

Nov. 13, 1923.

1,473,649

A. SCHLESINGER

PLATEN PRINTING PRESS

Filed Dec. 15, 1921

5 Sheets-Sheet 1

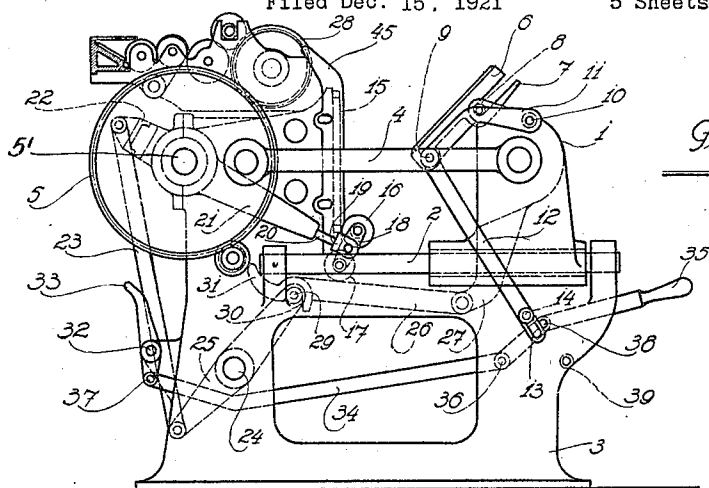


Fig. 1

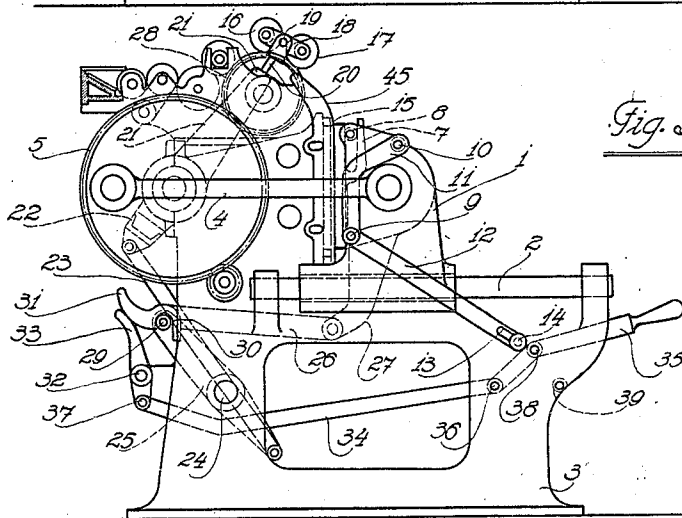


