

April 18, 1939.

A. TAYLOR

2,154,544

INKING MECHANISM

Filed March 5, 1937

3 Sheets-Sheet 1

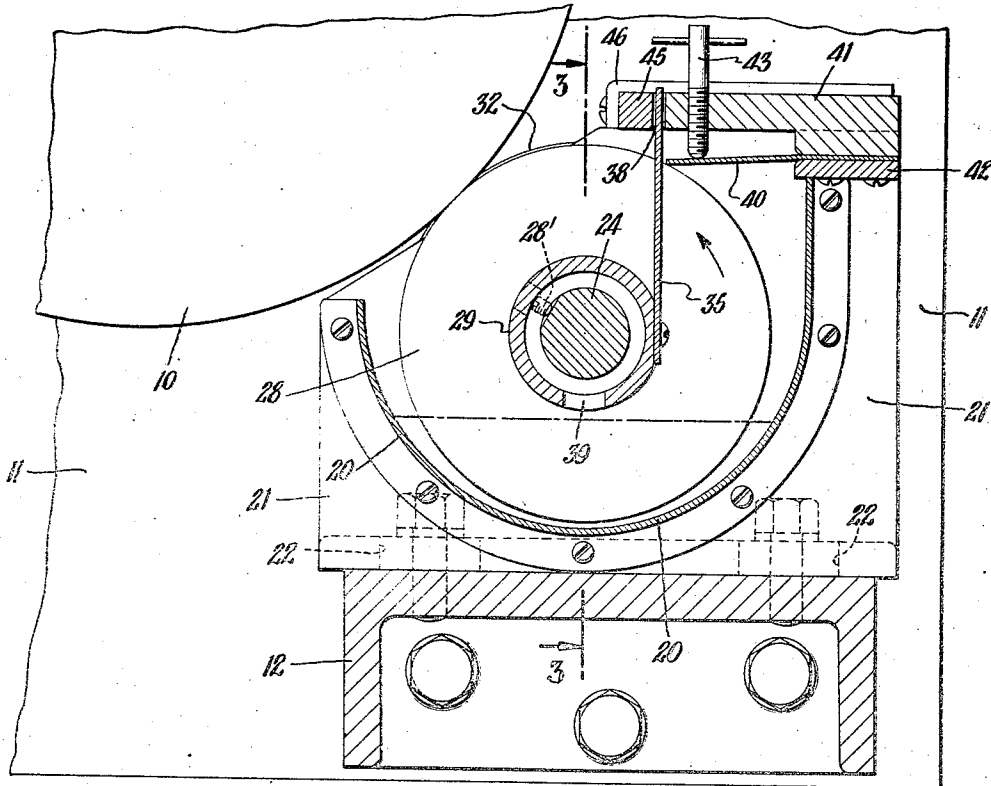


Fig. 1.

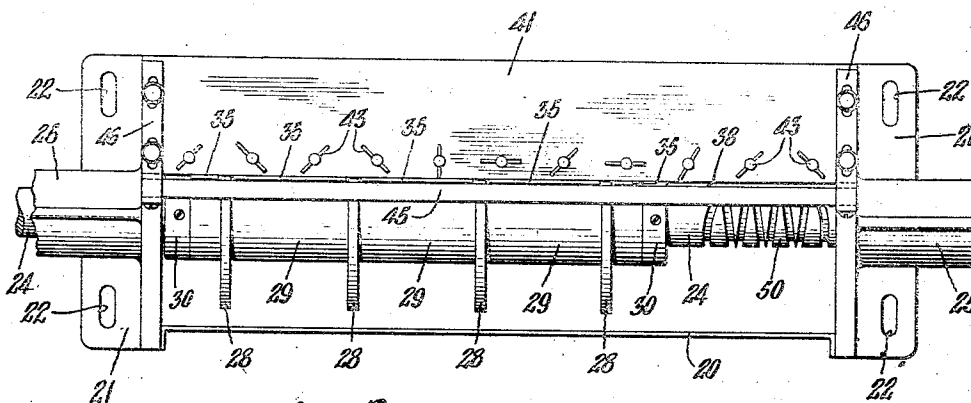


Fig. 2.

