

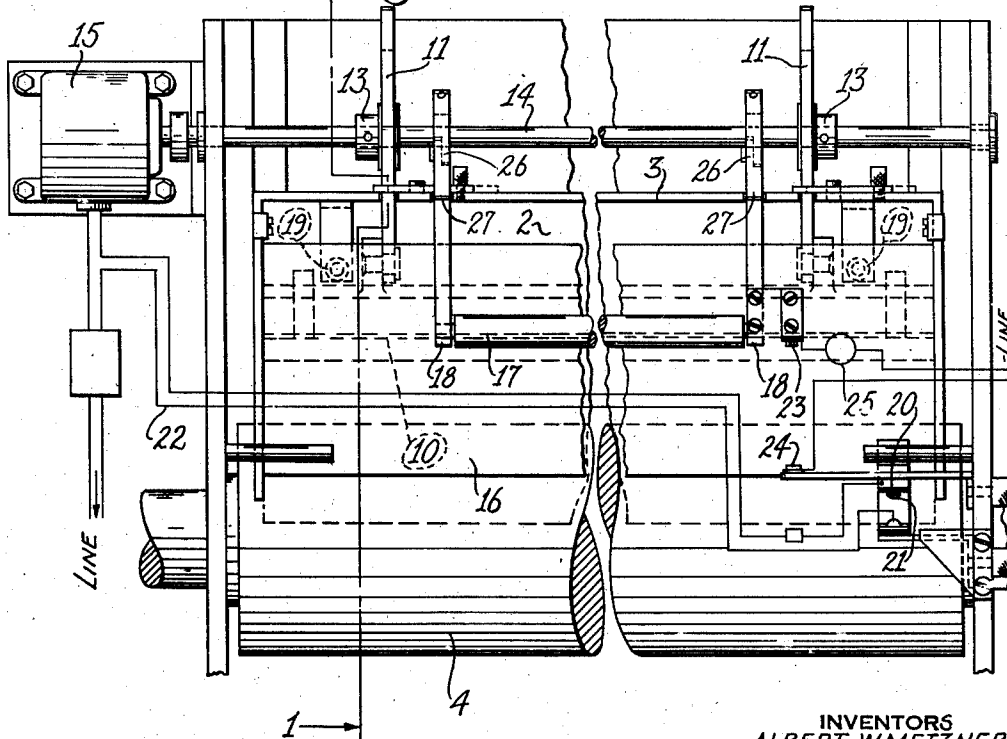
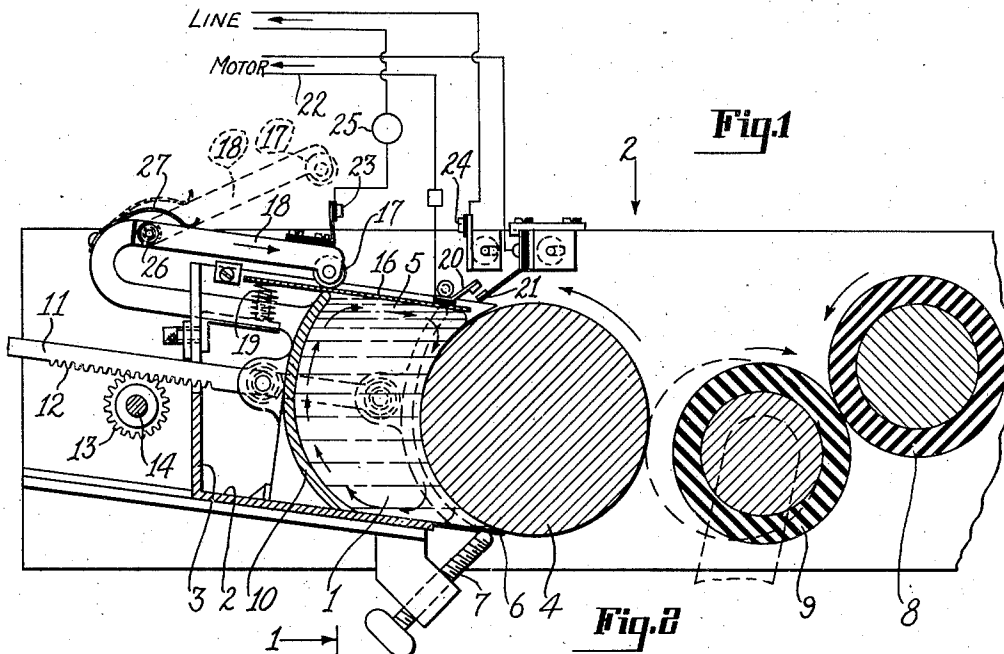
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INK FOUNTAIN