Fig. 3

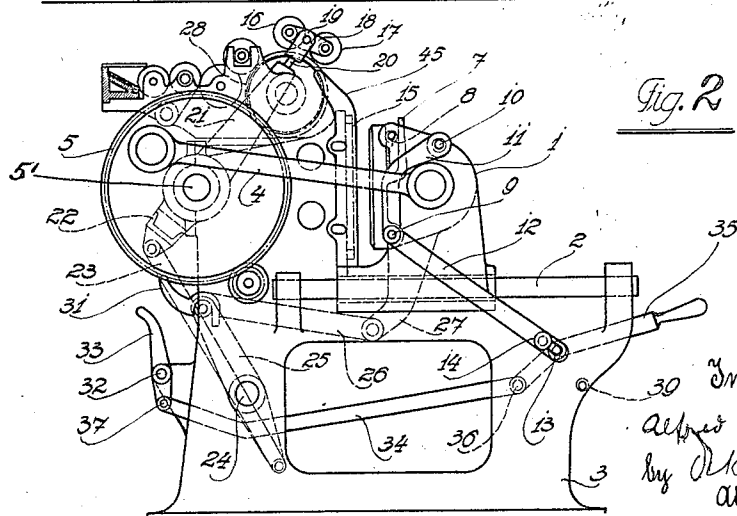


Fig. 2

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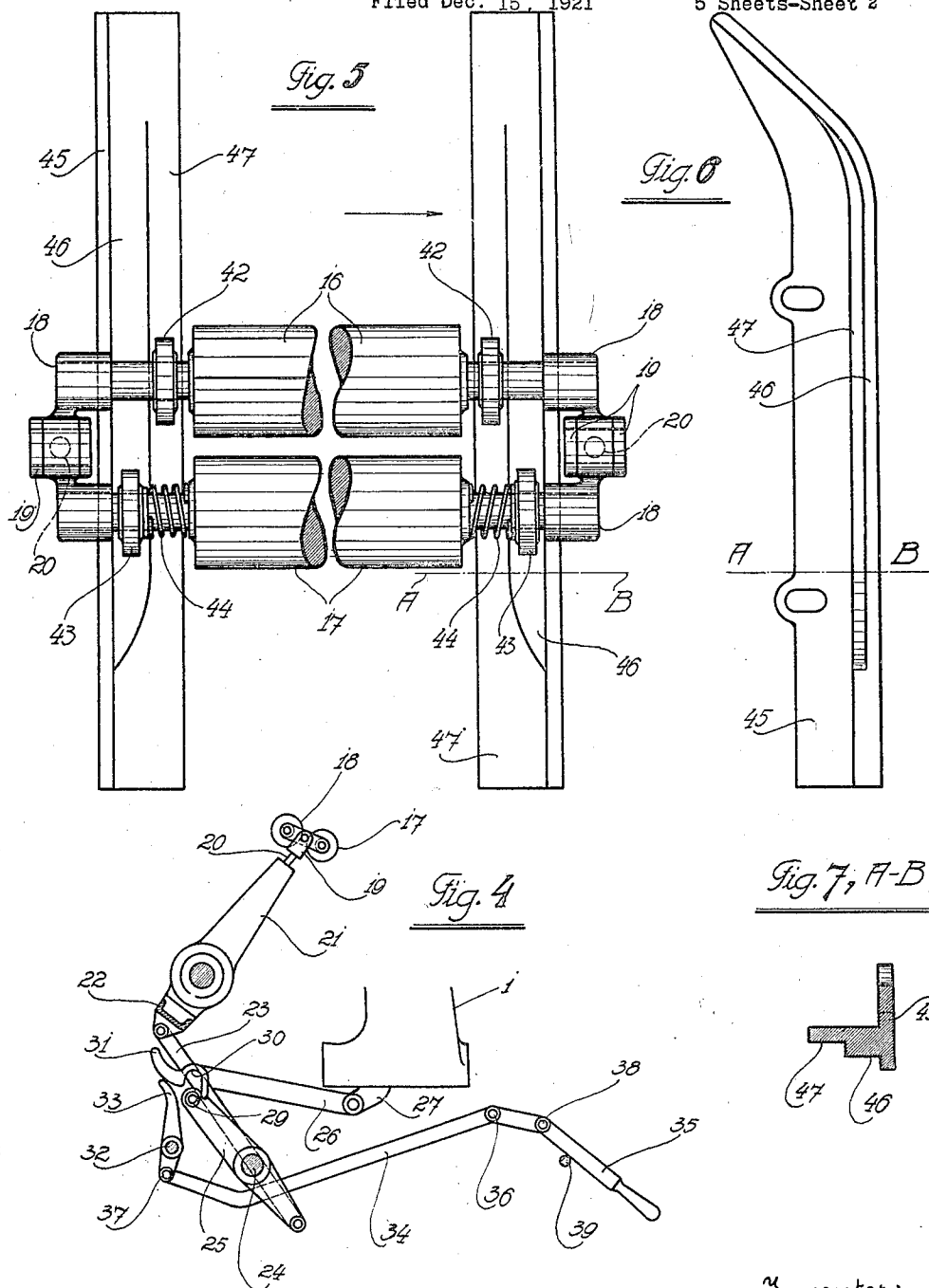
1,473,649

