J. J. WALSER AND H. FANKBONER.

PRINTING PRESS INKING MECHANISM.

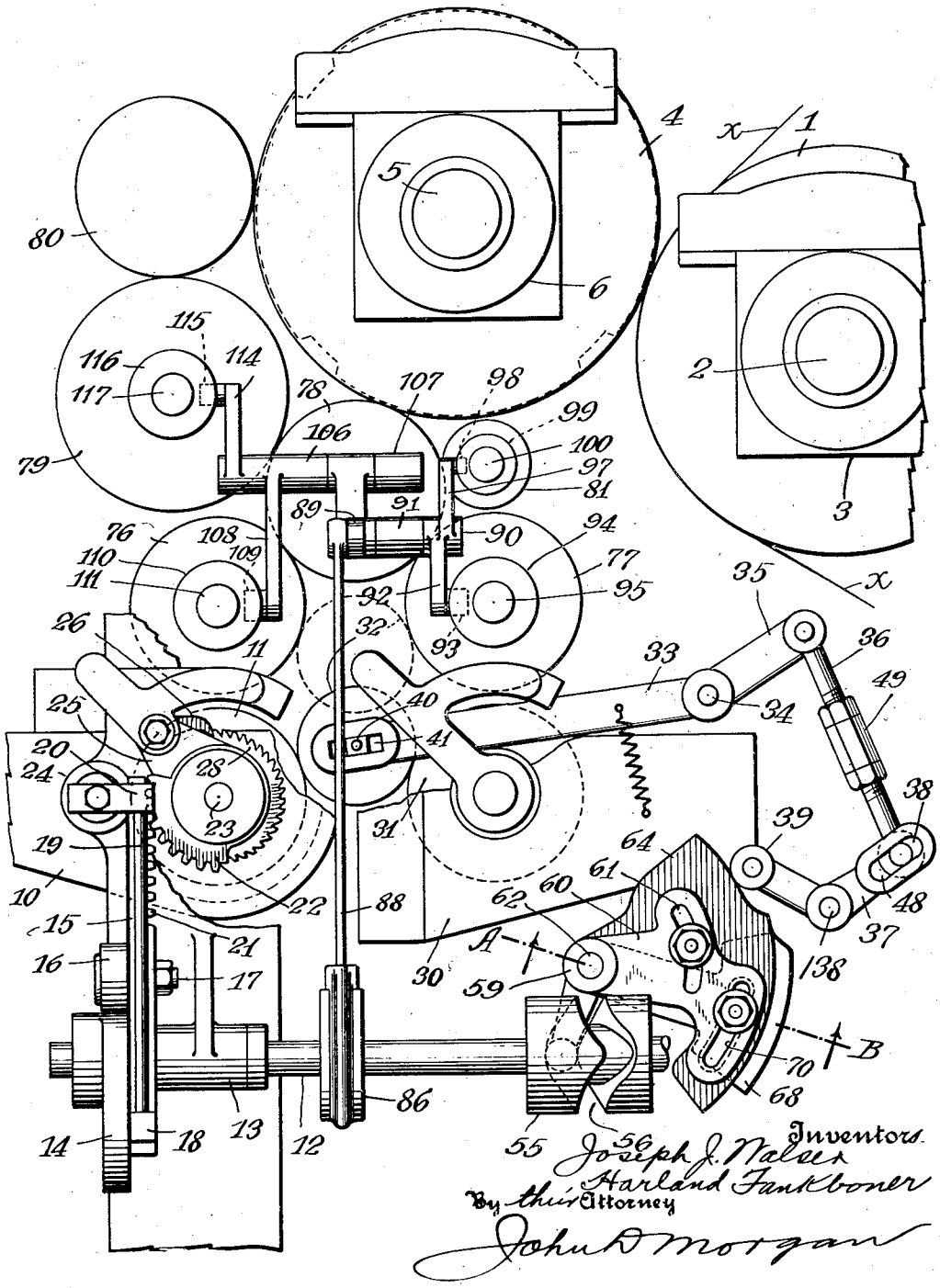
APPLICATION FILED JUNE 18, 1917.

1,376,982.

