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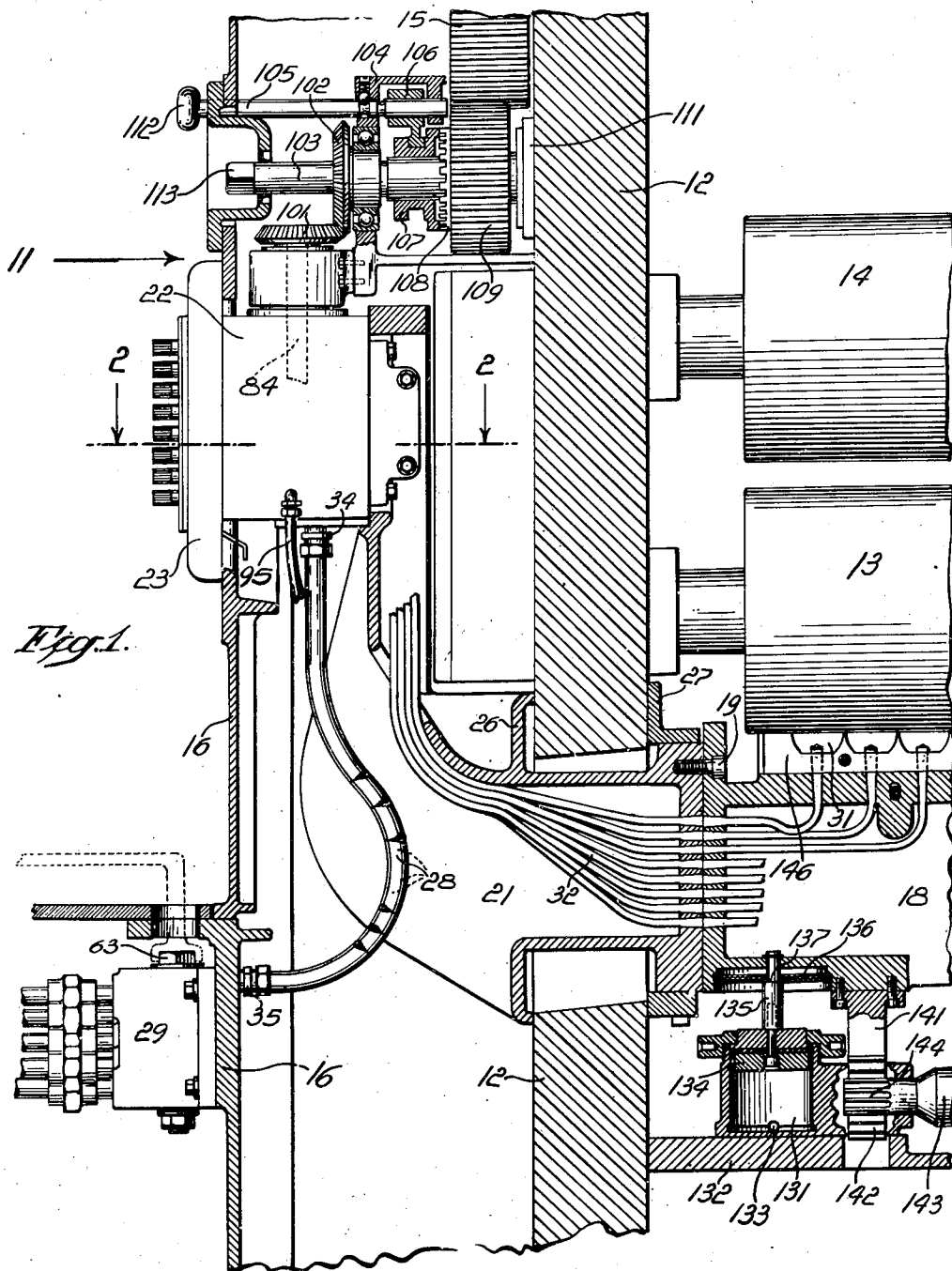
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INKING MECHANISM FOR PRINTING MACHINES

