

March 26, 1935.

H. J. BUTTNER

1,995,701

INKING MECHANISM

Filed April 27, 1932

2 Sheets-Sheet 1

Fig. 1.

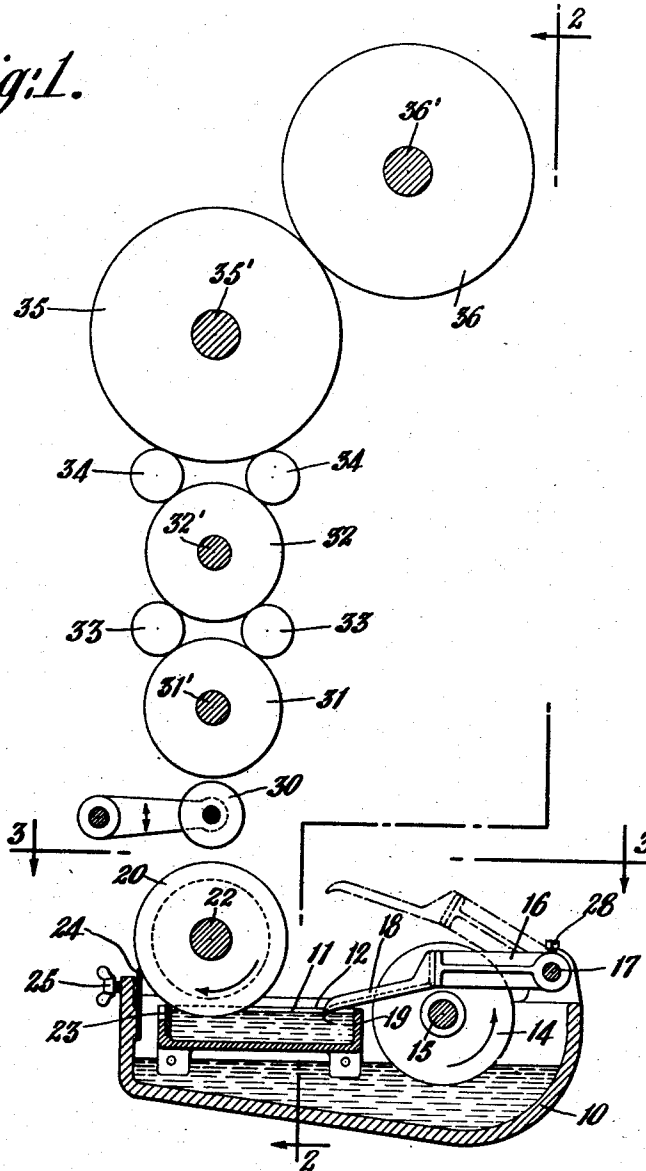


Fig. 5.

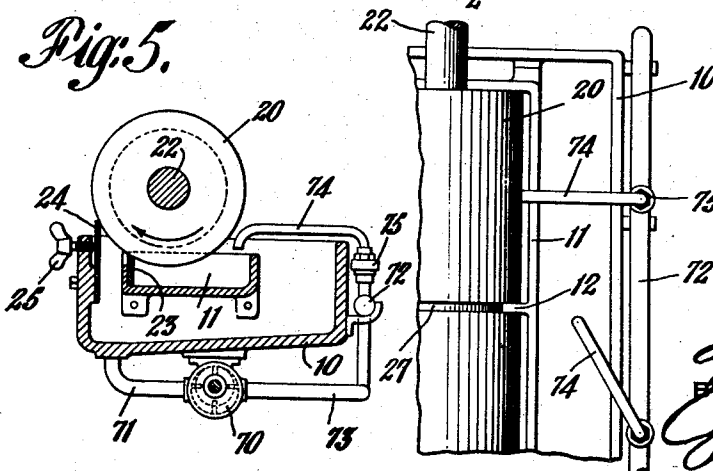


Fig. 6.

