

Jan. 15, 1963

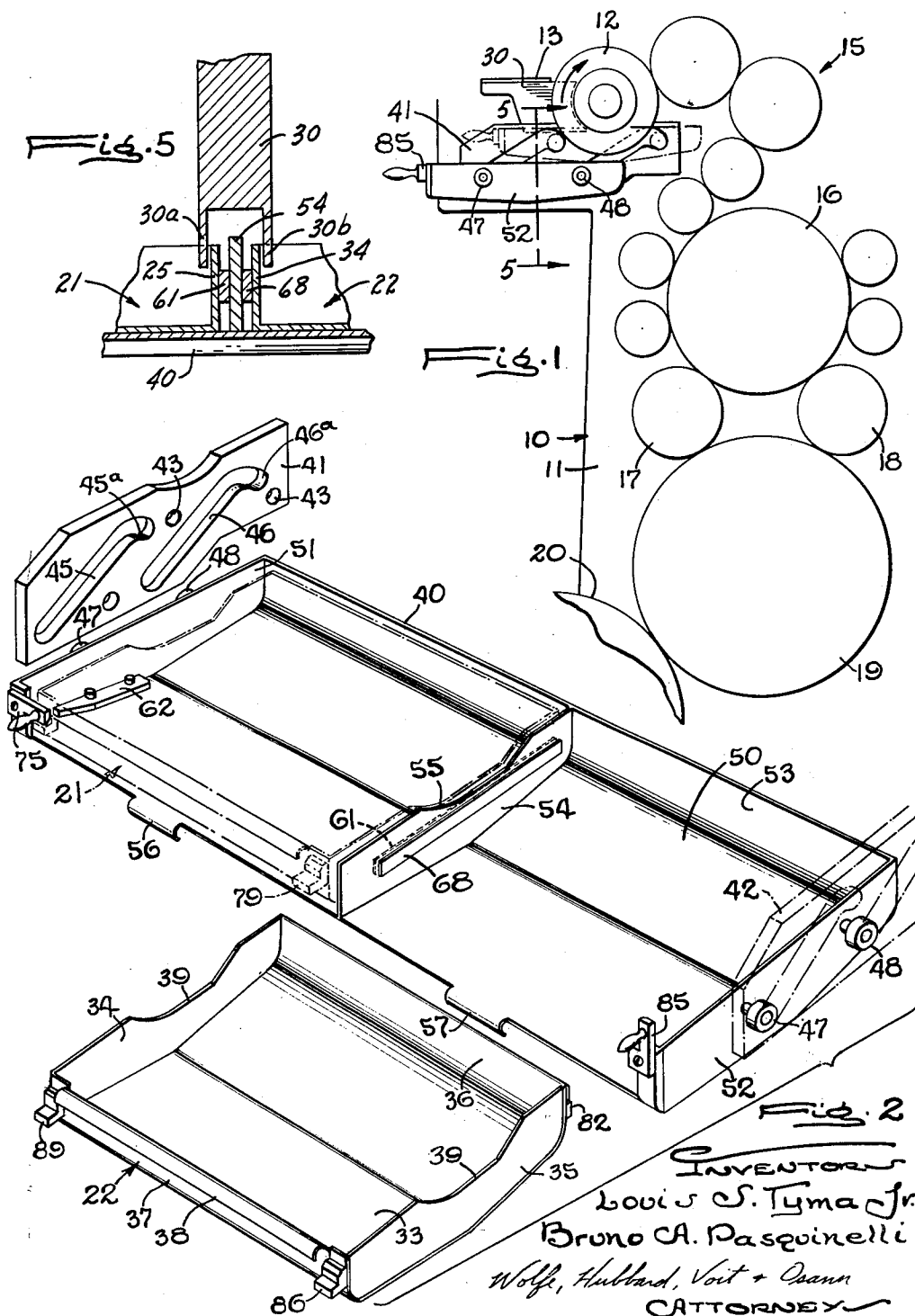
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3,073,240

