Dec. 19, 1950 C. W. HARROLD 2,534,670

INK FOUNTAIN

Filed March 13, 1946 2 Sheets-Sheet 1

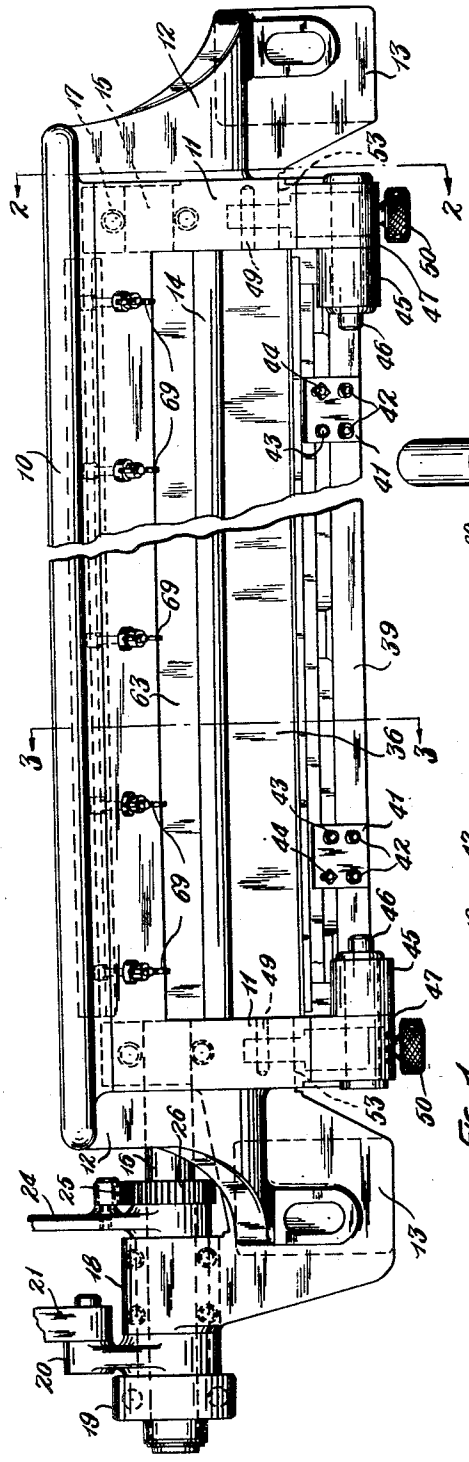


FIG. 1

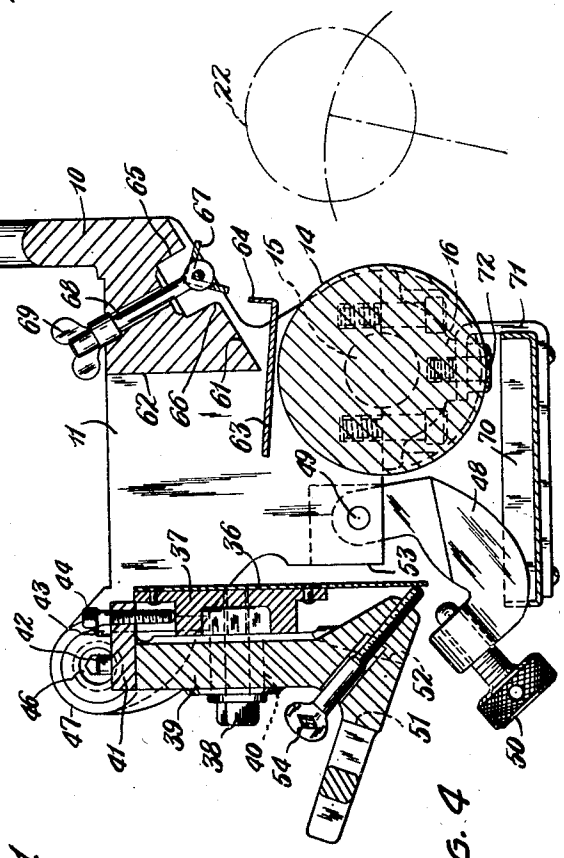


FIG. 4

INVENTOR.
CHARLES W. HARROLD
BY
Kuis, Hudson, Boughton & Williams
ATTORNEYS

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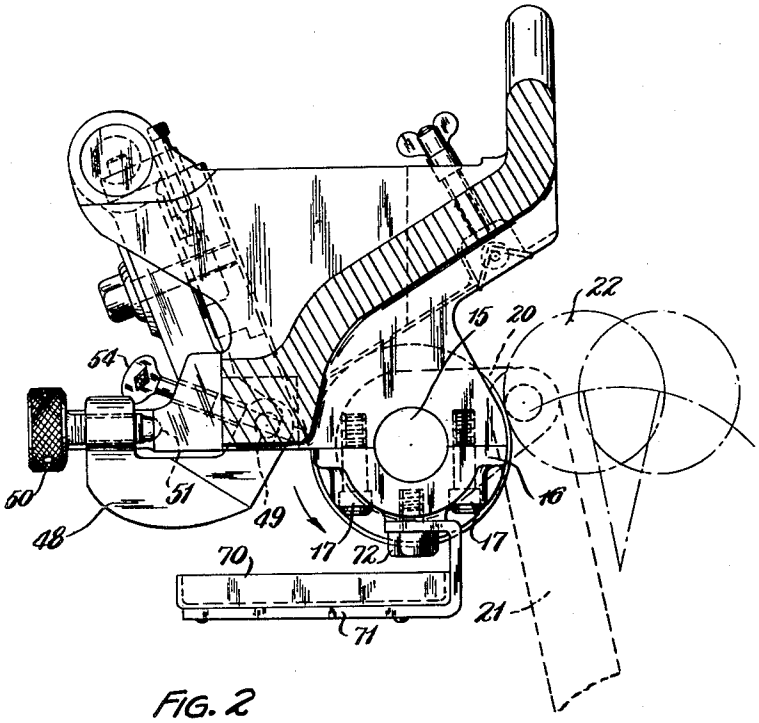


FIG. 2