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3 Sheets-Sheet 2

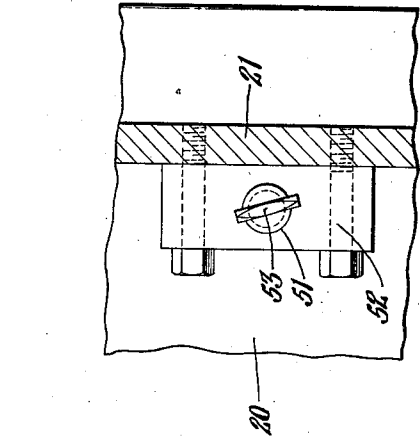
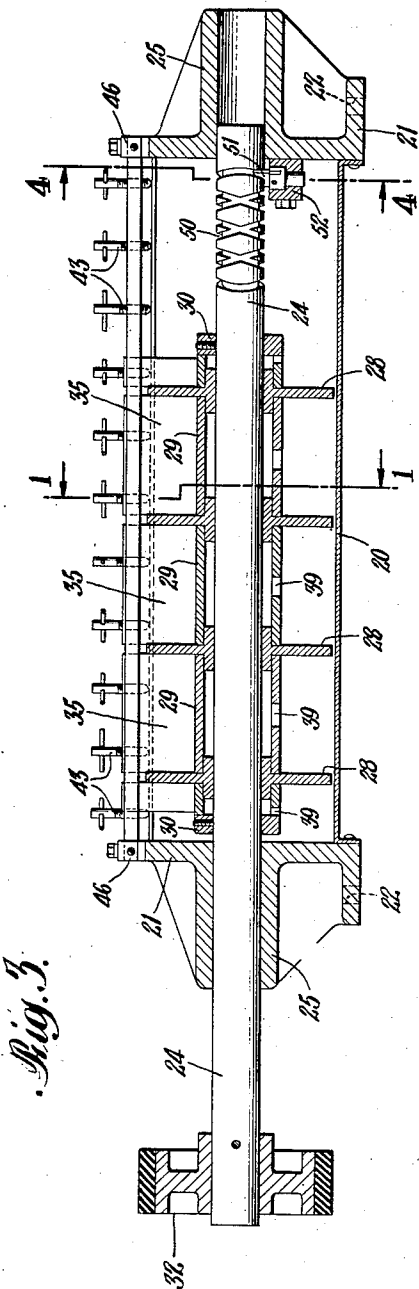
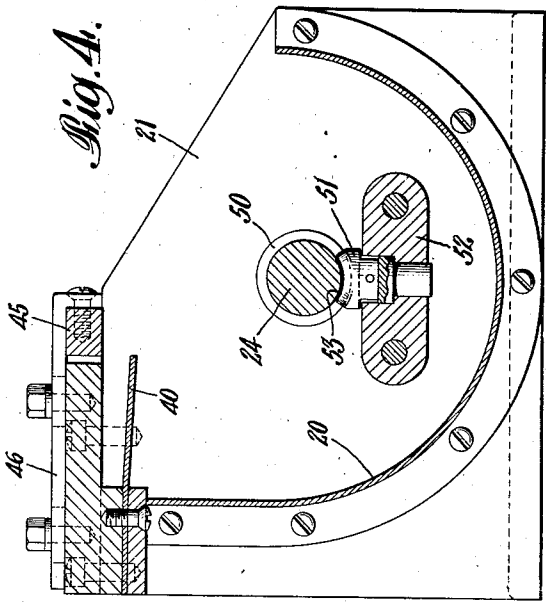


Fig. 5.



