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INK FOUNTAIN CONSTRUCTION FOR USE IN PRINTING PRESSES

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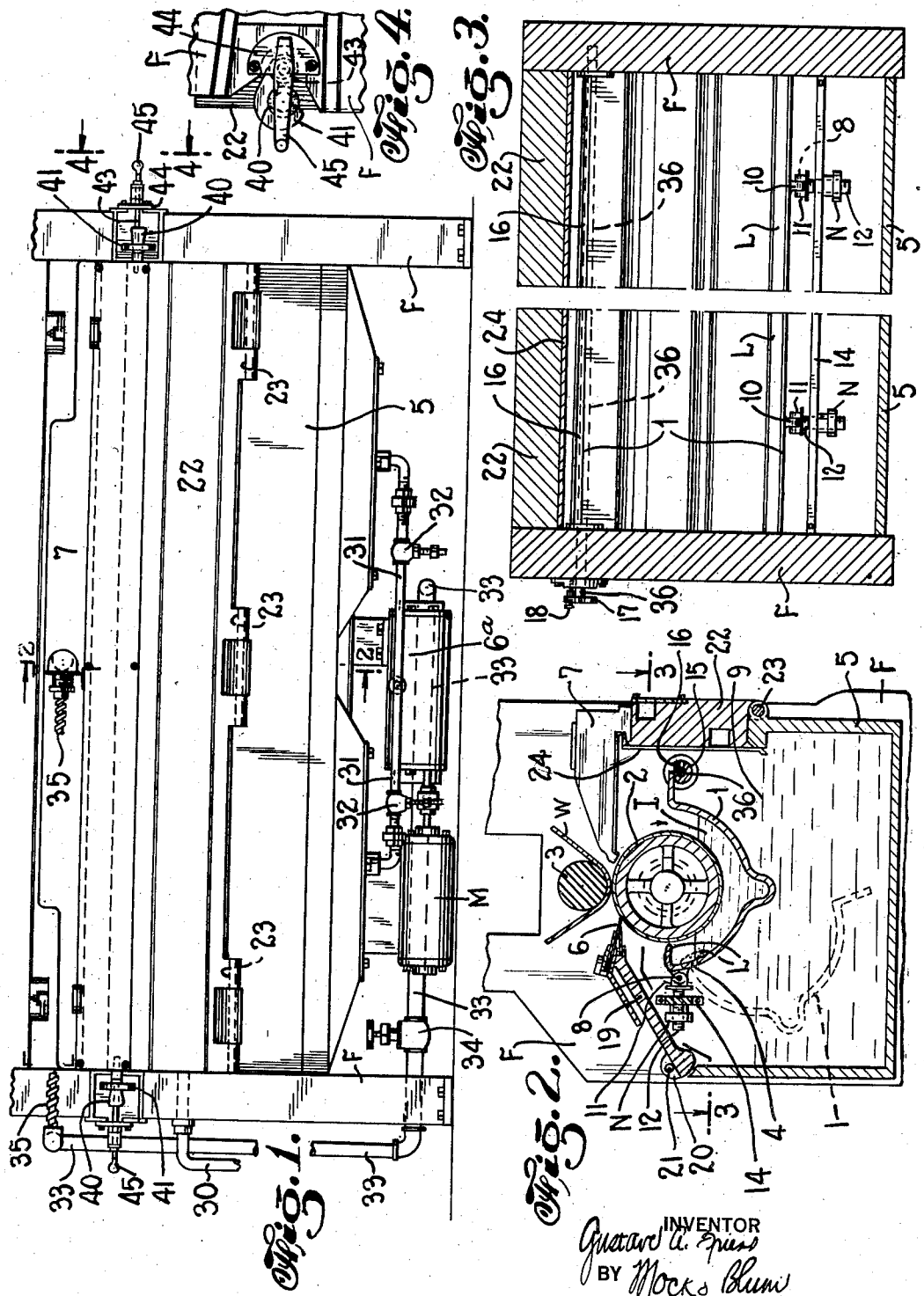

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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## INK FOUNTAIN CONSTRUCTION FOR USE IN PRINTING PRESSES

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2 Claims. (Cl. 101—157)

My invention relates to a new and improved ink fountain construction, for use in printing presses.

One of the objects of my invention is to provide an improved ink fountain whereby the ink which is forced or sprayed over the surface of the printing cylinder and which is thrown off by the centrifugal force, is retained, thus leaving an even distribution of ink on the printing cylinder, which is to be wiped off by the doctor blade.

Another object of my invention is to provide an improved device so as to prevent or minimize the vaporization of the ink. Likewise the improved device prevents or minimizes the separation of the pigment from the solvent which is a constituent of the ink.

Another object of the invention is to provide an improved device which will operate even if the pump or spraying device is temporarily out of operation, and which will operate with substantial uniformity, even if the spraying action is not uniform.

Another object of my invention is to provide an improved method of inking the cylinder of a printing press.

The invention applies particularly to rotogravure presses, although it is not necessarily limited thereto.