Filed Jan. 16, 1945

5 Sheets-Sheet 1



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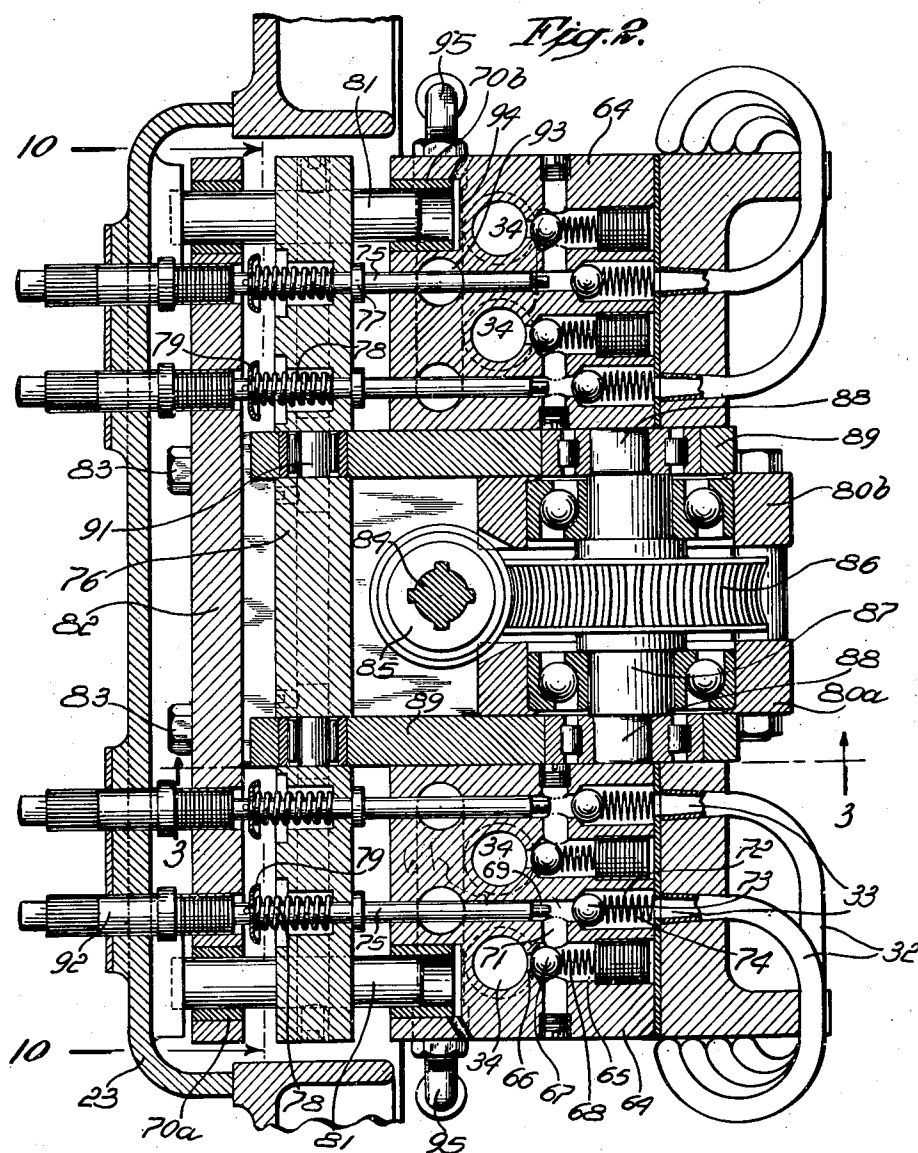
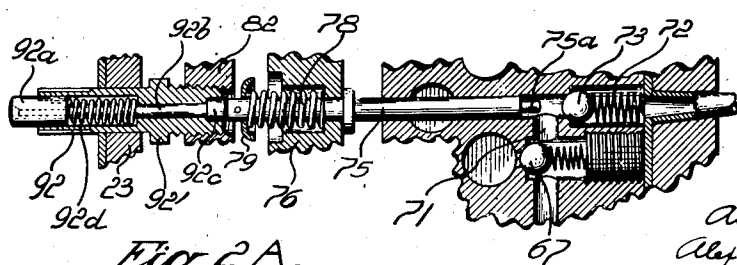
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INKING MECHANISM FOR PRINTING MACHINES

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5 Sheets-Sheet 2



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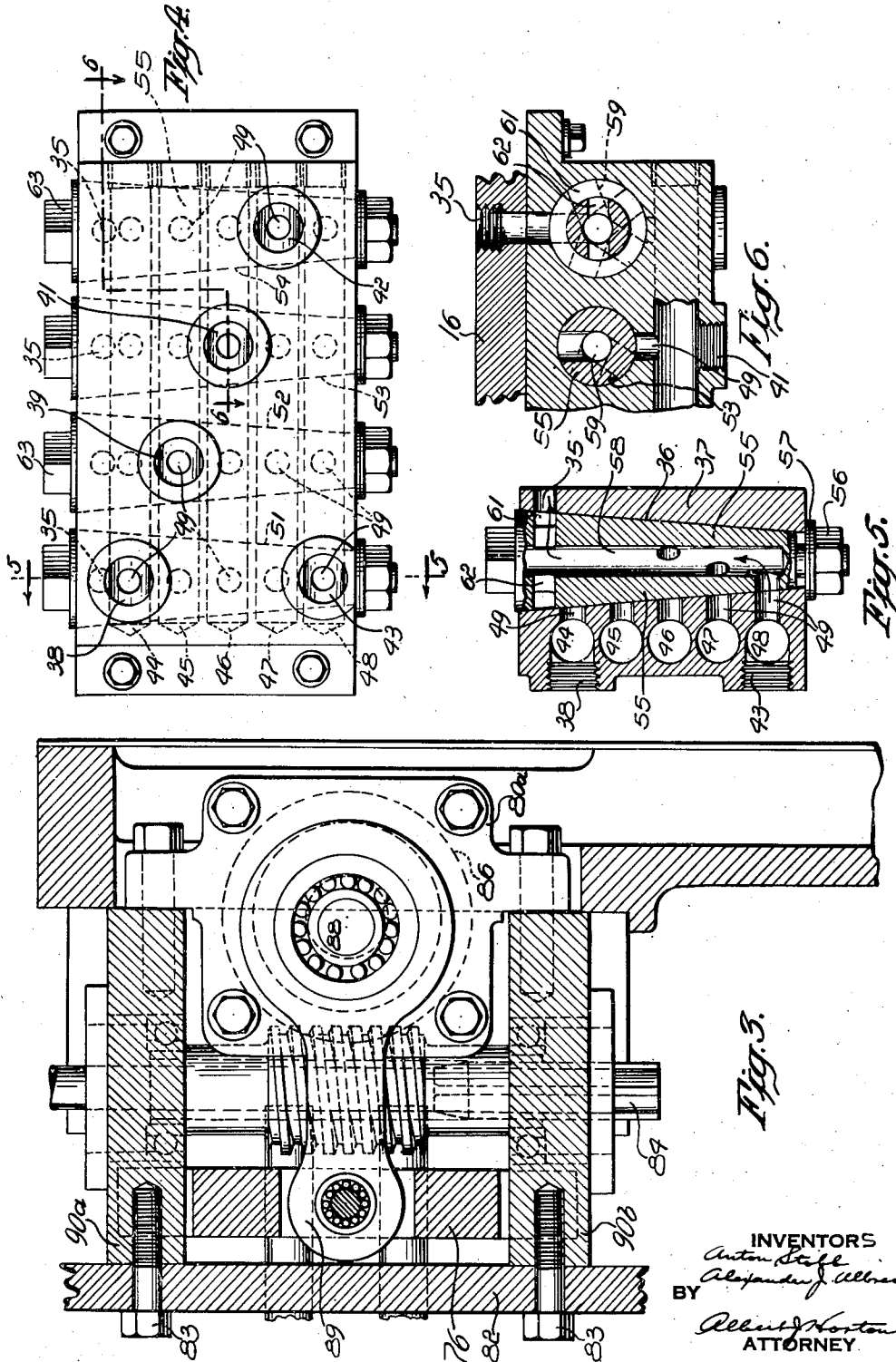
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INKING MECHANISM FOR PRINTING MACHINES