INK SUPPLY ARRANGEMENT FOR COLOR PRINTING

Filed Feb. 25, 1959

2 Sheets-Sheet 1



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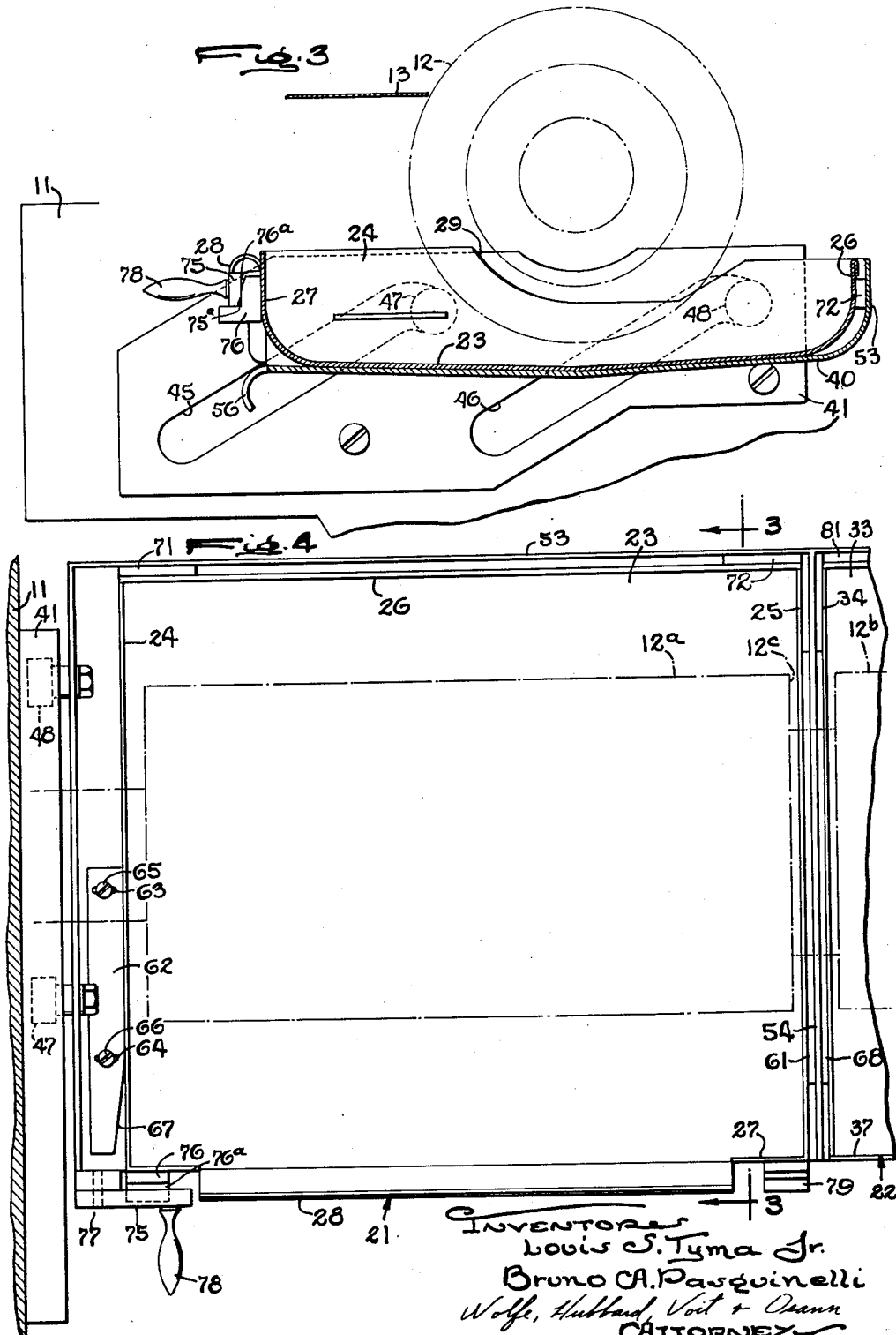
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INK SUPPLY ARRANGEMENT FOR
COLOR PRINTING

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Filed Feb. 25, 1959, Ser. No. 795,458
6 Claims. (Cl. 101—210)

The present invention relates to inking arrangements for printing presses and more particularly to a mechanism for supplying ink to the fountain roller in a newspaper press inking system.

