

Nov. 29, 1966

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3,288,061

PRESS INKING ARRANGEMENT

Filed Dec. 31, 1963

3 Sheets-Sheet 1

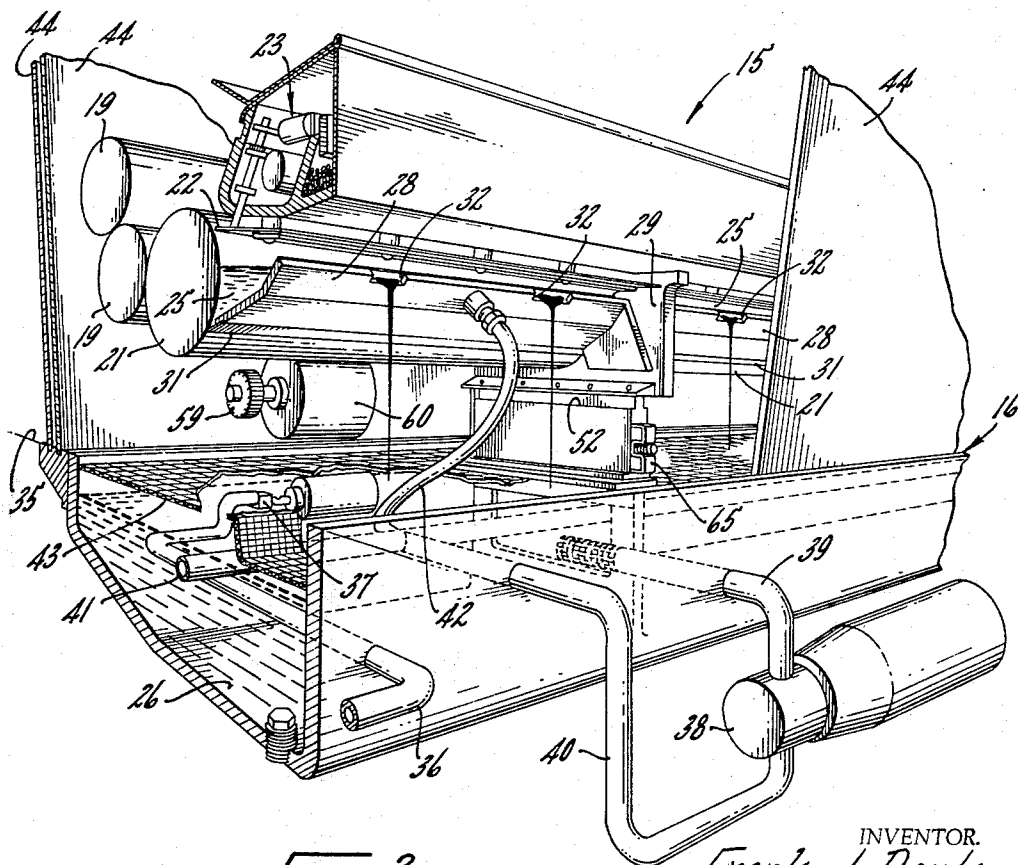
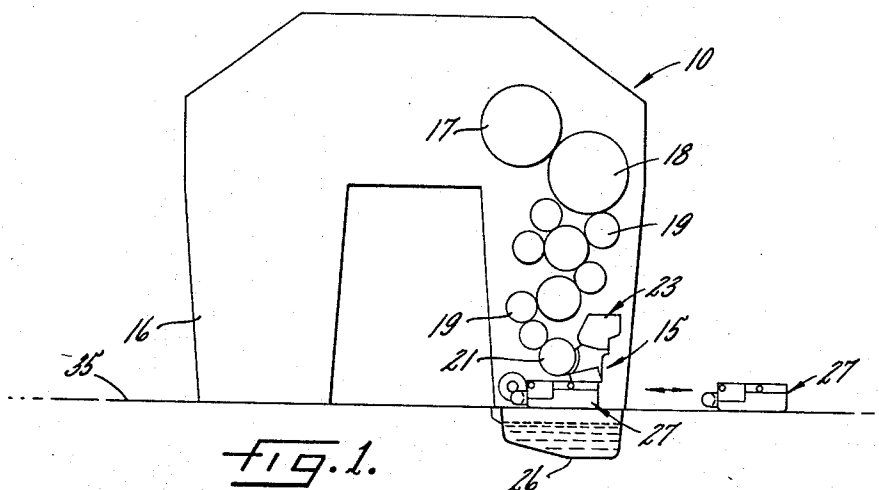


fig. 2.

