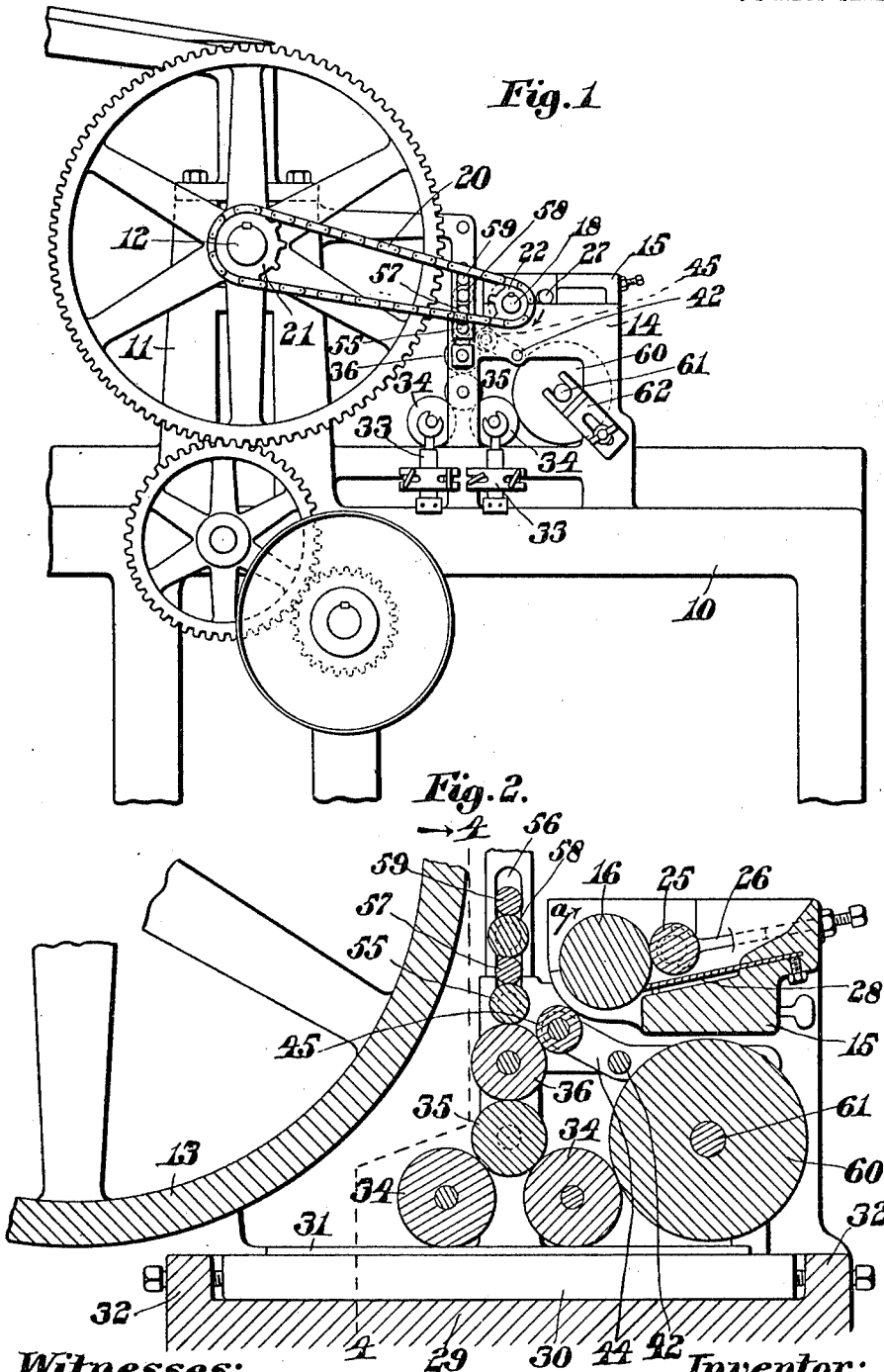


W. N. BATES.
 INKING DEVICE FOR PRINTING PRESSES.
 APPLICATION FILED JAN. 10, 1911.

1,001,576.

Patented Aug. 22, 1911.