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7 Sheets-Sheet 3

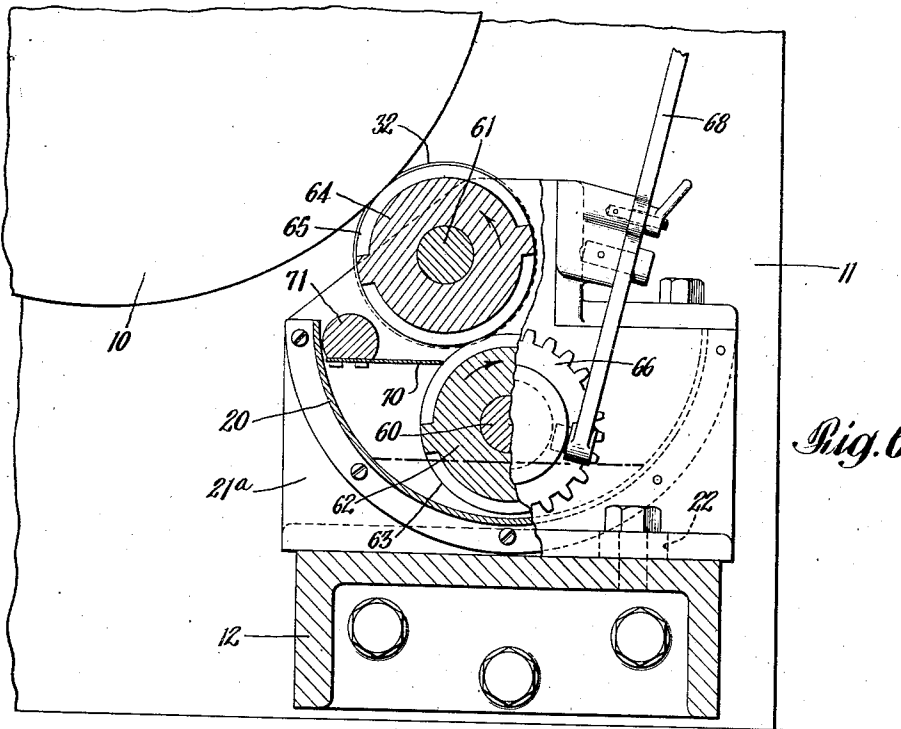


Fig. 6.

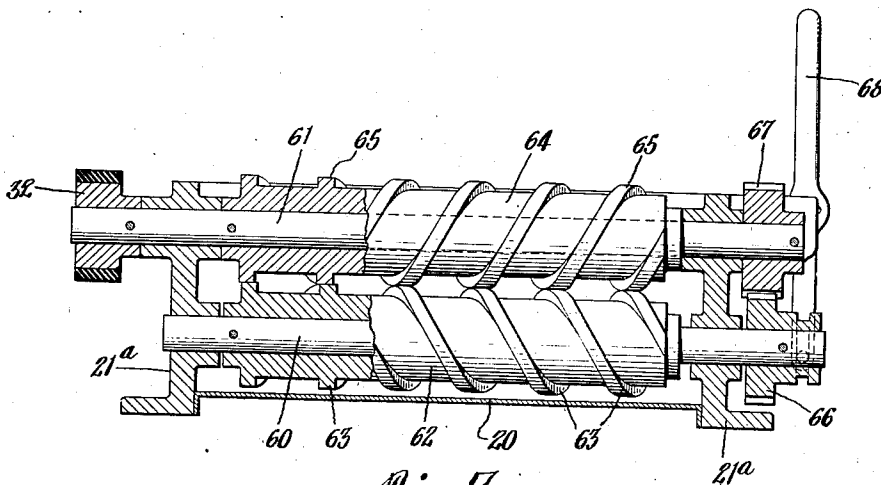


Fig. 7.

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INKING MECHANISM

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21 Claims. (Cl. 101—350)

The present invention relates to a novel and improved inking mechanism for rotary printing presses, and more particularly to a novel and improved inking mechanism or supplementary ink fountain for use with newspaper and high speed color printing presses.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, construction, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Figure 1 is a fragmentary vertical section of a typical and illustrative embodiment of the present invention and is taken on the line 1—1 of Fig. 3;

Figure 2 is a plan view of the supplementary inking mechanism shown in Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a vertical section taken on the line 4—4 of Figure 3;

Figure 5 is a fragmentary plan view of a portion of the vibrating mechanism;

Figure 6 is a vertical sectional view of a modified embodiment of the invention; and

Figure 7 is another sectional view of the inking mechanism shown in Figure 6.

