

April 22, 1969

J. P. DORR

3,439,609

INK FOUNTAIN FOR PRINTING PRESS

Filed Sept. 16, 1966

Sheet 1 of 2

FIG. 1

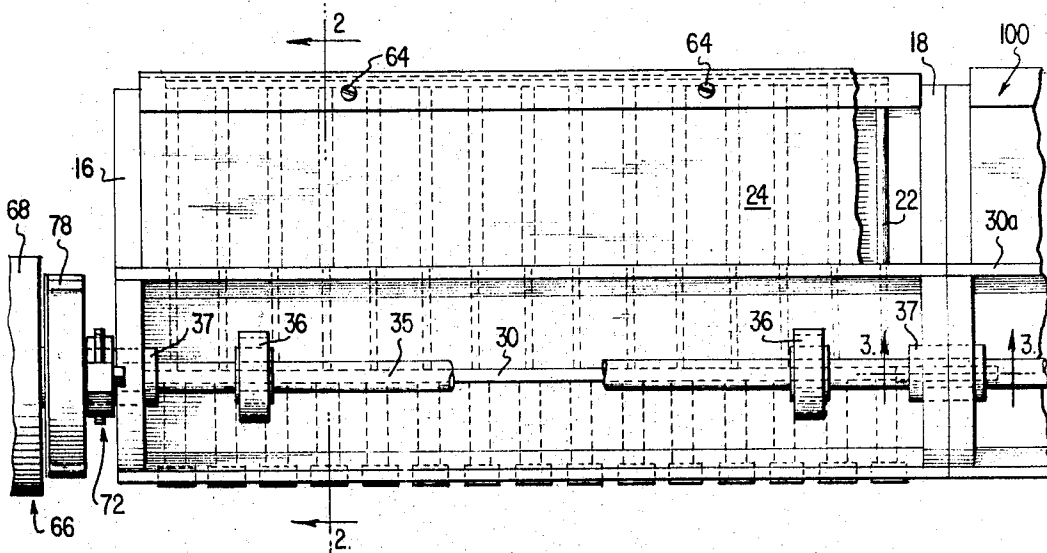


FIG. 2

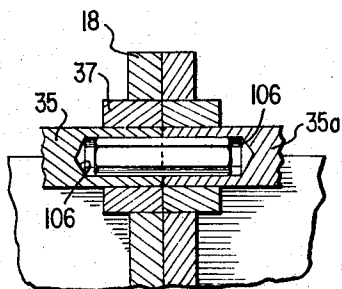
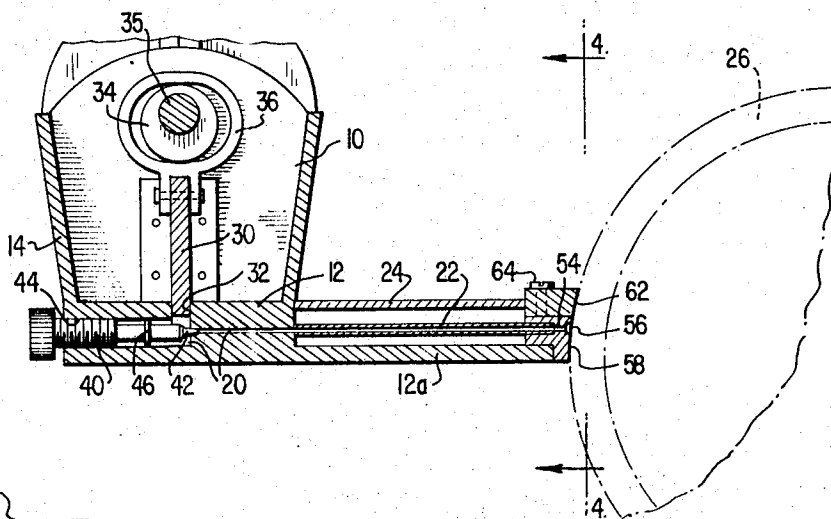