In a conventional newspaper press inking system, the ink fountain takes the form of a long shallow tray or pan which holds the ink so that it may be picked up by a fountain roller extending down into the pan. Where separate colors are used, the long tray or pan is divided into partitions containing the various colored inks and a sectioned fountain roller, one section for each color, is utilized.

Installing and removing an ink fountain tray for cleaning or changing ink color has been a difficult and awkward job, usually requiring the coordinated efforts of two men. When the shallow tray is full of ink there is substantial risk of spillage, and of intermixing varied colored inks when color printing.

The problem of handling ink fountain trays are more severe in so-called "center color" assemblies. These assemblies consist of an auxiliary frame, superimposed on the press unit, carrying an inking system and an extra printing cylinder for adding "spot color" or "center color" to certain pages of the newspaper. Because of its position on the press unit, a center color assembly has ink fountain trays which are often six or seven feet above floor level. Handling ink-filled trays at this height greatly increases the danger of ink spillage.

Accordingly, it is an object to provide an ink supply mechanism for a press inking system in which the ink trays may be easily and quickly installed and removed by one man with little danger of spillage.

It is a related object to provide an ink supply mechanism in which the operator need not lift an ink carrying tray into actual operating position but only into an accessible loading position, with subsequent movement into operating position being accomplished by novel supporting and guiding means which keep the ink tray perfectly level.

It is a further object to provide an inking arrangement which permits a rapid change in the color of ink without inconveniencing the press operator. More specifically, it is an object to provide an inking arrangement in which each color of ink is kept in an individual separately removable pan and in which a plurality of pans are supported in a single translatable rack which extends the length of a fountain roller. In a typical case, each pan when full weighs only approximately fifteen pounds and is of a shape and size permitting easy lifting and manipulation, even above the head level of the operator.

It is another object of the invention to provide a novel supporting rack for a plurality of ink pans which includes provision for guiding each of the pans into a predetermined position with the pans arrayed side-by-side and in register with one another, but without any particular care or attention on the part of the press operator.

It is still another object of the invention to provide an inking arrangement employing a plurality of individual, separately removable pans in which inks of various colors may be stored in readiness for immediate installation in operating position on the press.

It is, moreover, an object of the invention to provide an inking arrangement which is extremely flexible in use

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and which may be installed both on new presses in the factory and, without modification, in presses already in use in the field.

It is also an object of the invention to provide an inking arrangement which not only possesses a high degree of convenience but which may be constructed and installed at minor expense.

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

FIG. 1 is an elevational diagram showing the present invention embodied in a typical center color printing unit attached to a conventional newspaper printing unit;

FIG. 2 is an exploded perspective showing a rack and pan arrangement together with its supporting means of the type in FIG. 1;

FIG. 3 is a transverse section taken along the line 3—3 in FIG. 4;

FIG. 4 is a top view of one end of the rack with a tray installed and showing the fountain roller in phantom outline; and

FIG. 5 is a fragmentary section taken approximately along the line 5—5 in FIG. 1 when the rack and pan assembly is in its upper, dashed-line position.

While the invention has been described in connection with a preferred embodiment, it will be understood that we do not intend to be limited to such embodiment but intend to cover the various alternative and equivalent constructions falling within the spirit and scope of the appended claims.

In illustrating and describing the invention, it will be convenient to refer to a "center color" assembly embodying the invention. It will be understood, however, that the invention is not so restricted and finds utility in all types of inking systems using fountain rollers and trays.

Turning now to FIG. 1, a center color printing unit 10 embodying the invention is shown in diagrammatic elevation. It includes spaced frame members 11 mounting a fountain roller 12 and a fountain blade 13. A film of ink from the fountain roller is conveyed by a series of rollers 15 to an ink drum 16, and thence to form rollers 17, 18. The latter are in rolling engagement with a center color plate cylinder 19 which engages an impression cylinder 20, the latter forming a part of a conventional newspaper printing press unit. It will be understood that the frame 11 is solidly secured to the frame of the newspaper printing press unit, with the fountain roller 12 being at the top of the unit and with the ink film being fed in the downward direction.

