Dec. 29, 1964 D. H. KNOWLES ETAL 3,163,111

INK FOUNTAIN

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FIG. 1

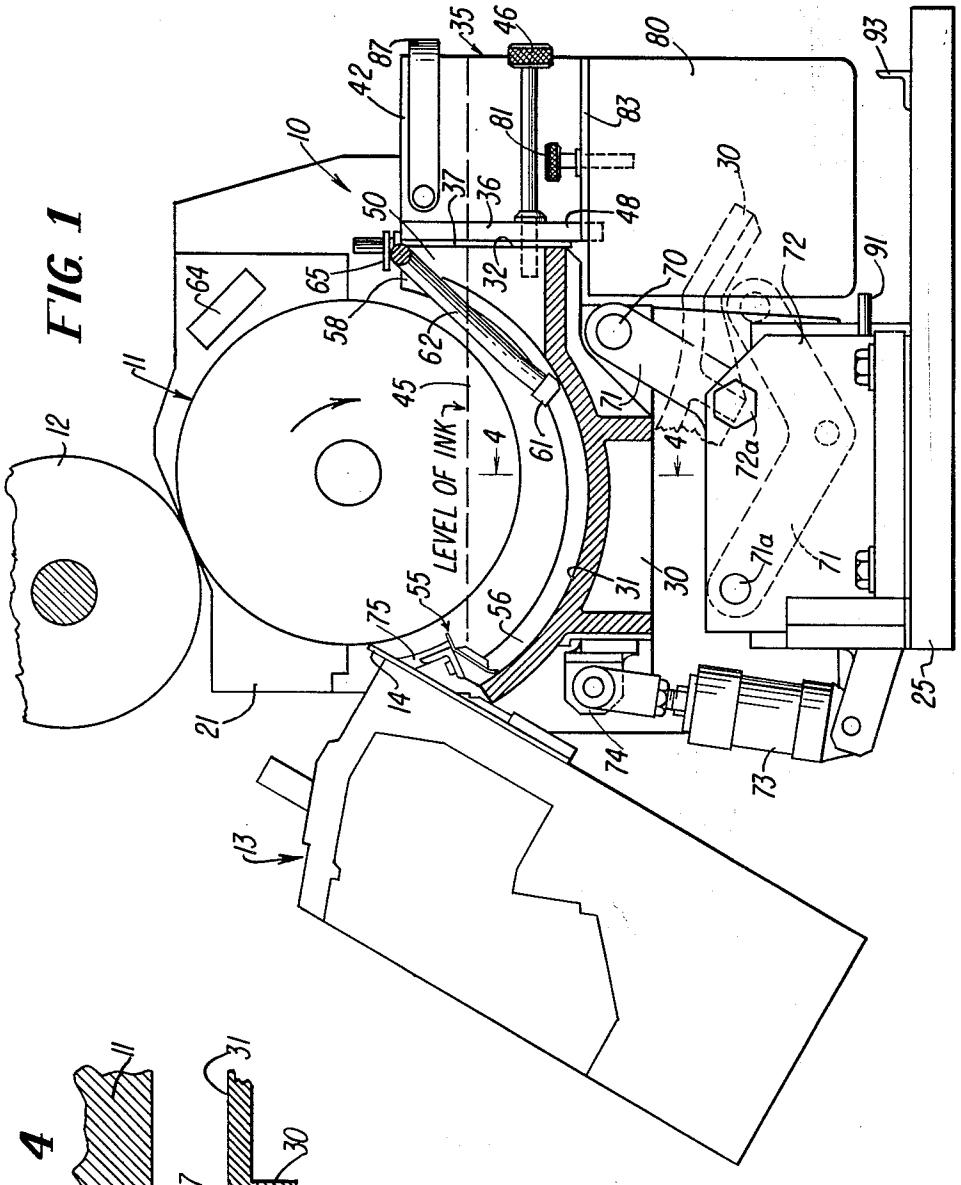
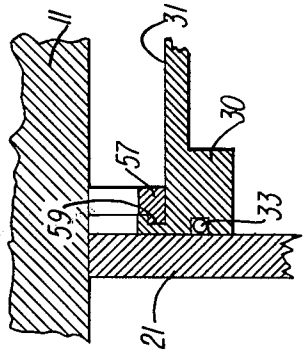


