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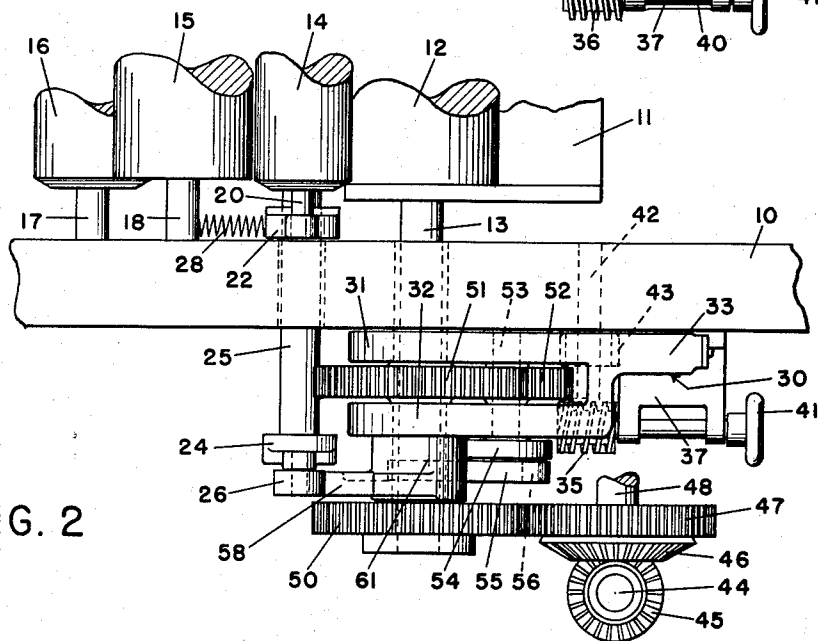
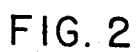
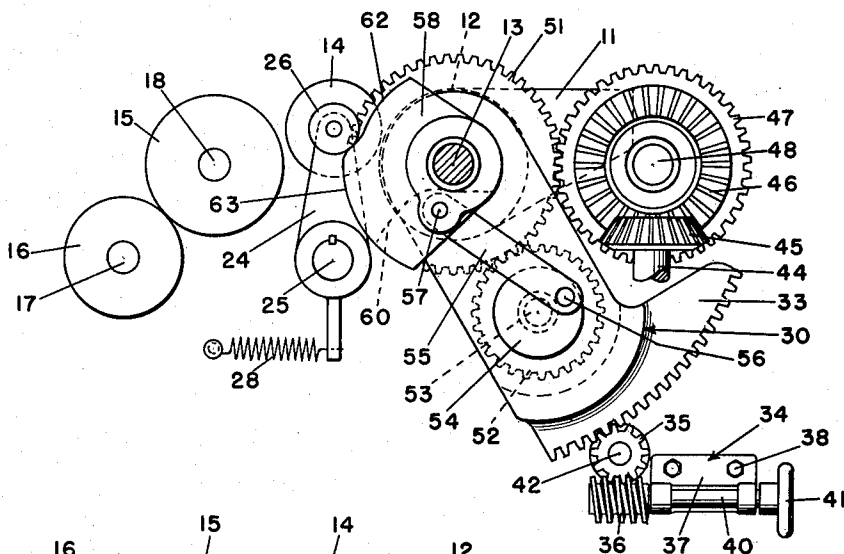
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3,147,704

DUCTOR ROLLER TIMING MECHANISM

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FIG. 1



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DUCTOR ROLLER TIMING MECHANISM

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The invention relates to inking mechanism for printing presses and has reference in particular to improved means for oscillating the ductor roller of such inking mechanism.

The oscillating movement of the ductor roller is employed for transferring ink from the ink fountain roller to the distributor roller of the inking mechanism. In the type of apparatus to which the present invention applies, the ink fountain roller and the distributor roller have continuous rotation during operation of the printing press. However, the ductor roller is rotated by friction as a result of its intermittent contact, first with the fountain roller and then with the distributor roller. Accordingly, it will be understood that the quantity of ink transferred can be controlled by varying the time interval during which the ductor roller remains in contact with the ink fountain roller during each oscillating cycle.