FIG. 3

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FIG. 4

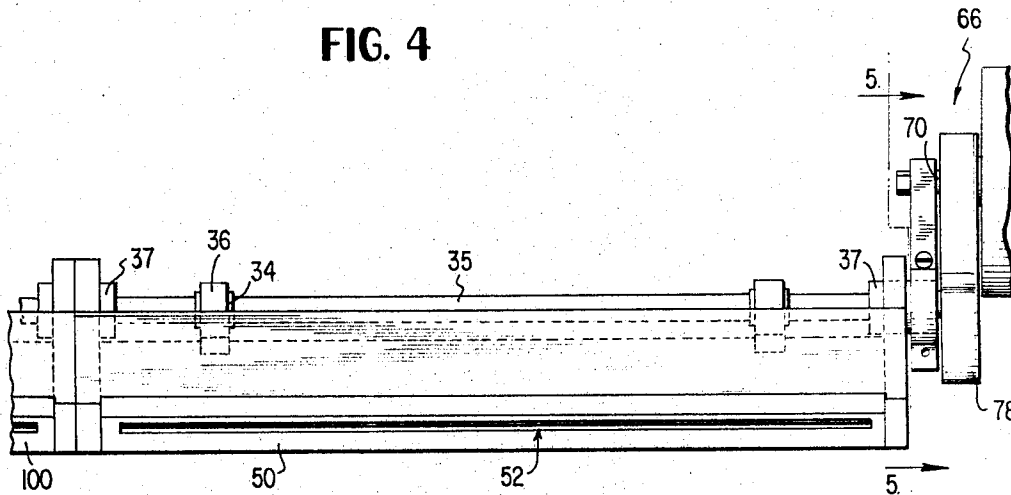
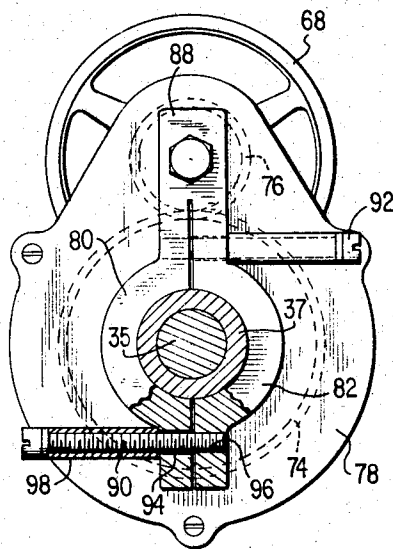


FIG. 5



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INK FOUNTAIN FOR PRINTING PRESS

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6 Claims

ABSTRACT OF THE DISCLOSURE

In an ink fountain for a printing press wherein the fountain has a plurality of outlet ducts and a pump mechanism for forcing ink through the outlet ducts; a discharge member engageable with an ink cylinder of the press and having an elongated discharge passage communicating with all the outlet ducts to discharge ink in a thin substantially continuous body extending longitudinally of the ink cylinder. Actuation of the pumping mechanism is through a drive shaft mounted in a bifurcated bracket having a pair of legs secured about a bushing which receives the drive shaft with a pair of screws received in threaded passages in the legs for securing the latter about the bushing. Rotation of the drive shaft is through a pulley operated stub shaft mounted in the upper end of the bracket and gears operatively connected between the shaft and the drive shaft for transmitting motion to the latter. The bracket screws are of sufficient length to provide access thereto without obstruction from the gears. To enable a plurality of fountains to be coupled together in series relationship to be driven from the same source, the end of the drive shaft is provided with a hexagonal passage for receiving a coupling pin which also is received in the drive shaft of an adjacent ink fountain to couple the drive shafts together for simultaneous operation from the same drive source.

The present invention relates to improvements in printing press ink fountains of the type disclosed in my earlier Patent No. 2,479,103 issued Aug. 16, 1949. Briefly described, such an ink fountain has a reservoir in which a plunger reciprocates to force ink through ducts in the bottom of the reservoir and then through tubular conduits which project outwardly from the reservoir and terminate at the ink cylinder of the press. Metering valves are installed in the reservoir ducts to regulate the quantity of flow therethrough.

Actuation of the ink forcing plunger is achieved through a rotatable shaft journaled in bushings in the end walls of the reservoir and having an eccentric which reciprocates the plunger upon rotation of the shaft. Drive for the shaft is obtained from a drive member of the associated press which drive member is operatively connected to a pulley mounted on a stub shaft. Rotatably supporting the stub shaft is a bracket mounted about one of the bushings which is mounted on an end portion of the plunger drive shaft projecting outwardly from the reservoir. Transmission from the stub shaft to the plunger drive shaft is achieved through gears. To adapt the pulley to various drive members of the press, the bracket is adjustable circumferentially of the plunger shaft.