FIG. 4



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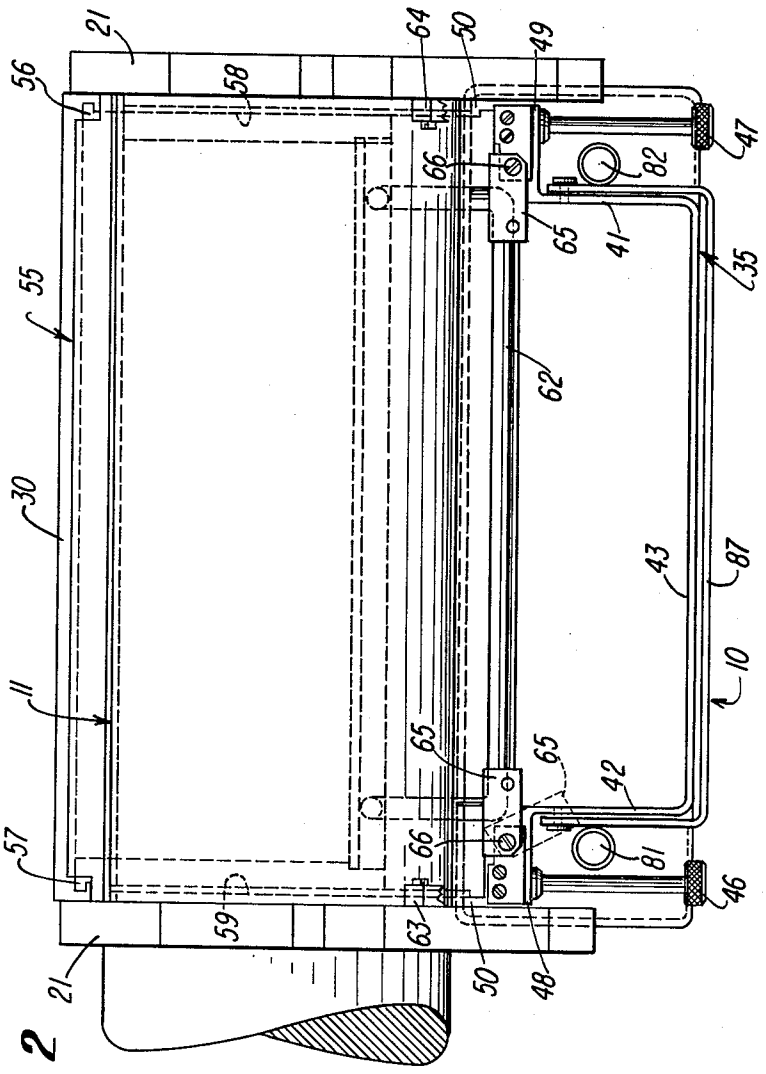