The invention is primarily concerned with improvements in means for oscillating the ductor roller of inking mechanism such as described and which will incorporate novel pivot structure under the control of the operator for varying the contact time of the ductor roller with the ink fountain roller during each oscillating cycle and without stopping operation of the press.

A more specific object of the invention resides in the provision of oscillating means for a ductor roller which will include an oscillating cam and a yoke member for journaling the drive for oscillating the cam, the cam and yoke member both having a pivot mounting on the axis of the ink fountain roller whereby the relative position of the cam with respect to the ductor roller can be varied.

Another object of the invention is to provide oscillating means for a ductor roller as described wherein the oscillating cam has a high peripheral portion for camming the ductor roller into contact with the distributor roller and a low peripheral portion to permit the ductor roller to contact the ink fountain roller and wherein the relative position of the cam can be adjusted to render operative more or less of the low peripheral portion of the cam on each oscillating cycle, whereby the contact time of the ductor roller with the fountain roller can be varied.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended thereto.

In the drawings which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

FIGURE 1 is a side elevational view showing ductor roller oscillating means embodying improvements of the invention; and

FIGURE 2 is a fragmentary top plan view showing the ductor roller oscillating means of FIGURE 1.

The numeral 10 as shown in FIGURE 2 represents that side frame of a printing press to which is applied the means for oscillating the ductor roller. Said frame 10 and the opposite side frame, not shown, which form the frame structure of the printing press is provided with an ink fountain 11, and an ink fountain roller 12. The shaft 13 of the ink fountain roller 12 extends through the side frames, respectively, and as evident from FIG-

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URE 2, the said shaft projects some distance beyond the side frame 10 at said end. The ductor roller mechanism to be presently described is mounted on the projecting end of the shaft 13 adjacent side frame 10 and the mechanism makes use of the shaft as an axis on which the mechanism has pivotal movement.

The ductor roller 14 has bodily movement between the ink fountain roller 12 and the distributor roller 15, and ink is accordingly transferred from the fountain roller to the distributor roller and is eventually distributed and applied to the plate cylinder of the printing press by a series of rollers such as the transfer roller 16. The shafts 17 and 18 journal the rollers 15 and 16 in the side frames of the press. The ductor roller 14 is also provided with a shaft such as 20 and at each end of the roller the shaft 20 is mounted for rotation in the free end of an arm 22 which is fixed to a shaft 25. The latter shaft is journaled for rotation in the side frames and one end thereof projects beyond the side frame 10 to receive the arm 24. The length of the arm 22 is such as to locate the ductor roller above a horizontal plane passing through the axes of shafts 13 and 18, and it will be understood that the shaft 25 extends to and is similarly journaled for rotation in the opposite side frame of the press and that an arm similar to 22 is fixed thereto for supporting the end of shaft 20 adjacent said opposite side frame.

A cam follower 26 is provided on the free end of outer arm 24 and the resilient spring 28 is employed to yieldingly urge the ductor roller 14 into frictional contact with the ink fountain roller 12. Thus by camming the follower 26 in a direction towards the left, the ductor roller can be caused to move out of contact with roller 12 and into contact with roller 15.

Although the present embodiment illustrates an open type cam for moving the ductor roller in one direction and spring means for effecting the return movement, it is to be understood that a box cam may be used for this purpose in which case the spring means could be dispensed with.

The camming mechanism includes the yoke member indicated in its entirety by numeral 30 and which consists of a pair of arms 31 and 32, and a gear segment 33. Arm 31 is located adjacent the exterior side of frame 10 and the yoke member 30 is mounted for pivotal movement on that portion of shaft 13 extending outwardly beyond side frame 10. The yoke member is adjusted and held in the desired angular position by the manual adjusting means 34 and which includes the worm gear 35 and worm 36. The bracket 37 is fixed to the side frame 10 by screws 38 and said bracket journals the shaft 40 having the knob 41 at one end and the worm 36 at its opposite end. The worm gear 35 is fixed on the stub shaft 42 extending outwardly from frame 10 and a pinion gear 43, also fixed on the shaft 42 has meshing relation with the gear segment 33. By turning the worm 36 through actuation of the knob 41 the yoke can be oscillated in either direction about the axis of the shaft 13 to an extent as permitted by the length of the gear segment. Also, in adjusted position the gear segment and thus the yoke are locked against movement by the worm gear 35 and worm 36.