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5 Sheets-Sheet 3



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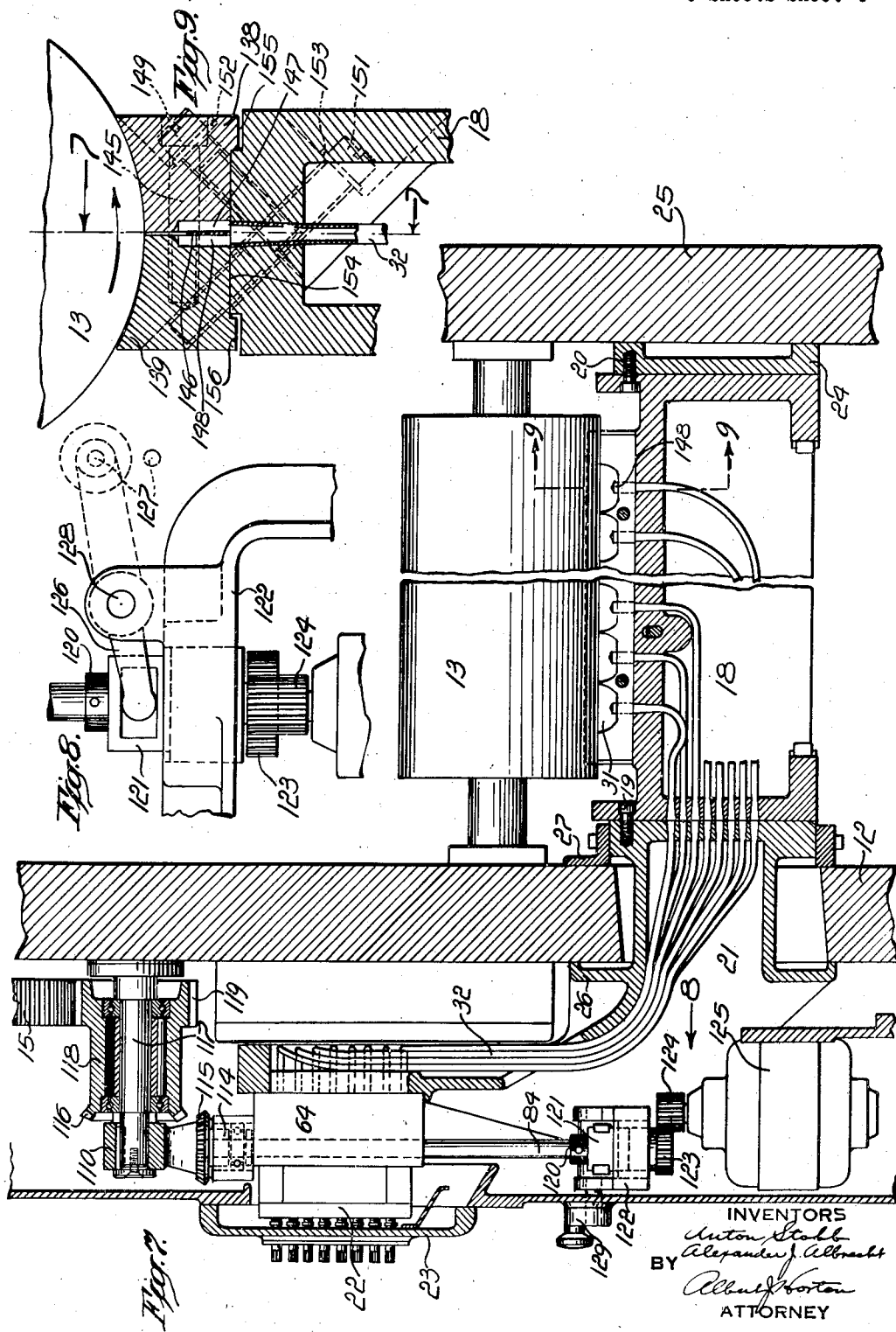
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INKING MECHANISM FOR PRINTING MACHINES