Patented May 3, 1921.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

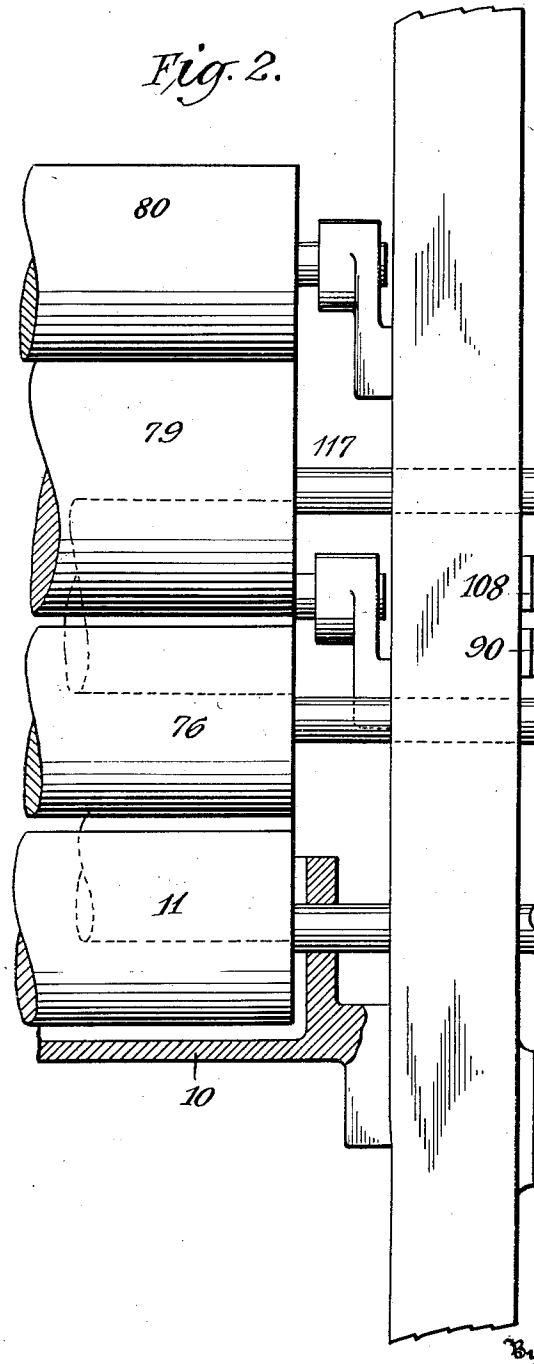
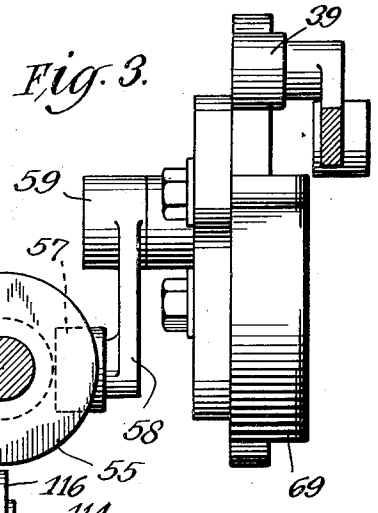


Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 6.

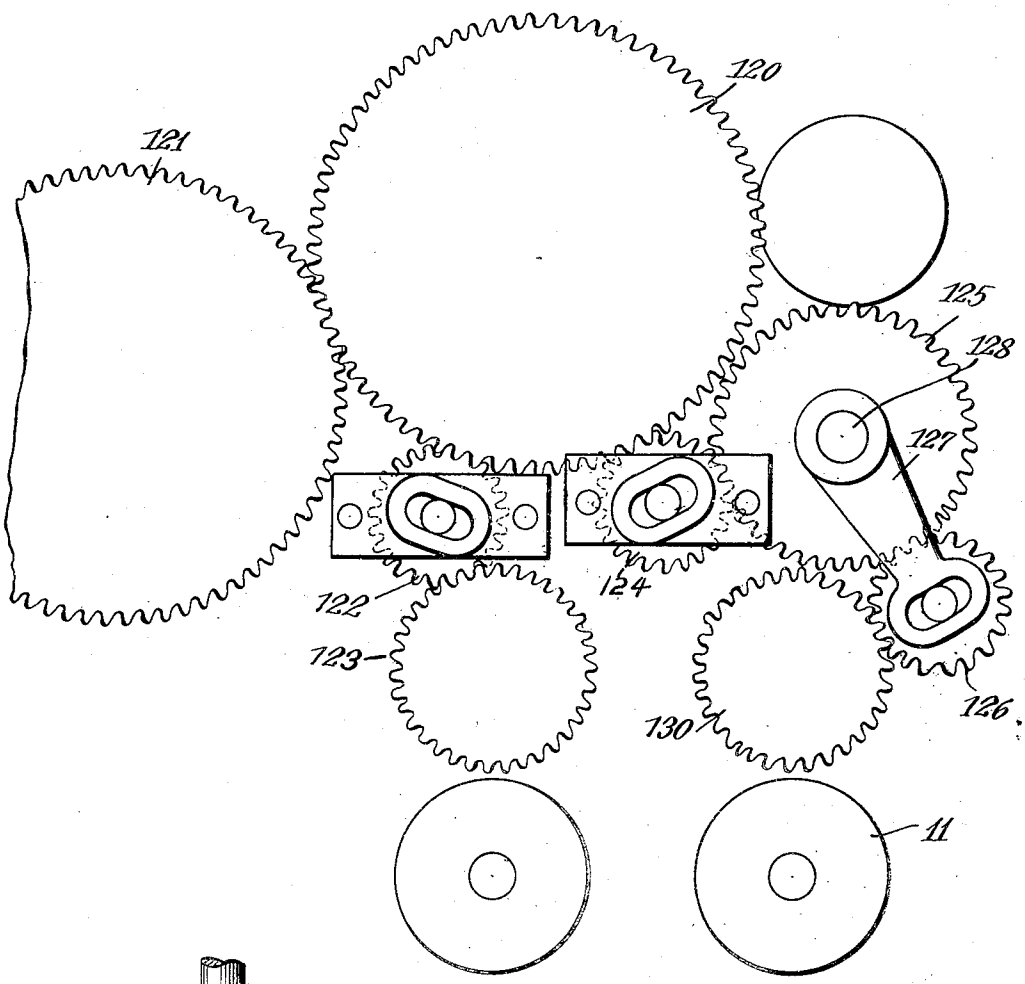
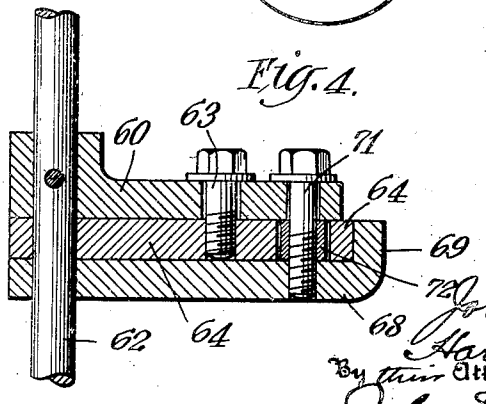