The ink fountain roller 12 is rotated continuously during operation of the printing press by the driving means including the shaft 44 and the bevel pinion 45 fixed to said shaft. The pinion meshes with the bevel gear 46 for driving the gear wheel 47, both of which are fixed to the shaft 48 which is suitably journaled for rotation in the side frame 10 of the press. Gear wheel 47 meshes with gear wheel 50 fixed to the outer extending end of shaft 13, and accordingly an operative gear drive is provided from shaft 44 to the ink fountain roller 12. A second gear 51 similar

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to gear 50 is also fixed to shaft 13, said gear 51 being located between the arms 31 and 32 of the yoke member 30. A driving gear 52 is also located between arms 31 and 32, being journaled by the yoke member 30 by means of shaft 53. Shaft 53 extends through and beyond arm 32, and a driving disc 54 has a fixed relation on the extending end of said shaft. The link 55 is pivotally connected at one end to the driving disc 54 by the pin 56, and said link at its opposite end is pivotally connected by means of a pin 57 to the oscillating cam 58. The cam is recessed at 60, as best shown in FIGURE 1, to provide the necessary space for accommodating the end of link 55. Thus, the link is pivoted to the cam 58 by said pin 57 so that reciprocating movement of the link effected by crank action of pin 56 upon rotation of the driving disc 54 will cause oscillating movement of the cam 58. In addition to recesses 60, the cam 58 is provided with a hub portion 61 which mounts the oscillating cam on shaft 13 for independent rotation. Thus shaft 13 which rotates continuously during operation of the press is employed for mounting the yoke member 30 and the oscillating cam 58, both of which will have movement independently of the shaft.

The function of the oscillating cam 58 is to engage the cam follower 26 and cause the ductor roller 14 to alternately contact the ink fountain roller and the distributor roller. For this purpose the periphery of cam 58 is formed with a low portion 62 and with a high portion 63. When the low portion 62 of the cam is in contact with the follower 26, the resilient spring 28 is effective to yieldingly force the ductor roller 14 into contact with the ink fountain roller 12. When in frictional contact with said fountain roller, ink will be transferred from the fountain roller to the ductor roller. The high portion 63 of the oscillating cam is effective to cam the ductor roller into frictional contact with the distributor roller, and thus the ink previously picked up by the ductor roller is now transferred to the distributor roller. This action of the cam 58 takes place during each cycle of oscillating movement, since for a part of the cycle the low portion 62 will be operative and for the remaining part of the cycle the high portion 63 of the cam will be operative.

It is possible to increase or decrease the quantity of ink transferred by the ductor roller by varying the angular position of the yoke member 30, and thus the position of the cam 58 angularly relative to the cam follower 26. By adjusting the yoke member in a counterclockwise direction, the low portion 62 of the oscillating cam is rendered operative for a greater portion of the cycle and thus the contact time of the ductor roller with the ink fountain roller is extended to thereby increase the quantity of ink picked up and transferred during each oscillating cycle. When the yoke member is adjusted in a clockwise direction the operative extent of the low portion of the cam is decreased and more of the high portion is rendered effective so that less ink is picked up and transferred by the ductor roller.

It will be noted that this arrangement has the inherent advantage in that when a minimum quantity of ink is to be transferred, the yoke 30 and thus the cam 58 is adjusted so that the roller 26 moves from the high part to the low part of said cam at that time in the cycle when the crank pin 56 is substantially at the reversal point in its rotary cycle. Consequently, the cam is moving at its lowest velocity at this time and thus a greater portion of the cycle time is utilized to effect movement of the ductor roller between the fountain and distributor rollers.

On the other hand when it is desired to transfer a maximum quantity of ink, the yoke 30 and thus the cam 58 are located so that movement of the roller 26 between the high and low parts of the cam takes place when the pin 56 and thus the cam are moving midway between the points of reversal of the pin and thus the cam is moving at its maximum velocity. Consequently only a minimum portion of the cycle time is required to move the ductor

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roller back and forth between the fountain and distributor rollers.