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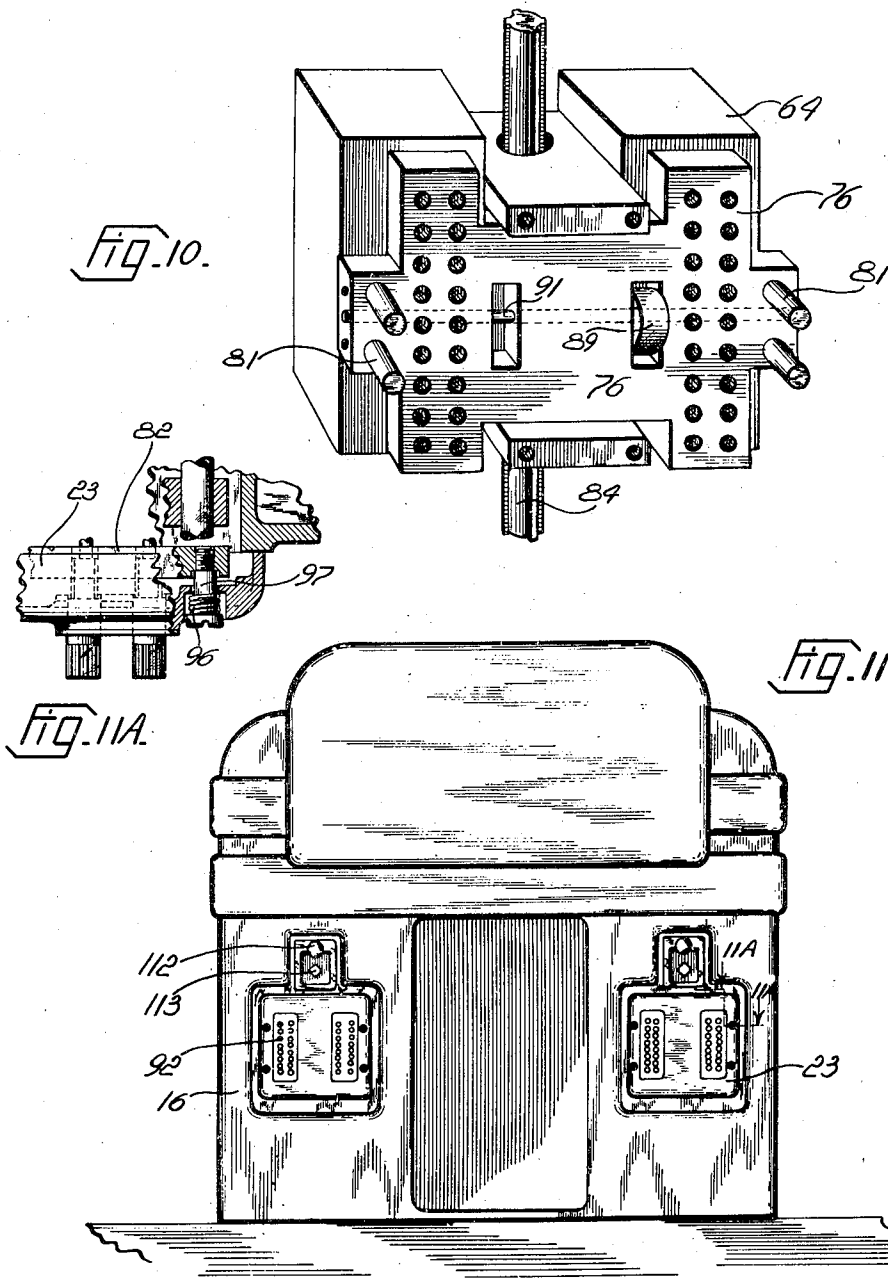
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INKING MECHANISM FOR PRINTING MACHINES

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5 Sheets-Sheet 5



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2,469,796

INKING MECHANISM FOR PRINTING MACHINES

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Application January 16, 1945, Serial No. 573,038

17 Claims. (Cl. 101—350)

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This invention relates to inking mechanisms for printing machines, especially those used for printing newspapers, and more particularly to an improved ink pump and associated devices, for use in selectively supplying a plurality of kinds of ink under pressure, to an ink distributing cylinder in regulated quantity, and whereby the amount and color of ink supplied to each of a plurality of sections of a printing form, may be varied as required by the matter to be printed.

An object of this invention is to provide in an inking mechanism, means whereby the ink being supplied to a selected portion of the printing form may be expeditiously changed from ink of one color to ink of another color.

Another object of the invention is to provide in an inking mechanism, means to expeditiously cleanse the mechanism of ink when it is desired to change the ink.

Still another object is to provide in an inking mechanism, an improved form of pump mechanism, the moving parts of which may be efficiently lubricated automatically.

A further object is to provide in an inking mechanism, means whereby the pump mechanism may be selectively actuated by the printing machine drive or by a separate motor.

It is also an object of the invention to provide an inking mechanism of improved construction, that will be simple, durable, and relatively inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, that will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed.

In the drawings:

Figure 1 is a vertical sectional view showing a portion of a printing machine having an inking mechanism embodying the features and principles of the invention;

Figure 2 is an enlarged horizontal sectional view of the ink pump operating mechanism as seen on the line 2—2 of Figure 1;

Figure 2A is a fragmentary view showing additional details of the ink pump operating mechanism as shown in Figure 2;

Figure 3 is a cross sectional view of the pump mechanism as seen on the line 3—3 of Figure 2;

Figure 4 is an end view of an ink color selecting valve device included in the invention;

Figure 5 is a sectional view as seen in a plane indicated by the lines 5—5 of Figure 4;

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Figure 6 is a fragmentary sectional view as seen on the broken line 6—6 of Figure 4;

Figure 7 is a sectional view generally similar to Figure 1, as seen on the line 7—7 of Figure 9, but showing a motor and driving connections for operating the inking mechanism separately from the printing machine;

Figure 8 is a fragmentary view as seen in the direction of arrow 8 in Figure 7;

Figure 9 is an enlarged view as seen on the line 9—9 of Figure 7 in the direction of the arrow;

Figure 10 is a front view of a portion of the pump mechanism, as seen in the direction of arrows 10 of Figure 2, with some of the parts removed;

Figure 11 is a front view of a printing unit of a printing machine having the inking mechanism of the invention, and includes the portion of the machine seen in the direction of arrow 11 of Figure 1; and

Figure 11A is a fragmentary plan view partly in section, as seen on the broken line 11A—11A of Figure 11, and in the direction of the arrow.

Referring now to the drawings, wherein like reference numerals designate like parts throughout the several views a portion of a printing machine frame 12 is shown, including portions of ink cylinders 13 and 14, a printing cylinder gear 15, and a portion of a housing wall 16 enclosing part of the driving mechanism of the printing machine, ink is supplied to the ink cylinder 13 from an ink rail 18, which as herein shown, is secured by screws 19, to a bracket 21 which supports a pump mechanism 22, the rail 18 and the pump mechanism 22 being movable vertically as a unit. The ink rail 18 is guided for vertical movement by a bearing plate 24 (Figure 7), which is secured to its remote end by screws 20, and slidably engages the inner surface of a frame member 25 of the printing machine, and by flanges 26 and 27 of the bracket 21, which slidably engage the outer and inner surfaces respectively of the printing machine frame 12. The pump mechanism 22 is connected by flexible ink conduits 28 (four being provided in this instance), to a multiple color ink selecting valve device or color selector 29 suitably secured to the outer housing wall 16.