INVENTOR
H. J. Buttner
BY *John D. Morgan*
ATTORNEY

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2 Sheets-Sheet 2

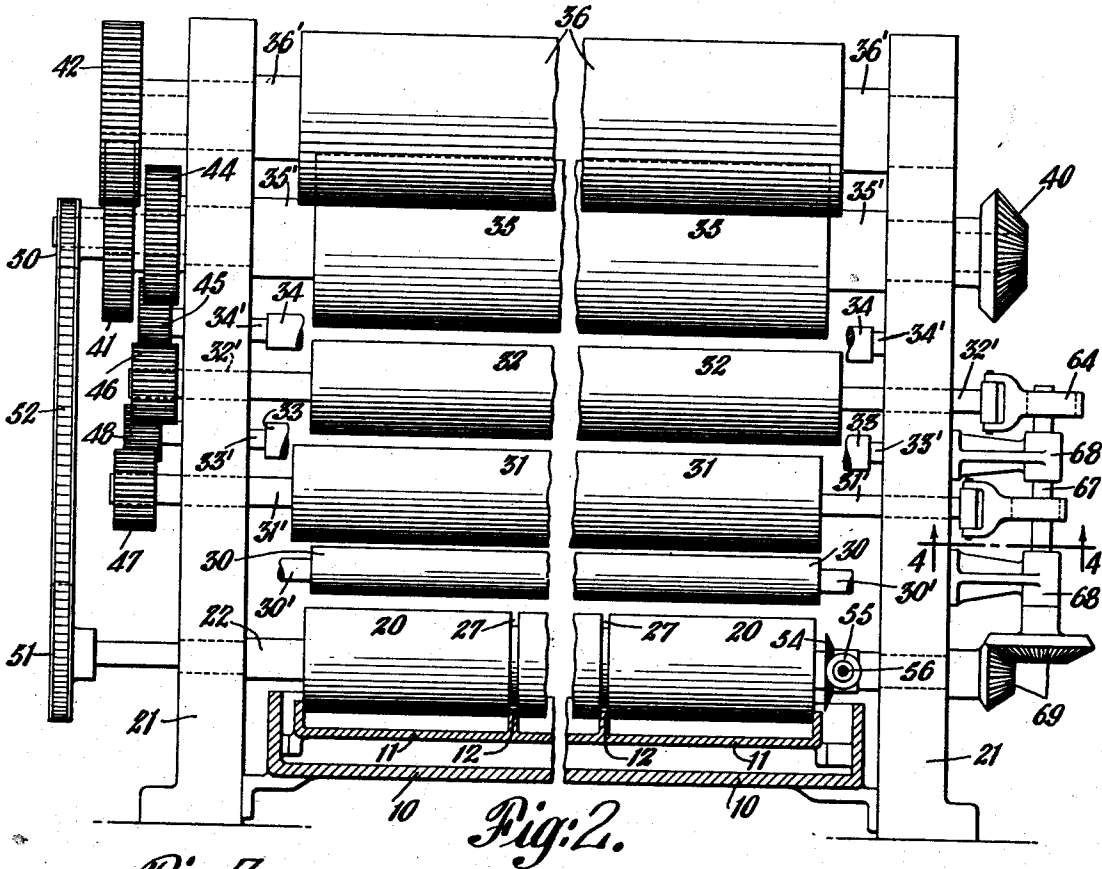


Fig. 2.

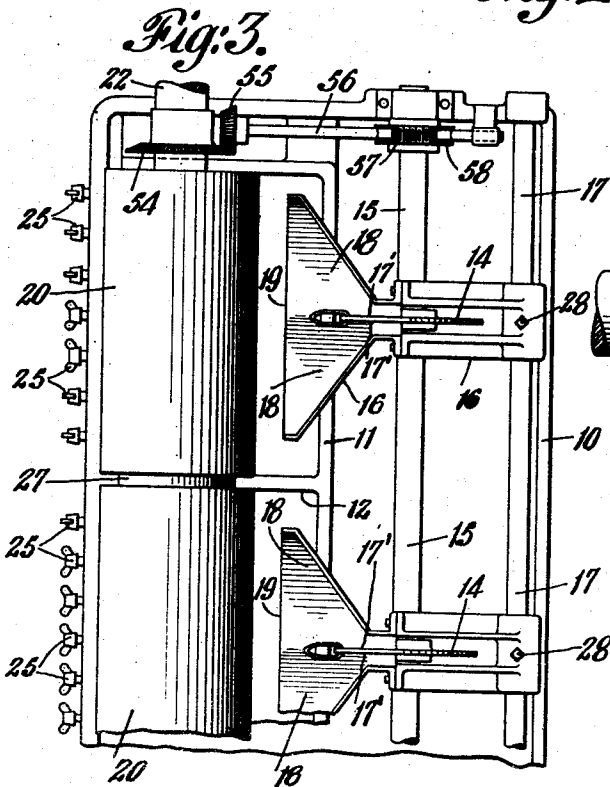


Fig. 3.