Other objects of my invention will be set forth in the following description and drawing which illustrates a preferred embodiment thereof, it being understood that the above statement of the objects of my invention is intended to generally explain the same without limiting it in any manner.

Fig. 1 is a side elevation of a printing press which embodies the improved device.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is an elevation on the line 4—4 of Fig. 1.

Since the invention relates particularly to an improved ink fountain and to a method of applying the ink to the printing cylinder, I have shown the improved device in more or less conventional relation to well-known parts.

Fig. 1 shows the frame F of a printing press.

Referring to Fig. 2, a trough 1 is located in spaced relation about the lower part of the printing cylinder 2. This printing cylinder 2 may be etched so that it can print pictures or other matter.

Said printing cylinder 2 cooperates with an impression cylinder 3, in order to print the paper web W, in the usual manner. The impression cylinder may be of the conventional type, which ordinarily has a resilient rubber sleeve.

The trough 1 is provided with an overflow outlet 4, so that the ink is maintained at a predetermined and constant level in the trough 1, this level being determined by the height of the outlet 4.

The trough 1 is located in a tank 5, which is adapted to receive the ink which flows out of the trough 1, through the outlet 4. A pump 6ª is operated by motor M. Ink is forced into tank 5, from any suitable source, through pipe 30. The pump for feeding ink to tank 5 is not shown. the ink may be supplied to tank 5, either continuously or intermittently, so as to maintain the ink in tank 5, substantially at a predetermined level, which is shown in Fig. 2.

The ink is drawn into pump 6, from the bottom of tank 5, through pump inlet pipes 31, each of which has a valve 32. These valves 32 may be hand-operated.

The ink is forced out of the pump through pipe 33, having hand-valve 34, which is connected by flexible pipe 35, to sprayer 7, which sprays the ink over the entire length of the cylinder or over a predetermined part of said length, in order to ink the cylinder.

The printing cylinder 2 is turned in the direction of the arrow which is indicated in Fig. 2. The inner wall of the trough 1 may be close to the periphery of the printing cylinder 2. This space may be regulated as desired and it is preferred to have this space rather small and not exceeding about four inches if the circumference of the printing cylinder 2 is forty-six inches.

The trough 1 is provided with a lip L. In the normal position of the trough 1, which is shown in full lines in Fig. 2, the lip L may be close or very close to the periphery of the cylinder 2, without actual wiping contact, so that the lip L does not remove any ink from the periphery of the printing cylinder 2.

In the normal position above mentioned, the space between the inner edge of lip L and the periphery of the printing cylinder 2, may be $\frac{1}{16}$ inch.

The trough 1 is pivotally mounted on pins 8 so that the trough can be swung to the dotted line position which is shown in Fig. 2, in order to clean or adjust the parts, without causing the lip L to contact with cylinder 2.

The tank 5 may likewise be drained.

Referring to Fig. 3, the width of the top of the trough 1 is indicated by the lead lines associated with the reference numeral 1.

As shown in Fig. 3, one of the side walls of the

trough 1 is provided with lugs 10. Each said lug 10 is pivotally connected by a pin 8, to a yoke 11. Each yoke 11 is connected to a horizontal screw 12 which is slidably mounted in a bearing which is provided in the frame member 14. Each screw 12 can be horizontally adjusted by means of a nut N.

By means of this adjustment the space between the edge of the lip L of the fountain, and the periphery of the printing cylinder 2 can be adjusted.

In order to hold the trough 1 in the full line position shown in Fig. 2, I utilize a turnable supporting member 15 which is connected to a shaft 36. This supporting member 15 has a flat surface 16, slightly rounded at the corners.

By turning said member 15, it loses contact with the adjacent flange of the trough 1, so that the trough 1 can fall to the dotted line position which is illustrated in Fig. 2.

The shaft 36 is mounted in suitable bearings connected to the frame of the machine, and said shaft 36 is provided with a hand-wheel 17 which is provided with a movable locking device 18. The shaft 36 can be turned by said hand-wheel.

In order to gain access to the parts, one side of the tank 5 is provided with a turnable extension 22. Said extension 22 is provided with a smooth inner plate 24, which is made of any suitable metal.

Referring to Fig. 2, the wall of the tank 5 which is adjacent said turnable extension 22, is provided with lugs in which a series of hinge pins 23 are located. The extension 22 is provided with corresponding lugs, through which said pins 23 pass.

The extension 22 has a stud 40 which can be engaged by a hook-latch 41, one end of which is connected to shaft 43. Shaft 43 is mounted in a bearing-plate 44, which is connected to the frame of the machine. Shaft 43 can be turned by arm 45, so as to release the extension 22, and to permit the outward movement thereof.

The doctor blade 6 has a suitable holder, which is mounted at the top of member 19, so that the doctor blade moves in unison with said member 19.