The ink pump 22 is arranged to supply ink to outlets 31 of the ink rail 18 through tubes 32. As herein shown, the pump 22 (Figure 2) is provided with four groups of outlets 33, to supply ink to thirty-two tubes 32, whereby four rail sections each having eight outlets 31 may be supplied with

ink from the same pump 22. Each rail section supplies ink to a section of the ink cylinder 13, corresponding to the width of a page of a newspaper and each rail outlet 31 supplies ink to an area of the cylinder corresponding to the width of a column on a page. The pump 22 is provided with four inlets 34 (Figure 1), one for each rail section, and each is connected by a flexible conduit 28 to an outlet 35 of the color selector 29 (Figures 4 to 6). The color selector 29 is arranged to supply ink of four colors (usually yellow, red, blue and black), to each of the four pump inlets 34, and makes it possible to print each page in the color desired.

The color valve device 29 as shown in Figures 4, 5 and 6, is devised with four five-way valves 36 in a block 37 having five inlet ports 38, 39, 41, 42 and 43, connecting with passageways 44, 45, 46, 47 and 48 respectively. The passageways are connected by short passages 49, with tapered bores 51, 52, 53 and 54, in each of which a rotatable valve member or rotor 55 is fitted and secured therein by a nut 56 and a spring washer 57. The valve rotors 55 are each provided with a central bore 58, and each has five ports 59, extending radially from the central bore 58 to its periphery, equally spaced thereabout, and each in horizontal alignment with one of the passages 49. Each valve rotor is provided with a square head 63 formed to receive a wrench which may be operated from the front of the machine as indicated by dotted outline in Figure 1. At the large diameter end of each valve rotor 55 (Figures 5 and 6), an annular groove 61 is provided and connected to the central bore 58 by a cross passageway 62. Each annular groove 61 is always in communication with its outlet port 35 which is connected to its pump inlet 34.

The inlet ports 38, 39, 41 and 42 of the color valve device are each connected to a different source of ink preferably supplied under pressure, and it will be seen that by turning the several valve rotors 55, to the proper positions, ink from any of the sources can be directed to the portion of the ink pump that feeds each group. The fifth inlet port 43 may be connected to a source of cleaning fluid, whereby the various ink pump parts and ducts, and the passages in the ink rail may be cleaned of ink, before using other ink. Alternatively, the port 43 may be connected to a supply of compressed air, to blow out the ink passages.

The flexible conduits 28 direct ink to the four pump inlets 34 (Figure 2) which extend through pump blocks 64. For the ink pump herein shown, there are eight inlet valve chambers 65 communicating with each inlet bore 34, by means of ports 66 each of which ports is normally closed by a ball 67 under the urge of a spring 68. Each of the inlet valve chambers 65 is connected to a pump cylinder 69 by a passageway 71. The pump cylinders 69 lead directly into outlet valve chambers 72, the connecting passage being normally closed by a ball 73 under the urge of a spring 74. The outlet chambers 72 communicate with the outlets 33. A piston rod 75 is arranged to reciprocate in each pump cylinder 69 to draw in ink from the inlet chambers 65 and to force it out through the outlet chambers 72. The outlet chambers being in communication with the tubes 32 through the outlet ports 33, the ink is forced to the rail openings 31 and is discharged onto the ink distributing cylinder 13.

Power to reciprocate the piston rods 75 is taken from a splined shaft 84 that is driven by the

machine. A worm gear 85 is fitted to slide on the splined shaft and meshes with a worm wheel 86 having a shaft 87, which is rotatably supported in bearing plates 80a and 80b, that form part of the pump frame. End portions 88 of the shaft 87 are made eccentric thereto to form cranks, and a crank arm 89 embraces each of these cranks 88. The opposite ends of the crank arms are pivotally connected to wrist pins 91 suitably secured in a plate 76. Guide studs 81 are suitably secured to the plate 76 and are arranged to slide in bushings 70a and 70b, secured in a front plate pump member 82 and in pump blocks 64, respectively. The front plate 82 is secured to pump side frames 90a and 90b (Figure 3), by screws 83. It will be seen (Figure 2), that rotation of the worm wheel 86 will operate the cranks 88, and reciprocate the plate 76 in a horizontal plane.

The piston rods 75 have collars 77 fixed thereon, which are normally held against the plate 76 by springs 78 that are held under compression by cupped washers 79 pinned to the piston rods 75. Reciprocation of the plate 76 will thus simultaneously reciprocate all of the piston rods 75 and force ink into the tubes 32 that lead it to the ink rail. The stroke of each piston rod 75 may be adjusted to regulate the quantity of ink forced into the respective tube 32 by means of an adjusting screw 92, which is screw-threaded into the front plate 82, and has its outer end knurled for manual manipulation. These adjusting screws 92 are formed with a stop collar 92' and are axially bored and counterbored (Figure 2A), and each adjusting screw carries a push rod 92a that is fitted to slide therein. The push rods 92a are each formed with a stem 92b and an inner head 92c, which engages the piston rod 75 when the rod is in the position shown in Figures 2 and 2A. A spring 92d surrounds the stem 92b and biases the push rod outwardly. When an adjusting screw 92 is screwed further into the plate 82, it forms a stop to limit the stroke of the piston rod 75, and as the stroke is shortened, the quantity of ink delivered, is correspondingly reduced. If the adjusting screw is turned until the collar 92' strikes the front plate 82, the piston rod 75 will not be reciprocated.

