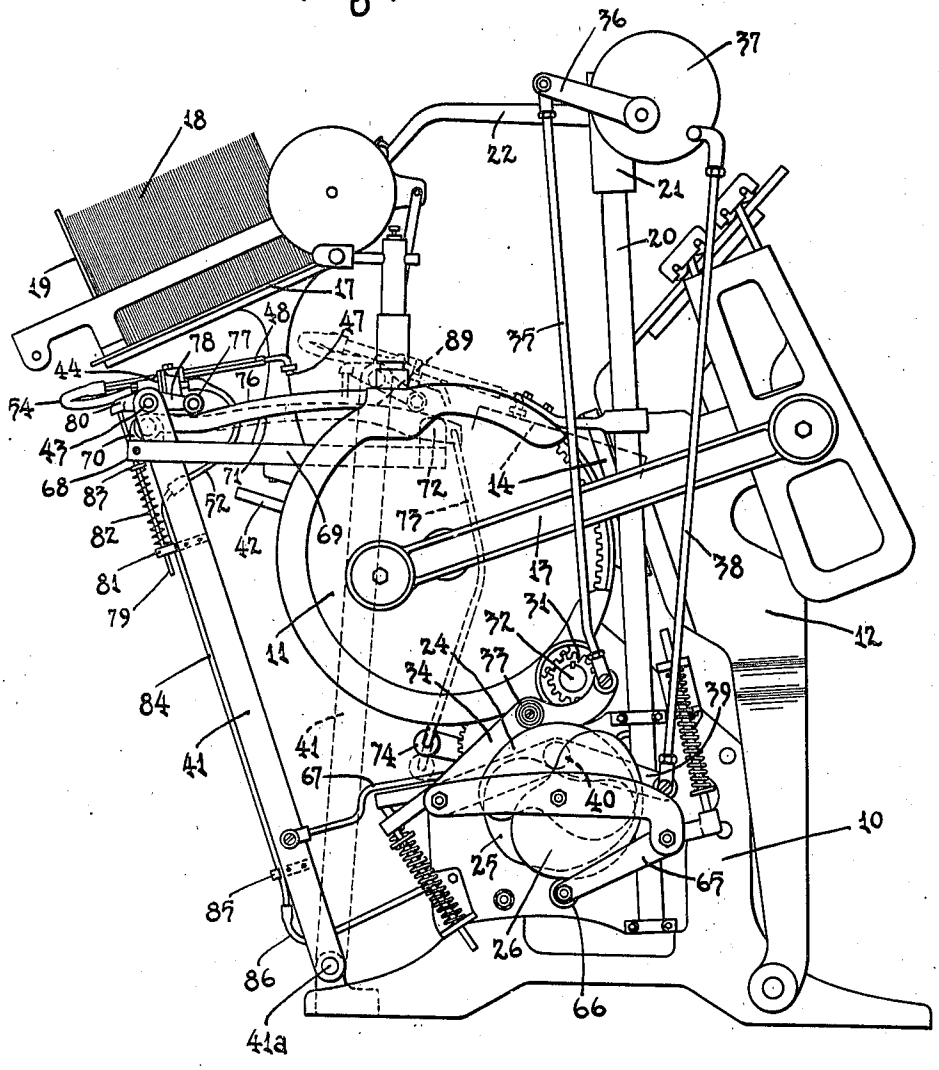
May 4, 1943. E. KLUGE 2,318,165

SHEET DELIVERY MECHANISM

Filed Oct. 11, 1941 5 Sheets-Sheet 1

Fig. 1



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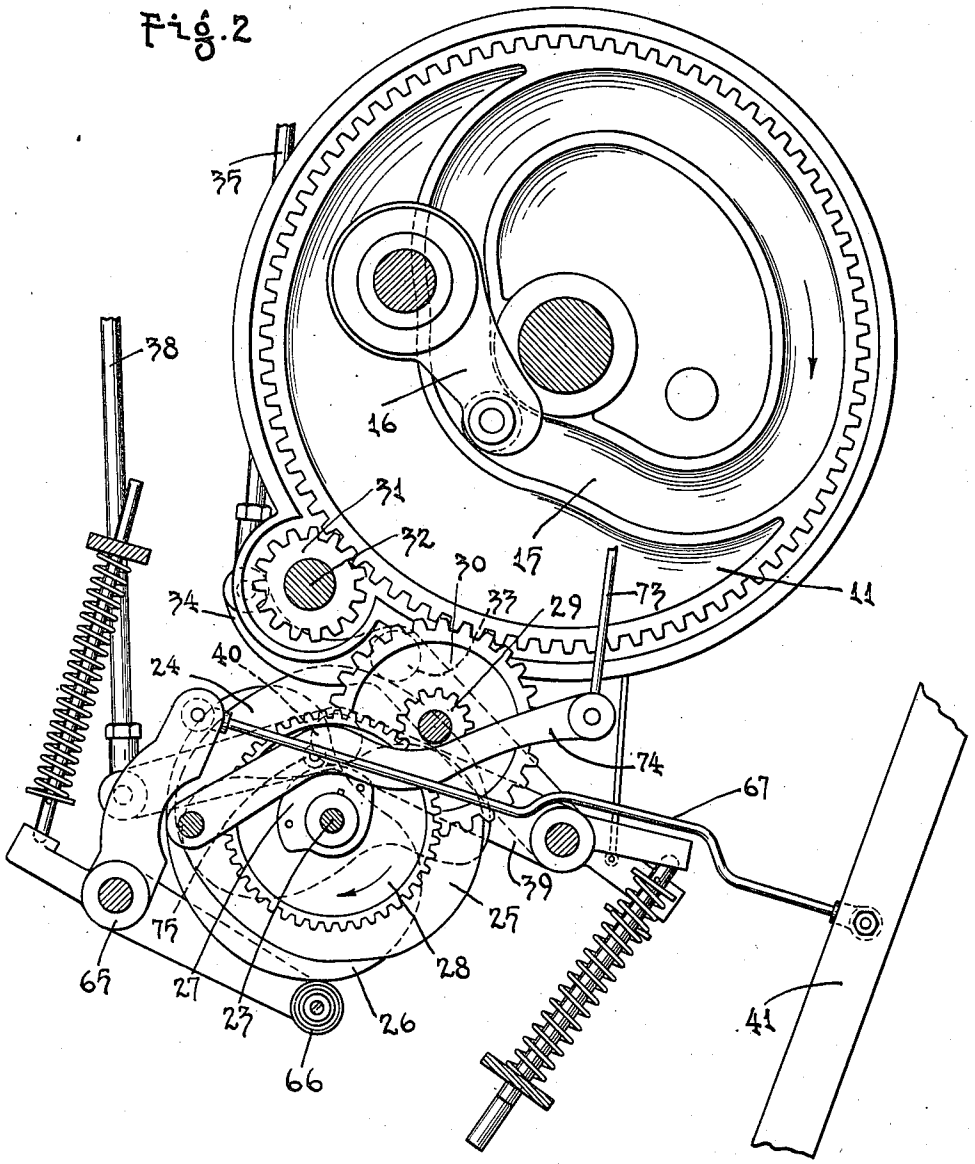
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SHEET DELIVERY MECHANISM