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3 Sheets-Sheet 2

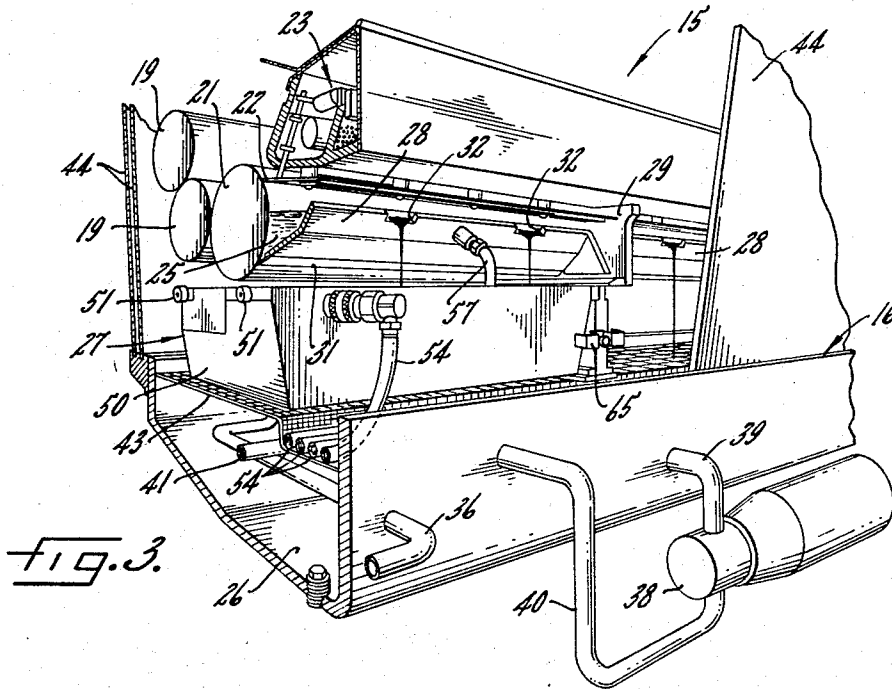


Fig. 3.

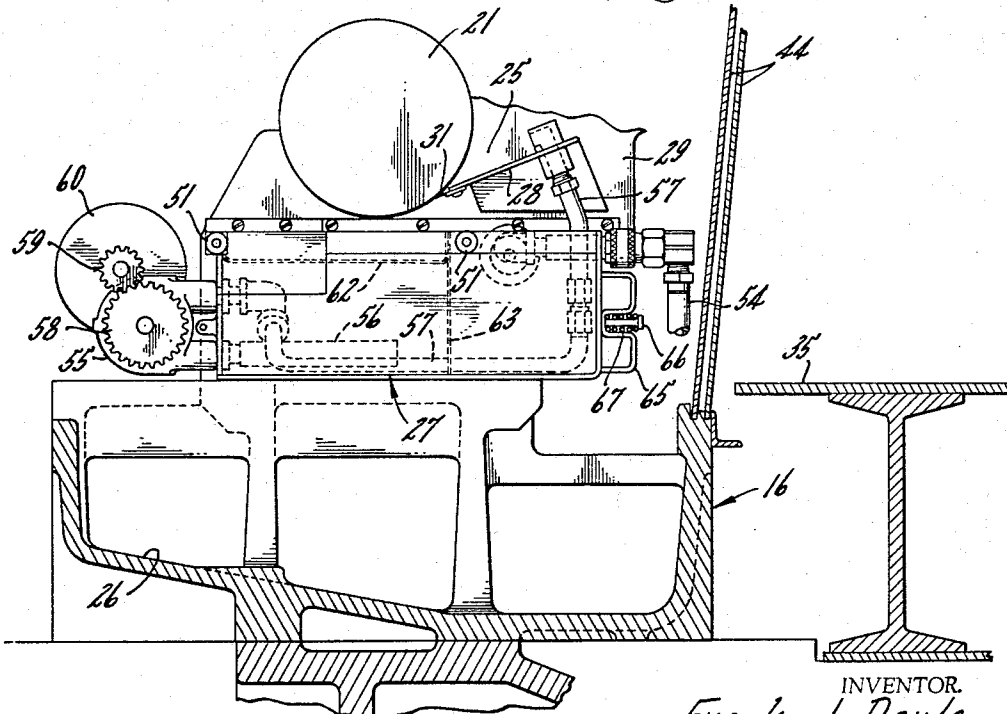


Fig. 4.