FIG 2

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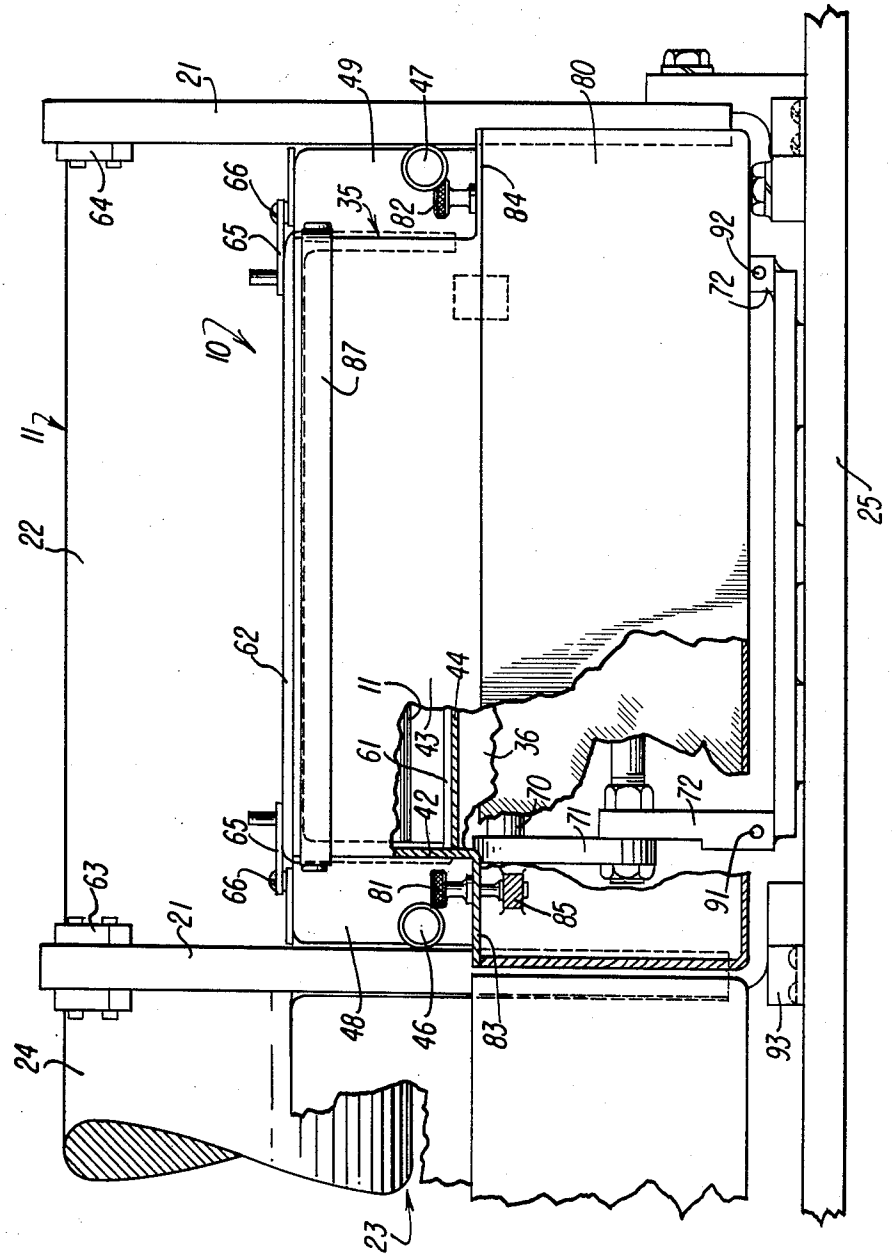
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INK FOUNTAIN

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FIG 3



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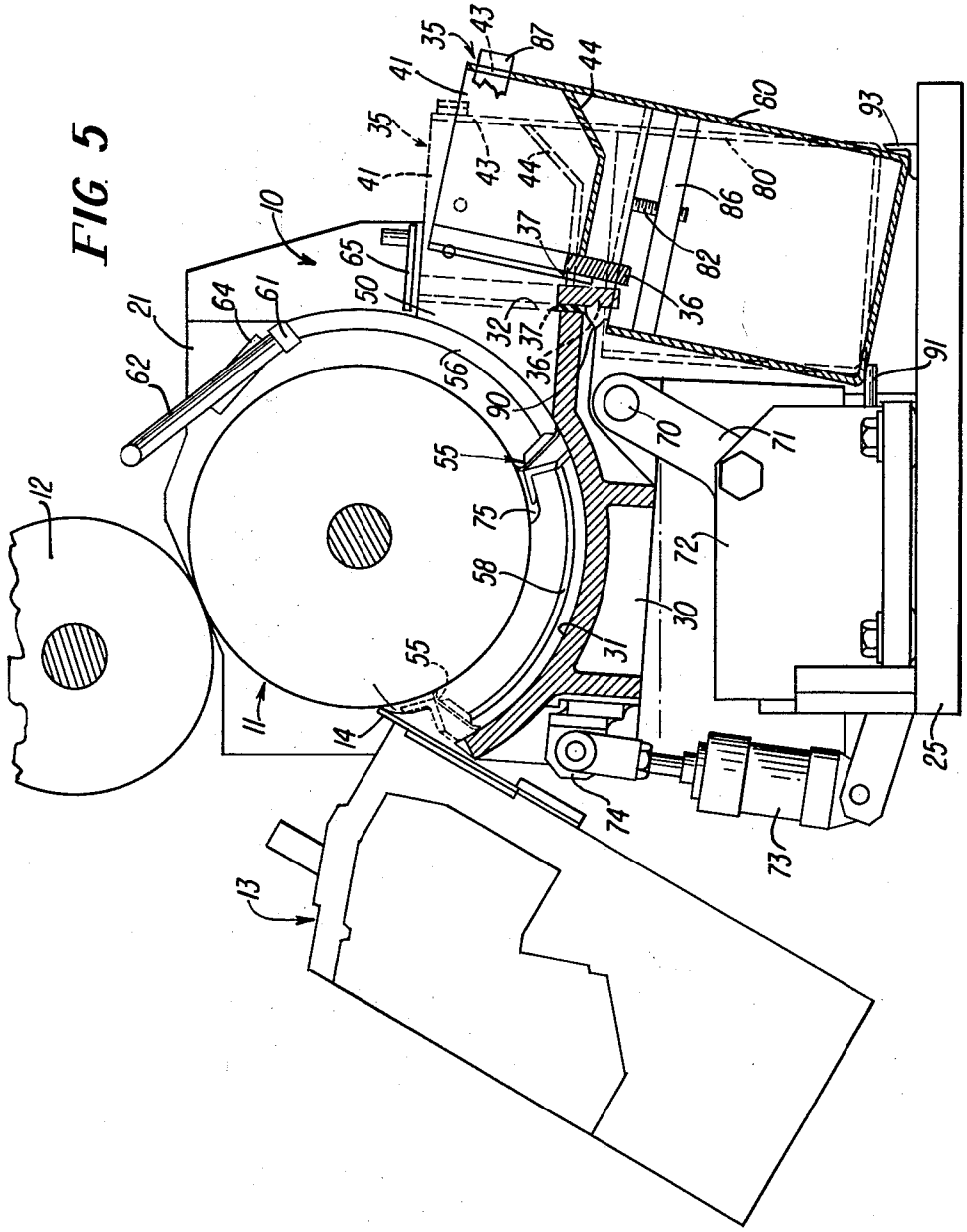
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INK FOUNTAIN