In the discussion which follows, it will be assumed that the press is two pages wide and that different colors are desired on adjacent pages on the web. Thus, for feeding ink of the two colors to the fountain roller 12, a first pan 21 is provided arranged adjacent a second pan 22. To prevent intermixing of the ink, the fountain roller is divided into two parts 12a, 12b separated by an annular groove 12c (see FIG. 4). In order to avoid ink accumulation in the groove 12c and eventual ink spillage into the press, a scraper 30 is mounted on the fountain plate 13 in register with the groove. The scraper extends into the groove and scrapes out ink lodged therein as the fountain roller rotates.

The ink pan 21 (see FIGS. 3 and 4) is rectangular in shape, having a bottom 23, vertical side walls 24, 25, a rear wall 26 and a front wall 27. The bottom rear and front walls may be formed of a single sheet of metal terminating in a forwardly overhanging lip 28 which permits easy finger engagement with the pan. Each of the side walls 24, 25 is relieved as indicated at 29 in order to "clear" the fountain roller.

Similarly, the second ink pan 22 includes a bottom 33,

side walls 34, 35, a rear wall 36 and a front wall 37, terminating in an overhanging lip or finger hold 38, and with the side walls relieved as shown in 39. The bottom of each of the trays may be formed into a shallow V as shown, with the bend lines of the V being centered under the fountain roller when the pans are in their operating position.

Preferably, the scraper 30 has depending flange portions 30a and 30b adapted to slightly overlap the respective pan walls 25 and 34 (see FIG. 5) so that ink scraped from the groove 12c is returned to the pans 21, 22.

In accordance with the present invention, a novel rack arrangement is provided for supporting a number of ink pans side-by-side, the rack arrangement including guiding means so that the pans may be simultaneously transported from an accessible loading position to an upraised operating position while maintaining the pans perfectly level without any special care or attention being required on the part of the press operator. Thus, in carrying out the invention, we provide a rack 40 mounted in supporting guide brackets 41, 42. Both of the brackets are provided with suitable bolt holes 43 for securing the same to the spaced frame members 11 of the center color printing unit. Thus, it will be seen that the rack 40 substantially spans the distance between the frame members and extends the length of the fountain roller 12.

For guiding the rack 40 between its loading position and its upraised operating position while maintaining the same perfectly level, a double cam and cam follower arrangement is used. In the present instance this arrangement includes inclined parallel cam surfaces 45, 46 formed in the bracket 41 and corresponding surfaces formed in the bracket 42. For engaging the cam surfaces, rollers 47, 48 are secured to each end of the supporting rack. It will be apparent that because of the weight of the rack 40, and the trays included therein, the rollers 47, 48 tend to seek a bottomed position in which the rack is positioned downwardly and to the left (FIG. 1) of the fountain roller. Upon applying force to the rack 40 in the direction of the fountain roller, the rollers 47, 48 ride upwardly on the cam surfaces so that the rack is smoothly translated without any tendency to tip in one direction or the other.

For the purpose of maintaining a rack in its upper or operating position, each of the cam surfaces in the brackets 41, 42 is provided with a "hump" or detent portion defining a terminal recess as indicated at 45a, 46a, respectively. Thus, when the rollers 47, 48 pass over the "hump," they are seated by gravity in the recesses and no further locking means is required to keep the rack 40 in place. To bring the rack down into loading position as may be required to change one of the pans, the rack is simply pulled outwardly until the rollers pass over the hump on the cam surfaces.