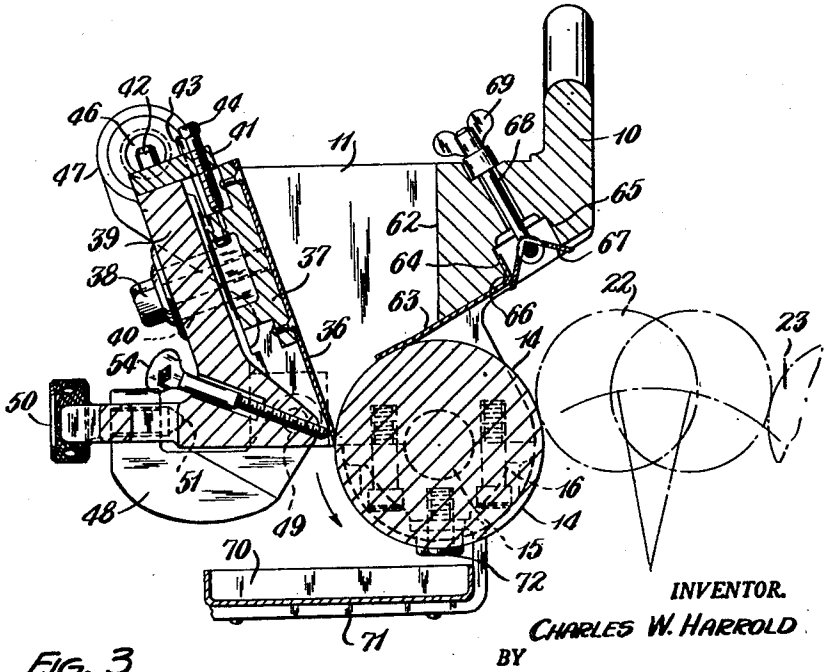


FIG. 3

INVENTOR.
CHARLES W. HARROLD
BY
Kwis, Hudson, Boughton & Williams
ATTORNEYS

Patented Dec. 19, 1950

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UNITED STATES PATENT OFFICE

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INK FOUNTAIN

Charles W. Harrold, University Heights, Ohio, assignor to Harris-Seybold Company, a corporation of Delaware