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FIG. 5



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3,163,111

INK FOUNTAIN

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9 Claims. (Cl. 101—350)

This invention relates to rotary printing presses and concerns, more particularly, ink fountains for supplying ink to such presses.

A rotary press ink fountain is basically an open topped pan which contains a quantity of ink. A fountain roller is journalled just above the "pan" so that the lower portion of the roller lies submerged in the ink. Rotating the fountain roller lifts a film of ink from the fountain on the periphery of the roller so that the ink can be picked up by the press inking arrangement and transferred to the printing or plate cylinder.

Modern rotary presses are often called upon to print with colored inks of various type as well as conventional black ink. When a color change is made, it is, of course, necessary to empty the fountain of the formerly used ink and clean the fountain, fountain roller, and related parts before the ink of an alternate color is supplied to the fountain. This has been a time consuming, rather difficult and generally messy task.

Accordingly, it is the primary aim of the present invention to provide a novel ink fountain that can be quickly cleaned to permit a color change to be rapidly and conveniently made, and which eliminates most of the messy aspects of the job.

With more particularity, it is an object of the invention to provide a novel fountain as characterized above having a removable ink retaining and disposal unit which makes it possible for the fountain to be emptied quickly and easily and which can be separated from the fountain for cleaning.

It is a further object to provide a fountain of the above described type having built-in elements for cleaning the fountain, fountain roller, and fountain knife blade.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings, in which:

FIGURE 1 is an elevation, partially in section, of a portion of a rotary press inking arrangement including a fountain constructed in accordance with the present invention;

FIG. 2 is a top plan of a portion of the structure shown in FIG. 1;

FIG. 3 is a side elevation, with portions broken away, of the fountain shown in FIG. 1;

FIG. 4 is an enlarged fragmentary section taken approximately along the line 4—4 in FIG. 1; and

FIG. 5 is similar to FIG. 1 but shows the parts in position at the end of the cleaning stroke.

While the invention will be described in connection with a preferred embodiment, it will be understood that we do not intend to limit the invention to that embodiment. On the contrary, we intend to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning now to the drawings, there is shown a portion of an inking arrangement for a rotary press including a fountain 10 embodying the present invention. Cooperating with the fountain 10 is a fountain roller 11 which is adapted to lift ink from the fountain and transfer the ink to a pickup roller 12. The amount of ink lifted by the fountain roller 11 is controlled in the usual manner

by a knife blade assembly 13 which includes a knife blade 14 positioned close to the periphery of the fountain roller.