In accordance with one of the aspects of the present invention, novel means are provided for positioning the ink pans 21, 22 accurately with respect to the supporting rack 40. For this purpose the rack 40 is in the shape of a shallow, longitudinally extending pan which mates with the shape of the ink pans. Specifically, the rack 40 has a shallow V shaped bottom 50, end walls 51, 52 and a rear wall 53. The rack is divided into two compartments by a permanent divider 54 which is relieved as shown at 55 to clear the fountain roller. To facilitate pulling the rack bodily forward, convenient finger holds 56, 57 are formed integral with the bottom 50.

Accurate lateral positioning of the pans within the rack is provided by a combination of fixed and adjustable guide bars. Taking the left hand compartment by way of example, a fixed guide bar 61 is secured to the partition 54. At the opposite end of the pan, and secured to the bottom wall of the rack, is an adjustable guide bar 62 having slots 63, 64 engaged by clamping screws 65, 66, respectively. The adjustable guide bar 62 has an entrant taper as shown at 67. Thus, the rear end of the ink pan 21 need only be approximately located between the

guide bars when it is lifted for loading in the rack 40, and subsequent rearward movement of the pan into the rack will cause the ink pan to be "crowded" or cammed by the bar 62 in the direction of the fixed guide bar 61. Similar means is employed in the right hand compartment for locating the second ink pan, but only the fixed guide bar 68 has been illustrated.

For positioning of the pans in their "in-and-out" direction, we prefer to employ fixed spacer blocks between the rear walls of the pans and rack, respectively. Thus, again taking the pan 21 by way of example, it will be noted in FIGS. 3 and 4 that spacer blocks 71, 72 are employed which may be permanently secured to the rear wall 26 of the pan. To insure that the pan is solidly seated against the rear wall of the rack, a locking means is employed which engages the front edge of each of the ink pans. Thus, the pan 21 is locked in place by a swingable latch 75 which cooperates with an L-shaped catch 76, the latter being secured to the front edge of the pan 21. The latch 75 is pivoted at 77 and has an operating handle 78 at its opposite end. The engaging surfaces of the latch and the catch are tapered at 75a and 76a, respectively, so that, as will be apparent to one skilled in the art, rotation of the latch into engagement with the catch causes the ink pan to be crowded backwardly until the stops 71, 72 engage the rear wall 53 of the rack. With the latch 75 seated on the catch 76, the pan is locked accurately in position until intentionally released.

The right hand ink pan is similarly provided with stops 81, 82 and a latch 85 for engaging a catch 86 which is secured to the pan. In order that the pans 21, 22 may be employed in either the right or left hand position, catches are provided at both ends of the pan as indicated at 79, 89, respectively.

Changing of ink pans particularly in a center color unit, has long been regarded as one of the unpleasant jobs in the servicing of a newspaper press since it requires carefully coordinated effort between two men with a substantial danger of spilling the ink. It will be apparent from what has been stated above that the present invention constitutes the solution of the problems associated with the prior procedures. Each of the ink pans employed in the present arrangement are of convenient size for manipulation, even above the head level of the operator, and are sufficiently light, about fifteen pounds when full, so as to permit handling without exertion. In installing a fresh pan, the pan is lifted into engagement with the front edge of the rack 40, following which slight rearward pressure is required to seat the pan against the stops provided for accurate positioning without particular care or attention on the part of the operator. Moreover, the pans are sufficiently small as to permit storage, when full of ink, in a suitable storage cabinet so that changing of the colors is a simple matter of substituting pans without the necessity for filling or emptying the pans. To clean the ink transferring rollers, a pan of solvent may be used in lieu of ink and the press operated a short time until the ink pigment on the rollers has been substantially transferred to the solvent.

It is to be noted that the present arrangement avoids any necessity for the operator to lift a pan into actual operating position. The pan is simply placed in the rack from which point mechanical means takes over to translate the pan in a precisely level position upwardly and inwardly with respect to the fountain roller. The rack automatically falls into seated position where it remains until a change of color or replenishment of the ink is required.