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 5.

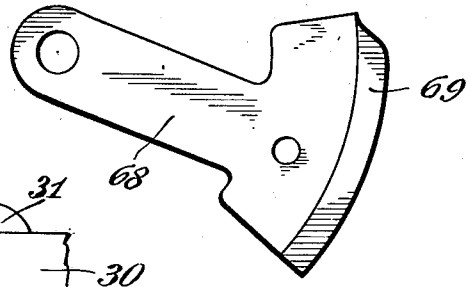


Fig. 9.

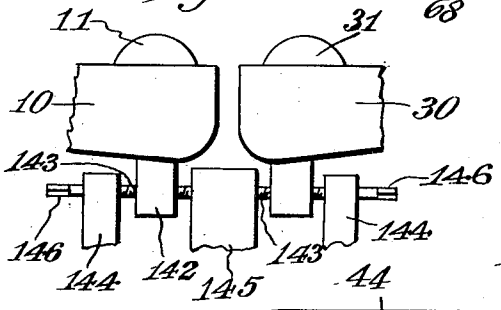


Fig. 7.

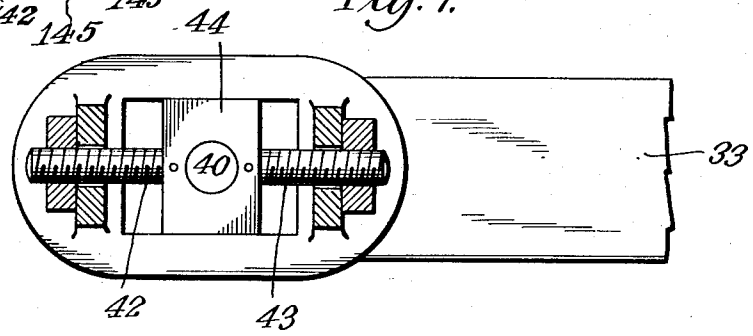
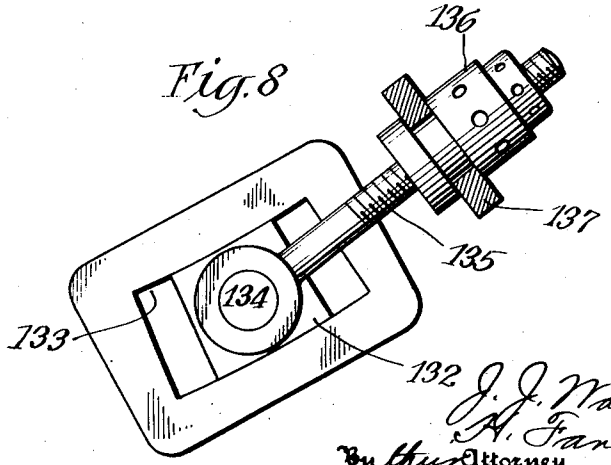


Fig. 8



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UNITED STATES PATENT OFFICE.

JOSEPH J. WALSER AND HARLAND FANKBONER, OF CHICAGO, ILLINOIS, ASSIGNORS TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

PRINTING-PRESS INKING MECHANISM.

1,376,982. Specification of Letters Patent. Patented May 3, 1921.

Application filed June 18, 1917. Serial No. 175,408.

To all whom it may concern:

Be it known that we, JOSEPH J. WALSER and HARLAND FANKBONER, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing-Press Inking Mechanisms, of which the following is a specification.

The invention relates to printing presses, and more particularly to inking mechanism for 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 ascertained through practice with the invention; the same being attained through the means, 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.

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

Of the drawings:

Figure 1 is a fragmentary elevation, with certain parts represented more or less diagrammatically, of a portion of a printing press constructed in accordance with the principles of the invention;

Fig. 2 is a fragmentary elevation looking at Fig. 1 from the left, and showing parts of the machine frame which have been omitted from Fig. 1;

Fig. 3 is a fragmentary elevation of the ductor roller actuating and controlling cam and allied mechanism, which mechanism is also shown in the lower right hand part of Fig. 1;

Fig. 4 on a somewhat enlarged scale is a section, through the ductor roller actuating cams, substantially on the line A—B of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a detail, likewise on an enlarged scale, of one of the cams shown in Fig. 4; and

Fig. 6 is a representation, partially diagrammatic, of the driving mechanism for the press cylinders and parts of the inking mechanism.