3 SHEETS-SHEET 1.



Witnesses:
Nathan C. Lombard.
Mary C. Smith.

Inventor:
Walter N. Bates,
by Walter C. Lombard,
Atty.

1,001,576.

3 SHEETS-SHEET 2.

Fig. 3.

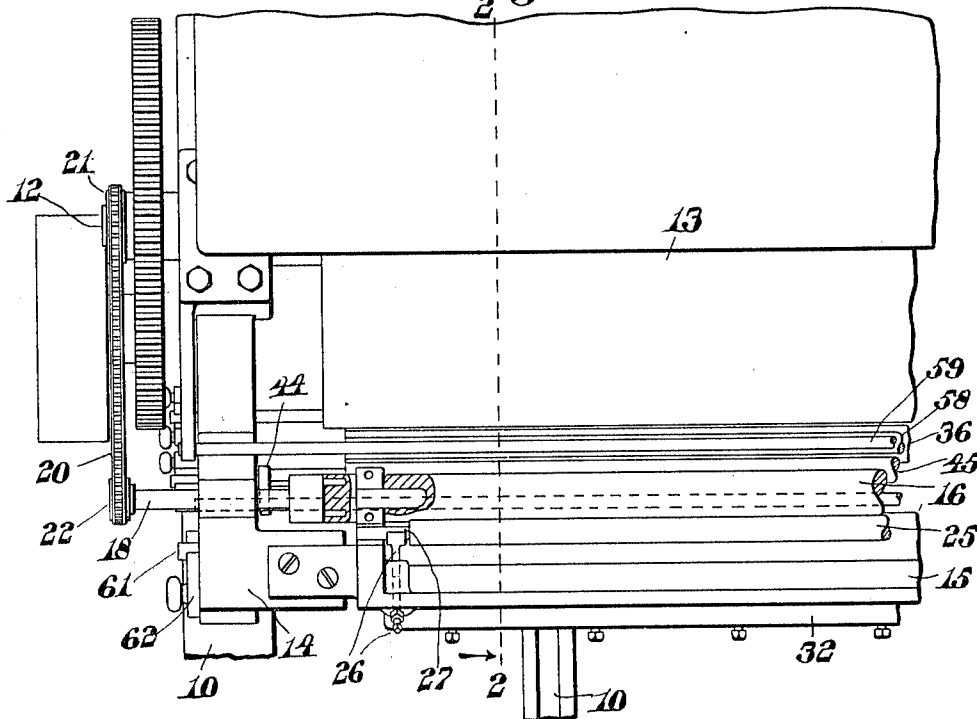
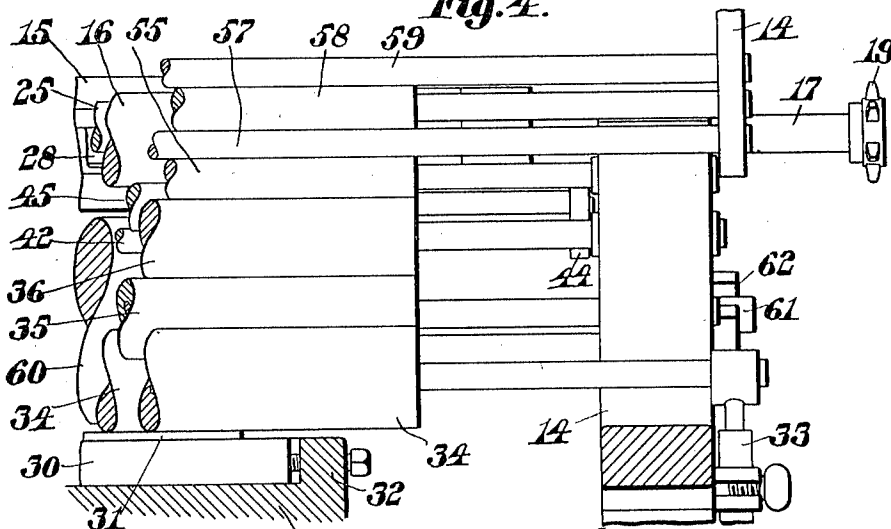


Fig. 4.