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Fig. 2



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SHEET DELIVERY MECHANISM

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Fig. 3

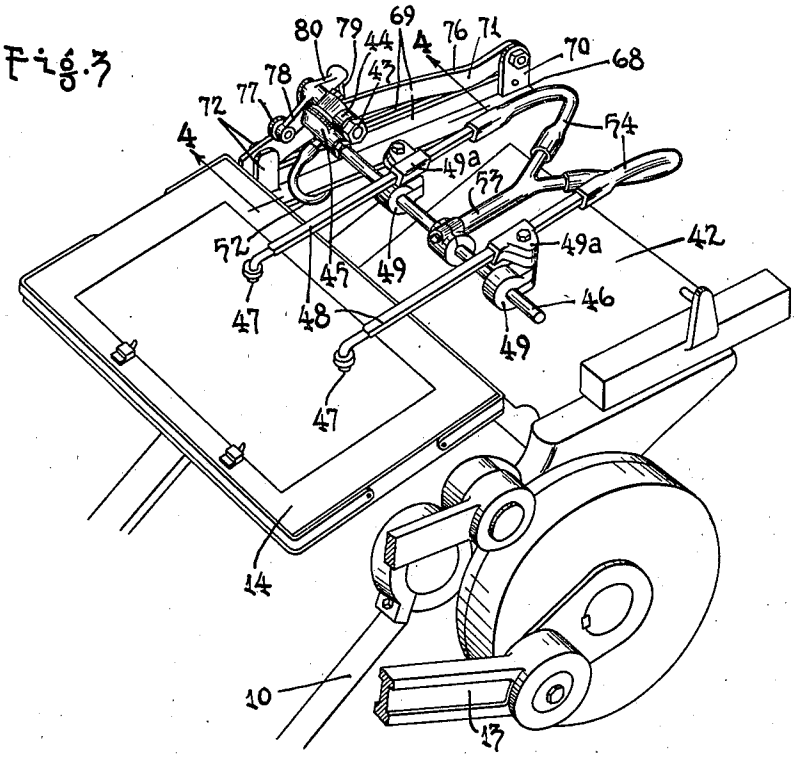
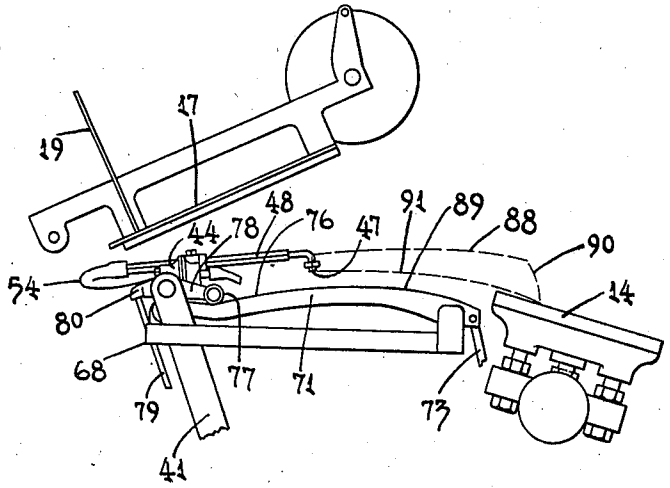