Each of the piston rods 75 is provided with a reduced diameter axial extension 75a, which when the push rod 92a is pushed inward, will engage the ball 73 and open the outlet 72 from the cylinder 69. It is desirable that the fluid pressure maintained in the reservoirs, which supply ink to the pump, and the spring pressure maintained on the balls 67, be so related that the fluid pressure will lift the ball 67 from its seat, and ink will flow through the pump whenever the push rod 92a is pressed sufficiently to lift the ball 73 from its seat. The pump outlet spring 74 should have sufficient strength, however, to hold the ball 73 on its seat against the fluid pressure of the ink supply system. It will be understood that when the pump is being driven, opening any of the pump outlets by pressing the push rod 92a will cause a continuous flow of ink to pass through the pump and to the ink rail, thus permitting an operator to temporarily increase the supply of ink to any section of the form without disturbing the normal running adjustment of the pump. Furthermore, if after cleaning the pump, or when the machine has stood idle for a considerable period, an air lock is formed in any of the pump cylinders, it may be cleared by pressing the corresponding

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push rod 92a, and allowing the pump cylinder to fill with ink.

The piston rods 75 are lubricated through bores 93 provided in the blocks 64, which bores connect through cross bores 94 with oil pipes 95, that are supplied with lubricating oil under pressure. It is desirable that the pressure of the lubricant be sufficient to counteract the pressure of the ink and form a seal between the rods 75 and the cylinders 69 to prevent the escape of ink past the piston rods 75. Other operating parts of the pump mechanism are lubricated by the splash of lubricant supplied to the housing 17 by a circulating system (not shown). The cover 23 of the pump mechanism (Figure 11A) is pressed against the housing wall 16 to prevent oil leakage, by means of springs 96, supported on screws 97, which are screw-threaded into the plate 82, and the cover 23 is thus drawn toward the plate and against the wall 16.

As shown in Figure 1, the pump driving shaft 84 extends upwardly from the pump housing and has a bevel gear 101 secured thereto and in mesh with a bevel gear 102 secured to a shaft 103. The shaft 103 is rotatably supported in a carrier 104 and a bearing block 111. A shift rod 105 slidably supported in the carrier 104 carries a shifter fork 106 which engages a clutch part 107. This clutch part is slidable, but not rotatable on the shaft 103, and is adapted to engage another clutch part 108 secured to the side of a gear 109, that is freely rotatable on the shaft 103. The gear 109 is in mesh with the printing machine gear 15. The shift rod 105 extends outwardly beyond the wall 16 of the housing 17 and is provided with a hand knob 112, whereby the clutch part 107 may be disengaged to permit operation of the machine without driving the pump. The shaft 103 extends outwardly through the wall 16 and is provided with a crank engaging terminal 113, whereby the pump may be manually operated by a crank or other suitable tool, when the clutch 107 is disengaged.

In the modified pump driving arrangement shown in Figure 7, the shaft 84 is slidable in a bearing 114 and a bevel gear 115 is secured to its upper end. The bevel gear 115 is arranged to mesh with a bevel gear 116, formed on a sleeve 118 that is rotatably supported on a shaft 117 secured to and extending outwardly from the frame 12. A bracket 110 is secured to the outer end of the shaft 117 and rotatably supports the upper end of the shaft 84. A spur gear 119 also, is formed on the sleeve 118 and is in mesh with the printing machine gear 15. A collar 120 (Figures 7 and 8) is secured to the shaft 84, and rests on a shift block 121 through which the shaft 84 passes. The shift block 121 is slidably mounted in a bracket 122 attached to the housing wall 16. The shaft 84 extends through the bracket 122 and a gear 123 is secured thereon which is in mesh with a gear 124 mounted on the shaft of an electric motor 125. The shift block 121 is arranged to be shifted in the bracket 122 by a lever 126 secured to a shaft 128 that extends through the housing wall 16, an operating handle 129 being secured to the outer end of the shaft 128. Swinging movement of the handle 129 from the position shown will raise the shaft 84 and engage the bevel gears 115 and 116 and simultaneously disengage the gears 123 and 124 to connect the pump 22 with the printing machine. The handle may be locked in either position by a spring pin which engages holes 127 in the housing wall 16. When disengaged from the print-

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ing machine drive and connected to the motor, the pump 22 can be driven without running the machine, to flush the ink system with cleaning fluid or to hasten the flow of ink to the cylinders.

The means for vertically adjusting the rail 18 and with it the pump 22, includes a fluid pressure cylinder 131 located at each end of the rail 18 and mounted on a supporting bar 132 (Figure 1), which extends from the front printing machine frame 12 to the rear frame 25 (Figure 7). Each of the cylinders 131 has an inlet port 133 through which fluid under pressure may enter and exhaust, to act upon a piston 134, and suitable valve mechanism with pipe connections to a source of fluid supply (not shown) are provided. A piston rod 135 secured to each piston 134 extends upwardly and is secured to the rail 18. A leaf spring 136 is arranged to react between a shoulder 137 on the rod 135 and the rail 18 to resiliently press ink rail members 138 and 139 (Figure 9), against the ink cylinder 13, when the piston is raised to its upper limit of travel. An arm 141 is secured to and extends downwardly from each end of the rail 18 adjacent each cylinder 131 and has rack teeth 142 formed on its lower portion. An equalizing shaft 143, one end of which is shown in Figure 1, journaled at each end in an arm 141 secured to the rail 18, has gear teeth 144 formed on each of its ends, and the teeth 144 being in mesh with the rack teeth 142, the movement of both ends of the rail 18 is equalized.

The opposing rail members 138 and 139 (Figure 9) are mounted upon the upper surface of the body of the rail 18 and screws 145 clamp a space plate 146 between the members 138 and 139. Semi-circular grooves 147 and 148 in the members 138 and 139 respectively, form ports aligned with the tubes 32. Portions of the space plate 146, best seen in Figure 7, are cut away to form separate openings 31, through which the ink from each tube 32 is led to a particular area of the ink cylinder 13, from which area ink is supplied for a column of the printing.