Fig. 7 is a fragmentary detail, on an enlarged scale and with parts in section, of the adjustable journal mounting for the ductor roll; and

Fig. 8 is a fragmentary detail, on an enlarged scale, of the adjustable journal bearings for the ink drums.

Fig. 9 is a fragmentary detail showing the adjustable mounting for the ink fountains.

Referring to the accompanying drawings, illustrating by way of example, one embodiment of the invention, the impression cylinder of a rotary printing couple is indicated by 1, the shaft 2 thereof being mounted in suitable bearings 3, carried upon the press frame. A coöperating form cylinder 4 has its shaft 5 mounted in like bearings 6, also carried upon the machine frame. The web x is run between the cylinders of the printing couple and is printed in the usual manner.

Referring to the illustrated embodiment of the inking mechanism, a ductor roller is provided coöperating with a plurality of ink fountain rollers, one ink fountain roller preferably, coöperating, with the ductor roller on either side thereof. Also, the ductor roller coöperates with a plurality of ink drums, and preferably the ductor roller engages with one ink drum on either side thereof, the ductor roller at one end of its travel engaging with the two ink fountain rollers on either side thereof to receive the ink, and at the other end of its travel engaging with the two ink drums to deliver the ink thereto, the ink being delivered thence to the form inking rollers which ink the plates on the cylinder.

In accordance with one feature of the invention, a plurality of form rollers are provided one of the form rollers receiving its ink more directly from the source of ink supply than the other, and more particularly, in accordance with said feature of the invention, there is an additional ink drum interposed between one of the form rollers and the source of ink supply, such addi-

tional ink drum receiving its ink from the other form roller.

According to one feature of the invention, also, there are a plurality of ink drums cooperating with a single form inking roller to impart ink thereto, and preferably an ink drum runs in contact with such form roller on either side thereof.

In the embodied form, these various features of invention are associated together in a single mechanism, together with other features of invention, which will be later described and pointed out. In the embodied form the ductor roller coöperates with two fountain rollers, one at either side thereof, both of which supply ink to the ductor roller. At the other end of its travel, the ductor roller engages with two ink drums, one at either side thereof, to both of which ink drums the ductor roller imparts a supply of ink. These two ink drums impart ink to one form inking roller, which roller in turn supplies ink to the plates upon the form cylinder, and also to an additional ink drum, which last mentioned ink drum supplies ink to another form inking roller, which roller inks the plates upon the form cylinder.

In accordance with one feature of the invention, a vibrating, frictionally driven metal roller also coöperates with one of the form rollers to mix and distribute the ink thereon preparatory to applying it to the plates upon the form cylinder.

Associated with the foregoing are other novel features of invention, many of which are designed to assist in rendering most highly efficient the action of the instrumentalities and mechanisms already pointed out.

Referring in more detail to the illustrated embodiment one or more ink fountains are provided, and as shown there are two such fountains. In the ink fountain 10 is a fountain roller 11, which is intermittently rotated while coöperating with the ductor roller, in the usual manner. The actuating means for the ductor roller may be of any suitable or adequate form, and as illustrated herein a shaft 12 is carried in suitable brackets 13 mounted on the machine frame, and carried on shaft 12 a cam 14. Coöperating with the cam 14 is a longitudinally-reciprocating rack bar 15, and carried by said rack bar 15 is a cam roller 16, which roller cooperates with the cam 14. The cam roller 16 is fixed to the bar 15 in a suitable manner, as by a bolt 17. The rack bar 15 has fixed thereto at 18 a longitudinally extending guide rod 19, which guide rod works in a guiding aperture in the brackets or lugs 20 fixed to the machine frame.

Thus as the shaft 12 rotates, rack bar 15 and guiding rod 19 are vertically reciprocated (Fig. 1).

Rack bar 15 is provided with a series of teeth 21, which teeth mesh with a toothed sector 22 carried loosely upon a shaft 23. A roller 24 is mounted in the bracket 20, and bears against the back of the rod 15 to hold it to its work. Fixed to reciprocate with the geared sector 22 is a pawl lever 25 provided with a pawl 26. The pawl 26 coöperates with a ratchet wheel 28, which ratchet wheel is fixed upon the shaft 23 of the fountain ink roller 11. Thus as the rack bar 15 reciprocates, the pawl 26 is oscillated to and fro, thereby imparting intermittent rotary movement to the ink fountain roller 11 when the ductor roller is in contact therewith. Suitable means for varying the throw or travel of the pawl 26 are provided, but are omitted from the drawings for the sake of clearness, together with other details of the associated mechanism.

In the embodied form a second ink fountain roller 31 also supplies ink to the ductor roll and is preferably located in a separate ink fountain 30. Fountain roller 31 is intermittently rotated, like the fountain roller 11, while the ductor roller is in engagement therewith. Suitable mechanism is provided for this purpose and if desired may be similar to that already described in connection with fountain roller 11, but the showing thereof is omitted from the drawings for the sake of clearness.