In actual practice, the cylinder 2 is turned with considerable velocity, about 300 revolutions per minute. The ink is sprayed in a uniform manner upon the printing surface of said cylinder 2. By having the outlet of member 7 close to cylinder 2, the ink can be in the form of a jet having a substantially continuous cross-section when it strikes cylinder 2. The centrifugal force may throw some of the ink outwardly so that it contacts with the interior smooth plate 24 of the extension 22. The ink does not adhere to said smooth plate 24, so that said ink will drip into the tank 5.

A substantial proportion of the ink, or nearly all the ink which is sprayed or forced upon the cylinder 2, will be thrown by centrifugal force into the trough 1, so that a substantially constant level of ink will be maintained in said trough 1, corresponding to the overflow opening 4, out of which the ink can flow continuously. The lip L prevents any substantial escape of the ink over the edge of the trough, due to the high speed of the cylinder even though there is no actual scraping contact between the edge of the lip L, and the periphery of the cylinder 2. Any excess ink is then removed by the doctor blade 6, so that the surface of the cylinder 2 is inked properly, when it comes into printing contact with the web W.

The doctor blade 6 extends preferably over the entire length of the printing cylinder 2. The doctor blade 6 is mounted at the end of a member 19, having a lug 20 which is connected or fixed to the frame of the machine by pin 21. The outlet of the sprayer 7 also extends substantially over the entire length of the printing cylinder 2.

Hence the extension 22, the sprayer 7, the doctor blade 6, and the extension 19, form in effect a hood which extends over the major portion of the cylinder 2, between the closed ends of the frame save for that portion of cylinder 2 which must be exposed for printing purposes. However, this hood is not air-tight.

The ink may be sprayed in a radial direction, or the ink may be sprayed in a direction which is more or less tangential to the cylinder, and in a direction which is parallel to the direction of turning movement of the cylinder 2, at the zone which is being sprayed. The movement of cylinder 2 causes the ink, or nearly all the ink, to be thrown into trough 1. The temperature of the sprayed ink may be below the temperature of vaporization of the solvent. The constant action of pump 6 causes the ingredients of the ink to remain thoroughly intermixed. This pump may be driven at suitable speed, so that the ink which is being sprayed or projected against the cylinder 2, is pumped at the rate of about 60 gallons per minute. Likewise, the ink in the trough is forced continuously out of trough 1 through its outlet 4, while the sprayer is being operated, because the ink is continuously thrown off the printing cylinder and into the trough, by the centrifugal force. These improvements prevent any separation of the pigment from the ink. Likewise, since the ink is sprayed in the form of a solid jet or jets, separation of pigment is minimized. The improved construction makes it possible to remove all or a substantial portion of the sprayed ink by means of centrifugal force into trough 1, while maintaining the lower part of the printing cylinder in constant contact with a continuous body of ink.

If for any reason the spraying device becomes inoperative, there is sufficient ink in the trough 1, to permit the operation of the printing press for a substantial period.

Likewise, if there is any irregularity in the action of the sprayer 7, the cylinder is properly inked because its lower part thereof contacts with a pool of ink in the trough 1.

The outlet 4 maintains the pool of ink at a predetermined level and said outlet 4 may be made sufficiently large so as to rapidly drain the ink from the trough 1, and to prevent said ink from being thrown upwardly above the lip L.

While I have shown an outlet 4 for maintaining the ink at a predetermined level in the trough 1, I could use any other means for securing this result and such other means are to be considered as equivalent for said outlet 4.

Any ink which is removed by the doctor blade 6 is collected in the tank 5. The space in which ink is applied to the printing cylinder may be designated as the inking zone. When I refer to means for delivering ink to the printing cylinder, I refer to means which act to project the ink against the cylinder, as distinguished from contacting the cylinder with a pool of ink which is maintained in a trough or fountain.

I have shown a preferred embodiment of my invention but it is clear that numerous changes

and omissions can be made without departing from its spirit.

I claim:

1. Mechanism for inking a printing press cylinder comprising means for delivering ink to the periphery of said cylinder above the bottom of said cylinder and in an inking zone which is spaced from the zone of printing, and a trough surrounding a part of said cylinder below said zone of printing, said trough having an outlet which is located above the bottom of the cylinder, so that a pool of ink is maintained in said trough at a predetermined level which is above the bottom of the cylinder and below said inking zone, said trough having a lip above said outlet, said lip and said outlet being located on the same side of said trough, said lip being sufficiently close to said cylinder so as to substantially prevent the cylinder from throwing ink upwardly out of said pool.

2. Mechanism for inking a printing press cylinder comprising means for delivering ink to the periphery of said cylinder above the bottom of said cylinder and in an inking zone which is spaced from the zone of printing, and a trough surrounding a part of said cylinder below said zone of printing, said trough having an outlet which is located above the bottom of the cylinder, so that a pool of ink is maintained in said trough at a predetermined level which is above the bottom of the cylinder and below said inking zone, said trough having a lip above said outlet, said lip and said outlet being located on the same side of said trough, said lip being sufficiently spaced from the periphery of the cylinder to prevent scraping contact, said lip being sufficiently close to said cylinder so as to substantially prevent the cylinder from throwing ink upwardly out of said pool.

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