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PLATEN PRINTING PRESS

Filed Dec. 15, 1921

5 Sheets-Sheet 2



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5 Sheets-Sheet 3

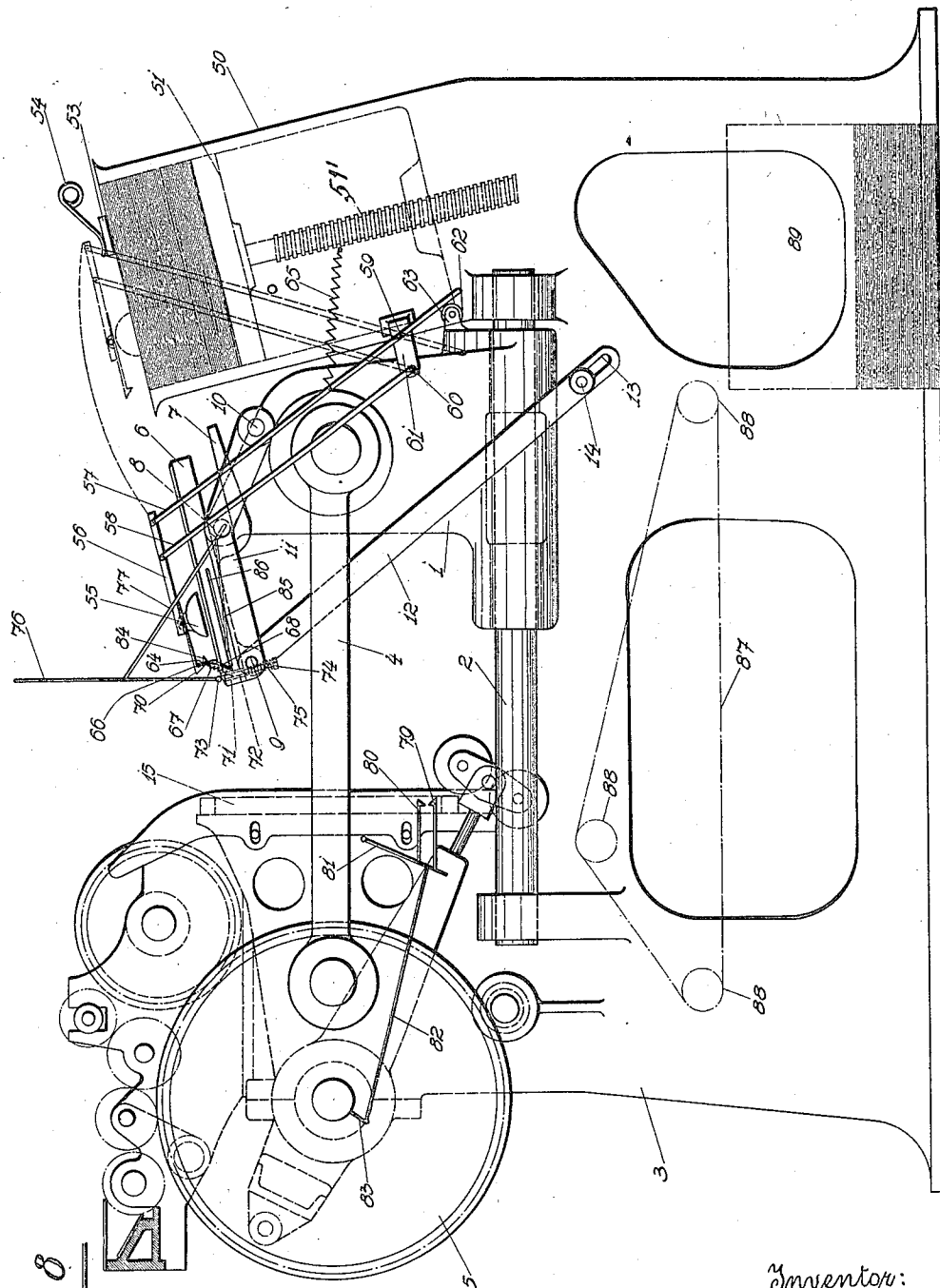


Fig. 8

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Nov. 13, 1923.