The fountain roller 11 is sectioned by a plurality of dividers or side walls 21 so that the fountain 10 supplies ink to only a portion 22 of the fountain roller between the side walls 21. Another fountain 23, preferably similar to the fountain 10, serves the adjacent portion 24 of the fountain roller 11. Normally, each of the portions of the fountain roller provides ink across the width of a single "page" being printed by the press. Of course the fountain roller can be sectioned into any number of portions, there being individual fountains mounted to supply ink to each of the portions. In the illustrated construction, both of the fountains 10, 23, as well as the side walls 21, are mounted on a plate 25 forming a portion of the frame of the press.

In the illustrated embodiment, the fountain 10 includes a bottom member 30 having an arcuate surface 31 underlying the fountain roller 11 and which, together with the side walls 21, defines a shallow ink reservoir having an open front 32. Preferably, the ink reservoir is completed by a wiper blade 55 whose mounting is described below. The bottom member 30 fits snugly between the side walls 21 and preferably a sealing element 33 is interposed between the member 30 and each of the side walls so that a tight, fluid seal is maintained (see FIG. 4).

For closing the open front 32 of ther reservoir, a removable pan unit 35 is fastened in sealing engagement with the bottom member 30. The pan unit 35 includes a U-shaped piece 36 which carries a resilient sealing element 37 that is pressed tightly against the sides and bottom of the open front 32 when the pan unit 35 is in its FIG. 1 operating position. The unit 35 also includes side walls 41 and 42, front wall 43 and bottom plate 44 which together form an extension of, and complete, the ink reservoir defined by the bottom member 30, the wiper blade 55 and the side walls 21. An operating ink level approximately at the broken line 45 in FIG. 1 can thus be contained by the fountain 10.

It will be appreciated that the pan unit 35 provides the fountain 10 with an easily accessible region, between the end walls 41, 42, within which can be mounted a float valve or other ink level controlling device coupled to an ink supply line for keeping the fountain 10 filled. Alternatively of course, a supply of ink can be simply poured manually into the pan unit 35.

For releasably locking the pan unit 35 to the bottom member 30, a pair of thumb screws 46 and 47 are passed through flange members 48 and 49, respectively, formed on the pan unit and into threaded engagement with upstanding portions 50 of the bottom member 30. Releasing the thumb screws 46, 47 frees the pan unit 35 for removal from the fountain 10.

Pursuant to the invention, the member 30 is mounted for shifting movement from an operating position toward the fountain roller 11 and to a cleaning position and the wiper blade 55 is slidably mounted on the bottom member 30 for sweeping movement over the arcuate surface 31 toward the open front 32 so that the blade 55 also sweeps the periphery of the fountain roller when the member 30 is shifted. The blade 55 is secured between a pair of arcuate segments 56, 57, which slide in grooves 58 and 59, respectively, formed on the bottom member 30 at either edge of the arcuate surface 31. The wiper blade 55 connects the forward ends of the segments. A U-shaped handle 62 is secured to the bar 61.

By manually grasping the handle 62, the segments 56, 57 can be pulled along their respective grooves 58, 59 so as to sweep the blade 55 along the arcuate surface 31. A pair of stops 63 and 64 secured to the side walls 21

limit movement of the segments 56, 57. To hold the wiper blade 55 in its FIG. 1, press operating position, a pair of latch fingers 65 are pivoted at points 66 to the top of the upwardly extending portions 59 formed on the bottom member 30. When the fingers 65 are rotated toward one another, they overlie the wiper handle 62 so as to lock the handle down and thus hold the wiper blade in its FIG. 1 position. Swinging the fingers 65 forwardly, as best seen in FIG. 2, frees the handle 62 so that the wiper blade can be manually moved along the grooves 58, 59.

For shiftably mounting the bottom member 30, the member is pivotally supported at 70 on the upper ends of a pair of V-shaped arms 71 which are pivoted at 71*a* on upstanding plates 72 secured to the frame plate 25. Removable pins 72*a* normally hold the arms 71 fixed with respect to the plates 72. To swing the bottom member 30 by pivoting it about its axis 70, an air cylinder 73 is anchored to the frame plate 25 and coupled to a lug 74 carried by the bottom member 30. Upon actuation of the air cylinder 73, the bottom member 30 shifts upwardly about its axis 70 from the operating position shown in FIG. 1 so as to bring the wiper blade 55 into contact with the periphery of the fountain roller 11; the parts assuming their cleaning position shown in FIG. 5.