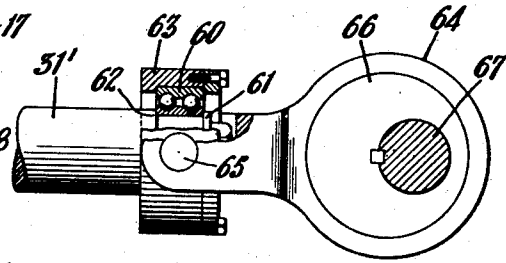


Fig. 4.

INVENTOR
H. J. Buttner
BY
John A. Morgan
ATTORNEY

UNITED STATES PATENT OFFICE

1,995,701

INKING MECHANISM

Horace Judson Buttner, Chicago, Ill., assignor to
The Goss Printing Press Company, Chicago,
Ill., a corporation of Illinois

Application April 27, 1932, Serial No. 607,764

16 Claims. (Cl. 101—350)

The present invention relates to inking mechanisms and more particularly to a novel and improved inking mechanism for use in connection with high speed rotary printing presses.

5 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, constructions, arrangements, combinations and improvements herein shown and described.

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

20 Of the drawings:—

Figure 1 is a vertical section showing an illustrative embodiment of the present invention, with certain parts being shown diagrammatically;

25 Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a fragmentary horizontal section taken on the line 3—3 of Figure 1;

30 Figure 4 is a detailed section taken on the line 4—4 of Figure 2;

Figure 5 is a fragmentary vertical section, partially diagrammatic, illustrating a modified form of ink fountain in accordance with the present invention; and

35 Figure 6 is a fragmentary plan view of the mechanism shown in Figure 5.

The present invention has for its object the provision of a novel and improved inking mechanism particularly adapted for use in supplying ink to the plate cylinders of high speed rotary newspaper presses. A further object is the provision of an inking mechanism in which the amount of ink subjected to the action of the fountain roller is relatively small thereby reducing the disintegration of the ink. Another object is the provision of a simple and inexpensive inking mechanism with improved means for silencing any page width of the ink fountain. Still another object is the provision of an inking mechanism comprising a relatively few number of parts, all of which are easily accessible.

45 In accordance with the present invention, and referring particularly to Figures 1, 2, 3 and 4 of the drawings, the inking mechanism comprises an ink fountain and a series of transferring and

distributing rollers and drums which transfer the ink from the fountain roll to form rollers running in contact with the plates on the plate cylinder.

As embodied, the ink fountain comprises a main 5 trough 10 of relatively large size extending from one side of the inking mechanism to the other and preferably of slightly greater length than the length of the plate cylinders with which it is used. Near one side edge of the trough, and in 10 the upper portion of trough 10 is positioned a smaller trough 11, divided into a plurality of sections by means of the transverse partitions 12. The number of sections is equal to the number of page widths of the plate cylinder, so that each 15 page width thereof corresponds to a particular one of the transverse sections.

Means are provided for withdrawing ink from the main trough 10 and supplying it to the smaller trough 11 during the running of the press, and 20 for this purpose, a plurality of discs 14 are rotatably mounted within trough 10 by means of shaft 15 and dip into the body of ink contained in said trough. Discs 14 are sufficiently large so that they project above the upper edge of 25 trough 11, and means are provided for removing ink from the discs and transferring it to the trough 11. These removing means comprise a slotted member 16 pivotally mounted at one edge of trough 10 on a shaft 17, the slot permitting 30 each member 16 to be fitted down over its co-operating disc. The edges of the slot in member 16 are formed to contact with the sides of the disc 14 and remove ink therefrom as the disc rotates. The scraper edges 17' communicate directly with widening channels 18 in the upper 35 surface of member 16, which channels are downwardly directed towards a common discharge mouth 19 positioned directly above the corresponding section of trough 11. Ink is thus removed from both sides of the disc and flows by 40 gravity into its corresponding section of trough 11 to maintain the trough fully supplied with ink.