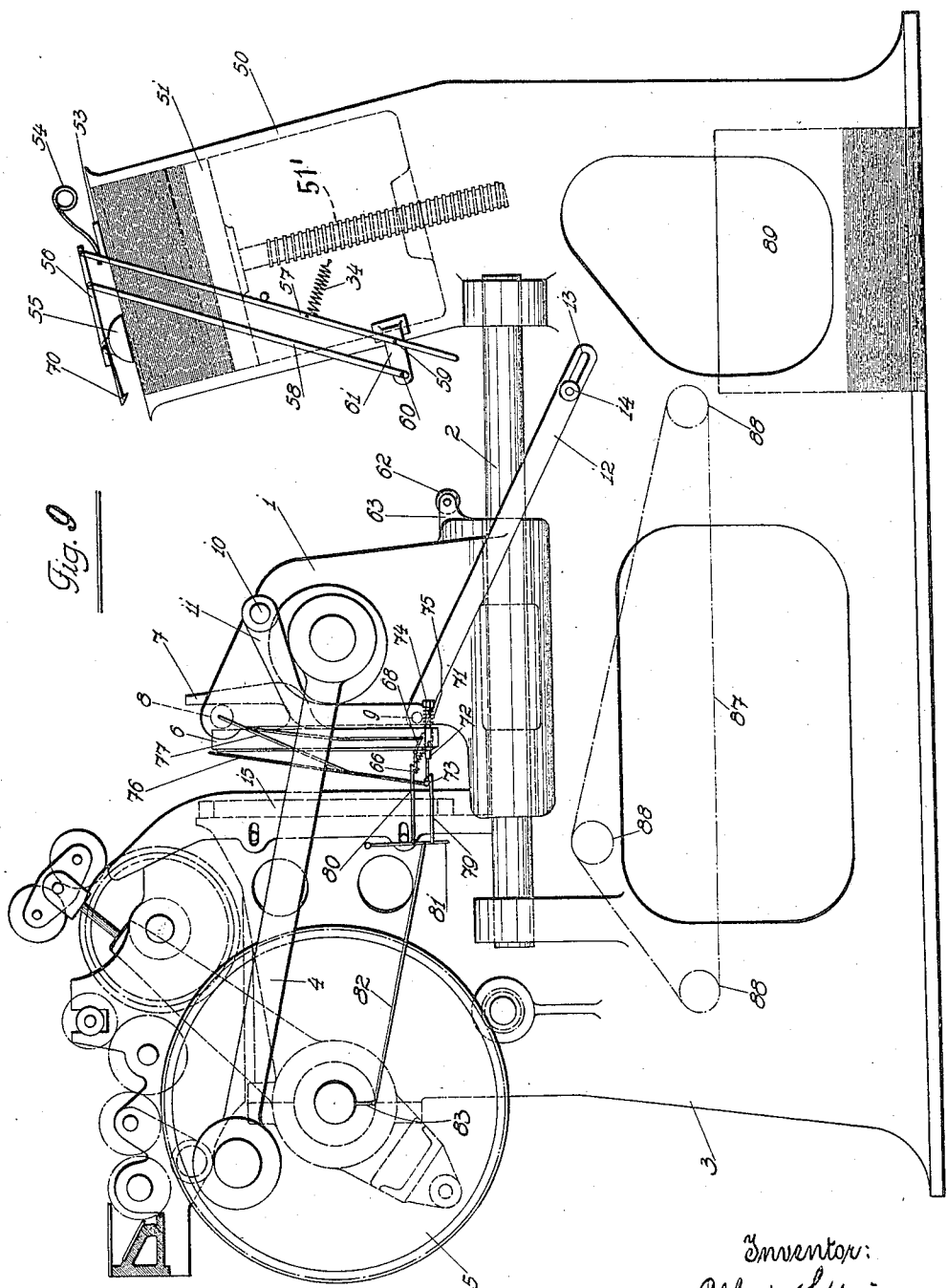
1,473,649

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PLATEN PRINTING PRESS

Filed Dec. 15, 1921

5 Sheets-Sheet 4



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Nov. 13, 1923.

1,473,649

A. SCHLESINGER
PLATEN PRINTING PRESS
Filed Dec. 15, 1921

5 Sheets-Sheet 5

Fig. 10

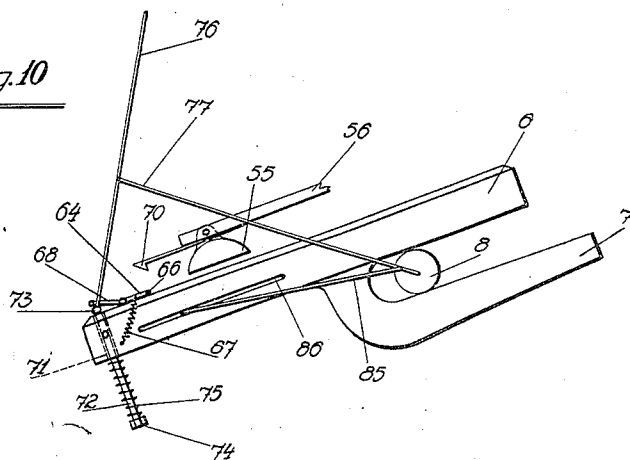


Fig. 12

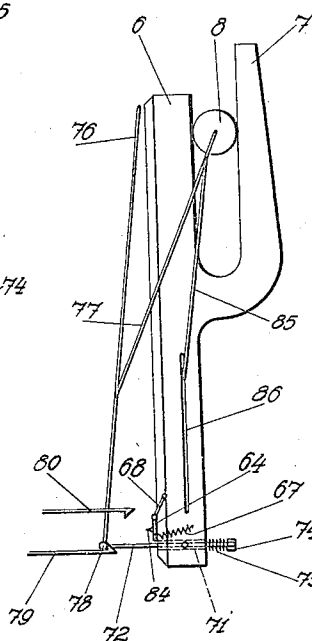
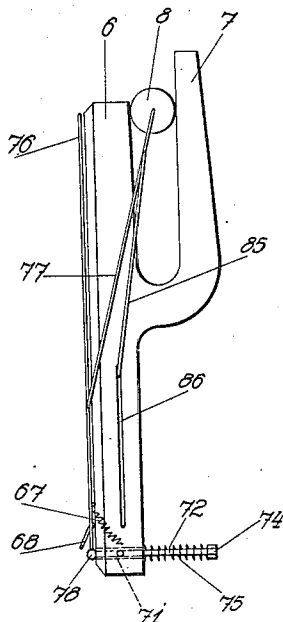


Fig. 11



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UNITED STATES PATENT OFFICE.

ALFRED SCHLESINGER, OF DUSSELDORF, GERMANY.

PLATEN PRINTING PRESS.

Application filed December 15, 1921. Serial No. 522,646.

To all whom it may concern:

Be it known that I, ALFRED SCHLESINGER, a German citizen, residing at Dusseldorf, Germany, have invented certain new and useful improvements in Platen Printing Presses, of which the following is a specification.

My invention relates to printing presses and more particularly to platen presses which are provided with a substantially stationary form and a platen adapted to reciprocate in a horizontal plane. It is an object of my invention to improve the operation of such presses in general and of the platen, the inking cylinders and the means for feeding the sheets.