The ductor roller 32 is carried in suitable bearings in a pair of arms 33, which arms are fixed to a shaft 34 mounted in and extending transversely to the frame of the machine. Fixed to the shaft 34 is an arm 35, and pivotally connected to the end of the arm 35 is a link 36. The other end of the link 36 is pivotally connected to a bell crank lever 37, which lever is pivotally mounted at 138 on the machine frame. Bell crank lever 37 at its other end is provided with a cam roller 39, which roller coöperates with a suitable cam mechanism, to be later described, whereby the ductor roller is traveled to and fro between the fountain roller 11 and 31 and the two ink drums to which the ductor roller delivers its ink.

Means are provided by the invention for regulating and adjusting both the position and the travel of the ductor roller to compensate for shrinkage in the size of the roller and to compensate for variations in size due to replacement of an old roller by a new, and to regulate the pressure or contact of the ductor roller with each of the respective fountain rollers, and also with each of the respective ink drums. In the embodied form of such means, the ductor roller 32 is mounted to have adjustment longitudinally in its bearings in the arms 33. For this purpose, the pintles 40 of the roller 32 are carried in slots 41 formed in the ends of the arms 33. The adjustment for the pintles in the slots in the arm 33 is shown in detail in Fig. 7 of

the drawings, wherein adjusting screws 42 and 43 act upon the journal boxes 44 of the pintles.

Means are also provided for regulating or varying the extent of travel of the ductor roller, and the exact location of the termini of its travel, to compensate for shrinkage and for variation in the size of new and old ductor rollers, as already explained. In the embodied form of such means, the pivotal connection of the link 36 with the bell crank lever 37 is adjustable to vary the effective throw of the lever. As embodied, a slot 48 is formed in the end of the lever 37 whereby the pivotal bearing 38 may be moved backwardly and forwardly in the slot, thus increasing or decreasing the throw of the arm 33, and thereby correspondingly varying and regulating the travel of the ductor roller 32. Adjusting means are also provided in the link 36, such as a turn buckle 49, whereby the length of the link 36 may be slightly varied to regulate the terminal points of the travel of the ductor roller, and to effect a smooth and harmonious action of the mechanism.

Means are also provided by the invention, in connection with the actuating means for the ductor roller, for regulating and varying the dwell of the ductor roller, both at the fountain ink rollers and at the ink drums. In accordance with certain features of the invention, such regulating means or devices are operable or regulable independently of each other.

In the embodied form of such actuating and regulating means, there is fixed to the shaft 12 a cam 55 having a cam groove 56 formed therein. In the groove 56 operates a cam roller 57, fixed to an arm 58, which arm is fixed to a shaft 62. Fixed also to the shaft 62 is an arm or plate 60, whereon is carried a plurality of coöperating, but independently positionable cams, which cams, through roller 39 and lever 37, actuate the ductor roller 32.

As embodied, there is formed in the arm or plate 60 a slot 61, through which slot projects a tap-bolt 63, the tap-bolt being threaded into a cam 64, which cam is fulcrumed on the shaft 62 (see especially Fig. 4). The roller 39 runs upon the periphery of the cam 64 (see Figs. 1 and 3) and determines the length of the dwell of the ductor roller against the ink fountain rollers. Also fulcrumed upon the shaft 62 is a cam 68, the upper portion 69 thereof being bent over the outer or operative edge of the cam 64 (Figs. 3, 4 and 5), whereby the part 69 is brought into position to coöperate with the cam roller 39.

In the plate 60 is formed a slot 70, through which slot projects a tap-bolt 71, which tap-bolt is threaded into the cam 68. A spacing block 72 encircles the tap-bolt 71 and is located in a slot in the cam 64 and between the plate 60 and the cam 68, to prevent jamming and clamping of the cam 64 by the bolt 71. The cam 68 regulates the dwell of the ductor roller 32 against the ink drums, and by reason of the cams 64 and 68 being independently positionable, the dwell of the ductor roller at the fountain rollers and of the ink drums may be regulated independently of each other, as may be desired or required for the best results in any particular case.

From the foregoing it will be seen or understood that means are provided whereby not only the periods of dwell of the ductor roller at the fountain rollers and also at the ink drums are regulated as desired, but the extent of travel of the ductor roller, the precise positioning of the termini of its path of travel, and the time and force of contact with each of the fountain rollers, and also with each of the ink drums, is adjusted and regulated as may be desired or required for the most efficient and adequate inking in any particular case or for any particular work.

In accordance with features of the invention already referred to, an ink drum 76 and an ink drum 77 are provided engaging with the ductor roller 32 at either side thereof, as shown in dotted lines in Fig. 1. Both the ink drum 76 and the ink drum 77 coöperate with the form inking roller 78, which form inking roller supplies ink to the plates upon the form cylinder 4 and also to an ink drum 79, which ink drum also rotates in contact with the form roller 78. Coöperating with the ink drum 79 is a form inking roller 80, which likewise supplies ink to the plates on form cylinder 40.