The cylinder to be inked, such as a fountain 45 roll 20, rotatably mounted in the side frames 21 of the press by means of shaft 22, dips into the ink contained in trough 11 and receives a film or coating of ink as it rotates therein. Along one edge, trough 11 is provided with a scraper blade 23 to contact with the fountain roll and remove 50 all but a limited quantity of ink from the fountain roll as it rotates in the ink. An additional scraper blade 24 is mounted on the edge of trough 10 adjacent to blade 23 and contacts with the 55

fountain roll to remove all but a regulable thickness of ink from the fountain roll and thereby accurately control the supply of ink to the press. Blade 24 is provided with a plurality of adjusting screws 25, threaded in the wall of trough 10 and bearing against the blade 24 on its side away from roll 20. One such adjusting screw 25 is preferably provided for each column width of the plate cylinder so that the ink requirements of each part of the press may be properly provided for.

For facilitating the silencing of any page width of the fountain, and thereby preventing the supply of ink to the corresponding portion of the plate cylinder, the trough 11 is divided into transverse sections by webs 12 which project into grooves 27 formed in the surface of fountain roll 20. The scraping members 16 are movably mounted on shaft 17 and may be secured in either scraping or non-scraping position by suitable means, such as set screws 28. In their lowered position, the members 16 remove ink and feed it to the trough 11, whereas in their raised position (as shown in dotted lines in Figure 1) no ink is removed from the discs and consequently none is supplied to the corresponding section of trough 11.

As fountain roll 20 is slowly rotated, ductor roller 30 is periodically oscillated by any suitable means into contact with roll 20 and alternately into contact with the distributing roll 31 which is rotated at a considerably higher peripheral speed than that of the fountain roller. Distributing roll 31 transfers its ink to distributing roll 32 by means of transfer rollers 33 which are freely rotatable and held against axial movement, while rolls 31 and 32 are vibrated in opposite directions. Roll 32 runs in contact with form rollers 34 which contact with and transfer ink to plates on the plate cylinder 35. All of rolls 31, 32, rollers 33 and 34 and plate cylinder 35 run at substantially the same peripheral speed, which is that of the web and impression cylinder 36 while means are provided for driving the fountain discs 14 at an extremely low speed.

As shown in Figures 2 and 3 of the drawings, rolls 31, 32, cylinders 35 and 36 and rollers 33 and 34 are mounted upon their respective shafts 31', 32', 35', 36', 33' and 34', which are rotatably mounted in suitable bearings in press frames 21. Plate cylinder 35 is driven by means of mitre gear 40 fixed on shaft 35 and in mesh with a mitre gear (not shown) driven from the main shaft. At its other end shaft 35' is provided with a gear 41 meshing with a gear 42 fast on shaft 36' and having an equal number of teeth. Shaft 35' also carries a gear 44 meshing with idler 45 which drives gear 46 on shaft 32'. Gear 47, on shaft 31' is driven from gear 46 through idler 48. The gear ratio of gears 44, 46 and 47 is such that the peripheral speeds of rolls 31, 32 and cylinder 35 are the same.

A sprocket 50 at the extreme end of plate cylinder shaft 35' drives a corresponding sprocket 51 on fountain roll shaft 22 through chain 52, and the drive ratio is such that the peripheral speed of the fountain is approximately one-third that of the plate cylinder and distributing rolls. At one end of the fountain trough 10 fountain roll shaft 22 is provided with a bevel gear 54 meshing with bevel pinion 55 on shaft 56 and driving worm 57 in mesh with worm wheel 58 on the fountain disc shaft 15, so that the fountain discs are driven very slowly relatively to the fountain roll.

For vibrating the distributing rolls 31, 32, each

of their shafts is provided at one end with a ball bearing 60 held against axial movement by means of cap 61 and shoulder 62 and having its outer race seated within collar 63. Collar 63 is pivotally connected with an eccentric yoke 64 by means of pivot pins 65. Eccentric yokes 64 are actuated by means of eccentrics 66 keyed to shaft 67 which is rotatably mounted in journal brackets 68 and driven through mitre gear 69 from shaft 22, thereby vibrating the distributing rolls 31, 32 at equal speeds in opposite directions.

Figures 5 and 6 of the drawings illustrate a modified embodiment of the invention in which the ink is supplied to a small trough 11 from the main trough 10 by means of a motor or press-driven, rotary, eccentric vane pump. As embodied, the motor or press-driven, rotary, eccentric vane pump 70 is connected to the lowermost portion of fountain trough 10, on the intake side of the pump, by means of pipe 71, and the discharge side of the pump is connected with header 72 by means of pipe 73. Connected with header 72 are a plurality of nozzles 74, one for each transverse section of the smaller trough 11 spaced along header 72 and connected thereto by means of unions 75.