In platen presses heretofore in use, the platen is arranged to rock as a whole, being attached to a heavy block and swinging during each operation from the vertical position of printing into the approximately horizontal position of feeding and back again. Owing to the necessity of moving heavy masses a press of this kind consumes a good deal of energy and requires a heavy flywheel.

In the platen press according to my invention, the platen is permanently moved in a position parallel to the form, only the register plate, movably connected therewith being imparted a rocking motion, whereby much energy is saved and a flywheel can be dispensed with. The register plate can moreover be readily disconnected so that it can be removed for the purpose of registering and the press can in the meantime be used for other work.

In the platen presses hitherto used the ink roller carriage is generally moved across the distributing cylinder by means of a system of levers which is actuated from a crank on the main shaft, the carriage being arrested in its uppermost position by lifting one of said levers. According to the present invention, the ink roller carriage is controlled by the platen, actuating by means of a rod adapted to be thrown out, a rocking lever connected with the roller carriage by a link, whose point of engagement is moved beyond the dead centre position when the roller carriage is in its highest position. Owing to this arrangement the roller carriage is held in its highest position by its actuating levers without a counter weight being required. This manner of operating the carriage by the platen is very simple and at the same

time causes the ink rollers to move slowly across the distributing cylinder but rapidly across the form.

The ink rollers are arranged in a bearing on the roller carriage and run on wheels secured to their shafts over guide rails at either side of the form each rail having two treads at different levels and ending in a sort of switches which cause the wheels of one of the ink rollers to run on one of the treads in one direction and back on the other, so that this roller is in contact with the form only when moving in one direction, but is lifted from the form when moving in the opposite direction.

The novel press is further provided with an automatic feeder comprising a suction nozzle secured to rock levers controlled by the platen. The nozzle gathers the sheets, one by one, from the pile and places them on the register plate. The reglet is provided with grippers which are actuated by catches secured to the suction nozzle and to the frame of the press, respectively. The grippers hold the sheet after it has been fed and allow it to drop when the platen is withdrawn from the form.

In the drawings affixed to this specification and forming part thereof, a platen press embodying my invention is illustrated diagrammatically by way of example. In the drawings—

Fig. 1 is an elevation, the feeder being not shown.

Figs. 2 and 3 are similar views illustrating other positions.

Fig. 4 is an illustration of the device for disconnecting the ink roller carriage.

Fig. 5 is an elevation of the guide rails for the ink rollers, and

Fig. 6 is an elevation of one of these rails.

Fig. 7 is a section on line A—B of Fig. 6.

Figs. 8 and 9 are elevations of the pneumatic feeder in different positions.

Figs. 10, 11 and 12 are detail views illustrating the operation of various parts connected with the register plate.

Referring now to Figs. 1 to 3, the platen 1 is arranged to reciprocate on guides 2 secured to the frame 3 and connected with tension rods 4 actuated by discs 5 on the driving shaft 5' so as to impart to the platen a reciprocating motion.

The register plate 6 is provided at the back with two forked arms 7 which engage a cross-bar 8 secured to the platen and guide

the register plate so that it does not only rock but is also displaced longitudinally in relation to the platen. At the lower edge of the register plate 6, eyes 9 are provided at both sides in which there are pivoted levers 11 adapted to turn on pins 10 of the platen, and links 12. The links 12 are slotted at 13 and engage pins 14 secured to the frame 3.

When the platen moves away from the form 15, so as to assume the position illustrated in Fig. 1, the register plate 6 is raised by the cooperation of the links 12 and arms 11 until it assumes the inclined position shown in Fig. 1. In this position the bar 8 lies at the lower end of the guide slot 7. When the register plate occupies this position, a sheet is fed.

The rods 4 now draw the platen 1 to the left toward the form 15. The register plate 6 sinks down by its own weight along its guide 7 and is carried into a vertical position by the arms 11 and links 12, thus being positioned in parallel to the form 15 and immediately in front of the platen, as shown in Fig. 2. This occurs a short time before the platen is pressed against the form 15. During the last phase of the stroke of the platen, from the position illustrated in Fig. 2 to the position illustrated in Fig. 3, the register plate is advanced toward the form in a position in which it is exactly parallel to the latter. The links 12 are inoperative at the time, their slots 13 being so long that the links can slide upwards for the required distance on the pins 14 during this movement.

When the platen is on its return stroke, the movements occur in reversed succession. In order to prevent a displacement of the register plate 6 at the moment of printing and to assure a clear print, the register plate 6 may be provided with pins or the like at the back which, when the plate is in its vertical position, enter corresponding recesses in the platen and securely hold the register plate in position.