In order that the rail 18 may be used with a distributing cylinder 13 running in either direction, the rail members 138 and 139 are arranged to be shifted transversely of the rail and tangentially with respect to the cylinder, to position the arcuate upper surface of the members 138 or 139 closer to the side of the cylinder 13 that is rotating upwardly. This is done to insure distribution of ink on the cylinder in a film of even thickness. The shifting of the members 138 and 139 is accomplished by two sets of screws 149 and 151, all of which are operable from the same side of the machine. The screw 149 passes through the member 138 downwardly at an oblique angle and is screw-threaded into the body of the rail 18 with its head engaging the rail member 138 upon a shoulder 152, provided in the member 138. The screw 151 passes upwardly at an oblique angle through the body of the rail 18 and is screw-threaded into the rail member 139 with its head engaging the body of the rail 18 upon a shoulder 153 provided therein. As shown in Figure 9, the rail is adjusted for the cylinder rotation indicated by the arrow. By loosening the screw 149 and tightening of the screw 151, the rail members 138 and 139 may be shifted so the member 139 will properly engage the cylinder 13 when it is rotated opposite to the direction indicated by the arrow. In their movements the rail members ride upon a tongue 154 formed on the body of the rail 18, shoulders 155 and 156 be-

ink formed in the members 138 and 139 respectively, to limit the shifting movement thereof by engagement with the sides of the tongue 154.

From the foregoing description and the accompanying drawings, it will be seen that an inking mechanism has been provided which when suitably connected to a plurality of sources of ink supply, will feed ink of any of the kinds available to each of a plurality of sections of a printing form. A change from ink of one kind to ink of another kind may be made at will, and if desired, each section of the form may be supplied with ink of a different color. The ink pump is contained wholly within an oil-tight enclosure, but the regulating devices for controlling the flow of ink are accessibly located at a convenient height on the face of the printing machine, and the color selector by means of which the ink may be changed when desired, is conveniently located for operation by means of a wrench inserted through the floor.

It will also be seen that the ink rail whereby the ink is applied to the ink cylinder is readily adjustable for operation of the printing cylinders in either direction, and the arrangement of the pump is such that no adjustment is required to permit operation of the machine in the opposite direction.

The term "ink" as used herein, is intended to include other liquids that may be used for printing or coating.

The invention may also be used advantageously in lithographic printing machines to supply moisture to the printing plates.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being made to the claims rather than to the foregoing description for an indication of the scope of the invention.

What we claim is:

1. In an inking mechanism for a printing machine having an ink distributing cylinder, an ink rail extending along the cylinder and slidably carrying a cylinder engaging member for adjustment tangentially in respect to the cylinder, the said ink rail and cylinder engaging member having channels communicating with each other, with the cylinder engaging member in different positions of adjustment relative to said ink rail, for supplying ink from said ink rail to said cylinder engaging member for application to the cylinder, an ink pump connected with the ink rail channels to supply ink thereto for application onto the cylinder through the channels of the cylinder engaging member, a bracket on the ink rail and supporting the pump, means operable from one side of the ink rail to adjust the cylinder engaging member tangentially, and means to move the rail and the pump vertically in unison, toward and away from the cylinder.

2. In an inking mechanism for a printing machine having an ink distributing cylinder, an ink rail extending along the ink distributing cylinder and having a cylinder engaging member adjustable tangentially in respect to the said cylinder, an ink pump connected with the cylinder engaging member to supply ink thereto for application onto the cylinder, a bracket supporting the pump on the ink rail, means operable from one side of the ink rail to adjust the cylinder engaging member tangentially, a fluid receiving

cylinder at each end of the rail, a piston in each cylinder adapted to be acted upon by fluid pressure, and a spring connecting each piston with the rail whereby the rail and the pump will be raised in unison when fluid under pressure is directed into the cylinder and the cylinder engaging member will be resiliently pressed against the ink distributing cylinder.

3. In an inking mechanism for a printing machine slidably carrying an ink distributing cylinder, an ink rail extending along the ink distributing cylinder and having a cylinder engaging member for adjustment tangentially in respect to the said cylinder, the said ink rail and cylinder engaging member having channels communicating with each other, with the cylinder engaging member in different positions of adjustment relative to said ink rail, for supplying ink from said ink rail to said cylinder engaging member for application to the cylinder, an ink pump connected with the ink rail channels to supply ink thereto for application through the channels of the cylinder engaging member onto the cylinder, a bracket secured to the ink rail and supporting the pump, adjusting means comprising screw-threaded devices extending into the cylinder engaging member tangentially and all operable from one side of the ink rail, to adjust the member tangentially to the cylinder, and means to move the rail and the pump vertically in unison, toward and away from the cylinder.

4. In an inking mechanism for a printing machine having an ink distributing cylinder, an ink rail extending along the ink distributing cylinder and having a cylinder engaging member adjustable tangentially in respect to the said cylinder, an ink pump in connection with the cylinder engaging member to supply ink thereto for application onto the cylinder, a bracket secured to the ink rail and the pump, means adapted to be operated from one side of the cylinder to adjust the cylinder engaging members transversely of the cylinder axis, a fluid receiving cylinder at each end of the ink rail, a piston in each cylinder adapted to be acted upon by fluid pressure, and a leaf spring connecting each piston with the rail whereby the rail and the pump will be raised in unison when fluid under pressure is directed into the cylinder and the cylinder engaging member will be resiliently pressed against the ink distributing cylinder, a rack at each end of the rail and a shaft extending between the racks and having gear teeth in mesh with teeth on the racks, to equalize the movement of each end of the rail.

5. In an inking mechanism for a printing machine, an ink pump having a plurality of groups of pistons therein, a cylinder operatively associated with each piston, each cylinder having an inlet and an outlet port, an ink color selector having outlet ports in connection with the inlet ports of the cylinders of each group and a plurality of separate inlet ports each connected to a different source of ink, and means in the ink color selector to direct ink to any of the groups from any of the ink sources.