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INK FOUNTAIN

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This invention pertains to printing, and more particularly to ink fountains for printing presses, and the means and method of automatically maintaining the ink supply at a substantially constant level and in a more or less continuous state of agitation.

While it is recognized that ink fountains of variable capacity have heretofore been known, in the present instance there is contemplated means for automatically contracting the size of the ink supply reservoir proportionately to the quantity of ink dispensed therefrom so that the fluid level of the ink supply is maintained substantially constant and the remaining ink supply is subjected at uniform depth to the frictional rolling and stirring influence of the dispensing roller, to effect uniform mixture and prevent settling or stagnation of any part thereof.

While the present dispensing apparatus and control means is especially designed for printing ink fountains, it is to be understood that the inventive features hereof are also applicable to dispensing apparatus for other commodities, and is therefore not limited to the present embodiment.

The object of the invention is to improve the construction of printing press ink fountains and other dispensing apparatus for fluids or semi-fluids, whereby they may not only be economically manufactured, but will be more efficient in use, automatic in operation, uniform in action, of simple construction and unlikely to get out of repair.

A further object of the invention is to provide an expansible and contractible reservoir or supply compartment and regulatory means automatically responsive to fluctuations of the fluid level of the contents thereof for progressively contracting the supply compartment proportionately to the remaining contents thereof.

A further object of the invention is to provide means for maintaining the fluid level of the contents of the ink reservoir substantially constant.

A further object of the invention is to provide means for uniformly stirring or agitating the ink supply regardless of size.

A further object of the invention is to provide an automatic signal or alarm system for indicating exhaustion of the ink supply.

A further object of the invention is to provide an ink fountain assembly or similar dispensing apparatus, wherein the parts are readily accessible for inspection, cleaning and replacement.

A further object of the invention is to provide an ink fountain or analogous dispensing apparatus

having the advantageous structural features and inherent meritorious characteristics and the mode of operation herein mentioned.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof and the mode of operation, or their equivalents as hereinafter described or illustrated in the accompanying drawing.

In the accompanying drawing, wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a sectional view on line 2-2 of Fig. 2 of an assembled ink fountain assembly in which the present invention is embodied.

Fig. 2 is a top plan view thereof.

Like parts are indicated by similar characters of reference throughout the several views.

It is common practice to supply printing ink to printing press mechanism from a supply trough or reservoir by a roller which contacts with the ink supply and delivers an adhering film of ink to distributing rolls, from which it is transferred to the printing elements. The quantity of ink discharge and uniformity thereof depends somewhat upon the area of contact between the dispensing roll and the body of ink supply. It is therefore desirable to maintain the ink supply contiguous to the roll of substantially uniform depth. Briefly stated, in the present instance whenever the ink level falls due to discharge of ink, the mass of ink is automatically subjected to sufficient compression to again raise the ink level to a predetermined stage. This is effected by providing a movable wall for the ink reservoir which is automatically adjusted to reduce the ink reservoir capacity concurrently with the descent of a governing device which rides upon the surface of the ink supply and rises and falls with fluctuations thereof.