The ink rollers 16 and 17 are supported in bearings 18 on either side of the press, said bearings turning about pins in brackets 19 of the roller carriage. The brackets 19 are secured to rods 20 which slide in rock levers 21 and are drawn into the levers by springs (not shown). The levers 21 are connected at their rear ends by a bar 22 to which is pivoted a link 23. This link is connected to a double armed lever 25 adapted to rock about a shaft 24 carried in the frame 3. The other arm of said rock lever is connected by a link 26 with an extension 27 of the platen 3. When the platen moves away from the form, the rock lever 25 is turned on its shaft 24 so that the rollers 16, 17 are caused by the levers 21 to move downwards across the form 15 until they

arrive at the position illustrated in Fig. 1. When the platen 3 is moved toward the form, the arms 21 are rocked in opposite direction until the rollers 16, 17 have reached their upper position as illustrated in Fig. 2.

The double armed lever 25 is arranged with regard to the roller carriage and the platen in such manner that its point of connection with the link 23 is just moving past the dead centre, when the ink rollers 16, 17 are moving across the distributing cylinder 28, while at the same time the pin 29 which connects the double armed lever 25 and the link 26 is as far away from its dead centre as possible. In this manner a uniform movement of the double-armed lever 25 on its pin 24 would cause a considerably retarded motion of the roller carriage while the ink rollers 16, 17 are passing across distributing cylinder 28. As, however, the plate also moves very slowly at this moment, because the rods 4 are near the dead centres of the discs 5, the double armed lever 25 moves very slowly also, thus further reducing the velocity of the ink rollers 16, 17. Owing to this arrangement of parts the time during which the ink rollers are moving across the distributing cylinder 28, is about one third of their entire reciprocating motion.

If it be desired to disconnect the roller carriage, the connection between the lever 25 and the link 26 is interrupted. The link 26 engages the pin 29 of the lever 25 by means of an eye 30 which is open at the bottom. An upwardly curved catch 31 on the link extends beyond the eye 30. When the catch 31 is in its end position to the left, as illustrated in Fig. 4, it engages a curved lever 33 fulcrumed in the frame 3 at 32. A rearward extension of the lever 33 is connected by means of a link 34 with a double-armed hand lever 35. On lever 35 being depressed the curved end of lever 33 will move to the right in Fig. 4 so as to be engaged by the curved catch 31 when this latter reaches the end of its stroke, whereby the catch is raised. In order to prevent the hand lever 35 from being returned to its normal position by the pressure exerted on the lever 33, the pin 36 connecting the hand lever 35 and the link 34 is caused to move past the line extending through the pins 37 and 38 so that the pressure exerted on the lever 33 tends to move the hand lever 35 further down. The stroke of the hand lever in this direction is limited by a stop 39. As the catch 31 and the lever 33 engage, the eye 30 is lifted from the pin 29 so that the pin is not engaged when the link 26 returns. As in the highest position of the roller carriage the point of connection of the link 23 and the lever 25 above, lies somewhat to the right of the dead centre, the weight of the roller carriage tends to turn the lever 25

in an anticlockwise direction so that the roller carriage remains in its raised position and does not turn the lever 25 backwards by its weight. Catches (not shown) prevent further the lever 25 from turning and the link 26 from descending further.

The roller carriage remains in the position illustrated in Fig. 3 as long as the catch 31 is lifted by the lever 33 every time it reaches the left hand end of its stroke. When however the lever 33 is lowered by raising the hand lever 35, the catch 31 is no longer lifted, so that the pin 29 is again engaged by the eye 30 and the roller carriage is reciprocated as before.

The rollers 16, 17 are guided by rails 45 at either side of the form 15, as shown in Fig. 5. Wheels 42 which are secured against axial displacement are arranged on the axle of the roller 16. Similar wheels 43 arranged on the axle of the roller 17 are adapted to be displaced axially and are forced outwards by springs 44. The wheels 42, 43 run on rails 45 having a higher tread 46, and a lower tread 47. Both treads merge into one another at the upper end of the rails 45 while at the lower end the higher tread 46 is curved outwards.

When the roller carriage moves downwards, the wheels 43 which are forced outwards by the springs 44 run on the higher treads 46 and the fixed wheels 42 on the lower treads 47. The bearings 18 are thereby tilted in such a manner that the roller 16 engages the form 15 while the roller 17 passes across out of contact therewith. At the lower end of the rails 45, the wheels 43 run off the treads 46 and are forced inwards by the curved ends of the treads 46 when the carriage starts on its return stroke, the springs 44 being compressed, so that the wheels 43 now run upwards on the treads 46. The bearings 18 are hereby caused to be tilted in such manner that during the upward stroke of the carriage both rollers engage the form. While the rollers are moving across the distributing cylinder 28 the wheels 42 and 43 leave the rails 45 so that the springs 44 can force the rollers 43 outwards and the wheels will run on the higher tread 46 when the roller carriage moves downwards.