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8 Claims. (Cl. 101—364)

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This invention relates to improvements in ink fountains particularly, although not exclusively, ink fountains for offset printing presses. Ink fountains heretofore employed in lithographic presses and typographical presses other than newspaper presses usually consist of a fountain roller which forms one side of a reservoir and which is turned slowly or intermittently to carry ink out of the reservoir past a blade which lies at a small angle to the horizontal and forms the other wall of the reservoir. In such fountains, particularly for lithographic presses where stiff inks are employed, there is a tendency for the ink to form into a roll between the blade and roller and to withdraw from the narrow opening between the roller and the tip of the blade. Under these conditions the roller does not draw the desired amount of ink from the fountain but merely continues to turn over this roll of ink, making it necessary for the operator to break up the roll so that the ink may be forced down into the space between the end of the blade and the roller. Because of this difficulty various types of ink agitators have been designed and used. Both the hand operation of cutting up the ink and the use of automatic agitators are open to objection, and it is the purpose of the present invention to eliminate that objection by providing a fountain which will function satisfactorily without agitation of the ink therein.

This object is accomplished by disposing the blade at a much steeper angle and at a point on the roller which will tend to cause the ink to flow downward by gravity and by the pull of the roller into the space between the roller and the edge of the blade. The disposing of the ink above the roller presents the problem of sealing the other wall of the fountain against leakage. A further object of the invention therefore is to provide a seal for the opposite wall of the fountain which will prevent ink from leaking out of the fountain past the roller and which will, at the same time, permit the ink remaining on the roller after passing the blade and the ductor roller to reenter the fountain instead of being scraped off by the sealing means.

The cleaning of an ink fountain at frequent intervals is necessary and this also presents problems. Various expedients have been proposed to facilitate cleaning, for example making the blade slidably removable or mounting the roller in eccentrics so that it can be moved away from the blade. In accordance with the present invention cleaning is materially facilitated, in that the blade is hinged so as to swing away from the

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roller and provide a large opening through which the surface of the roller is made accessible.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Fig. 1 is a plan view of a fountain embodying the invention.

Fig. 2 is an end elevational view, partly in section upon the line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional view taken substantially on the line 3—3 of Fig. 1, with the blade in operative position, and

Fig. 4 is a similar view with the blade swung away from the roller for cleaning purposes.

The body of the fountain, which may be formed of a single casting, comprises a wall 10 which extends across the press and forms one side of the ink trough. It also comprises end walls 11 and supporting brackets 12, the latter being provided with pads 13 adapted to rest upon the main frame of the inker. An ink roller 14 is disposed between the end walls 11, fitting them closely enough to prevent leakage at those points. Journals 15 at the ends of the roller turn in bearings formed partially in the end walls 11 and partially in bearing caps 16 which are secured to the ends 11 by machine screws 17 or the like.

One of the journals 15 is elongated and extends into a further bearing formed in an extension 18 of the main body of the fountain. This elongated journal carries at its extremity a clutch 19 which is adapted to be turned intermittently through a desired angle by an oscillating lever 20 actuated by a link 21 in known manner for turning the roller 14 to withdraw ink from the fountain. Ink is transferred from roller 14 by a ductor roller indicated schematically at 22, which is oscillated from a position in contact with roller 14 to a position in contact with a roller 23 of the usual inking mechanism of the press. For the purpose of turning the roller 14 by hand the usual lever 24 is provided. This lever turns freely upon the journal 15 and carries a pawl 25 which engages a ratchet 26 that is keyed to the journal.

A relatively flexible metal blade 36 is riveted to a stiff backing piece 37 which extends across the fountain. Blade 36 is of the same length substantially as the distance between the ends 11 of the fountain body, so that when it is in the operative position shown in Fig. 3 no leakage around the ends of the blade is permitted. Backing piece 37 is secured by screws 38 to a side wall

39 which extends along the full length of the fountain between end walls 11. This side wall 39 is provided with slots 40 through which the screws 38 extend, so that the backing piece 37 and blade 36 may be secured in different positions on side wall 39.