Referring to the drawing, 1 is the ink reservoir or trough having the bottom 2 and rear upright stationary wall 3. At the front of the reservoir or trough 1 is a dispensing roller 4 which forms the front wall of the reservoir and against which the ink supply 5 contacts throughout its full depth. Contacting the bottom of the roll 4 is a doctor or flexible wiper blade 6, engageable with the roller under variable pressure by adjustment of the screw 7 to regulate the rate of ink discharge. The ink is transferred from the surface of the roller 4 to a distributing roller 8 by an intermediate vibrating transfer roller 9.

In order to maintain the ink supply 5 of a substantially constant depth against the roller 4, a follower plate or adjustable wall 10 is provided within the reservoir 1. This follower plate or wall 10 is progressively adjustable toward the roller as the ink supply diminishes to thereby reduce the capacity of the reservoir, and by compressing the ink supply between the follower plate 10 and the roller 4 raises the ink level. To automatically adjust the false wall or follower plate 10, a push rod or rack bar 11 connected thereto and provided with a series of rack teeth 12 is engaged by a pinion 13 on an intermittently power driven shaft 14. The shaft 14 is actuated by an electric motor 15, preferably at reduced speed, through a gear reduction mechanism which may be embodied in the motor.

The motor is momentarily energized to advance the push rod 11 and false wall 10 only when the ink level falls below an established level. Resting upon the ink supply 5 is a cover plate 16 which is fulcrumed upon the top edge of the false wall or follower plate 10 and held down by a roller 17 upon an overhanging arm 18 carried by the follower plate 10. The rear margin of the fulcrumed plate 16 is urged upwardly by an expansion spring 19. The descent of the forward margin of the plate 16 under influence of the spring 19 is resisted by the body 5 of ink upon which the forward portion of the plate 16 rests. Carried by the plate 16 is an electrical contact 20 engageable with a second contact 21 to close the motor circuit 22 when the level of the ink supply has lowered sufficiently to permit the fulcrumed plate 16 to tilt downwardly. The motor 15 thus energized by the closing of the contacts 20-21 actuates the follower plate 10 to reduce the capacity of the ink reservoir and so compress the ink supply 5 between the plate 10 and the roller 4, until the ink level is raised sufficiently to push the fulcrumed plate 16 upwardly against the yielding resistance of the spring 19. This separates the contacts 20-21 and opens the motor circuit 22, to arrest the motor and hence the advancement of the follower plate.

The follower plate 10 and hold-down arm 18 advance in unison relative to the fulcrumed plate 16, so that the roller 17 maintains its relation with the plate. At the limit of advancement of the follower plate, the driving pinions 13 pass beyond the range of rack teeth 12 and cease to actuate the plate.

An electrical contact 23 carried by the arm 18 engages a stationary contact 24 at the limit of advancement of the follower plate 10, to thereby close the circuit through a signal device 25 bridged across the circuit to indicate that the ink supply is exhausted. The signal 25 may be either a light, a bell, or a buzzer, which may be close to or remotely disposed relative to the apparatus. The arm 18 is preferably jointed or pivotally connected at 26, whereby the overhanging portion may be elevated against the tension of a spring 27 to permit the cover plate 16 to be removed and access to the ink reservoir.

The traveling frictional contact of the dispensing roller 4 with the body of ink supply will transmit a rolling motion to the latter as indicated by the arrows in Fig. 1, by which the contents of the reservoir are agitated and maintained in a thoroughly mixed condition.

While the invention is described in its application to an ink fountain for which it is especially well adapted, it is also applicable to other dispensing purposes, as, for example, paint dis-

pensing or adhesive applying mechanisms, and other analogous applications.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. An ink fountain for a printing press or the like, including a reservoir, an ink dispensing roller forming one side of the reservoir, a movable side wall adjustable toward and from the dispensing roller forming the opposite side of the reservoir and by its adjustment relative to the roller varying the capacity of the reservoir, an actuating device for automatically moving the said side wall toward the roller proportionately to the quantity of ink dispensed to thereby maintain the ink level in the reservoir substantially constant, and a control device supported upon the ink supply within the reservoir and variable in accordance with fluctuations of the ink level for governing the actuating device for the said movable side wall.