The present invention has for its object the provision of a novel and improved inking device of general application and also particularly adapted for use in connection with rotary newspaper presses such as are commonly used for the printing of colored newspaper supplements. A further object is the provision of a supplementary inking fountain which may be quickly and easily applied to and removed from a printing press for a short run with special ink, as for instance a different colored ink, or may be used to produce colored pages in a regular black and white newspaper product.

In accordance with the illustrative embodiment of the invention there is provided a detachable inking device to be driven from and to transfer ink to the usual distributing drum of a conventional newspaper or color press. This device

comprises an ink trough mounted on a base by which it may be secured to the press frame adjacent to the distributing drum, this trough being of approximately page length, or slightly longer. Within the trough is rotatably mounted a shaft parallel to the distributing drum, and on the shaft are mounted a plurality of spaced apart narrow discs of uniform diameter. These discs dip into the supply of ink contained in the trough and contact with the surface of the ink drum, so that as the discs are located a small supply of ink is transferred from the trough to the surface of the drum. In order to secure uniform feeding of the ink, and proper regulation of the amount of ink, means are preferably provided for removing most of the ink from the sides of the discs and for removing more or less of the ink from the surface of the disc just prior to their contact with the distributing drum. Means are provided for rotating the discs, and to facilitate the installation and removal of the inking device, the discs are preferably driven from the surface of the inking drum, as by a narrow-faced roller mounted on the disc-supporting shaft and having frictional contact with an uninked portion of the distributing drum. For vibrating the discs so that all parts of the distributing drum and form will receive a uniform quantity of ink during several revolutions of the drum, the disc-supporting shaft is axially movable and is threaded so as to provide for a slow reciprocation of the shaft and discs as they rotate. In place of discs, other forms of ink applying members may be used such as a helical member of relatively large pitch, and when this form is used regulation may be obtained by axial shifting of it with respect to a similar helix running in the ink.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the illustrative embodiment of the invention as shown in the accompanying drawings, there is provided the conventional distributing cylinder 10, of relatively large diameter, which is adapted to receive the ink, distribute it evenly in cooperation with the distributing rollers, and thereafter transfer the ink to the printing plates on the plate cylinder. As is usual, the distributing drum 10 is rotatably mounted in the side frames 11 which are connected together by a spacing member 12.

The inking device comprises a trough 20 which may be formed of sheet metal and is open at its

top. This trough is supported between end plates 21 having angled bases resting on the cross base 12, each base having provided with apertures 22 by which it is bolted to the spacing member 12, and apertures 22 are preferably slotted so that the inking device may be positioned properly with reference to the distributing drum 10. A shaft 24 is rotatably mounted in bearings 25 formed in the end plates 21, and shaft 24 is preferably axially movable parallel to the axis of the distributing drum 10. Means are provided for removing ink from the trough 20 and for transferring it to the surface of the distributing drum 10, said means comprising a member having continuous rotary, ink-conveying surface contact with the distributing drum at a plurality of points, these ink conveying contacts also having movement along the ink drum. In the form shown in Figs. 1 to 5, these means comprise a plurality of spaced-apart circular members having a relatively narrow edge, such as the discs 28, which are mounted on and secured to shaft 24. Discs 28 are held spaced apart by set screws 28', while sleeves 29 are held in assembled relation between the discs 28 and at the ends by means of the collars 30. The number of discs and width of the spaces may be suitably varied to meet different operating conditions.

For rotating discs 28, there is provided a friction pulley 32, adapted to contact with an uninked portion of the distributing drum 10, and pulley 32 is mounted at one end of the shaft 24 outside of the inking trough. Pulley 32 is preferably of substantially the same diameter as discs 28 so that when the device is in operative position, with pulley 32 in contact with the surface of the drum 10, discs 28 are only in light contact with the inking portion of drum 10, and running at the same peripheral speed as drum 10.