At the front of the press there is arranged a frame 50 (Figs. 8 and 9) in which the sheets to be printed are stored between guides. The pile of sheets is supported by a movable bottom 51 which can be raised by means of a screw 51' in proportion to the feed, so that the uppermost sheet is always at the same level. The screw 51' is automatically operated by a ratchet and pawl mechanism (not shown), which can be actuated by any convenient means, for instance by the platen. Above the pile of sheets there is arranged a finger 53 held down on the

sheets at a slight pressure by a spring 54. The pile of sheets is slightly inclined so that the uppermost sheet is in line with and close to the register plate 6, when the platen approaches the end of its outward stroke.

A nozzle 55 arranged above the pile of sheets is connected with a suction pipe by a rubber tube (not shown). The nozzle 55 is secured to a frame 56 to which are linked at either side two levers 57 and 58 turning on pins 59 and 60 secured to lugs of the frame 50. The levers 57 are extended beyond their pins 59 and the extensions project into the path of rollers 62 carried in brackets 63 of the platen 1. During the last part of its outward stroke, the platen strikes the ends of the levers 57 by means of the rollers 62 so that the nozzle 55 having engaged the uppermost sheet by suction, moves to the left, opposite the platen, raises the sheet past the right hand edge of the register plate 6 which is still somewhat raised and, when the platen has reached the end of its outward stroke, places the sheet against the reglet 64. At this moment the suction is temporarily interrupted by suitable means, (not shown). When the platen starts on its inward stroke, the levers 57 and 58 are returned to their initial positions by springs 65.

The reglet 64 (Figs. 10 to 12) comprises a sheet metal strip arranged to rock on the register plate 6 and pins 66 which project at its upper ends at either side of the register plate 6. The reglet is engaged by springs 67 which are secured to the register plate 6 some distance to the left from and below the axis of rotation of the reglet 64 so that they tend to turn it to the left when it is at right angles to the register plate 6 but hold it tightly down on the register plate when it is turned over to the right. Short arms 68 are arranged at the hinge pin of the reglet 64 intermediate the springs 67 and the edge of the register plate 6.

A spring pawl 70 is secured to the holder 56 of the nozzle 55. When the nozzle approaches the reglet 64, the reglet assumes a vertical position, this being effected by means which will be described later on. The pawl 70 moves beyond the reglet without turning it over. When the motion is interrupted and the sheet thereby released, it abuts against the reglet 64. At this moment, the nozzle 55 starts on its return stroke so that the pawl 70 turns the reglet 64 over to the right whereupon it is tightly held drawn toward the register plate 6 by the springs 67 and grips the sheet.

At the lower end and at either side of the register plate 6, guide sleeves 71 adapted to turn on pins 73 are arranged. Rods 72 which pass through these sleeves support the gripper shaft 78. Underneath the plate 6 each rod 72 carries a nut 74 and a helical

spring 75 interposed between the nut and the guide 71. The gripper shaft 78 is provided with the usual adjustable grippers (not shown), for holding the sheets and a fixed rod 76 at either end. This rod is connected with the bar 8 of the platen by a link 77 (Figs. 11 and 12) so that the rod 76 and the grippers are opened when the register plate 6 moves upwards along the platen 1, and closed, when the plate descends along the platen. As soon as the register plate 6 stands parallel to the form 15 (Figs. 9 and 11), the rods 76 firmly engage the register plate. In this position, the register plate performs the last portion of its stroke until it reaches the form 15. The gripper shaft 78 is extended at both ends beyond the rods 76. On either side of the frame 3, there are provided pawls 79 which, when the register plate 6 is pressed onto the form resiliently, engage from below the projecting ends of the shaft 78. As the platen starts on its outward stroke, the gripper shaft 78 is drawn away from the register plate by the pawls 79 so that the sheet is free to drop as soon as it is released by the reglet 64 in a manner which will be described later on. As the rods 76 are connected with the bar 8 by the links 77, they will carry out a slight upward movement when retained by the pawl 79 (Fig. 12). In consequence of the rocking arrangement of the guides 71, the rods 72 are capable of following this movement. During the outward stroke of the platen the extensions of the shaft 78 are drawn out of contact with the pawls 79, whereupon the springs 75 pull the gripper shaft back to the register plate 6. Two pawls 80 are arranged at the base which, when the register plate is pressed onto the platen, engage the pins 66 of the reglet 64. When the plate returns, these pawls cause the reglet 64 to assume a vertical position from which the springs 67 turn it downwards so that the sheet can drop out. (Fig. 12).

The pawls 79 and 80 are arranged at either side of the base on rock levers 81 which are withdrawn as soon as the roller carriage moves across the form, so that the pawls get out of the way of the rollers. For actuating the levers 81, rods 82 may be employed which connect the levers with arms 83 at the roller carriage.

In order to ensure the dropping out of the sheet, several fine pins 84 are provided at the reglet 64 which raise the sheet and starts its downward movement when the reglet is raised or turned down.