Fig. 7



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SHEET DELIVERY MECHANISM

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Fig 4

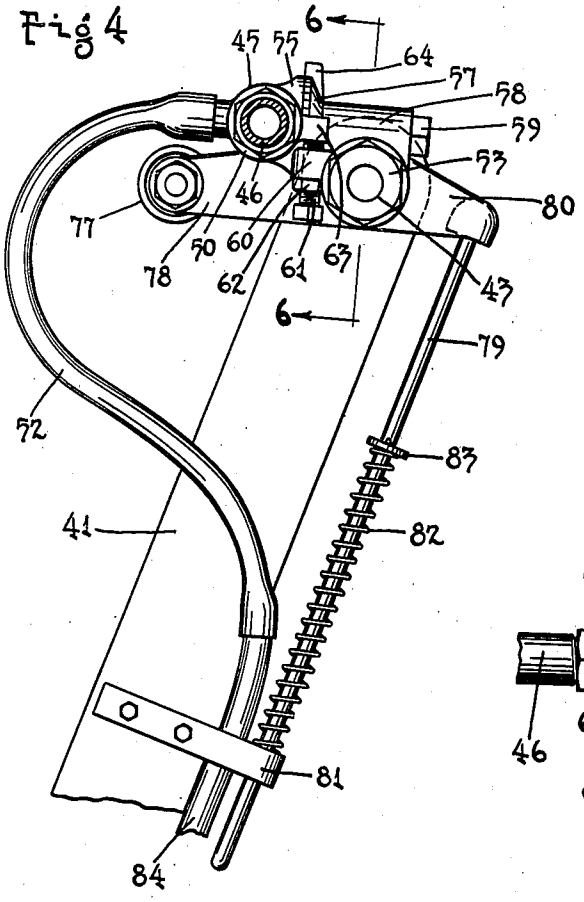


Fig 5

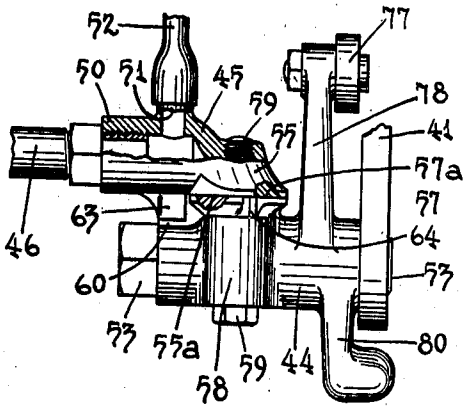
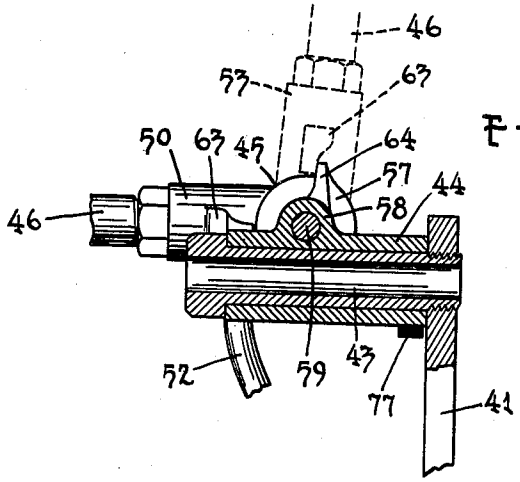


Fig. 6



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May 4, 1943. E. KLUGE 2,318,165

SHEET DELIVERY MECHANISM

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Fig. 8

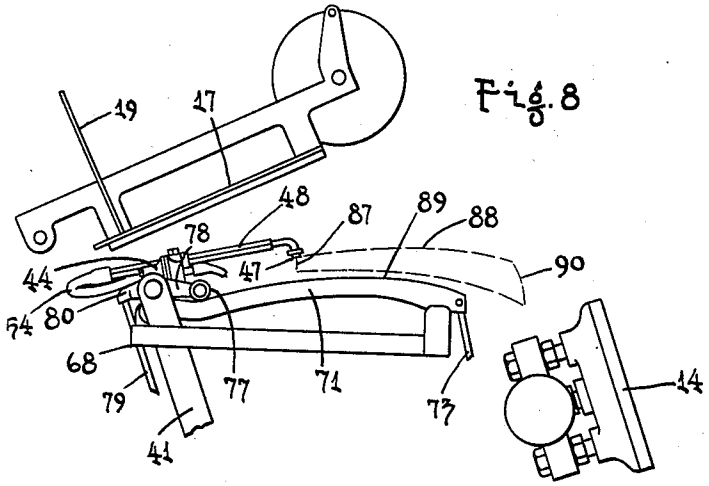
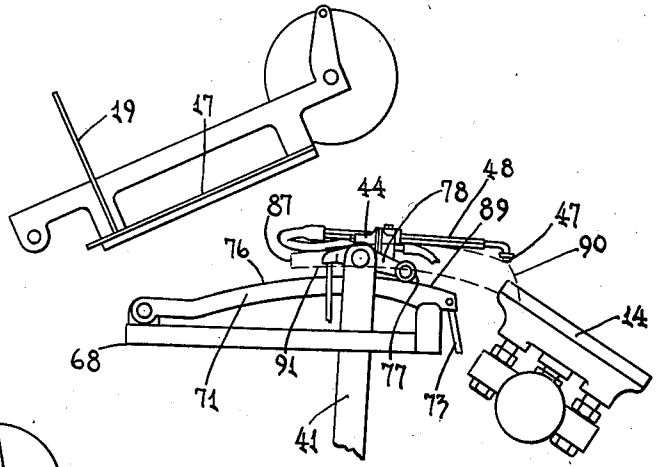


