lever, rollers journaled on the upper and lower shafts, rollers located beneath the table, and tapes
5 passing around the rollers and extending between the bed and cylinder.

In testimony that I claim the foregoing as

my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES MORGAN THOMAS.

Witnesses:

L. P. DALY,
J. B. HOWARD.