In order to return the reglet into the position required for feeding a fresh sheet after a sheet has dropped out, rods 85 are linked to the links 77 whose ends are guided in grooves 86 of the register plate 6. The length of the rods 85 is such that they en-

gage arms 68 provided at the sides of the reglet 64 when the register plate is in its highest position. By these means the reglet is placed in a vertical position.

Underneath the path of the platen 1, conveyer belts 87 running on rollers 88 are arranged which are actuated by suitable means so as to convey the sheets dropping out of the press into a box 89 which is preferably arranged at the bottom of the frame.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate and means for applying said plate against and for rocking it relatively to said platen, respectively.

2. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate and means for applying said plate against and for rocking it about a point on said platen.

3. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate and means adapted to be actuated by the movement of said platen for applying said plate against and for rocking it relatively to said platen, respectively.

4. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate connected with and adapted to be disengaged from said platen and means for applying said plate against and for rocking it relatively to said platen, respectively.

5. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate and means for applying said plate against, for rocking and for shifting it relatively to said platen, respectively.

6. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate, a slotted guide connected with said plate and embracing part of said platen and arms linked to said platen and said plate, respectively, and adapted to simultaneously raise and rock said plate, as said platen recedes from said form.

7. In a platen printing press in combination, a form, a platen adapted to reciprocate in a position parallel to said form, a register plate, a slotted guide connected with said plate and embracing part of said platen and arms linked to said platen and said plate, respectively, and adapted to

simultaneously raise and rock said plate, as said platen recedes from said form and to carry it in front of and in a position parallel to said platen, before said platen is applied against said form.

8. In a platen printing press in combination, a form in substantially vertical position, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage adapted to rock in front of said form and a rock lever connected with and adapted to rock said carriage, said lever being fulcrumed in such wise as to move beyond its dead centre position when said carriage reaches its highest position.

9. In a platen printing press in combination, a form in substantially vertical position, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage adapted to rock in front of said form, and a rock lever connected with and adapted to rock said carriage, said lever being fulcrumed in such wise as to move beyond its dead centre position when said carriage reaches its highest position and a rod connected with said lever and said platen, respectively.

10. In a platen printing press in combination, a form, in substantially vertical position, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage adapted to rock in front of said form, and a rock lever connected with and adapted to rock said carriage, said lever being fulcrumed in such wise as to move beyond its dead centre position when said carriage reaches its highest position, a rod connected with said lever and said platen, respectively, a curved extension at one end of said rod, a cam face and means for carrying said cam face in contact with said extension.

11. In a platen printing press in combination, a form in substantially vertical position, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage adapted to rock in front of said form, and a rock lever connected with and adapted to rock said carriage, said lever being fulcrumed in such wise as to move beyond its dead centre position when said carriage reaches its highest position, a rod connected with said lever and said platen, respectively, a curved extension at one end of said rod, a cam face and a self locking toggle lever

for carrying said cam face in contact with said extension.

12. In a platen printing press in combination, a form, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage, a pair of ink rollers supported by said carriage, treads disposed at different levels on either side of said form and means for causing one of said rollers to travel downwards on one pair of treads and upwards on the other.

13. In a platen printing press in combination, a form, a platen adapted to reciprocate relatively to said form, a register plate, means for applying said plate against and for rocking it relatively to said platen, respectively, an ink roller carriage, a pair of ink rollers supported by said carriage, treads disposed at different levels on either side of said form, a spring actuated roller on either side of one of said rollers and an inclined face at the lower ends of the higher treads.

14. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring-actuated reglet adapted to act as a gripper connected with said plate and a pawl connected with said nozzle and adapted to change the operative position of said reglet.

15. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring actuated reglet adapted to act as a gripper connected with said plate and a stationary pawl and spring adapted to turn said reglet so as to release a sheet.

16. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring actuated reglet adapted to act as a gripper connected with said plate, means for rocking said register plate and means adapted to be actuated by said rocking means for carrying said reglet into a position at right angles to said plate.

17. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring-actuated reglet adapted to act as a gripper connected with said plate and pins on said reglet serving to discharge a sheet.

18. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring-actuated reglet adapted to act as a gripper connected with said plate, a shaft on said plate, grippers on said shaft and

means for lifting said shaft off said plate, when said register plate is being lifted off said platen.

19. In a platen printing press in combination, a platen, a pneumatic feed nozzle, rock levers carrying said nozzle and adapted to be rocked by said platen, a register plate, a spring-actuated reglet adapted to act as a gripper connected with said plate, a shaft on said plate, grippers on said shaft and means

connected with said platen for lifting said shaft off said plate, when said register plate is being lifted off said platen.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED SCHLESINGER.

Witnesses:

OSKAR FRAGE,
M. SCHUP.