For insuring a uniform transfer of ink from the trough to the surface of the inking drum 10, means are provided for removing substantially all of the ink from the sides of discs 28. These means comprise blades 35, located between the discs 28 and of a width substantially the same as the spacing of the discs 28. They are fastened to the sleeves 29 and extending upwardly into slot 38 so as to prevent rotation of the sleeves 29 and blades 35. At their bottoms, sleeves 29 are provided with drain holes 39 through which accumulated ink may drain back into the trough.

For regulating the quantity of ink retained on the peripheral surface of the discs 28, doctor blades 40 are provided which remove a variable amount of ink so as to regulate the amount of ink transferred to the drum 10. Blades 40 are fastened at one end between the plates 41 and 42, which are secured to the end plates 21, while the other ends of the blades 40 may be variably spaced from the edge of discs 28 by means of the regulating screws 43 threaded into plate 41 to contact with the upper surface of the blades. Slot 38 is formed by the forward edge of plate 41 and a bar 45 extending across parallel to the plate and retained on the end plates 21 by means of the clamps 46.

To provide movement of the rotary, ink-conveying surface contacts along the drum 10, in the present embodiment, vibration of the discs 28 is provided to insure more uniform and better distribution of the ink on the surface of the drum and for this purpose the shaft 24 is formed with an endless reversing thread 50 near one end. Thread 50 coacts with a dog 51 which is swiveled in a block 52 secured below the shaft so that the

concave thread engaging face 53 of the dog engages in the thread 50. As the shaft 24 rotates, the shaft and its supported discs 28 are first moved in one direction, and are then moved in the other direction to produce wavy lines of ink on the drum 10. Preferably, the length of the threaded portion of shaft 24 is such that it corresponds to the spacing of the discs 28, thereby applying an equal amount of ink to each circumferential portion of drum 10.

In the operation of this embodiment, the device is positioned as shown in Figure 1, with the roller 32 in contact with an uninked portion of drum 10 and discs 28 contacting very lightly with the page width of the drum to be used for inking. The trough 20 is filled with ink to the level shown in Fig. 1 by the dotted line, and the screws 43 are regulated to the proper position. Then, as drum 10 rotates it drives discs 28 to remove ink from the trough and transfer the ink to the drum 10 which feeds it to the form rollers. Excess ink is removed from the sides of discs 28 by scraper blades 35, so that only the ink on the face of the discs is transferred, thereby avoiding irregularities due to the diminishing level of ink in the trough. Blades 40 remove excess ink from the peripheral surface of discs 28 and regulate the amount supplied to the plates. However, due to the fact that a thick film of ink is regulated, only a slight amount of power is required for the inking device and the regulation can be effected by coarse adjustment as is not the case with a conventional type of ink fountain.

Figures 6 and 7 illustrate a modified embodiment of the invention, in which the ink transferring member having the continuous rotary, ink-conveying surface contact with the ink drum is preferably frictionally driven, but does not dip into the ink in the trough. As embodied, the end plates 21a, between which is supported the trough 20, rotatably support parallel shafts 60 and 61. On shaft 60 is mounted a fountain roller 62 which runs in the ink in the trough 20. As here exemplarily shown, the fountain roller is provided with helical raised ribs 63. Intermediate the fountain roller and the ink drum 10 is a member having continuous rotary surface contact with both at a plurality of spaced-apart points to convey ink from the fountain roller to the drum. As embodied, a shaft 61 carries a similar roller 64 with helical ribs 65. The peripheral surface of the helical ribs or projections 65 take the ink from the surface of the fountain roller and transfer it at a plurality of spaced-apart points to the surface of the ink drum, and due to the helical form these contact points also move along the drum without reciprocatory movement. Rollers 62 and 64 are of equal length and diameter and the pitch of the helical members 63 and 65 are equal, but they are threaded in opposite directions so that the ribs 63 always contact with ribs 65. In the embodied form of means for varying the supply of ink, shafts 60 and 61 are intergearsed by gears 66 and 67, and shaft 60 is slidable in its bearings, being held by and moved from one position to another by the pivoted, forked lever 68 engaging the groove on the end of gear 66. When the ribs 63 and 65 are in full contact with each other, the maximum amount of ink is transferred to the drum 10, but as they are moved out of full contact with each other by lever 68, the amount of ink transferred is nicely regulated. As in the previous modification, the rollers are driven by the friction pulley 32 on shaft 61 and

roller 62 is short enough to permit some axial movement between end plates 21a.