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3 Sheets-Sheet 3

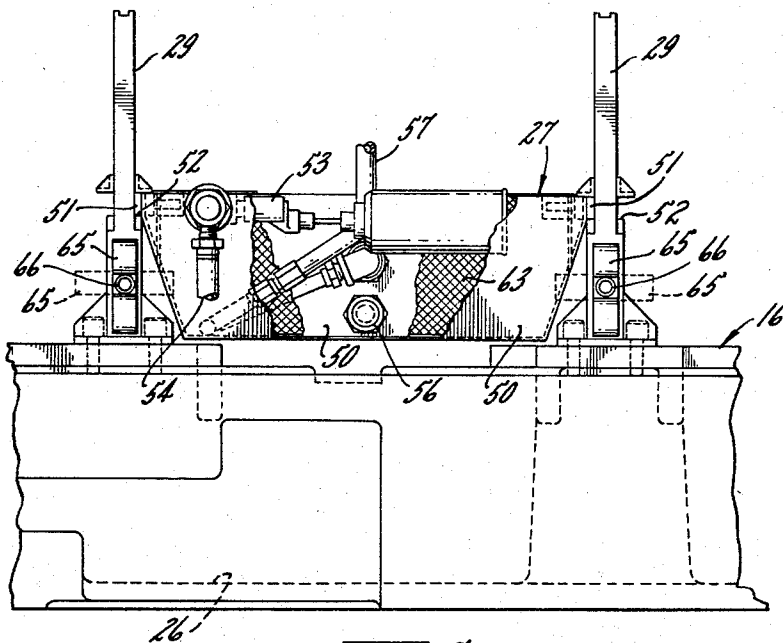


Fig. 5.

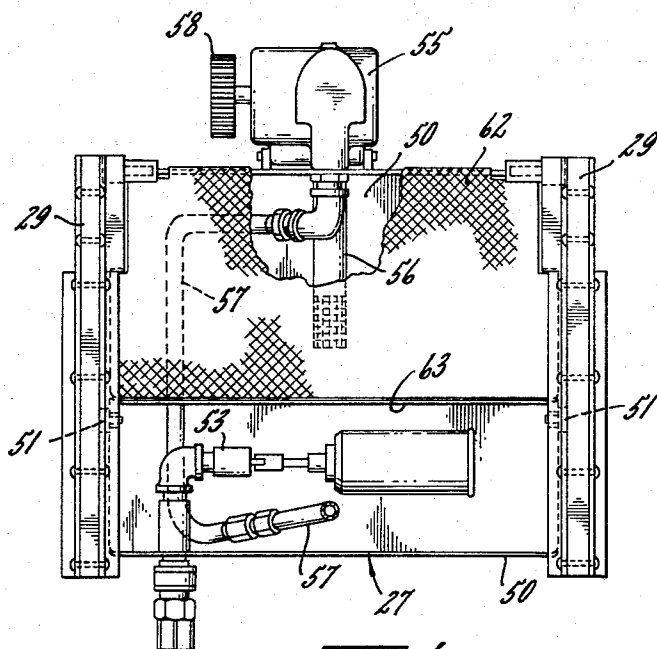


Fig. 6.

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3,288,061

PRESS INKING ARRANGEMENT

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Filed Dec. 31, 1963, Ser. No. 334,704

1 Claim. (Cl. 101-210)

This invention relates to rotary printing presses and more particularly concerns ink fountain arrangements for such presses.

The modern rotary press, particularly those used for high-speed newspaper printing, must be readily adapted for color printing as well as basic black printing. At the same time, the ink supplying arrangement must be capable of delivering controlled quantities of ink for high speed printing in a continuous, uninterrupted flow.

An ink fountain-fountain roller arrangement has long been a widely used method of supplying ink to a rotary press. Basically, this approach includes a fountain roller which rotates in a body of ink. The roller surface carries a coating of ink, whose thickness is controlled by an adjacent knife blade, to the inking rollers of the press. The inking arrangement may be divided into sections which supply ink to adjacent portions of the plate cylinder.

There have been several prior suggestions for improving the effectiveness of such arrangements which are pertinent to an understanding of the present invention. For example, United States Patent No. 1,995,701 to Buttner contemplates the provision of a small auxiliary trough for supplying ink to the fountain roller and within a relatively larger main fountain. Ink is continuously fed from the main fountain to the auxiliary fountain, from which it overflows back to the main fountain. In this way, a constant ink level is presented to the fountain roller.

The idea of continuous feed of ink to a "leaking" auxiliary fountain is also shown in United States Patent No. 1,338,044 to Smith. In this case, the emphasis is on keeping the ink clean and free of foreign materials. To this end, the bottom of the Smith auxiliary fountain is formed by a scraper blade engaging the fountain roller so that the roller is scraped clean on each revolution, and the circulating ink is passed through a filtering screen. The somewhat more recent United States Patent No. 2,368,500 to Taylor et al. also shows a fountain arrangement that embodies the advantages of continuous ink circulation and straining so as to maintain a constant ink level at the fountain roller and constant straining of the ink.