Fig. 9



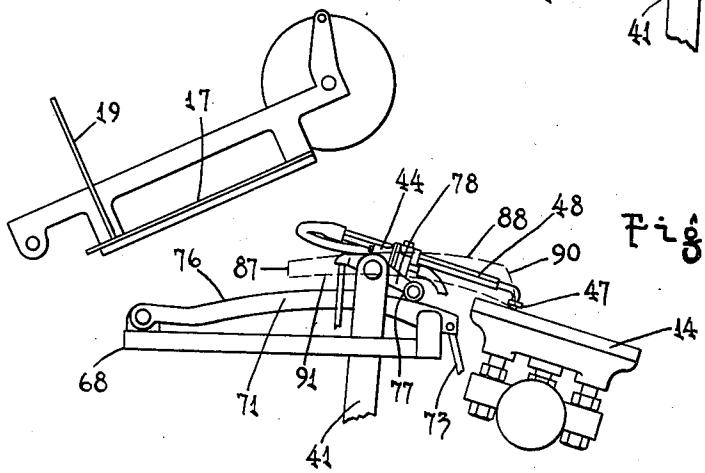


Fig 10

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Patented May 4, 1943

2,318,165

UNITED STATES PATENT OFFICE

2,318,165

SHEET DELIVERY MECHANISM

Eneval Kluge, St. Paul, Minn., assignor to Brandtjen & Kluge, Inc., St. Paul, Minn., a corporation of Minnesota

Application October 11, 1941, Serial No. 414,628

11 Claims. (Cl. 101—287)

My invention relates to improvements in sheet delivery mechanisms and pertains especially to pneumatic delivery devices for printing presses of the Gordon type and of the nature disclosed in Patents No. 1,472,656 of October 30, 1923, No. 1,621,547 of March 22, 1927, and No. 2,088,377 of July 27, 1937, all granted to Abel Kluge and myself.

Said prior delivery mechanisms have functioned efficiently in extensive practice and particularly those disclosed in the second and third patents above noted. These mechanisms, as may be observed upon reference to said patents, have been incorporated in printing presses of the Gordon type equipped with pnuematic feeding means, such means including an oscillating feeding arm hung over a press and equipped at its free end with suction grips movable upon each cycle of the arm from a fixed sheet receiving position to the press platen and back again. The means employed for supplying a press with sheets to be printed has consisted of an elevated sheet magazine consisting of an inclined table for the reception of a pack of sheets on edge and consisting further of an advancing back rest for supporting the leaning pack and maintaining the leading sheet thereof at said fixed sheet receiving position as the feeding mechanism diminishes the pack, sheet by sheet. The sheet delivery mechanism of each of said patented structures has been located beneath the stock magazine of the press and has included a member movable back and forth to take the printed sheets from the open platen and deposit them on a delivery table. In the use of presses of the instant nature equipped with pneumatic sheet feeding and delivering mechanisms, it has become desirable to increase the capacity of the sheet magazines. This desideratum may be accomplished and without radical reconstruction of press and feeder parts simply by extending the lower end of a magazine to make it longer. But, such acceptable lengthening of a magazine so narrowly reduces the space beneath it that a delivery mechanism constructed and arranged as heretofore cannot be accommodated therein.

It is an object of my present invention to provide a pneumatic sheet delivery mechanism for a self-fed printing press of the nature hereinabove indicated which is improved from the standpoints of simplicity, durability, cost of production, cost of maintenance, and efficiency and convenience in use, it being also a purpose of my invention to furnish such a delivery mechanism in which the parts are so constructed and arranged that the sheet taking members are amply accommodated in overhead space limited in extent by a sheet magazine located thereabove.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings, Fig. 1 is a side elevational view of a pneumatically fed printing press of the Gordon type, the same being shown as equipped with pneumatic sheet delivery mechanism in embodiment of my present invention; Fig. 2 is a fragmentary elevational sectional view taken through the structure shown in Fig. 1, said view illustrating the inside of the cam-assembly seen from the outside in said Fig. 1; Fig. 3 is a fragmentary perspective view illustrating a portion of the press and a portion of the delivery mechanism shown in Fig. 1; Fig. 4 is an elevational sectional view in detail taken as on the line 4—4 of Fig. 3, said view showing especially the carrier structure for the suction grips of the delivery mechanism; Fig. 5 is a plan view in detail of the structure shown in Fig. 4; Fig. 6 is a detail sectional view taken as on the line 6—6 of Fig. 4; Figs. 7 to 10 inclusive are diagrammatic views illustrating a typical path followed by the suction grips of the delivery mechanism and further illustrating the carrier structure for said grips in different positions thereof in respect to the platen of the press and the sheet magazine of the feeding mechanism.

Reference being had to the accompanying drawings, it will be observed that the platen press illustrated therein conventionally includes a frame 10, a cam-gear wheel 11, an oscillatory bed 12 rocked by said cam-gear wheel 11 through side arms 13, and an oscillatory platen 14 also rocked by said cam-gear wheel 11 through a cam 15 (Fig. 2) thereon and a cam-arm 16 cooperating with said cam. As is customary, during each cycle of the press, the bed 11 and platen 14 rock to close upon each other for the impression and then rock away from each other to open and give access to the platen 14 for the removal of the printed sheet therefrom and for the application of a fresh sheet thereto.

The feeding mechanism, shown more or less diagrammatically in connection with the illustrated press structure, is of the nature disclosed in said Patents Nos. 1,472,656 and 2,088,377 and more nearly resembles the disclosure of the latter patent. This feeding mechanism has a stock magazine for sheets to be printed, said magazine including an inclined table 17 upon which a lean-

ing pack of sheets 18 stand on edge, the same being supported against toppling by a rest 19 which is intermittently advanced always to present the foremost sheet of the pack at a predetermined or fixed sheet receiving position. Also included in said sheet feeding mechanism is a standard 20 anchored to the press frame 10 and carrying a feeder head 21 in which a feeder arm 22 bearing suction feed grips (not shown) is mounted to oscillate and in its oscillatory cycle of movement to carry the feed grips from a locality enabling them to grasp a sheet at said sheet receiving position and thence down and over the platen 14 and back again for a new sheet. The mounting for the feeder arm 22 includes an eccentric member (not shown) which is rocked, as said feeder arm oscillates to project and to retract said arm.