By removing the pins 72*a*, the arms 71 and the bottom member 30 may be dropped to their dashed line positions in FIG. 1 so as to provide access to the fountain blade 14 and adjacent structure. The pan unit 35 is detached before the pins 72*a* are removed.

It is important to note that the arcuate surface 31 is proportioned so that when the wiper blade 55 contacts the fountain roller 11, the axes of the fountain roller and of the arcuate surface 31 are brought into substantial alinement. With these axes coinciding, sweeping movement of the wiper blade 55 along the surface 31 also sweeps the portion of the periphery of the fountain roller 11 which overlies the surface 31.

Preferably, the wiper blade 55 includes a flexible portion 75 which is in sealing engagement with the knife blade 14 when the parts are in their FIG. 1, press operating position. The wiper blade portion 75 is also disposed so as to scrape along, and thus clean, the knife blade 14 as the bottom member 30 is swung upwardly upon actuation of the cylinder 73 (see FIGS. 1 and 5). In addition, it should be understood that the wiper blade portion 75 fills the space between the blade and the knife 14 and thus acts as a slide along which ink removed by the knife blade 14 from the periphery of the fountain roller during press operation is returned to the fountain 10.

As an important feature of the invention, ink drained from the fountain 10 is received by a receptacle 80 forming part of the pan unit 35. The receptacle 80 is of simple rectangular, open topped, box-like configuration and is secured to the pan unit 35 by a pair of thumb screws 81 and 82 which pass through flanges 83 and 84, respectively, formed on the pan unit 35 into threaded engagement with bars 85 and 86 anchored within the receptacle 80. When the thumb screws 81 and 82 are turned into the bars 85, 86, the receptacle 80 is drawn firmly against the pan unit 35 so that the pan unit and receptacle form a single rigid unit. A bail-type handle 87 pivoted on the opposite side walls 41, 42 of the pan unit 35 facilitates handling the pan unit and the attached receptacle 80. The receptacle 80 may be easily separated from the pan unit to facilitate cleaning by releasing the screws 81, 82 from the respective bars 85, 86.

The receptacle 80 extends outwardly from the U-shaped pan unit piece 36 so as to define an opening 90 running the full width of the bottom member 30 and underlying the open front 32. Thus, when the thumb screws 46, 47 are released and the pan unit 35 slightly separated from the bottom member 30, the ink contained in the fountain and in the pan unit 35 drains from the open front 32 through the opening 90 and into the receptacle 80. To conveniently hold the receptacle 80 in ink

draining position, a pair of pins 91, 92 are extended from the plates 72 and an angle member 93 is mounted on the frame plate 25 is opposed relation to the pins 91, 92. Lowering the pan unit and atached receptacle upon release of the thumb screws 46, 47, causes the receptacle to seat in the angle member 93 while resting in a tilted position on the pins 91, 92 (see FIG. 5). This disposes the opening 90 in position to receive ink from the open front 32 of the bottom member.

The operation and advantages of the fountain 10 can now be appreciated. In the FIG. 1, press running position, the bottom member 30 assumes its lower position in which the blade 55 is separated from the roller 11 and the fingers 65 overlie the handle 62 so as to hold the wiper blade portion 75 against the knife blade 14. The pan unit 35 is drawn securely against the open front 32 of the bottom member so as to complete a reservoir capable of holding ink at the approximate level of the line 45. Rotation of the fountain roller 11 in a supply of ink contained by the fountain 10 feeds ink to the pickup roller 12 and thence to the rotary press in the usual manner. Surplus ink lifted by the roller 11 is removed by the knife blade 14 and is returned along the slide defined by the wiper blade portion 75 to the supply of ink in the fountain.

When it is desired to change the color of the ink in the fountain 10 or to otherwise completely clean the fountain of its ink supply, the press is stopped and the air cylinder 73 actuated. This rotates the bottom member 30 about the pivot 70, causing the wiper blade 55 to move into contact with the fountain roller and the axis of the arcuate surface 31 to move into substantial alinement with the axis of the fountain roller 11. As the bottom member 30 is pivoted, the wiper blade portion 75 moves upwardly and scrapes along the knife blade 14 thus cleaning the knife blade and returning the ink to the reservoir.