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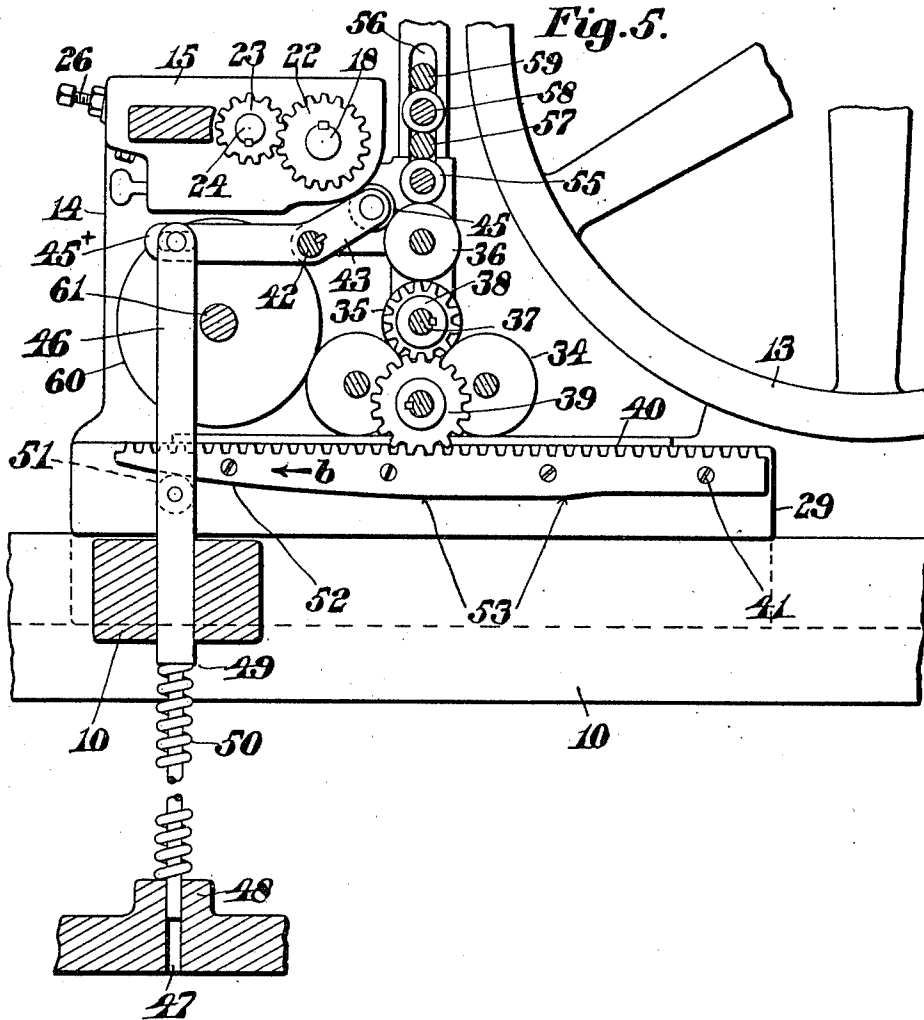
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UNITED STATES PATENT OFFICE.

WALTER N. BATES, OF WESTWOOD, MASSACHUSETTS.

INKING DEVICE FOR PRINTING-PRESSES.

1,001,576.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed January 10, 1911. Serial No. 601,891.

To all whom it may concern:

Be it known that I, WALTER N. BATES, a citizen of the United States of America, and a resident of Westwood, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Inking Devices for Printing-Presses, of which the following is a specification.

10 This invention relates to ink distributing apparatus for printing presses, and is especially designed for cylinder presses. Its principal object is to provide a means for automatically distributing the ink, whereby an equal amount of ink is always spread over the type form, so that when an impression is made such impression will be even throughout and be free from streaks and uneven shades.