One of the objects of the present invention is to provide an ink fountain of the aforementioned type which uniformly discharges and distributes ink to the ink cylinder of the associated press to avoid concentrations of ink on the ink cylinder.

Another object of the present invention is to provide such an ink fountain wherein adjustment of the bracket to adapt the pulley to a particular drive member of the associated press is facilitated.

A further object is to provide such an ink fountain which may be easily coupled to one or more ink fountains with the coupled ink fountains being driven from the same source.

Other objects and advantages of the present invention will be apparent from the following detailed description in conjunction with the attached drawings in which:

FIGURE 1 is a plan view of a portable ink fountain embodying the present invention and illustrated as being coupled to a similar ink fountain which is only partially shown for purposes of brevity;

FIGURE 2 is a cross-sectional view taken generally along lines 2—2 of FIGURE 1 and additionally illustrating in phantom an ink cylinder of an associated printing press;

FIGURE 3 is an enlarged, fragmental, cross-sectional view taken generally along lines 3—3 of FIGURE 1;

FIGURE 4 is a side view taken generally along lines 4—4 of FIGURE 2; and

FIGURE 5 is an enlarged end view taken generally along lines 5—5 of FIGURE 4.

Referring now to the drawings in detail there is shown for illustrative purposes only a portable ink fountain, embodying the present invention, including an ink reservoir 10 defined by a bottom wall 12, outwardly flaring side walls 14 and end walls 16, 18 projecting upwardly from the bottom wall. Extending transversely in bottom wall 12 of the reservoir are fifteen (15) ink ducts 20 each communicating with tubular outlet ducts 22 projecting laterally from one side of the reservoir between an extension 12a of the reservoir bottom and an overlying cover plate 24.

Ink is forced from reservoir 10 into ducts 20 for deposit on an ink cylinder 26 of a printing press by means of a reciprocable plunger 30 the lower end of which is received in an elongated slot or recess 32 formed longitudinally in bottom wall 12 in communication with ducts 20. Reciprocation of plunger 30 into and out of recess 32 is effected by eccentrics 34 which are fixed about a drive shaft 35 and act on surrounding pitmans 36 fixed to the upper portion of plunger 30. Drive shaft 35 is journaled for rotation in bushings 37 placed in end walls 16, 18 of the reservoir, and the plunger 30 is guided in its reciprocatory movement into and out of recess 32 by suitable guide members 38 provided on the internal sides of end walls 16, 18 to slideably receive the opposite ends of the plunger.

When plunger 30 is raised out of recess 32 ink is admitted into ducts 20 to be subsequently forced through the ducts and deposited on ink cylinder 26 when the plunger is returned into recess 32. To regulate the quantity of ink flowing through ducts 20 adjustable metering valves 40 are provided in each of the ducts with their valve heads 42 positioned for selectively varying the cross-sectional area of the ducts. As shown in FIGURE 2 metering valves 40 are threaded in correspondingly threaded passages 44 extending transversely from the side of the reservoir opposite tubular conduits 22. For sealing purposes neoprene O-rings 46 are provided about the shank of each metering valve in sealing engagement against the surrounding duct passage.

In accordance with one aspect of the present invention, ink is discharged from tubular conduits 22 through an improved discharge member, generally designated 50, suitably fixed along the longitudinal edge of bottom wall extension 12a. Discharge member 50 has a narrow discharge aperture or mouth 52 extending continuously both in transverse and longitudinal directions of the discharge member as shown in FIGURES 2 and 3, so as to be in communication with all of the tubular ducts 22. In the illustrated form, discharge mouth 52 has a narrow portion 54 which adjoins with tubular conduits 22 and an enlarged portion

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56 which opens into the side face 58 of the discharge member which contacts ink cylinder 26. With the discharge member of the present invention, ink is deposited on ink cylinder 26 in a thin substantially continuous body extending longitudinally of the ink cylinder thus avoiding concentrations of ink on the ink cylinder.

To insure that the ink deposited on the ink cylinder is distributed in an even layer, a distributing or wiping member shown as a rail 60 is placed above or below discharge member 50, it being illustrated as above the discharge member. Distributing rail 60 is coextensive with discharge member 50 and its outer face 62 is formed with the same concave curvature as that of the discharge member face 58 and both faces 58 and 62 are positioned to form a continuous concave surface. Any suitable means such as the indicated screws 64 may be employed to secure ink distributing rail 60 to discharge member 50.