With the nozzles 74 extending perpendicularly to header 72, the ink is delivered therefrom directly into the trough sections, but the nozzles 74 may be individually swung so as to return the ink to the main trough 10 in case it is desired to silence any one or more individual page widths of the printing cylinder. Pump 70 is preferably capacitated to deliver ink at a rate slightly in excess of the maximum requirements of the press, thereby always maintaining a surplus of ink in the smaller fountain trough 11.

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.

What I claim is:—

1. In an ink fountain for printing presses having an ink fountain, the combination of a trough extending across said printing press, a small trough within said first trough, means for supplying ink from said first trough to said small trough, a fountain roll dipping into said small trough and a scraper at one edge of the small fountain and bearing against said roll.

2. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a rotatable member dipping into said first trough and means for removing ink therefrom and delivering it to said smaller trough.

3. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a continuously moving member dipping into said first trough and means for removing ink therefrom and supplying it to said smaller trough.

4. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a

smaller trough within said first trough, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a disc dipping into said first trough and means for removing ink from the disc and transferring it to the smaller trough.

5. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a pump, a plurality of nozzles, one for each section whereby ink is withdrawn from the first trough and fed to the sections of the smaller trough.

6. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a pump, a plurality of nozzles, one for each section, each of said nozzles being movable to discharge into said smaller trough or into the main trough.

7. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a pump for withdrawing ink from said first trough and a plurality of nozzles connected thereto, one for each section, said nozzles being individually movable either to discharge into said smaller trough or into said first trough.

8. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a plurality of rotatable discs dipping into said first trough, one for each section, and means for removing ink therefrom and delivering it to the corresponding section.

9. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a plurality of continuously moving members dipping into said first trough, means for removing ink therefrom and supplying it to the corresponding section of the smaller trough.

10. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a plu-

rality of discs dipping into said first trough and means for removing ink from the sides of the discs and transferring it to the corresponding sections, said means being individually movable into and out of operative relationship with the discs.

11. In an ink fountain for printing presses having an ink fountain, the combination of an ink trough extending across said printing press, a smaller trough within said first trough and divided longitudinally into a plurality of sections, a fountain roll dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough including a plurality of thin, press-driven discs dipping into said first trough, means for scraping ink from the sides of the discs and supplying it to said smaller trough sections, the scraping means for each disc being individually movable into and out of operative relationship to its disc.

12. An inking mechanism for high speed rotary printing presses having a plate cylinder including in combination a fountain roll, a pair of distributing rolls, a ductor roller between the fountain roll and one of the distributing rolls, transfer rollers between the distributing rolls and between the other of the distributing rolls and the plate cylinder of the press, a flexible drive from said cylinder to said fountain roll, a shaft perpendicular to the distributing rolls and carrying a pair of eccentrics for vibrating said distributing rolls, means for driving said shaft from the fountain roll, and gearing connecting said distributing rolls with the plate cylinder, none of said rolls being driven slower than the rolls from which they receive their ink.

13. In an inking mechanism for printing presses having an ink fountain, the combination of a trough extending across said printing press, a smaller trough within said first trough, a fountain roll dipping into said smaller trough, means for supplying ink from said first trough to said smaller trough, distributing rolls and means driven from said fountain rolls for vibrating the distributing rolls.

14. In an inking mechanism for printing presses having an ink fountain, the combination of a trough extending across said printing press, a smaller trough within said first trough, a fountain roll dipping into said smaller trough, means for supplying ink from said first trough to said smaller trough, distributing rolls, a flexible drive for driving said fountain roll from a printing press cylinder above said fountain roll, a shaft perpendicular to the distributing rolls and driven by said fountain roll and means driven from said fountain roll for vibrating the distributing roll.

15. In an ink fountain for printing presses having an ink fountain, the combination of a trough extending across said printing press, a smaller trough within said first trough, a rotatable cylinder to be inked dipping into said smaller trough and means for supplying ink from said first trough to said smaller trough.

16. In an ink fountain for printing presses having an ink fountain, the combination of a trough extending across said printing press, a small trough within said first trough, a pump for supplying ink from said first trough to said small trough, a cylinder dipping into said small trough and a scraper at one edge of the small fountain and bearing against said cylinder.

HORACE JUDSON BUTTNER.