20 The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

25 Of the drawings: Figure 1 represents a side elevation of a portion of a cylinder press showing the ink distributing apparatus with the present invention applied thereto. Fig. 2 represents a longitudinal vertical section of the ink distributing apparatus, drawn to an enlarged scale, the cutting plane being on line 2—2 on Fig. 3. Fig. 3 represents a plan of one end of that portion of the printing press and ink distributing apparatus shown in Fig. 1. Fig. 4 represents a transverse vertical section, the cutting plane being on line 4—4 on Fig. 2, looking in the direction of the arrow, said figure being drawn to an enlarged scale, and 40 Fig. 5 represents a longitudinal section of the parts shown in Fig. 2 and looking in the opposite direction and showing the devices for operating the transfer roller.

Similar characters designate like parts throughout the several figures of the drawings.

50 In the drawings 10 represents the frame of a printing press of any usual construction, having mounted in suitable bearings in the standard 11 the revoluble shaft 12, to which is secured so as to revolve therewith the cylinder 13.

55 In a suitable framework 14 extending upwardly from the frame 10 is the usual ink fountain 15. This fountain 15 is provided with the usual fountain roll 16, which may

be of any well-known construction and is provided with trunnions 17 and 18, revolvably mounted in suitable bearings formed in the ends of the ink fountain 15. To the trunnion 17 is secured a sprocket wheel 19, which is connected by means of a chain 20 with a sprocket wheel 21 secured to and revoluble with the shaft 12 of the cylinder 13. Preferably the trunnion 17 and shaft 12 are connected in this manner so as to revolve in unison, but it is quite obvious that they may be connected by means of gears, belts, or any other instrumentalities provided they are caused to revolve in unison.

70 To the trunnion 18 of the fountain roll 16 is secured a gear 22, which meshes with and drives a gear 23 secured to the trunnion 24 of a grinder roll 25 positioned within the fountain 15 and held in contact with the fountain roll 16 by the adjustable forked members 26 bearing against the trunnion 24 at one end of said grinding roll and the trunnion 27 at the other end thereof.

80 The fountain roll 16 moves in the direction of the arrow *a*, see Fig. 2, while the grinding roll 25 revolves in the opposite direction. It is obvious, therefore, that when the ink within the fountain 15 becomes lumpy, it will be forced downwardly between these two rolls, thereby grinding it to a proper consistency for use.

85 Co-acting with the fountain roller 16 is a scraper plate 28 which regulates the amount of ink that may pass from the fountain on the periphery of the fountain roller 16. This scraper plate 28 and the mechanism for adjusting the same are of the usual construction and form no part of the present invention, and for this reason the details of adjustment are omitted in the drawings.

90 On a reciprocating bed 29 between the side frames 10 is supported the chase 30, carrying the type form 31, this chase being caused to reciprocate with the bed 29 by means of the projections 32 formed upon or secured to the reciprocating bed 29. As the reciprocating bed and the mechanism for operating same are of any well-known construction and form no part of the present invention, the details of construction for operating same are omitted from the drawings.

105 Adjustably mounted upon the framework 14 are the supports 33, carrying the form inking rollers 34. Superimposed upon the form inking rollers 34 is a metal ink dis-

tributing roller 35, revolubly mounted in the framework 14 and having superimposed thereon a composition ink distributing roller 36.

5 The trunnion 37 of the metal ink distributing roller 35 has secured thereto a gear 38 which meshes with an intermediate gear 39, in turn meshing with a rack 40 secured by suitable screws 41 to the side face
10 of the reciprocating frame 29. It is obvious that by means of the rack 40 and the gears 38 and 39, whenever the frame 29 reciprocates the ink distributing roller 35 is moved alternately in opposite directions.

15 In suitable bearings in the framework 14 is mounted an oscillating shaft 42, having splined thereto at one end an arm 43, and at its opposite end another arm 44. Revolubly mounted in the outer ends of the arms
20 43 and 44 is a transfer roller 45. The arm 43 has an extension 45*, to the outer end of which is pivotally connected the reciprocating member 46, the lower end of which is adapted to reciprocate in a guide opening
25 47 formed in the hub 48 on the frame 10. Between the hub 48 and a shoulder 49 on the member 46 is interposed a spring 50 which normally retains the transfer roller 45 in contact with the composition ink distributing roller 36. The member 46 has also
30 secured thereto a projection, preferably a roller 51, with which engages the cam surface 52 of the rack 40. As the rack 40 moves in the direction of the arrow b, see Fig. 5, the cam surface 52 will act upon the roller
35 51 to move the arms 43 and 44 about the axis of the shaft 42 so that the transfer roller 45 is brought into contact with the fountain roller 16.