It is the primary aim of the present invention to maintain the advantages discussed above while achieving, in a fountain inking arrangement, complete color flexibility. More specifically, it is an object of the invention to provide a fountain inking arrangement that can be rapidly and conveniently converted from black to colored ink, and back, with a minimum amount of cleaning and effort.

A further object is to provide a fountain arrangement of the above character having separable, easily handled color ink pans which combine screen, pump, level control and ink container, all in one assembly which can be quickly and easily installed in the press to convert from black to color printing.

Another object is to provide a fountain inking arrangement as described above which permits colored ink to be substituted in any selected page section without disturbing the black ink supply mechanism for the section or the other portions of the press. Moreover, an object is to provide a fountain arrangement of this kind which allows conversion to colored ink supply without draining and cleaning the basic black ink supplying structure.

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

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FIGURE 1 is a somewhat diagrammatic side elevation of a press including an inking arrangement embodying the invention;

FIG. 2 is an enlarged fragmentary perspective, with portions broken away, of the inking arrangement shown in FIG. 1 as adapted for basic blank ink printing;

FIG. 3 is similar to FIG. 2 but shows the arrangement adapted for color ink supply;

FIG. 4 is an enlarged transverse section of a portion of the structure shown in FIG. 3;

FIG. 5 is a fragmentary elevation, with portions broken away, as seen from the right-hand side of FIG. 4; and

FIG. 6 is a fragmentary plan of the structure shown in FIG. 5.

While this invention will be described in connection with a preferred embodiment, it will be understood that I do not intend to limit the invention to that embodiment. On the contrary, I intended 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, in FIG. 1, a rotary newspaper type press 10 having an inking arrangement 15 embodying the invention. The press includes support or frame structure generally indicated at 16 which supports an impression cylinder 17 and a plate cylinder 18. A plurality of inking rollers 19 are journaled in the frame for carrying ink from the inking arrangement 15 to the plate cylinder 18. Of course, similar structure is mounted in the other half of the press.

The inking arrangement 15 includes a fountain roller 21 and a doctor blade or knife 22 which regulates the thickness of the ink film on the fountain roller that is transferred to the inking rollers 19. The press also includes a doctor knife controlling mechanism 23.

In keeping with the invention, overflow fountains 25 are provided immediately adjacent the fountain roller 21, and the fountains are supplied with circulating ink from either a trough 26 underlying and in spaced relation to the roller 21 or a pan 27 removably mounted between the trough and the fountain roller. The overflow fountains 25 are defined by plates 28 removably mounted in the press frame 16 below the doctor knife 22 and between upstanding page section walls 29.

The space between adjacent ones of the walls 29 corresponds to the length of one printed page so that inking of each page can be independently controlled. The plates 28 carry metal blades 31 in scraping contact with the fountain roller 21 and are formed, at their upper edges, with overflow outlets 32.

The primary supply of ink, normally black ink in a newspaper press, is maintained in the trough 26 which constitutes a portion of the press frame 16 underlying the press room floor 35. The trough 26 extends the full length of the fountain roller and is supplied with ink through a conduit 36 that ends in a fluid level sensing device such as a float valve 37. A pump 38 is mounted on the press below the press room floor 35 and draws ink from the trough 26 through a conduit 39. The pump 38 discharges ink through a conduit 40 to a supply conduit 41 running the width of the press. A connection such as a flexible hose 42 extends from the supply conduit 41 to each fountain and is releasably connected to the adjacent fountain 25 through a fitting attached to the plate 28. A coarse screen 43 overlies the entire trough 26. A plurality of sliding mist guards 44 enclose the inking arrangement 15 while providing ready access thereto.

With the primary ink supply in operation, the desired level of ink in the trough 26 is maintained by the float valve 37. The pump 38 supplies, through the conduits 40, 41 and the flexible hoses 42, the fountains 25 with more than enough ink to satisfy the requirements of

maximum press speed and copy coverage. The excess ink spills over the overflow outlets 32 and down into the trough 26. The constantly overflowing ink maintains a uniform depth of ink in contact with the fountain roller 21 and the screen 43 screens out paper and other foreign matter.

Ink can also be fed to one of the overflow fountains 25 by disconnecting the associated hose 42 and sliding one of the pans 27 into place. The pan 27 is a self-contained, easily handled assembly made up of an open topped tray 50 dimensioned to fit between the walls 29, the fountain roller 21, and above the trough screen 43. Preferably, the tray 50 is provided with rollers 51 journaled at each side which are adapted to ride in tracks 52 formed on the walls 29 at a vertical level permitting the pan 27 to be simply slid along the floor line 35 into the tracks and into operating position (see FIG. 1).