Rotation of drive shaft 35 to reciprocate plunger 30 is achieved through a drive mechanism, generally designated 66, located on the end of the drive shaft which projects beyond end wall 16. Drive mechanism 66 includes a pulley 68 which may be rotated by a drive member (not shown) on the associated press. Pulley 68 is mounted on a stub shaft 70 to rotate the same and stub shaft 70 is rotatably journaled in a bracket generally designated 72 which is secured about bushing 37. Rotation of stub shaft 70 is transmitted to drive shaft 35 by gears 74, 76 fixed to shafts 35 and 70 respectively and being shown as enclosed by a protective cover 78.

Referring to FIGURE 5 bracket 72 has a bifurcated construction including a pair of opposite legs 80, 82 separated at one end and joined together at the other end so as to be movable towards and away from each other to secure or release the bracket relative to bushing 37. In the illustrated bracket the intermediate portions of legs 80, 82 are formed with semi-cylindrical surfaces 84, 86 for accommodating bushing 37 while the upper end 88 of the bracket has a generally rectangular outline. Upper bracket portion 88 has a transverse passage 90 which receives stub shaft 70 for rotation, and any suitable means may be provided for securing the stub shaft in bracket portion 88 against axial movement.

Securement of bracket legs 80, 82 about bushing 37 is achieved by screws 90, 92 adjustably mounted in the bracket on opposite sides of the semi-cylindrical portions 84, 86. In the shown embodiment screw 90 is slideably received through a passage 94 in leg 80 and engaged in threads formed in a passage 96 in the other leg 82. The other screw 92 is arranged in reverse manner by being slideably received through a passage in leg 82 and engaged in threads formed in a passage in leg 80. To transmit force from screws 90, 92 to the bracket legs for securing the bracket about bushing 37, tubular members 98 are positioned about the screws with one end of each tube engaging one of the bracket legs and the opposite end of the tube engaging a head portion of the associated screw. Upon advancement of screws 90, 92 into the bracket legs, the tubes will act on the bracket legs to resiliently deflect them towards each other into clamping engagement about bushing 37 to thereby secure the bracket.

When it is desired to loosen the bracket from bushing 37 for purposes of adjusting the position of pulley 68, for example, screws 90, 92 are retracted and the bracket legs 80, 82, because of the bifurcated construction, will move apart thus allowing the bracket to be adjusted circumferentially or longitudinally of the drive shaft. In order to facilitate access to screws 90, 92 for adjustment of the bracket, the screws are of sufficient length to extend beyond gears 74, 76 to a point at least at the peripheral edge of gear cover 78. In this way rotation of screws 90, 92 may be accomplished without interference with the gear housing or other adjacent elements.

Referring now to FIGURES 1 and 3 there is illustrated another improvement which allows the ink fountain to be coupled in end-to-end relationship with a second, similar

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ink fountain generally designated 100. Additionally the coupling arrangement allows the plunger 30a of the second ink fountain to be driven by drive mechanism 66. In the preferred embodiment the coupling is achieved by passages 106 formed in the adjacent end portions of drive shafts 35 and 35a and a hexagonal pin 108 forced fitted into passages 106 to axially interconnected and secure drive shafts 35, 35a for rotation as a unit. It will be appreciated that other coupling means may be employed to interconnect the drive shafts 35, 35a.

Other modifications readily apparent from the foregoing description and associated drawings, although not specifically mentioned herein, will nevertheless be included with the spirit and scope of the invention as indicated in the appended claims.

I claim:

1. In an ink fountain for printing presses and the like wherein the fountain includes a reservoir defined by opposite sides and end walls and a bottom wall, a plurality of ink discharge ducts communicating with the reservoir and terminating at separate and spaced outlets positioned laterally of the reservoir for depositing ink on an ink cylinder, and ink forcing means in the reservoir for forcing ink into said discharge ducts; a discharge member fixed with respect to the fountain and extending generally parallel to one side of the reservoir, said discharge member having a face adapted to engage an ink cylinder and a continuous non-interrupted narrow discharge passage extending longitudinally thereof in simultaneous communication with the outlets of all of said discharge ducts for delivering ink to the ink cylinder in a substantially continuous thin body, said discharge passage including a mouth portion opening into the face of said discharge member and a narrow portion communicating with the outlets of said discharge ducts, said discharge member further including passage means receiving the outlet ends of said discharge ducts.