40 The rack member 40 is also provided with a straight face 53, forming a continuation of the cam surface 52. When the movable bed 29 has been moved in the direction of the arrow b, Fig. 5, sufficiently far for the
45 roller 51 to be acted upon by this face 53, the transfer roller 45 will be in contact with the fountain roller 16, and will remain in such contact until the movable bed 29 has moved in the opposite direction sufficiently
50 for the said roller 51 to again engage with the cam surface 52, when the spring 50 will act to move the transfer roller into contact with the ink distributing roller 36. The size of the sprocket wheel 19 is so proportioned
55 relative to the length of time that the roller 51 is in contact with the straight face 53 that the rotation of the fountain roller caused by the movement of said sprocket wheel will be just sufficient to impart a single revolution
60 to the transfer roller 45 before it is moved from contact with said fountain roller, when the roller 51 again reaches the cam surface 52. In other words, the roller 51 reciprocates along the surface 53 a given distance.
65 and during this reciprocation in contact

with the face 53 the transfer roller 45 completes a single cycle about its axis, and is then immediately removed from contact with the fountain roller, this separation from contact with the fountain roller being
70 effected by means of the spring 50.

By positively driving the fountain roller 16, an even distribution of the ink in the fountain 15 is made and transferred to the transfer roller 45. Owing to the fact that
75 this transfer roller is yieldingly held in contact with the fountain roller during its rotation just long enough for the transfer roller 45 to make one complete revolution, it is self-evident that an equal amount of
80 ink will be received by said transfer roller throughout its entire periphery. In no case can the transfer roller remain in contact with the fountain roller long enough for it to receive an overlapping of the ink delivered thereto from the fountain roller. By
85 thus obviating this overlapping and positively driving the fountain roller while the transfer roller is in yielding contact therewith, an absolutely even distribution of the
90 ink is provided for.

Superimposed upon the ink distributing roller 36 is a smaller ink distributing roller 55, revolubly mounted in the framework 14 and above this roller 55 the framework 14
95 is provided with a vertical slot 56, in which are mounted the rollers 57, 58, and 59, one above the other. These rollers 57, 58, and 59 are revolved in opposite directions by contact with one another while the lower
100 one is revolved by contact with the ink distributing roller 55. The object of these rollers 55, 58, and 59, is to divide the ink upon the distributing rollers 36 and 55 as they rotate alternately in opposite directions, thereby causing a portion of the ink to be transferred directly downwardly through the medium of the distributing roller 35 to the form rollers 34, while another portion thereof is conveyed upwardly around the surfaces of the rollers 57, 58, 59, and 62 and the distributing roller 36, thus making a much more even distribution of the ink than could be secured if these rollers were omitted. By
105 this action the ink thus received will be gradually distributed and conveyed to the distributing rollers 36 and 35, and the form rollers 34.

One or more of the ink distributing rollers may be provided with suitable mechanisms for vibrating them during their revolution if desired, without affecting the principles of the present invention, but as the mechanisms for vibrating the rollers form no part of the present invention, they are
120 not shown in the drawings.

Positioned immediately below the fountain 15 and above the upper face of the type form 31 is a greatly enlarged roller 60, this roller 60 being mounted on a shaft 61, sup-
130

ported in the brackets 62 adjustably secured to the framework 14. The periphery of this roll 60 is adapted to contact with the periphery of one of the form rollers 34, and owing to the large surface of its periphery relative to the smaller surface of the periphery of the form roller, the distribution of ink upon the form rollers is made more even. The large roller 60 serves another very useful purpose, for instance, as one of the form rollers 34 revolves, it will convey ink to the surface of this roll 60, the entire periphery of which will soon be covered with a supply of ink evenly distributed thereon. When the form passes beneath the form rollers 34, it is obvious that a certain portion of the ink upon the form rollers will be removed therefrom by contacting with the type. As these form rollers continue to rotate about their axes, the bare surfaces thereon will again be covered with ink from the supply upon the large roll 60 before these surfaces could again come into contact with another portion of the type form. In other words, ordinarily, where the two form rollers 34 are used and the form is being inked, it is obvious that these form rollers will be rotated about their axes, and any portion thereof from which ink has been removed from contact with the type will only be replenished as that portion of the form roller in its rotation comes into contact with the distributing roller 35.