The operator then loosens the thumb screws 46 and 47 and drops the pan unit 35, together with the attached receptacle 80, onto the pins 91, 92 and the angle member 93. As soon as the seal 37 is separated from the periphery of the open front 32 of the bottom member 30, a portion of the ink contained in the fountain drains downwardly into the receptacle 80. It is important to note that the shifting movement of the bottom member toward the receptacle 80 and thus facilitates draining the ink.

The operator then swings the fingers 65 outwardly to free the wiper blade handle 62 and the handle is pulled upwardly so as to slide the segments 56, 57 along the grooves 58, 59. This draws the wiper blade over the arcuate surface 31 and about the bottom segment of the fountain roller 11, thus sweeping these surfaces clean and moving the ink toward the open front 32 and into the receptacle 80. The fountain roller 11 is then slowly turned in its normal forward direction for approximately three quarters of a revolution, so as to move the remaining peripheral portions of the fountain roller past the wiper blade 55 and completely clean the surface of the fountain roller. Again, the ink swept from the fountain roller as it is rotated spills through the open front 32 into the receptacle 80. A rubber squeegee or other implement can then be used to move most of the remaining ink on the wiper blade and forward portions of the member 30 into the receptacle.

The operator next lifts the pan unit 35 and attached receptacle 80 from the press, using the convenient handle 87, and wipes the blade 55 and the forward portions of the bottom member 30 clean. It will be appreciated that these parts are easily accessible and, hence, this manual wipe-up job is relatively simple.

The receptacle 80 may be separated from the pan unit 35 by releasing the thumb screws 81, 82 so that the receptacle and the pan unit may be cleaned conveniently before they are again attached to the bottom member 30. Alternatively, another pan unit and receptacle, properly

cleaned, can be substituted in the fountain so that operation of the press may be resumed immediately while the pan unit 35 and receptacle 80 are cleaned at leisure. The ink contained in the receptacle 80, rather than being simply wasted, can be suitably stored for future use.

To restore the press to operation, the steps described above are simply reversed. The handle 62 is pushed downwardly to return the wiper blade 55 to press operating position and the handle is locked in position by turning the fingers 65 toward one another. The cylinder 73 is operated so as to pivot the bottom member 30 to press operating position shown in FIG. 1 and thus move the wiper blade 55 out of contact with the fountain roller. A clean pan unit 35 is brought into position with the edges of the open front 32 and the thumb screws 46, 47 are manipulated to lock the pan unit securely in position. Ink can then be supplied to the fountain in any convenient manner and press operation may be resumed.

Those skilled in this art will appreciate that the color change procedure outlined above and made possible by the fountain 10 is unusually rapid and convenient as compared to what has heretofore been known. The built-in ink cleaning and ink disposal obtained through the use of the wiper blade 55 and the receptacle 80 are particularly convenient and ink spillage is virtually eliminated.

The wiper blade 55 quickly and easily cleans the normally inaccessible portions of the ink fountain and provides a rapid way of cleaning the entire periphery of the fountain roller.

We claim as our invention:

1. In a press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surfaced bottom member shiftably mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, means for shifting said member toward said roller so that the axes of said surface and said roller substantially coincide and said blade contacts said roller, a pan unit in contact with said bottom member across said open front so as to complete said reservoir whereby said roller can be rotated in a supply of ink in said reservoir, means for releasably supporting said pan unit so that the unit can be moved out of contact with said member in order to drain the ink from said reservoir through said open front, and means for drawing said wiper blade over said surface toward said open front and around a portion of said roller when said member has been shifted.

2. In a printing press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surfaced bottom member mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, a pan unit abutting said bottom member across said open front so as to complete said reservoir so that said roller can be rotated in a supply of ink in said reservoir, means for releasably supporting said pan unit so that the unit can be moved out of contact with said member in order to drain the ink from said reservoir through said open front, and means for sliding said wiper blade over said surface toward said open front.

3. In a press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surfaced bottom member tiltably mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface, means for tilting said member for cleaning so that said blade is in contact with said roller and the axis of said arcuate surface substantially coincides with the axis of said roller, and means for sliding said wiper blade over said surface and around a portion of said roller when said member has been tilted.