A cam assembly mounted at the side of the press frame 11 includes a cam shaft 23 (Fig. 2) upon which cams 24, 25, 26 and 27 are mounted, said cam shaft 23 being driven through gears 28, 29 and 30 by the cam-gear 11, which, in turn, is driven by a gear 31 on the drive shaft 32 of the press. The cam 24 is engaged by a cam follower 33 on a lever 34 connected through a link 35 with a rocker-arm 36 which rocks the feeder arm 22 of the feeding mechanism, said eccentric mounting for said feeder arm 22 being rocked through a rocker-disk 37, a link 38, and a lever 39 having a cam-follower 40 thereon engaging the cam 25 of said cam assembly.

The delivery mechanism to which my present invention especially pertains includes a long oscillatory delivery arm 41 pivoted at its lower end, through a pivot 41a, to the base of the press frame 10 at one side thereof, said arm extending upwardly in front of the platen 14. This arm 41 swings back and forth between a substantially upright rearmost position (dotted lines, Fig. 1) for the taking of a printed sheet from the platen 14 and in inclined foremost position (solid lines, Fig. 1) for depositing such printed sheet upon the delivery table 42 of the press. Threaded into the upper end of the delivery arm 41 and extending inwardly therefrom is a headed stud 43 (Fig. 6) upon which is swiveled a sleeve-like carrier member 44. A mounting 45 pivoted to said carrier member 44 has a hollow support 46 issuing therefrom and upon which suction grips 47, borne by tubular suction stems 48, are secured by means of adjustable clamps 49, 49a embracing said support and stems. Said mounting 45 has a hollow shank 50 into which said support 46 is threaded, said shank being formed with a nipple 51 communicating with the interior of the support 46 through the interior of said shank 50, said nipple 51 having a suction hose 52 attached thereto. Carried by the hollow support 46 is a hollow Y fitting 53, the leg of which is clamped to said support 46 in a manner bringing the interior thereof into communication with the interior of said support, each of the branches of said fitting being connected by a length of suction hose 54 with one of the suction stems 48. The shank 50 of the mounting 45 has a head 55 thereon formed with a planiform face 55a which faces a similar face 57a on the head 57 of a boss 58 formed integrally with the upper portion of the carrier member 44. This boss 58 and the head 57 thereof have a smooth axial bore extending therethrough which snugly but revolubly receives the body of a headed pivot screw 59, the tip of said screw having right hand threads screwed into a threaded bore formed axially of the head 55 of said mounting 45. The carrier member 44 has a lug 60 (Fig. 4) at its rear side through which an upwardly extending abutment screw 61 is fitted, said screw being supplied with a lock-nut 62 adapted to be turned up against the bottom of said lug 60. Issuing forwardly from the shank 50 of the mounting 45 is a stop-lug 63 which engages the upper end of said set abutment screw 61 when the mounting 45 is swung down to locate the tubular support 46 roughly in substantially horizontal operative position, the more accurate positioning of said support 46, for any particular job, being accomplished by turning the screw 61 up or down as the occasion may require. In the operative and substantially horizontal position of the support 46, the pivot screw 59 is so turned in the head 55 of the mounting 45 that the face 55a of said head 55 is brought closely against the face 57a of the head 57 on the carrier member 44, thus depriving the mounting 45 of any lost motion relative to said carrier member 44 during the operation of the delivery mechanism. To shift the support 46 from its said operative position into an inoperative position for giving access to the press platen 14, without interference from said support and the parts carried thereby, said support 46 is readily swung upwardly, the head 55 of the mounting 45 unscrewing on the threads of the pivot screw 59 and causing its face 55a to be freed from contact with the face 57a of the head 57 on the carrier member 44. To limit the swinging of the support 46 away from its operative position and slightly beyond the vertical, or over center, where it will stand alone, I supply the head 57 on the carrier member 44 with an abutment 64, the same being engaged by the stop-lug 63 on the mounting 45 and keeping said mounting from swinging beyond its over-center position. Whenever it is deemed advisable to secure the support 46 against being swung back inadvertently from its upright inoperative position toward its operative position, the pivot screw 59 will be turned to clamp the face 55a of the head 55 on the mounting 45 against the face 57a of the head 57 on said carrier member 44. This having been done, the screw 59 will be loosened to unclamp the mounting 45 from the carrier member 44 when it is desired to return the support 46 to its operative position and, if necessary, said screw 59 will be retightened in such operative position of said support to preclude any lost motion between the mounting 45 and said carrier member 44.

To swing the delivery arm 41 back and forth, I employ the cam 26 of the cam assembly in conjunction with a bell-crank 65, one branch of which carries a follower 66 engaging said cam 26, the other branch of said bell-crank being connected through a link 67 with said delivery arm 41. This swinging of the delivery arm 41 is attended with the swiveling of the carrier member 44 on the stud 53 issuing from said arm, such swiveling of said member 44 being effected by means now to be described. Secured to the press frame 10 and extending forwardly therefrom along the path of the upper end of the delivery arm 41 is a bracket 68 (Fig. 3) having relatively spaced guide-rails 69 between which the upper end of said arm 41 is slidably received. Pivotally mounted at its forward end to an upstanding lug 70 at the forward end of the bracket 68 is a vertically swingable cam-rail 71, the free rear end of said cam-rail being received between relatively spaced upstanding guide-lugs 72 at the

rear end of said bracket 68. To swing the cam-rail 71 up and down, a link 73 connects the free end of said cam-rail with a lever 74 equipped with a follower 75 engaging the cam 27 of the cam assembly. The upper edge of the cam-rail 71 provides its cam surface 76 and riding said cam surface is a follower roll 77 mounted on the end of cam-arm 78 issuing rearwardly from the carrier member 44. Yieldingly operating to keep said follower roll 77 in engagement with the cam surface 76 of the cam-rail 71 is a thrust-rod 79 socketed at its upper extremity in the end of an arm 80 issuing forwardly from the swiveled carrier member 44. The thrust-rod 79 is slidably mounted in a guide-clip 81 secured to the delivery arm 41. Encircling the thrust-rod 79 to urge the same upwardly is a helical spring 82 which is compressed between said guide-clip 81 and a washer 83 keyed to said thrust rod 79.