Coöperating with the form roller 78 is a smooth metal roller 81 running frictionally in contact with the form roller 78 and adapted to assist in the distribution of the ink on the form roller.

The ink drums 76, 77 and 79 and the roller 81, in the preferred form, are all vibrated, and the ink drums 76, 77 and 79 are likewise positively driven, while the roller 81 is frictionally driven from form roller 78. In the embodied form of vibrating means, there is fixed on the shaft 12 an eccentric 86, the strap 87 thereof being connected to a rod 88. The rod 88 is pivotally connected to an arm 89, which arm is fixed to a shaft 90 journaled in a bracket 91 mounted upon the machine frame.

Fixed to the shaft 90 is an arm 92, provided with a roller 93, which roller runs in an annularly grooved collar 94 formed upon the shaft 95 of ink drum 77. The ink drum is positively rotated from the other end of its shaft, as will be later described. An arm 97 extends upwardly from the shaft 90 and is provided with a roller 98, said roller work-

ing in an annularly grooved collar 99 carried on the shaft 100 of the frictionally driven roller 81.

Fixed to shaft 90 is a geared sector 104, with which means a geared sector 105, fixed to a shaft 106, which shaft is journaled in a bracket 107 carried on the machine frame. From shaft 106 an arm 108 extends downwardly and is provided with a roller 109, said roller working in an annularly grooved collar 110 on the shaft 111 of the ink drum 76. The ink drum 76 is likewise positively driven from the other end of its shaft, as will be later described. From the shaft 106 an arm 114 extends upwardly and carries a roller 115, said roller working in an annularly grooved collar 116 on the shaft 117 of the ink drum 79, which ink drum, like the others, is driven from the other end of its shaft.

In Fig. 6 of the drawing is shown as arrangement of gearing for driving the various cylinders and ink drums, and therein 120 is a gear fixed to the shaft of the form cylinder 4, and 121 is a gear fixed to the shaft of the impression cylinder 1. An intermediate 122 drives a gear 123 on the shaft of ink drum 77. An intermediate 124 drives the gear 125 upon the shaft of ink drum 79, and gear 125 drives an intermediate 126, which intermediate is carried on an arm or arms 127 journaled on the shaft 128 of gear 125. Gear 126 drives a gear 130 on the shaft of ink drum 76.

Gears 122, 124 and 126 are shown adjustable in their bearings, thereby providing for positioning or adjustment of the three ink drums to compensate for shrinkage of the form rollers due to age or wear, or replacement of rollers, or for other causes, and to regulate the pressure or contact therebetween. Details of such an adjustment, applicable to the shafts of the ink drums and of the intermediate gears, are shown in Fig. 8 of the drawing. The shafts 134 of the various gears are journaled in boxes 132, slidable in accurate apertures 133 in the press frame. Pivoted on the shafts 134 of the gears are screw-threaded pins or eye-bolts 135. Collared nuts 136 are threaded thereon, the grooved collar of the respective nuts engaging with a plate 137 fixed to the frame. A single detail will be sufficient for all the different bearings of the gearing.

The adjustment of the ink fountains to and from each other to compensate for variations in the size of the ductor roller, as to details of structure, may be of any known or suitable form. Such a form of said means is shown in Fig. 9, said figure showing a part of the mechanism shown near the bottom of Fig. 1.

The ink fountains 10 and 30 are provided, respectively, with a plurality of downwardly extending lugs 142 arranged transversely of the fountain, each of the lugs 142 having therein a screw-threaded aperture. Screw threaded in each of the apertures in the respective lugs 142 is a horizontally disposed screw-rod 143, each of the rods 143 being journaled in bearing blocks 144 and 145, supported on the machine frame. Suitable turning means are provided for the screw rods 143, and for this purpose they are shown with squared heads 146, which are adapted to take gear pinions, or a handle, or any other suitable actuating connection, in a well known manner. The change of position of the fountains is so slight that it will not interfere with the roller actuating means.

By reason of the two fountain rollers cooperating to ink the ductor roller, the ductor roller receives a large and adequate supply of ink, its entire surface being practically covered with a layer of ink, of the requisite thickness and very evenly distributed, in the short time that the ductor roller is in contact with the fountain rollers. The ductor roller being completely supplied with ink as described, comes in contact with both the cooperating ink drums and the ink is transferred thereto, and is then transferred by both the ink drums to the first form inking roller.

The first form inking roller, this being the form roller which the forms first encounter as they come around from the impression, thus receives an adequate supply of evenly distributed ink for the first, and also for the subsequent inking of the plate. As hereinbefore described the second form inking roller is supplied preferably from the first form inking roller. The vibrating distributing roller 81, running in contact with the first form inking roller, assists in providing and maintaining a constant and even distribution of the supply of fresh ink.

The first form inking roller, carrying fresher ink than the second form inking roller, and making contact with the plates on the form cylinder ahead of the second form inking roller, prevents the lint or dust from the paper being picked up by the inking mechanism, as would be the case if a comparatively drier and more sticky form roller should come in contact with the plates immediately after they have left the impression. A very rapid and efficient speed control for the ductor roller is also effected.