Sometimes, through lack of adjustment, or from some other cause, the portion of the form roller from which the ink has been removed might not come into sufficient contact with the roller 35 to receive the desired amount of fresh ink, and this would be very objectionable because when that portion came into contact with another portion of the type form, the form would not be sufficiently inked and bad results would obtain when the impression was made. By the use of the large roll 60, however, this objection is wholly overcome, for if one of the rollers 34 should miss in its rotation contact with the roller 35, it would be sure to contact with the larger roller 60 and receive sufficient ink on its periphery to insure the proper inking of the form. The use of this large roller in connection with ink distributing apparatus of the form disclosed has been found to be of great advantage, although it is obvious that good results could be obtained from the apparatus under certain conditions without using it. The same is true of the rollers 57, 58, and 59, while considerable advantage is gained from their use, a very even distribution of the ink is effected by means of the other instrumentalities, and applicant does not desire to be limited to the use of either the smaller rollers 57, 58, and 59, or the larger roller 60. Where the ink is distributed by the use of the con-

struction shown in the drawings, a very perfect impression is secured at all times, entirely free from the streaks and uneven tints often seen in impressions, especially where bold-faced type is used, as for instance in printing calendars and posters, or where deep solid plates or tint blocks are used in the form.

While the apparatus is shown in connection with one type of cylinder press, it is self-evident that it could be adapted to any type of cylinder press, and, by slight modifications, used in connection with ordinary job presses.

It is believed that the operation and many advantages of the invention will be thoroughly understood from the foregoing.

Having thus described my invention, I claim:

1. In a device of the class described, the combination with a form roller and rollers adapted to distribute the ink and transfer it to said form roller; a fountain roller; a swinging frame; a roller mounted therein and adapted to transfer ink from said fountain roller to said distributing rollers; means for positively rotating said fountain roller; and mechanism for retaining said swinging roller during a complete revolution thereof in contact with the fountain roller and then moving it out of contact with said fountain roller and into contact with the distributing rollers.

2. In a device of the class described, the combination with a form roller and rollers adapted to distribute the ink and transfer it to said form roller; a fountain roller; a swinging frame; a roller mounted therein and adapted to transfer ink from said fountain roller to said distributing rollers; means for positively rotating said fountain roller; and mechanism for moving said swinging roller into contact with the fountain roller, retaining it temporarily in contact therewith during a complete revolution of said transfer roller, and moving it away from said fountain roller at the commencement of a second revolution of said transfer roller and causing it to contact with a distributing roller.

3. In a device of the class described, the combination with an ink fountain roller; means for positively rotating said roller; ink distributing rollers; and a transfer roller adapted to contact normally with one of said ink distributing rollers and to be moved into contact with said fountain roller and retained in contact therewith during a complete revolution of said transfer roller and then move out of contact therewith.

4. In a device of the class described, the combination with a positively revolved ink fountain roller; an ink distributing roller; a transfer roller; a support therefor; means

- connected with said support for normally retaining said transfer roller in contact with said distributing roller; and means for moving said support into position so that
- 5 said transfer roller will contact with said fountain roller and be retained in such contact during a complete revolution of said transfer roller and then move out of contact therewith.
- 10 5. In a device of the class described, the combination with a positively revolved ink fountain roller; an ink distributing roller; a transfer roller; a support therefor; means connected with said support for normally retaining said transfer roller in contact; 15 with said distributing roller; and cam mechanism for moving said support into position so that said transfer roller will contact with said fountain roller and be retained in such contact during a complete revolution of said 20 transfer roller and then move out of contact therewith.
- Signed by me at 4 P. O. Sq., Boston, Mass., this 7th day of January, 1911.
WALTER N. BATES.
- Witnesses:
WALTER E. LOMBARD,
NATHAN C. LOMBARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."