2. An ink fountain for a printing press or the like, including an ink reservoir, an ink dispensing device for progressively discharging ink from the reservoir, automatic capacity reducing device for the reservoir by adjustment of which the ink level in the reservoir is maintained approximately uniform, and a governor for the capacity reducing device subject to the fluctuations of ink level within the reservoir for controlling the automatic reservoir capacity reducing device proportionately to the quantity of ink dispensed therefrom.

3. An ink fountain for a printing press or the like, including an ink reservoir of variable capacity, an ink dispensing device for progressively discharging ink therefrom, an adjustable wall for the ink reservoir by adjustment of which fluctuations of the level of the ink content of the reservoir is compensated to maintain such level substantially constant, actuating means for said movable wall, governor means therefor supported upon the ink content of the reservoir and variable with the fluctuations thereof to automatically start and stop the actuating means for the adjustable wall.

4. The method of maintaining the ink supply of an ink fountain at substantially uniform depth, including the step of intermittently reducing the capacity of the ink fountain containing the ink supply proportionately to the quantity of ink dispensed therefrom, and utilizing the lowering of the level of the ink supply within the fountain incident to discharge thereof and the subsequent rise of level thereof incident to reduction of the capacity of the fountain to respec-

tively initiate and arrest the change of the capacity of the fountain.

5. The method of maintaining the ink supply within the reservoir of an ink fountain at substantially uniform depth, including intermittently changing the capacity of the reservoir through step by step adjustment proportionately to the quantity of ink contained therein and thereby maintaining the level of the ink remaining therein substantially at a predetermined level and utilizing the fluctuation of level of the ink content in the reservoir to initiate and arrest the progressive change in capacity of the reservoir.

6. An ink fountain for a printing press or the like, including a reservoir of variable capacity for ink, dispensing means for discharging ink therefrom, electrically operated mechanism for varying the capacity of the reservoir to maintain the ink level therein substantially uniform, an electrical circuit therefor and a circuit closer controlled by fluctuations of the ink level within the reservoir.

7. An ink fountain for a printing press or the like, including an ink reservoir, an ink dispensing device discharging ink from the reservoir, automatic means for exerting upon the ink content remaining within the reservoir sufficient pressure to raise the level thereof when lowered by discharge of ink from the reservoir, and a governor upon which the pressure of the ink is exerted when raised to a predetermined level to automatically arrest the increase of pressure upon the ink content of the reservoir, and operative upon decrease of ink pressure thereon to increase the pressure upon the ink, the construction and arrangement being such that the pressure exerting means is controlled by fluctuations of the ink level within the reservoir for raising the level thereof in proportion to the quantity of ink dispensed therefrom to maintain the ink supply at a substantially uniform level.

8. A dispensing apparatus of the character described, including a supply reservoir, an adjustable wall therefor by movement of which the capacity of the reservoir may be reduced, a control device supported upon the contents of the reservoir and subject to fluctuations in accordance with variations of the level of the contents of the reservoir, motive means for the adjustable wall governed by fluctuations of said control device, the construction and arrangement being such that the reservoir wall is automatically adjusted proportionately to reduction of the quantity of contents of the reservoir to maintain the level of the remaining reservoir contents substantially constant.

9. A dispensing apparatus of the character described, including a contractible supply reservoir, means for dispensing material therefrom, automatic means for progressively contracting the reservoir proportionately to the quantity of material dispensed therefrom whereby the level of the remaining contents of the reservoir will be maintained at a substantially constant level, and pressure responsive means against which the remaining ink supply exerts pressure when at a predetermined level controlling the automatic reservoir contracting means to initiate such contraction of the reservoir when the remaining ink content falls below a predetermined level and to arrest the contraction of the reservoir when the ink level is restored to the predetermined level thereof.