By reason of the ductor roller coöperating with the two fountain rollers, and being as it were pressed or wedged therebetween, the ductor roller is immediately brought down from the high speed at which it was spinning or rotating after leaving the ink drums and almost at once is brought to the slow speed of the fountain rollers, which would not be the case if the ductor roller made contact with only one fountain roller. Fur-

thermore, when the ductor roller, at the other end of its travel, engages in like manner with the two ink drums it will be practically immediately brought up from the comparatively slow speed of the ink fountain rollers to the speed of the ink drums, which likewise would not be the case if but a single ink drum were used.

Thus there is secured a much better and more quickly acting control of the ductor roller on a high speed press, in which the inking mechanism is likewise highly speeded, than would be otherwise possible. There is also insured an adequate supply of ink for fast running presses, and this supply very fully and uniformly distributed to the various devices.

Other objects and uses of the invention will be understood by those skilled in the art or may be ascertained by practice with the invention. It will be understood that changes may be made from the exact construction shown and described without departing from the principles of the invention and without sacrificing its chief advantages.

What we claim as our invention and desire to secure by Letters Patent is:

1. A printing press inking mechanism including in combination a plurality of fountain rollers, and a single ductor roller coacting simultaneously therewith and taking ink from both fountain rollers upon the same part of the ductor roller.

2. A printing press inking mechanism including in combination a plurality of fountain rollers, a single ductor roller, all said rollers having their operating surfaces of substantially the same length and all coacting simultaneously together throughout their length.

3. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller, and means for conveying the ink from the ink drums to the plates on the form cylinder.

4. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller and means for conveying the ink from the ink drums to the plates on the form cylinder.

5. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller contacting therewith and means including a pair of arms on which the ductor roller is adjustably journaled for regulating the contact of the ductor roller with each of the fountain rollers, and means for conveying the ink from the ductor roller to the plates on the form cylinder.

6. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller contacting simultaneously therewith, means including a pair of arms on which the ductor roller is adjustably journaled for regulating the contact of the ductor roller with each of the fountain rollers and means for conveying the ink from the ductor roller to the plates on the form cylinder.

7. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller contacting simultaneously therewith, means for supplying ink to the ductor roller, means for regulating the contact of the ductor roller with each of the ink drums, and means for conveying the ink from the ink drums to the plates on the form cylinder.

8. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for applying ink to the ductor roller, means for regulating contact of the ductor roller with each of the ink drums, and means for conveying the ink from the ink drums to the plates on the form cylinder.

9. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller passing therebetween and presenting its opposite sides in contact therewith, arms upon which the ductor roller is carried and by which it is oscillated, means for adjusting the ductor roller on its arms, and means for conveying the ink from the ductor roller to the plates on the form cylinder.

10. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller contacting simultaneously therewith, arms upon which the ductor roller is carried and by which it is oscillated, means for adjusting the ductor roller on its arms, means for supplying ink to the ductor roller, and means for conveying the ink from the ink drums to the plates on the form cylinder.

11. A printing press inking mechanism including in combination a plurality of fountain rollers, a single ductor roller coacting simultaneously therewith and taking ink from both fountain rollers upon the same part of the ductor roller and means for regulating the dwell of the ductor roller in contact with the fountain rollers.

12. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller, means for conveying the ink from the ink drums to the plates on the form cylinder, and means for regulating the dwell of the ductor roller in contact with the ink drums.

13. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller conveying ink therebetween and means for conveying the ink from the ink drums to the plates on the form cylinder.

14. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller contacting simultaneously with the fountain rollers at one end of its travel and with the ink drums at the other end of its travel, and means for conveying the ink from the ink drums to the plates on the form cylinder.

15. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller contacting simultaneously with the fountain rollers at one end of its travel and with the ink drums at the other end of its travel, means for conveying the ink from the ink drums to the plates on the form cylinder and means for regulating the dwell of the ductor roller at the fountain rollers and also at the ink drums.

16. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller conveying ink therebetween, oscillating arms on which the ductor roller is mounted, means for adjusting the ductor roller on its arms, and means for conveying the ink from the ink drums to the plates on the form cylinder.

17. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller contacting simultaneously with the fountain rollers at one end of its travel and with the ink drums at the other end of its travel, and means for conveying the ink from the ink drums to the plates on the form cylinder, and means for adjusting the fountain rollers toward and from each other to compensate for variations in the size of the ductor roller.

18. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a plurality of ink drums, a single ductor roller contacting simultaneously with the fountain rollers at one end of its travel and with the ink drums at the other end of its travel, means for conveying the ink from the ink drums to the plates on the form cylinder, and means for adjusting the ink drums toward and from each other to compensate for variations in the size of the ductor roller.

19. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller contacting with both fountain rollers throughout its length, means for conveying the ink from the ductor roller to the plates on the form cylinder, and means for adjusting the fountain rollers toward and from each other to compensate for variations in the size of the ductor roller.

20. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller, means for conveying the ink from the ink drums to the plates on the form cylinder, and means for adjusting the ink drums toward and from each other to compensate for variations in the size of the ductor roller.

21. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller entering therebetween and having its opposite sides contacting therewith, means for conveying the ink from the ductor roller to the plates on the form cylinder, means for adjusting the fountain rollers toward and from each other to compensate for variations in the size of the ductor roller and means for varying the length of the travel of the ductor roller.

22. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller, means for conveying the ink from the ink drums to the plates on the form cylinder, means for adjusting the ink drums toward and from each other to compensate for variations in the size of the ductor roller, and means for varying the length of the travel of the ductor roller.

23. In combination in a printing press a form cylinder and plates thereon, a plurality of fountain rollers, a single ductor roller contacting therewith, means for conveying the ink from the ductor roller to the plates on the form cylinder, means for adjusting the fountain rollers toward and from each other to compensate for variations in the size of the ductor roller and means for varying the location of the terminus of the travel of the ductor roller toward the fountain rollers.

24. In combination in a printing press a form cylinder and plates thereon, a plurality of ink drums, a single ductor roller coöperating simultaneously therewith, means for supplying ink to the ductor roller, means for conveying the ink from the ink drums to the plates on the form cylinder, means for adjusting the ink drums toward and from each other to compensate for variations in the size of the ductor roller and means for varying the location of the terminus of the travel of the ductor roller.

25. A printing press inking mechanism including in combination a plurality of ink drums, a form inking roller inked by said

plurality of ink drums and an ink drum receiving ink from said form inking roller, and a form inking roller receiving its ink from said ink drum.

26. A printing press inking mechanism including in combination a form inking roller, means for supplying ink thereto comprising a plurality of fountain rollers and a plurality of coöperating ink drums, a ductor roller contacting with the plurality of fountain rollers and then with the plurality of ink drums, and an ink drum receiving ink from said form inking roller, and a form inking roller receiving ink from said ink drum.

27. A printing press inking mechanism including in combination a form inking roller, means for supplying ink thereto comprising a plurality of fountain rollers and a plurality of coöperating ink drums with a single intervening ductor roller contacting with a plurality of the ink drums, an ink drum receiving ink from said form inking roller and a form inking roller receiving ink from said ink drum.

28. A printing press inking mechanism including in combination a form inking roller, means for supplying ink thereto, a distributing roller engaging with and frictionally driven by said form inking roller, an ink drum supplying the form roller, and means for longitudinally vibrating the ink drum and the distributing roller.

29. A printing press inking mechanism including in combination a form inking roller, means for supplying ink thereto, a vibrating distributing roller engaging with and frictionally driven by said form inking roller, and means for positively longitudinally vibrating the distributing roller.

30. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a variable dwell cam and a lever arm following the cam, and connections for varying the extent of travel of the ductor roller to compensate for variations in the size of the ductor roller.

31. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a lever carrying the ductor roller, a link pivotally connected thereto and a lever arm with a slotted connection therebetween, and a variable dwell cam for actuating the other end of the lever.

32. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a variable dwell cam and a link and lever arm with a slotted connection therebetween, and a length adjusting device for said link.

33. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a cam having low and high parts relatively adjustable to independently regulate the dwells of the ductor roller at the fountain roller and at the ink drum.

34. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a cam having low and high parts independently adjustable with reference to each other and the body of the cam to independently regulate the dwells of the ductor roller at the fountain roller and at the ink drum.

35. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a cam, a lever operated directly by said cam, a cam carried by said lever, and connections between the last-named cam and the ductor roller.

36. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a rotating cam, an oscillating lever actuated by said cam, a cam carried by said lever, and connections between the last-named cam and the ductor roller.

37. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a cam, a lever actuated by said cam, a cam carried by said lever, connections between said last-named cam and the ductor roller, comprising a lever actuated by said last-named cam and connections between said lever and the ductor roller comprising devices for varying the throw of said lever.

38. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said

oscillating means comprising a cam, said cam comprising high and low parts relatively adjustable with respect to the cam body.

39. An inking mechanism for a printing press including in combination means for inking the plates upon the form cylinder, said means comprising a ductor roller, means for oscillating the ductor roller, said oscillating means comprising a cam, said cam comprising high and low parts relatively adjustable with respect to each other, and with respect to the body of the cam.

40. A printing press inking mechanism including in combination two ink fountain rollers, two ink drums, and a ductor roller simultaneously engaging the two fountain rollers, and simultaneously engaging the two ink drums.

41. A printing press inking mechanism including in combination two ink fountain rollers, two ink drums, and a ductor roller simultaneously engaging the two fountain rollers, and simultaneously engaging the two ink drums, and means for varying the length of the path of travel of the ductor roller at either end thereof to regulate its contact with the rollers or drums.

42. A printing press inking mechanism including in combination two ink fountain rollers, two ink drums, and a ductor roller simultaneously engaging the two fountain rollers, and simultaneously engaging the two ink drums, and means for transversely varying the position of the ductor roller to regulate its contacts with the two rollers or drums.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses.

JOSEPH J. WALSER.
HARLAND FANKBONER.

Witnesses to signature of Joseph J. Walser:

R. A. BEAL,
D. P. MCAULIFFE.

Witnesses to signature of Harland Fankboner:

F. J. HALSEY,
JOHN M. CARLSON.