Extending along the forward edge of the delivery arm 41 is a metallic suction tube 84 which is secured at its upper end to the upper end of said arm 41 by said guide-clip 81, the lower end of said tube 84 being secured to the lower end of said arm 41 by a fastening clip 85. The suction hose 52, attached at the one end thereof to the nipple 51 of the mounting 45, is flexible and attached at its other end to the upper end of said suction tube 84, said hose 52 being looped under the bracket 68 and flexing to accommodate the movements of the mounting 45 relative to the delivery arm 41. The lower end of the suction tube 84, located near the pivot 41a of the delivery arm 41, has a hose 86 connected therewith which leads to a suction pump (not shown) driven by the press mechanism. Suction in this hose 86 is alternately established and relieved by valve means, not shown herein, to cause the suction grips 47 to grasp a sheet at the sheet taking position of said grips and to release the sheet at their sheet depositing position.

The swinging cycles of the delivery arm 41, cam-rail 71 and press platen 14 are concurrently effected and coordinated so that the suction grips 47, properly adjusted to the particular job in hand, will take a printed sheet from the open platen, carry it forward therefrom and drop the same upon the sheet delivery table 42.

The cam surface 76 of the cam-rail 71 throughout the greater portion of its extent, from the front portion thereof toward the rear, substantially conforms with an arc struck from the pivotal axis of the delivery arm 41, the rear portion of said cam surface dipping downwardly within such arc. With the roll 77 of the carrier member 44 following said cam surface 76 on the swinging cam-rail 71, each suction grip 47 is directed as through typical paths indicated in each of the Figs. 7 to 10 inclusive. In Fig. 7, the delivery arm 41 is shown in its extreme forward position at a time when the cam-rail 71 is depressed. Correspondingly, the suction grip 47 is at its lowermost and extreme forward position, having been carried into such position from the open platen 14 with a printed sheet preparatory to depositing such sheet on the feed table of the press. During the closing of the platen 14, the cam-rail 71 is swung upward causing the suction grip 47, now relieved of the printed sheet previously grasped thereby, to be carried in an ascending path 87 to its uppermost and extreme forward position (Fig. 8). Following this positioning of the suction grip 87, the delivery arm 41 moves rearwardly carrying said grip toward the then closed platen 14 in a generally elevated path 88. When the follower 77 of the carrier member 44 reaches the said dipped portion 89 of the cam-rail 71, the elevated path 88 of the suction grip 47 dips correspondingly and brings said grip to the end of its said generally elevated travel, as shown in Fig. 9. In the final stage of the opening movement of the platen 14, the delivery arm 41 progresses in the final stage its rearward swing and, concurrently therewith, the cam-rail 71 is swung downward, the result being that the suction grip 47 pitches downward, as in the path 90, arriving at the face of the platen 14 as said platen reaches its fully open position (Fig. 10). Here, the suction grip 47 grasps the printed sheet on the platen 14 and this having been accomplished, the delivery arm 41 swings away from the platen 14 to remove the grasped sheet therefrom. Upon this swing-away movement of the delivery arm 41, the suction grip 47 follows a depressed path 91, the cooperation of the dipped portion 89 of the cam-rail 71 with the follower 77 causing the grip 47 to rise from the platen 14 as it begins its departure therefrom, whereby the sheet is freed from any danger of being dislodged from the grasp of the suction grip 47 by the scuffing thereof along the platen.

Among the numerous advantages residing in my present construction is the advantage gained by the employment of the delivery arm 41 to carry the suction grips 47 and their supporting means and by the further employment of the swinging cam-rail to effect the dipping of the suction grips 47. This provision makes for simplicity in construction and for quiet, long-wearing, smooth and efficient operation. Furthermore, in this construction, the required overhead space progressively decreases forwardly from the platen and accords with the corresponding progressively increasing requirement for space occasioned by the lengthening of the stock magazine in enlargement of its capacity. In respect to the suction line leading to the suction grips 47, my improved arrangement of parts compactly supports the non-flexible and flexible conduit sections, the latter readily accommodating the limited flexing movements imposed upon them. The grip support 46 is readily adjusted to the precise operating position desired and, so adjusted, is firmly held relative to the carrier member 44. Yet, without binding, said support 46 is readily swung upwardly into an over-center inoperative position, where it is self-retained and, if desired, additionally clamped by the pivot screw 59 upon which it swings.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. Delivery mechanism for a self-fed platen printing press having a delivery table in front of the platen and an overhead magazine for sheet stock, said mechanism comprising an oscillatory delivery arm pivoted at its lower end to the base of the press at one side thereof and swingable from a substantially upright rearward position to an inclined forward position, a carrier member swiveled to the upper end of said arm, a support extending inwardly of the press structure and mounted on said carrier member, said support having a suction grip thereon, a bracket extending forwardly from the press frame and including spaced rails at opposite sides of said delivery arm for guiding the same in its swinging