4. In a press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surface bottom member tiltably mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, means for tilting said member from press operating to fountain cleaning positions so as to elevate said blade into contact with said roller and move the axis of said arcuate surface into substantial alinement with the axis of said roller, a unit abutting said bottom member across said open front so as to close in and complete said reservoir whereby said roller can rotate in a supply of ink in said reservoir, means for releasably attaching said unit so that the unit can be moved out of abutment with said member to drain the ink in said reservoir through said open front, and means for sliding said wiper blade over said surface toward said open front and around said roller when said member has been tilted.

5. In a press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surfaced bottom member shiftably mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, means for shifting said member toward said roller so that the axes of said surface and said roller substantially coincide and said blade contacts said roller, a shiftable pan unit abutting said bottom member across said open front so as to complete said reservoir whereby said roller can be rotated in a supply of ink in said reservoir, said pan unit including an underlying, open topped receptacle, said receptacle being positioned to receive ink draining from said reservoir when said pan unit is moved away from said member into a cleaning position, and means for sliding said wiper blade over said surface toward said open front and around said roller when said member has been shifted so as to sweep ink remaining in said reservoir and in the fountain roller into said receptacle.

6. In a press inking arrangement having a journalled fountain roller, the combination comprising, an arcuate surfaced bottom member mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, a pan unit abutting said bottom member across said open front so as to complete said reservoir whereby said roller can be rotated in a supply of ink in said reservoir, said pan unit being releasably secured to an underlying, open topped receptacle, means for releasably supporting said pan unit in abutment with said bottom member, and an alternate support for said pan unit and receptacle when

released from said member, said receptacle underlying said open front when held by said alternate support so as to receive ink draining from said reservoir when said pan unit is released, and means for sliding said wiper blade over said surface toward said open front and around said roller when said member has been shifted so as to move ink remaining in said reservoir and on a portion of said roller into said receptacle.

7. In a press inking arrangement having a journalled fountain roller and a knife blade positioned adjacent the periphery of said fountain roller, the combination comprising, an arcuate surfaced bottom member shiftably mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade having a portion engaging said knife blade when said blade is in position for press operation so as to provide a return slide for ink scraped from said roller by said knife blade, said wiper blade being slidably mounted on said member for sweeping movement over said surface, means for shifting said member toward said roller so that the axes of said surface and said roller substantially coincide and said blade contacts said roller, said shifting of said member causing said wiper blade portion to scrape ink from said knife blade, and means for sliding said wiper blade over said surface and around said roller when said member has been shifted.

8. In a press inking arrangement having a journalled fountain roller and a knife blade positioned adjacent the periphery of said fountain roller, the combination comprising, an arcuate surfaced bottom member pivotally mounted beneath said fountain roller with said surface underlying said roller, a pair of side walls mounted to define, together with said bottom member, a shallow ink reservoir having an open front, a wiper blade in fluid sealing engagement across said member between said walls, said wiper blade having a portion engaging said knife blade so as to provide a return slide for ink scraped from said roller by said knife blade, said wiper blade being slidably mounted on said member for sweeping movement over said surface toward said open front, means for rotating said member about said pivotal mounting toward said roller so that the axes of said surface and said roller substantially coincide and said blade contacts said roller, said rotating of said member causing said wiper blade portion to scrape ink from said knife blade, a pan unit abutting said bottom member across said open front so as to complete said reservoir whereby said roller can be rotated in a supply of ink in said reservoir, means for releasably supporting said pan unit so that the unit can be moved out of abutment with said member to drain said reservoir through said open front, and means for sliding said wiper blade over said surface and around said roller.

9. An inking arrangement for a press having a journalled fountain roller and a pair of side walls extending radially from and dividing said roller comprising, in combination, a bottom member mounted beneath said roller in slidable engagement with each of said side walls, means establishing fluid seals between said side walls and said bottom member so that the member and the walls define a shallow ink reservoir with an open front, a unit removably mounted on said bottom member and positioned across said open front so as to complete said reservoir whereby said roller can be rotated in a supply of ink contained by the reservoir, said bottom member and said unit defining a subassembly that is positionable with respect to said roller, and an open topped receptacle removably mounted on said subassembly in position to receive ink draining from said reservoir when said unit is released from said open front.

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