We claim as our invention:

1. In a printing press having a pair of spaced frame members and a plate cylinder, an inking arrangement comprising, in combination, a fixedly journaled fountain roller, means for feeding a film of ink from said fountain roller to the plate cylinder, a shiftable horizontal rack spanning the distance between said frame members and

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arranged under the fountain roller, a plurality of ink pans removably rested in said rack, means for securing said pans in side-by-side position in said rack, and supports at the ends of said rack for supporting the same for limited movement on said frame members, said supports each including guide means so that the rack is guided for movement between an upraised or operating position in which the ink pans cooperate with said fountain roller and a lowered position in which the pans are below and away from said fountain roller while maintaining the pans in level position.

2. In a printing press having a pair of spaced frame members and a plate cylinder, an inking arrangement comprising, in combination, a fixedly journaled fountain roller, means for feeding a film of ink from said fountain roller to the plate cylinder, a horizontal rack spanning the distance between said frame members and arranged under the fountain roller, a plurality of ink pans removably rested in said rack, means for securing said pans in side-by-side position in said rack, and supports at the ends of said rack for supporting the same on said frame members, said supports and said rack having a pair of cooperating cam surfaces and cam followers at each end of the rack so that the rack is guided for movement between an upraised position in which the ink pans cooperate with said fountain roller and a lowered position in which the pans are moved downwardly and away from said fountain roller while maintained in level position, said cam surfaces having a detent defining hump for releasably detaining the rack in its said upraised position.

3. In a printing press having a pair of spaced frame members and a plate cylinder, an inking arrangement comprising, in combination, a fixed journaled fountain roller, means for feeding a film of ink from said fountain roller to the plate cylinder, a rack spanning the distance between said frame members and arranged under the fountain roller, a plurality of shallow, V-bottomed ink pans removably rested in said rack, said rack being shaped to conform to the shape of said pans and having an open side allowing the pans to be slid into and out of the rack, a latch for releasably locking said pans in the rack, and supports at the ends of said rack for supporting the same for limited movement on said frame members, said supports each including guide means so that the rack is guided for movement between an upraised position in which the ink pans cooperate with said fountain roller and a lowered position in which the pans are below and away from said fountain roller while maintaining the pans in level position.

4. In a printing press having an inking arrangement including a fountain roller fixedly journaled between a pair of spaced frame members, the combination comprising, a movable rack spanning the distance between said frame members and arranged under the fountain roller, a plurality of ink pans removably rested in said rack, means for securing said pans in side-by-side position in said rack, and supports at the ends of said rack for supporting the same for limited movement on said frame mem-

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bers, said supports each including guide means so that the rack is guided for movement between an upraised or operating position in which the ink pans cooperate with said fountain roller and a lowered position in which the pans are below and away from said fountain roller while maintaining the pans in level position.

5. In a printing press having a pair of spaced frame members and a plate cylinder, an inking arrangement comprising, in combination, a fountain roller divided into two sections separated by an annular groove, means for feeding a film of ink from said fountain roller sections to the plate cylinder, a shiftable horizontal rack spanning the distance between said frame members and arranged under the fountain roller, a pair of removable ink pans in said rack secured in side-by-side position one beneath each roller section, a scraper positioned above said pans and having a portion extending into said roller groove, said scraper closely overlying and spanning the adjacent sides of said pans so that ink removed from the groove is returned to the pans and not lost therebetween, and supports at the ends of said rack for supporting the same for limited movement on said frame members, said supports each including guide means so that the rack is guided for movement between an upraised position in which the ink pans cooperate with said fountain roller and a lowered position in which the pans are below and away from said fountain roller while maintaining the pans in a horizontal position.

6. In a printing press having a pair of spaced frame members and a plate cylinder, an inking arrangement comprising, in combination, a fountain roller divided into sections with adjacent sections being separated by an annular groove, means for feeding a film of ink from said fountain roller sections to the plate cylinder, a horizontal rack spanning the distance between said frame members and arranged under the fountain roller, a plurality of ink pans in said rack secured in side-by-side position one beneath each roller section, a scraper positioned above said pans and having a portion extending into said roller groove, said scraper having depending flange portions extending down into the pans on either side of said groove so that ink removed from the groove by the scraper is returned to the respective pans, and supports at the ends of said rack for supporting the same on said frame members.

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