movements, a swingable cam-rail pivoted at its forward end to the forward end of said bracket, the rearward end of said bracket having guides for the rearward end of said cam-rail to guide the same vertically, said cam-rail having a cam surface extending therealong, said cam surface in greater part substantially coinciding with an arc struck from the pivotal axis of the delivery arm and dipping at its rearward portion beneath such arc, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for swinging the delivery arm back and forth to carry the suction grip rearwardly over the platen for the taking of a sheet therefrom and forwardly over the delivery table for the depositing of the sheet thereon, said delivery arm substantially throughout its entire forward movement directing said carrier member in a descending arc to clear the overhead stock magazine of the press, means for swinging the cam-rail up and down to cause the grip to follow an elevated path upon its approach to the platen and to depart from the platen along a lower path, the cam surface of said cam-rail and the downward swinging thereof combining in cooperation with said cam-arm to turn the swiveled carrier member and cause the suction grip to dip sharply to a position for grasping a sheet on the platen and, upon thus dipping, to clear the opening platen, arriving at such position substantially concurrently with the completion of the opening of said platen, said cam surface further cooperating with said cam-arm reversely to turn said swiveled carrier member and cause the grip to rise from its said sheet grasping position as it moves forwardly to sheet depositing position.

2. Delivery mechanism for a self-fed platen printing press having a delivery table in front of the platen and an overhead magazine for sheet stock, said mechanism comprising an oscillatory delivery arm pivoted at its lower end to the base of the press at one side thereof and swingable from a substantially upright rearward position to an inclined forward position, a carrier member swiveled to the upper end of said arm, a support extending inwardly of the press structure and mounted on said carrier member, said support having a suction grip thereon, a bracket extending forwardly from the press frame, a swingable cam-rail pivoted at its forward end to the forward end of said bracket and having a cam surface extending therealong, said cam surface in greater part substantially coinciding with an arc struck from the pivotal axis of the delivery arm, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for swinging the delivery arm back and forth to carry the suction grip rearwardly over the platen for the taking of a sheet therefrom and forwardly over the delivery table for the depositing of the sheet thereon, said delivery arm substantially throughout its entire forward movement directing said carrier member in a descending arc to clear the overhead stock magazine of the press, means for swinging the cam-rail up and down to cause the grip to follow an elevated path upon its approach to the platen and to depart from the platen along a lower path, the cam surface of said cam-rail and the downward swinging thereof combining in cooperation with said cam-arm to turn the swiveled carrier member and cause the suction grip to dip sharply to a position for grasping a sheet on the platen and, upon thus dipping, to clear the opening platen, arriving at such position substantially concurrently with the completion of the opening of said platen.

3. Delivery mechanism for a platen printing press having a delivery table in front of the platen, said mechanism comprising an oscillatory delivery arm pivoted at its lower end to the base of the press at one side thereof and swingable from a substantially upright rearward position to an inclined forward position, a carrier member swiveled to the upper end of said arm, a support extending inwardly of the press structure and mounted on said carrier member, said support having a suction grip thereon, a bracket extending forwardly from the press frame, a swingable cam-rail pivoted at its forward end to the forward end of said bracket and having a cam surface extending therealong, said cam surface in greater part substantially coinciding with an arc struck from the pivotal axis of the delivery arm and dipping at its rearward portion beneath such arc, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for swinging the delivery arm back and forth to carry the suction grip rearwardly over the platen for the taking of a sheet therefrom and forwardly over the delivery table for the depositing of the sheet thereon, said delivery arm substantially throughout its entire forward movement directing said carrier member in a descending arc to provide overhead clearance, means for swinging the cam-rail up and down to cause the grip to follow an elevated path upon its approach to the platen and to depart from the platen along a lower path, the cam surface of said cam-rail and the downward swinging thereof combining in cooperation with said cam-arm to turn the swiveled carrier member and cause the suction grip to dip sharply to a position for grasping a sheet on the platen and, upon thus dipping, to clear the opening platen, arriving at such position substantially concurrently with the completion of the opening of said platen, said cam surface further cooperating with said cam-arm reversely to turn said swiveled carrier member and cause the grip to rise from its said sheet grasping position as it moves forwardly to sheet depositing position.

4. Delivery mechanism for a platen printing press having a delivery table in front of the platen, said mechanism comprising a movable delivery element, a carrier member swiveled to said element, a support mounted on said carrier member, said support having a suction grip thereon, a vertically movable cam-rail having a cam surface extending therealong, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for moving the delivery element back and forth to carry the suction grip rearwardly over the platen for the taking of a sheet therefrom and forwardly over the delivery table for the depositing of the sheet thereon, said delivery element substantially throughout its entire forward movement directing said carrier member in a descending path to provide overhead clearance, means for moving the cam-rail to cause the grip to follow an elevated path upon its approach to the platen and to depart from the platen along a lower path, the cam surface of said cam-rail and the movement thereof combining in cooperation with said cam-arm to turn the swiveled carrier member and cause the suction grip to dip sharply to a position for grasping a sheet on the platen and, upon thus dipping, to clear the opening platen, arriving at such po-

sition substantially concurrently with the completion of the opening of said platen, said cam surface further cooperating with said cam-arm reversely to turn said swiveled carrier member and cause the grip to rise from its said sheet grasping position as it moves forwardly to sheet depositing position.