2. The combination defined in claim 1 further including a second ink fountain similar to said first defined ink fountain, coupling means for coupling the said fountains in end to end relationship, a common drive means for actuating said ink forcing means of both fountains, said ink forcing means each including a reciprocating plunger, said common drive means including two coaxial drive shafts rotatably journaled in the end walls of the fountains respectively, said drive shafts having eccentrics for reciprocating the plungers upon rotation of said drive shafts, said coupling means including coaxial passages in the adjacent ends of said shafts and connecting pins received in said passages for securing the shafts for rotation as a unit, a bushing in one of said end walls receiving one end of one drive shaft, said one drive shaft and bushing projecting beyond said one end wall, said drive means further including a bifurcated bracket having opposite leg portions engaged about said bushing and at least one elongated screw received through one of the bracket legs and threaded into the other leg for securing said bracket about said bushing, a stub shaft rotatably supported in said bracket, a pulley mounted on the stub shaft to drive the same, and gear means for transmitting motion of the stub shaft to the drive shaft, said screw projecting outwardly transversely of said stub shaft to a point beyond said gear means to provide access to said screw for adjusting the bracket legs towards and away from each other, a pressure transmitting tube mounted about said screw with its opposite ends in engagement with said one leg of the bracket and a head portion of the screw such that upon advancement of said screw a force is applied through the tube upon said one leg of the bracket to move the leg of the bracket towards the other leg to secure the bracket about the bushing.

3. The combination defined in claim 1 further including an elongated ink distribution member removably mounted on one of the sides of said discharge member

for engaging ink supplied on the ink cylinder to distribute the ink on the ink cylinder.

4. The combination defined in claim 3 wherein said discharge and ink distribution members have concave ink distributing faces which are continuous with each other and have the same radius of curvature dimensioned to accommodate the associated ink cylinder.

5. A pressure feed ink fountain for printing presses and the like, the fountain including a reservoir defined by a bottom wall on opposite side and end walls projecting upwardly from the bottom wall, ink discharge ducts communicating with the reservoir and terminating at outlets positioned laterally of the reservoir for depositing ink on an ink cylinder, a drive shaft rotatably journaled in end walls of the reservoir, a reciprocal plunger having one end positioned in portions of said discharge ducts so as to force ink therethrough upon reciprocation of the plunger, means operatively connecting said plunger to said drive shaft such that upon rotation of the drive shaft the plunger will reciprocate towards and away from the discharge ducts, one end of said drive shaft projecting beyond the adjacent end wall of the reservoir, a bracket including opposite leg portions mounted about the projecting end of said shaft, a pair of elongated screws oppositely received through said legs on opposite sides of said shaft with one screw slidably received through one leg of the bracket and threaded in the other leg of the bracket and the other screw slidably received through said other leg and threaded in said one leg, a pair of pressure transmitting tubes mounted about the screws respectively with one end of each tube engaging said leg of the bracket and the opposite end of the tube engaging a head portion on the associated screw, a stub shaft mounted in one end of the bracket for rotation, drive means mounted on the stub shaft for rotating the same, and gear means for transmitting rotation of the stub shaft to said drive shaft to rotate the same to reciprocate the plunger for forcing ink through said ducts for deposit onto the ink cylinder, said screws

extending transversely of the stub shaft beyond said gear means for facilitating rotation of the screws for adjusting the bracket on opposite sides of said drive shaft.

6. A bracket assembly comprising a bifurcated body including opposite legs joined at one end and being separated at the other end for movement toward and away from each other, said legs having arcuate intermediate portions dimensioned to be engaged about the periphery of a bushing for a shaft, two elongated screws, one screw being slidably received through one bracket leg and threaded into the other bracket leg on one side of said shaft for relatively moving the bracket legs towards and away from each other, the other screw being slidably received through said other bracket leg and threaded into said one leg for relatively moving the bracket legs towards or away from each other, a pair of pressure transmitting tubes located respectively about said screws with the opposite ends of said tubes engaging one of the legs of the bracket and a head portion on the associated screw, and means including a passage generally in one end of the bracket for rotatably mounting a shaft in the bracket.

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292—256.67; 308—15, 58