Each pan 27 includes a float valve 53 or other level sensing device for maintaining a constant level of ink within the tray 50 when the valve is connected to one of the plurality of hoses 54 running the width of the press from suitable sources of ink, for example colored ink. A pump 55 is mounted on the back of the tray 50 with an inlet conduit 56 extending into the pan 50 and an outlet hose 57 that may be releasably coupled to the overlying overflow fountain 25 at the same point of the plate 28 at which the flexible hose 42 is adapted to be connected. Alternatively, the hose 57 can be replaced by a relatively rigid, upstanding pipe curved to overlie the fountain 25 when the pan 27 is in operating position. The pump 55 carries a driving gear 58 that is adapted to come into engagement with a powered gear 59 that is operated by a motor 60 mounted in the press. The pan 27, with its integral pump 55, is incorporated into the press inking system by simply being slid into position, so that the gear 58 meshes with the motor gear 59, and connecting the hoses 54 and 57.

The pan 27 also includes a screen 62 overlying a part of the tray 50 to prevent paper scraps or other foreign material from getting into the ink and clogging the inlet conduit 56. Preferably, the screen 62 also has a vertically extending portion 63 which subdivides the tray 50 so as to completely surround the pump intake 56 yet permit unobstructed visual inspection of the ink level in the pan. This feature is useful when ink is added by hand, and it also permits the float valve to be readily serviced when ink is being fed through the line 54.

To releasably secure the pan in position, clamps 65 are pivoted on studs 66 at the outer edges of the walls 29. Springs 67 urge the clamps 65 against the pan. The press operator, by grasping the clamp 65 and pulling it outwardly, can manually rotate it so that the outer edges of the clamp are brought to bear on the rear wall of the pan 27, thus releasably holding the pan in operating position.

With the secondary or color ink supply in operation, the ink level in the pan 27 is maintained by the float valve 53. The pump 55 supplies the fountain 25 with more ink than is required for printing and the excess overflows and spills over the outlets 32 back into the tray 50 so as to maintain a constant level of ink at the fountain roller 21. The screen 62, 63 screens out large pieces of foreign material as the ink is circulated.

It can be seen that conversion of the press from basic black ink printing to colored ink printing is quite simple. To convert from the black ink supply condition shown in FIG. 2 to the ink supply condition shown in FIG. 3, the press operator simply disconnects the flexible hose

42, drains and cleans the relatively small overflow fountain 25, cleans the fountain roller 21 and slides one of the pans 27 into position with the pan rollers 51 riding within the tracks 52. The appropriate one of the hoses 54 is connected to the pan 27 and the pan pump outlet hose 57 is connected to the overflow fountain 25. Upon sliding the pan 27 into position, the pan pump 55 becomes drivingly engaged with the motor 60 and the press is ready for color printing. To return to basic black ink supply, the pan 27 is simply removed, and, following appropriate cleaning, the hose 42 is reconnected to the overflow fountain 25. The pan 27 can then be cleaned without interfering with operation of the press.

I claim as my invention:

In a rotary printing press, an inking arrangement comprising, in combination, a frame, a fountain roller journaled in said frame, means defining an overflow fountain adjacent said roller, a trough in said frame underlying said roller in position to receive ink overflowing from said fountain, first supply means including a conduit for selectively delivering ink to said trough, a level control valve in said trough and coupled to said conduit for maintaining a supply of ink in said trough, a screen over said trough, a pump associated with said trough and having a releasable coupling with said fountain for feeding ink from the trough directly to the fountain, a pair of horizontally spaced tracks secured to said frame between said overflow fountain and said trough, a pan having rollers journaled on the sides thereof removably supported on said tracks and above said screen, said pan having an open top disposed, and dimensioned so as to intercept substantially all of the ink overflowing from said fountain, when positioned within said frame on said tracks, second supply means including a selectively disconnectable supply line for delivering ink to said pan, a second level control valve in said pan releasably coupled to said supply line for maintaining a supply of ink in said pan, a second pump mounted externally on said pan, a powered drive member on said press disposed substantially in the plane of said tracks, said second pump having a driving member adapted to engage said powered drive member when said pan is rolled into said ink intercepting position, a second screen in said pan for preventing foreign matter from entering and clogging said second pump and extending down into said pan to separate said second pump and level control valve, and said second pump having a releasable coupling with said fountain for feeding ink from the pan directly to the fountain, whereby ink can be continuously supplied to said roller from either said trough or said removable pan.

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