5. Delivery mechanism for a platen printing press having a delivery table in front of the platen, said mechanism comprising a movable delivery element, a carrier member swiveled to said element, a support mounted on said carrier member, said support having a suction grip thereon, a vertically movable cam-rail having a cam surface extending therealong, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for moving the delivery element back and forth to carry the suction grip rearwardly over the platen for the taking of a sheet therefrom and forwardly over the delivery table for the depositing of the sheet thereon, said delivery element substantially throughout its entire forward movement directing said carrier member in a descending path to provide overhead clearance, means for moving the cam-rail to cause the grip to follow an elevated path upon its approach to the platen and to depart from the platen along a lower path, the cam surface of said cam-rail and the downward movement thereof combining in cooperation with said cam-arm to turn the swiveled carrier member in one direction and cause the suction grip to dip to a position for grasping a sheet on the platen, said cam surface further cooperating with said cam-arm in the depressed position of said cam-rail reversely to turn said swiveled carrier member and cause the grip to rise from its said sheet grasping position as it moves forwardly to sheet depositing position.

6. Delivery mechanism for a self-fed platen printing press having a delivery table in front of the platen and an overhead magazine for sheet stock, said mechanism comprising an oscillatory delivery arm pivoted at its lower end to the press frame and swingable from a substantially upright rearward position to an inclined forward position, a grip carried by said arm at the upper end thereof, means for swinging said delivery arm back and forth to direct said grip rearwardly over the platen to reach a sheet thereon and forwardly over said table for the delivery of the sheet thereto, said delivery arm substantially throughout its entire forward movement directing said grip in a descending path to clear the overhead magazine of the press.

7. Delivery mechanism comprising an element movable forth and back, a carrier member on said element, a hollow support having a suction grip thereon in communication with the interior of said support, a mounting for the support, said mounting comprising a hollow shank and a head thereon having a planiform face, the interior of said shank communicating with the interior of said support, said shank having a nipple for the attachment thereto of a suction hose, a screw issuing from said carrier member and threaded into the head of said mounting to secure the mounting to the carrier member, said carrier member having a head thereon formed with a planiform face facing said face on the head of said mounting, said mounting being adapted to turn on the threads of said screw upon the swinging of the support from a substantially horizontal operative position to a substantially upright inoperative position, spaced abutments on the carrier member, a stop on said mounting engaging one of said abutments in the operative position of the support and engaging the other of said abutments in the inoperative position of said support, said latter abutment and stop cooperating to render said support self-sustaining in an upright over-center relationship, the turning of said mounting on said screw to locate said support in its operative position serving to draw the face of the mounting against the face of the carrier member, the reverse turning of said mounting withdrawing the face thereof from said face of said carrier member.

8. Delivery mechanism comprising an element movable forth and back, a carrier member on said element, a support having a grip thereon, a mounting for said support, a screw revolubly carried by said carrier member and threaded into said mounting to secure the mounting to said carrier member, said mounting being adapted to turn on the threads of said screw upon the swinging of the support from a substantially horizontal operative position to a substantially upright inoperative position, spaced abutments on the carrier member, a stop on said mounting engaging one of said abutments in the operative position of the support and engaging the other of said abutments in the inoperative position of said support, said latter abutment and stop cooperating to render said support self-sustaining in an upright over-center relationship, the turning of said mounting on said screw to locate said support in its operative position serving to tighten said mounting against said carrier member, the reverse turning of said mounting loosening the same from said carrier member, said screw independently serving to tighten and loosen said mounting relative to said carrier member.

9. Delivery mechanism comprising an element movable forth and back, a carrier member on said element, a support having a grip thereon, a mounting for said support, a screw issuing from said carrier member and threaded into said mounting to secure the mounting to said carrier member, said mounting being adapted to turn on the threads of said screw upon the swinging of the support from a substantially horizontal operative position to a substantially upright inoperative position, spaced abutments on the carrier member, a stop on said mounting engaging one of said abutments in the operative position of the support and engaging the other of said abutments in the inoperative position of said support, said latter abutment and stop cooperating to render said support self-sustaining in an upright over-center relationship, said former abutment being adjustable to vary the operative horizontal positioning of the support, the turning of said mounting on said screw to locate said support in its operative position serving to tighten said mounting relative to said carrier member, the reverse turning of said mounting loosening the same relative to said carrier member.

10. Delivery mechanism comprising an element movable forth and back, a carrier member on said element, a support having a grip thereon, a mounting for said support, a threaded pivot connecting the mounting to said carrier member, said mounting being adapted to turn axially of said pivot upon the swinging of the support from an operative position to an inoperative position, the turning of said mounting to locate said support in its operative position serving, through said pivot, to tighten said mounting against said carrier member, the reverse turning of said

mounting serving to loosen the same relative to said carrier member.

11. Mechanism for pneumatically delivering sheets from a platen printing press, said mechanism comprising an oscillatory delivery arm pivoted to the press frame, a carrier member swiveled to the free end of said arm, a support mounted on said carrier member, said support having a suction grip thereon, a suction conduit including three sections, one thereof extending along and carried by said arm, another of said sections being flexible and extending from the free end of said arm for communication with said suction grip, the third of said conduit sections being flexible and leading away from said delivery arm at a point near its pivotal axis, a movable cam-rail having a cam surface extending therealong, said swiveled carrier member having a cam-arm thereon coacting with the cam surface of said cam-rail, means for swinging the delivery arm to carry the suction grip to and from the platen for the removal of a sheet therefrom, means for moving the cam-rail, the cam surface of said cam-rail and the movement thereof combining in cooperation with said cam-arm to turn the swiveled carrier member, said second section of said suction conduit accommodating movements of said grip relative to said delivery arm, and said third section of said conduit, at that portion thereof adjacent to said pivotal axis, serving to accommodate the swinging movements of said arm.

ENEVAL KLUGE.