Gibs 41 are secured by means of screws 42 to the upper edge of side wall 39. Through holes in these gibs there extend loosely flat headed screws 43 which are threaded into tapped holes in backing piece 37. Screws 44 threaded in gibs 41 bear against a flat surface in the backing piece. Adjustment of the blade 36 upward and downward in its own plane is effected by first loosening screws 44, then turning screws 43 to raise or lower the backing piece, and finally by threading screws 44 down into contact with the said flat surface of backing piece 37. In other words, after the adjustment is effected, the screws 43 and 44 work in opposition to each other to lock the backing piece in adjusted position.

The side wall member 39 is provided with ears 45 which are carried on pins 46 supported in bosses 47 formed in the end walls 11 of the fountain body. In this manner the side wall 39 is hinged to the end walls 11 of the fountain. The position of the hinge pins 46 and the arrangement of the blade 36 and its supporting means are such that when the side wall member 39 hangs freely from pins 46, as in Fig. 4, the blade 36 is spaced a considerable distance from the roller 14. This provides easy access to both the blade and the roller and greatly facilitates cleaning of those parts.

The side wall member 39 and the blade 36 are held in operative position by clamping members 48 at each end of the fountain. These clamps are hinged on pins 49 carried in the end walls 11 and are provided with tightening screws 50 which engage depressions 51 in the movable side wall member 39. These screws are adapted to clamp the faces 52 of member 39 against abutments 53 formed in end walls 11, thereby holding member 39 firmly in position and insuring its return to previous position after cleaning.

A series of closely spaced thumb screws 54 are threaded in side wall member 39 for the purpose of flexing the lower edge of blade 36 locally so as to adjust the pressure or clearance of the blade with respect to the surface of roller 14 in order to control the amount of ink delivered at different points along the length of the roller.

The inner surface of side wall 10 has a substantially vertical face 62 which is in substantially the same plane as the axis of roller 14. This wall 62 and the blade 36 comprise the opposite walls of the ink reservoir or trough. The face 62 terminates somewhat short of roller 14, and the intervening space is sealed by means of a flexible plate 63 extending between the end walls 11 and arranged to be clamped against the lower inclined surface 61 of wall 10, so that its forward end rests or bears tangentially against roller 14. This plate at its rear edge is provided with an upwardly extending flange 64 which, in the operative position of the seal, fits against one wall of a groove 65 formed in and extending lengthwise of the fountain body. The radius of the bend between plate 63 and flange 64 is quite short, while the radius 66 between the surface 61 and the wall of groove 65 is of somewhat greater length. The plate 63 with its flange 64 is held in operative position by means of an angle clamp 67 extending the full length of the fountain, which is wedged against one edge of the groove 65 and against the bend between the plate 63 and its flange 64, threaded rods 68 and thumb nuts 69 being employed for the purpose. This flexible plate 63, which may be made of spring brass or some similar material, enables the ink remaining on the roller 14 after it has passed the blade and the ductor roller to reenter the reservoir and mingle with the main body of the ink, while at the same time the ink in the reservoir is prevented from leaking out.

70 is a pan which may be provided for catching any drops of ink or cleaning fluid which may fall from the blade or the roller. As shown this pan may be mounted upon brackets 71 secured to the bearing caps 16 by machine screws 72 or the like.

The operation of the device will be obvious to those skilled in the art and will therefore be only briefly summarized. With the parts in operating position, as in Fig. 3, and the reservoir filled or partly filled with ink, when the press is started the roller 14 will be rotated step by step in the direction indicated by the arrow in that figure. The heavy ink will gravitate into the angle between the blade 36 and the roller 14, the movement of the roller functioning also to drag the ink downward into this angle. These two influencing factors are more than strong enough to overcome any tendency for the ink to form into a roll in the manner of prior constructions previously explained. In case some ink remains on the roller 14 after it has passed the ductor roller 22, this ink will be carried back into the reservoir since the plate 63, being substantially tangential to the surface of the roller, does not tend to scrape ink from the roller. The adjustment of the sealing plate 63 by the means shown in the drawing is very sensitive. After engagement between angle clamp 67 and the sealing plate 63, 64 is effected, a slight rotation of one of the thumb screws 69 will exert a pull on the angle clamp 67 at that point, pressing the bend in plate 63, 64 against the radius 66, thereby tending to flex the plate 63 and increase its pressure on the roller 14. On the other hand, loosening the clamp 67 sufficiently will permit the plate 63, 64 to be withdrawn entirely, as indicated in Fig. 4. This of course is done only when the level of ink in the fountain is below the point of contact of the plate 63 with the roller 14, or when the blade 36 is swung back to the Fig. 4 position and no ink whatever remains in the fountain.