For securing uniformity in the inking, a blade 70 projects laterally from a supporting rod 71 and bears against the face of helical ribs 63 tending to maintain a uniform thickness of ink on the surface of the ribs.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

15 What I claim is:

1. A supplementary ink fountain including in combination a trough, a plurality of narrow faced members rotatable therein, a roller connected to rotate the members, said roller having at least a portion of its face lying on a line with the periphery of the narrow faced members whereby they may both be contacted with a rotating ink drum.

2. A supplementary ink fountain including in combination a trough, a plurality of narrow faced members rotatable therein, a roller connected to rotate the members, said roller being mounted at one end of the trough and being so positioned that it and the members may contact with a rotating ink drum and means for regulating the ink retained on the surface of the drum prior to the transfer of ink to the drum.

3. A supplementary ink fountain including in combination a trough, a plurality of narrow faced members rotatable therein, a roller connected to rotate the members, said roller mounted at one end of the trough and being so positioned that it and the members may contact with a rotating ink drum, means for regulating the ink retained on the surface of the drum prior to the transfer of ink to the drum, and means for removing ink from the side faces of the members.

4. In an inking device for printing presses, the combination of a distributing drum, a fountain adjacent thereto, said fountain having an ink trough, a plurality of discs mounted therein and contacting the drum, a shaft on which the discs are mounted and a roller to contact the drum and drive the discs.

5. In an inking device for printing presses, the combination of a distributing drum, a fountain trough adjacent the drum, rotatable members in the trough to transfer ink therefrom to the drum, and a roller fixed to said rotatable members and contacting the drum to drive the members from the drum.

6. In an inking device for printing presses, the combination of a distributing drum, a fountain trough adjacent the drum, rotatable members in the trough to transfer ink therefrom to the drum, a roller fixed to said rotatable members and contacting the drum to drive the members from the drum, and means for varying the amount of ink retained on the rotatable members before transfer to the drum.

7. In an inking device for printing presses, the combination of a distributing drum, a fountain trough adjacent to the drum, narrow faced rotatable members in the trough to transfer ink therefrom to the drum, and a roller fixed to said rotatable members and contacting the drum to drive the members from the drum.

8. In an inking device for printing presses, the combination of a distributing drum, a fountain trough adjacent the drum, rotatable members in the trough to transfer ink therefrom to the

drum, a roller fixed to said rotatable members and contacting the drum to drive the members from the drum, and means for vibrating the rotatable members.

9. A supplementary ink fountain including in combination an ink distributing drum, an ink trough, a shaft therein, rotatable, spaced-apart narrow faced members fast on the shaft, means for reciprocating the shaft and discs axially for substantially the length of a disc and the adjacent space, a friction pulley on the shaft and out of contact with the ink in the trough, said members and pulley being of substantially the same size.

10. A supplementary ink fountain including in combination an ink distributing drum, an ink trough, a shaft therein, rotatable, spaced-apart narrow faced members fast on the shaft, means for reciprocating the shaft and discs axially for substantially the length of a disc and the adjacent space, a friction pulley on the shaft and out of contact with the ink in the trough, said members and pulley being of substantially the same size, and means for axially moving the members as they rotate.

11. A supplementary ink fountain including in combination an ink distributing drum, an ink trough, a shaft therein, rotatable, spaced-apart narrow faced members fast on the shaft, means for reciprocating the shaft and discs axially for substantially the length of a disc and the adjacent space, a friction pulley on the shaft and out of contact with the ink in the trough, said members and pulley being of substantially the same size, and means for removing ink from the surface of the members.