10. A dispensing apparatus, including a contractible supply reservoir from which material is

progressively discharged, a fulcrumed control member limited in its oscillatory movement by the contents of the reservoir and subject to oscillation in accordance with fluctuation of the level of the reservoir contents, an electrical circuit opened and closed by alternating fluctuations of the fulcrumed control member, and means energized by said circuit for reducing the capacity of the reservoir, the construction and arrangement being such that the contents of the reservoir will be maintained at a substantially constant level regardless of the quantity thereof remaining in the reservoir.

11. An ink fountain for a printing press or the like, including an ink reservoir, a roller forming one side of the reservoir with which the contents of the reservoir are in direct contact, and by the rotation of which rotary motion is transmitted to the contents of the reservoir, an adjustable side wall for the reservoir by adjustment of which the area of contact of the reservoir contents with the roller may be maintained substantially constant, actuating means for said adjustable side wall, and automatic control means therefor, including a control member supported upon the remaining ink content within the reservoir and movable in unison with fluctuations of level of the ink contents of the reservoir, and an operative connection for initiating the adjustment of said adjustable wall upon descent of said control member upon descent of the level of the ink content, and for arresting the adjustment of said reservoir wall upon the elevation of said control member by rise of the level of the ink content to a predetermined level.

12. An ink reservoir for a printing press or the like, including a roller forming one side of the reservoir and operative to progressively discharge ink therefrom, a movable side wall for the reservoir opposite the roller, motive means for automatically adjusting the movable side wall to progressively reduce the reservoir proportionately to the quantity, and a governor for the motive means responsive to fluctuations of the level of the remaining contents of the reservoir, the construction and arrangement being such that the level of the remaining contents of the reservoir is maintained substantially constant.

13. An ink fountain for a printing press or the like, including an ink reservoir of variable capacity, a roller for progressively discharging ink from the reservoir, means for automatically reducing the capacity of the reservoir proportionately to the amount of ink discharged therefrom, a movable control member supported upon the ink content of the reservoir, and responsive to fluctuations of the level of the remaining contents of the reservoir, and an operative connection between the said movable control member and the means for automatically reducing the capacity of the reservoir effective to initiate such reduction of the reservoir capacity upon descent of the control member upon lowering of the level of the remaining ink content of the reservoir, and effective to arrest reduction of the reservoir capacity upon its elevation by rise of the level of the remaining ink content of the reservoir, the construction and arrangement being such that the level of the remaining contents of the reservoir is maintained substantially constant, regardless of the quantity of contents remaining in the reservoir.

14. An ink fountain for a printing press or the like, including an ink reservoir, a movable wall thereof by adjustment of which the capacity of

the reservoir is varied, intermittently operative actuating means for adjusting the wall, and control means supported upon the ink content of the reservoir and movable in unison with fluctuations of the level thereof operative to initiate and arrest the movement of the adjustable wall in accordance with the fall and rise of the ink level of the contents of the reservoir.

15. An ink fountain for a printing press or the like, including an ink reservoir wherein the ink level of the contents changes from time to time, pressure means for intermittently subjecting the ink content of the reservoir to pressure sufficient to raise the level thereof to a predetermined degree, and a governor therefor movable in unison with fluctuations of the level of the ink content of the reservoir operative to alternately initiate and arrest operation of said pressure means, the

operation of which is initiated upon a lowering of the ink level of the contents and the arrest thereof upon raising the level of the contents of the reservoir thereby stabilizing the ink level of the contents thereof at an established level.

16. An ink fountain for a printing press or the like, an ink reservoir wherein the ink level of the contents varies as ink is dispensed therefrom, intermittently operable pressure means for raising the level of the ink supply in the reservoir and a governor therefor influenced by fluctuations of the ink supply for alternately automatically initiating and arresting application of pressure upon the ink content of the reservoir to maintain the level thereof within an established range.

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