Having thus described my invention, I claim:

1. In an ink fountain, a body member having fixed end walls and a side wall, a roller mounted at the bottom of the body member and spanning the distance between said end walls, and a second side wall having a downwardly extending blade meeting said roller on the down-going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45°.

2. In an ink fountain, a body member having fixed end walls and a side wall, a roller mounted at the bottom of the body member and spanning the distance between said end walls, and a second side wall hinged at its upper edge and having a downwardly extending blade meeting said roller on the down-going side thereof along a line in the same horizontal plane substantially as the axis of said roller and at an included angle of not more than 45°.

3. In an ink fountain, a body member having an ink reservoir, a roller at the bottom of said reservoir, and means for sealing the reservoir against the incoming top side of said roller comprising a flexible plate riding tangentially upon the surface of the roller, said plate having a flange at its edge remote from the roller, and said body member having walls for engagement by said plate and flange connected by a curve of greater radius than that of the bend between said plate and flange, and adjustable means for exerting pressure on the bend toward said curve for regulating the bearing pressure of said plate against the surface of said roller.

4. In an ink fountain, a body member having fixed end walls, a first side wall, a movable side wall opposite said first side wall, a roller mounted at the bottom of the body member between said side walls and spanning the distance between said end walls, said movable side wall having a downwardly extending blade meeting said roller on the down going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45°, and means carried by said first side wall for sealing the fountain against the incoming top side of said roller and comprising a flexible plate riding tangentially upon the surface of the roller along a line at the top of the roller or between that line and said downwardly extending blade.

5. In an ink fountain, a body member having fixed end walls and a first side wall, a roller mounted at the bottom of the body member and spanning the distance between said end walls, and a movable side wall hinged at its upper edge to said body member, the hinge line lying in a vertical plane spaced laterally from said roller, and said movable side wall having a downwardly extending blade meeting said roller on the down-going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45° and adapted to swing to a vertical position to clear the roller for cleaning purposes.

6. In an ink fountain, a body member having fixed end walls and a side wall, a roller mounted at the bottom of the body member and spanning the distance between said end walls, a second side wall hinged at its upper edge to said body member, the hinge line lying in a vertical plane spaced laterally from said roller, and said hinged side wall having a downwardly extending blade meeting said roller on the down-going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45°, and means for locking said hinged wall in operative position, said locking means when released permitting said hinged wall to assume a substantially vertical position spaced laterally from said roller.

7. In an ink fountain, a body member having fixed end walls and a side wall, a roller mounted at the bottom of the body member and spanning the distance between said end walls, a movable side wall hinged at its upper edge to said body member, the hinge line lying in a vertical plane spaced laterally from said roller, and said movable side wall having a downwardly extending blade meeting said roller on the down-going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45°, means for locking said movable wall in operative position, and means carried by said wall for adjusting said blade in its own plane toward and away from said roller.

8. In an ink fountain, a body member having fixed end walls and a side wall, a movable side wall opposite said first named side wall, a roller mounted below said first named side wall and spanning the distance between said end walls, said movable side wall being mounted at its upper edge upon a hinge, the hinge line lying in a vertical plane spaced laterally from said roller and having a downwardly extending blade meeting said roller on the down-going side thereof along a line substantially level with the roller axis and at an included angle of not more than 45°, removable means for holding said movable side wall with its blade in contact with said roller against the action of gravity, and means removably mounted on said first named side wall for sealing the fountain against the incoming top side of said roller and comprising a flexible plate riding tangentially upon the surface of the roller, whereby through the removal of said last named means and the withdrawal of said hinged wall the fountain may be opened up completely for cleaning purposes.

CHARLES W. HARROLD.

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