12. A supplementary ink fountain including in combination an ink distributing drum, an ink trough, a shaft therein, rotatable, spaced-apart narrow faced members fast on the shaft, means for reciprocating the shaft and discs axially for substantially the length of a disc and the adjacent space, a friction pulley on the shaft and out of contact with the ink in the trough, said members and pulley being of substantially the same size, and means for removing ink from the sides of the members.

13. A supplementary ink fountain including in combination an ink distributing drum, an ink trough, a shaft therein, rotatable, spaced-apart narrow faced members fast on the shaft, means for reciprocating the shaft and discs axially for substantially the length of a disc and the adjacent space, a friction pulley on the shaft and out of contact with the ink in the trough, said members and pulley being of substantially the same size, means for removing ink from the surface of the members and means for removing ink from the sides of the members.

14. A supplementary ink fountain including in combination an ink trough, a shaft rotatably mounted therein, narrow discs spaced from each other on the shaft and fast thereon, a friction pulley mounted on the shaft outside the fountain, said discs and pulley being adapted to contact with an ink drum and means for removing the surplus ink from the discs prior to its transfer to the ink drum.

15. In an inking mechanism for printing presses in combination an ink distributing drum, a fountain having an ink trough, a plurality of concentric spaced-apart discs running in said ink trough and with their peripheries in engagement with said ink drum, and means for rotating said

discs and concurrently moving them axially along the ink drum.

16. In an inking mechanism for printing presses in combination an ink distributing drum, a plurality of concentric, spaced-apart circular discs having continuous smooth peripheries in contact with said ink distributing drum, means for supplying ink to the discs, means for rotating said discs at the same surface speed with said drum, and means for concurrently moving said discs along the drum.

17. In an inking attachment for printing presses, in combination, an ink distributing drum, a fountain having an ink trough, a rotating member immersed in the ink in the fountain, means for regulating the amount of ink transferred from the rotating member, rotary means for receiving ink from the rotating member and for transferring it to the drum in the form of a plurality of narrow stripes, and causing the narrow stripes of ink to be moved axially of the drum, a friction drive, said rotating member and rotary means being driven together from the ink distributing drum by the friction drive, said fountain, including the rotating member, rotary means, ink trough and friction drive being removable as a unit from the printing press when it is desired to change color.

18. A readily removable, supplementary ink fountain unit to supply ink to the ink distributing drum of a printing press including in combination a fountain having an ink trough, a rotating member immersed in the ink in the fountain, means for regulating the amount of ink transferred from the rotating member, rotary means for receiving ink from the rotating member and for transferring it to the drum in the form of a plurality of narrow stripes, and causing the narrow stripes of ink to move axially of the drum, a friction drive to contact with the ink distributing drum, said rotating member and rotary means being driven together from the ink distributing drum by the friction drive.

19. A readily removable, supplementary ink fountain unit to supply ink to the ink distributing drum of a printing press including in combination a fountain having an ink trough, a rotating member immersed in the ink in the fountain, means for regulating the amount of ink transferred from the rotating member, rotary means for receiving ink from the rotating member and for transferring it to the drum in the form of a plurality of narrow stripes, a friction drive to contact with the ink distributing drum, said rotating member and rotary means being driven together with the ink distributing drum by the friction drive.

20. A readily removable, supplementary ink fountain unit to supply ink to the ink distributing drum of a printing press including in combination a fountain having an ink trough, a rotating member immersed in the ink in the fountain, means for regulating the amount of ink transferred from the rotating member, rotary means for receiving ink from the rotating member and for transferring it to the drum in the form of a plurality of narrow stripes, and friction means on said rotary transfer means engageable with the surface of the ink distributing drum at any place along its length for driving the rotating member and rotary means from the ink distributing drum.

21. A readily removable, supplementary ink fountain unit to supply ink to the ink distributing drum of a printing press including in combination a fountain having an ink trough, a rotating member immersed in the ink in the fountain, rotary means for receiving ink from the rotating member and for transferring it to the drum in the form of a plurality of narrow stripes, a friction drive to contact with the ink distributing drum, said rotating member and rotary means being driven together with the ink distributing drum by the friction drive.

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