6. In an inking mechanism for a printing machine, an ink pump having a plurality of groups of pistons therein, a cylinder operatively associated with each piston, each cylinder having an inlet and an outlet port, an ink color selector having outlet ports in connection with the inlet ports of the cylinders of each group and a plurality of separate inlet ports each connected to

a different source of ink, an additional inlet port in the ink color selector for connection with a source of cleaning fluid and means in the ink color selector to direct ink from any of the said sources, or cleaning fluid to any of the ink outlet ports thereof.

7. In an inking mechanism for a printing machine, an ink pump having a plurality of groups of pistons therein, a cylinder operatively associated with each piston, each cylinder having an inlet and an outlet port, an ink color selector having an outlet port in connection with the inlet ports of the cylinders of each group, the ink color selector having a plurality of separate inlet ports each connected to a source of differently colored ink, and a valve device in the selector operable to direct ink of any of the colors from the inlet port for the selected color to any of the outlet ports of the ink color selector.

8. In an inking mechanism for a printing machine, an ink pump having a plurality of groups of pistons therein, a cylinder operatively associated with each piston, each cylinder having an inlet and an outlet port, an ink color selector having an outlet port in connection with the inlet ports of the cylinders of each group, the ink color selector having a plurality of separate inlet ports each connected to a source of differently colored ink, an additional inlet port in the ink color selector for connection with a source of cleaning fluid, and a valve device in the selector operable to direct ink of any of the colors, or cleaning fluid from the corresponding inlet port, to any of the outlet ports of the ink color selector.

9. In an inking mechanism for a printing machine, an ink pump having a body member, a group of cylinders formed in the body member, a piston reciprocable in each of the cylinders, an inlet port and an outlet port for each cylinder, means to reciprocate the pistons, including an axially slidable shaft, a first gear driven by the machine, an electric motor, a second gear connected to one end of the shaft and arranged to mesh with the first gear, a third gear connected to the motor, and a fourth gear connected to the other end of the shaft and arranged to mesh with the third gear, and means to slide the shaft for selective operation of the pump by either the machine or the motor.

10. In an inking mechanism for a printing machine, a plurality of sources of ink supply, an ink pump device comprising a pump body having a plurality of ink passageways formed therein, a plurality of groups of cylinders formed in the pump body, valve controlled inlet ports connecting each cylinder of each group with one of the ink passageways, a valve controlled outlet port for each cylinder, a piston adapted to reciprocate in each cylinder, means to reciprocate the pistons, and means to selectively connect each of the ink passageways to any of the said sources of ink supply.

11. In an inking mechanism for a printing machine, an ink pump device comprising a pump body having a plurality of ink passageways formed therein, a plurality of groups of cylinders formed in the pump body, valve controlled inlet ports connecting the cylinders of each group with one of the ink passageways, a valve controlled outlet port for each cylinder, a piston adapted to reciprocate in each cylinder, means to reciprocate the pistons, a plurality of sources of ink supply, and an ink selector having a plurality of outlets each of which is connected to one of the ink passageways in the pump body

and having means to selectively connect any one of the sources of ink supply to any one of the selector outlets to supply any one of the ink passageways with ink from any one of the sources of supply.

12. In an inking mechanism for a printing machine, an ink pump device comprising a pump body having a plurality of ink passageways formed therein, a plurality of groups of cylinders formed in the pump body, valve controlled inlet ports connecting the cylinders of each group with one of the ink passageways, a valve controlled outlet port for each cylinder, a piston adapted to reciprocate in each cylinder, means to reciprocate the pistons, a plurality of sources of ink supply and a source of cleaning medium, and an ink selector having a plurality of outlets each of which is connected to one of the ink passageways in the pump body and having means to selectively connect any one of the sources of ink supply or the source of cleaning medium supply, to any one of the selector outlets to supply ink to or to clean out any group of ink passageways, ports, and cylinders.

13. In an inking mechanism for a printing machine, an ink pump having a group of pumping members, means including an axially slidable shaft to operate the pumping members, means to slide the shaft and to secure it in a first position and a second position, a gear driven by the machine and a motor independent thereof, coupling means operable by movement of the shaft to the first position to rotatively drive the shaft from the gear and uncoupled by movement of the shaft away from the said first position, and coupling means operable when the shaft is moved to the second position to rotatively drive the shaft by the motor.

14. In an inking mechanism for a printing machine having an ink distributing member, a source of supply of ink under pressure, an ink measuring device comprising a plurality of ink pumps, each having an inlet connection communicating with the ink supply, an outlet connection communicating with an orifice in the ink distributing member and a spring-seated liquid pressure operated outlet valve controlling flow into said outlet connection, and means for holding any of said outlet valves open for increasing the flow of ink to the corresponding orifice of the ink distributing member above the pumping rate of the associated ink pump.

15. In an inking mechanism for a printing machine having an ink distributing member, a source of supply of ink under pressure, an ink measuring device comprising a plurality of reciprocating piston ink pumps each having an inlet connection communicating with the ink supply, an outlet connection communicating with an orifice in the ink distributing member, and a spring seated pressure operated outlet valve for controlling flow into said outlet connection, means for reciprocating the pistons of said pumps, and means for moving a piston of a said pump to engage its associated outlet valve and hold the same open to increase the rate of flow of ink therethrough over the pumping rate of the pump.

16. Mechanism according to claim 15 in which the said means for reciprocating the pistons comprises springs for moving the pistons in their suction or intake strokes and the means for moving the piston to hold the associated outlet valve open comprises a member moveable to engage the end of the piston and force the same

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against the last said spring into position for holding open the said valve.

17. Mechanism according to claim 16 in which the said moveable member comprises a plunger adjustable to limit the suction stroke of the piston for regulating the pumping rate and slidable for so moving the piston to hold open the outlet valve.

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