Accordingly the quantity of ink supplied to the distributor roller during each cycle of operation can be easily and conveniently adjusted between zero and maximum amounts by appropriate angular adjustments of the yoke member. Also, it will be appreciated that the knob 41 can be turned by the operator for selecting any adjusted position of the yoke member without stopping operation of the printing press.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings, as various other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In inking mechanism for a printing press, the combination with a side frame of the press, of an ink fountain roller having a shaft journaled in said frame and projecting outwardly of the frame, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and the distributor roller, means normally maintaining the ductor roller in contact with the fountain roller, other means for effecting said oscillating movement of the ductor roller including a yoke member mounted on the projecting end of the shaft for pivotal adjustment, a cam associated with the yoke member and being mounted on the end of said shaft for independent oscillating movement, means carried by the yoke member and rotated by the drive means for oscillating said cam, said cam having one portion for camming the ductor roller into contact with the distributor roller and a second portion which permits the ductor roller to return for contact with the fountain roller, and means for adjusting the position of the cam angularly relative to the ductor roller including manual means for adjusting the angular position of the yoke member.

2. Inking mechanism as defined by claim 1, wherein the one portion is a high part of the cam and the second portion is a low part, and wherein the yoke member is provided with a gear segment to facilitate the adjustment of the pivot position of the yoke member by the manual means.

3. In inking mechanism for a printing press, the combination with a side frame of the press, of an ink fountain roller having a shaft journaled in said frame and projecting outwardly of the frame, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and the distributor roller, means normally maintaining the ductor roller in contact with the fountain roller, other means for effecting said oscillating movement of the ductor roller including a yoke member having spaced arms, said arms being rotatably mounted on the projecting end of the shaft whereby the yoke member is capable of pivotal adjustment, a cam mounted on the projecting end of the shaft for independent oscillating movement, crank means journaled by the yoke member and rotated by the fountain roller shaft for oscillating the cam, said cam having a high portion for camming the ductor roller into contact with the distributor roller and a low portion which permits the ductor roller to return for contact with the fountain roller, and manual means for adjusting the angular position of the yoke member whereby the position of the cam can be varied angularly relative to the ductor roller.

4. In inking mechanism for a printing press, the combination with frame structure including spaced side frames, of an ink fountain roller shaft journaled by the spaced side frames and having one end of said shaft extending through and projecting from one side frame, an ink foun-

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tain roller on said shaft and disposed between the side frames, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller journaled by the side frames and also disposed between the side frames, a ductor roller supported for oscillating movement and adapted to alternately contact the fountain roller and the distributor roller, means for effecting said oscillating movement including a yoke member having a pair of spaced arms mounted on the projecting end of the ink fountain roller shaft, whereby the yoke member is capable of angular adjustment, a cam mounted on said projecting end of said shaft for independent movement, means located between and carried by the arms of the yoke and rotated by the drive means for oscillating said cam, said cam having a high portion for camming the ductor roller into contact with the distributor roller and a low portion which permits the ductor roller to return for contact with the fountain roller, and manual means for varying the angular position of the yoke member, whereby the angular position of the cam relative to the ductor roller can be adjusted to thereby vary the duration of contact of the ductor roller with the fountain roller for each oscillating cycle of the cam.

5. In inking mechanism for a printing press the combination including an ink fountain roller, a distributor roller, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and the distributor roller, and means for oscillating the ductor roller including a shaft, a support member pivotally mounted on said shaft, a cam mounted for independent oscillating motion about the axis of said shaft, said cam having a first portion for causing the ductor roller to contact the distributor roller and a second portion for causing the ductor roller to contact the fountain roller, means for oscillating said cam including a crank member journaled for rotation on said support member, drive means mounted on said shaft and adapted to drive said crank member, and manually operable control means for adjusting the support member and therewith said crank member about the axis of said shaft to thereby increase and/or decrease the duration of the effect of said first cam portion upon the ductor roller during a complete cycle of said oscillating cam.

6. In inking mechanism for a printing press, the combination with a side frame of the press of an ink fountain roller having a shaft journaled in said side frame, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and with the distributor roller, means for effecting said oscillating movement of the ductor roller including a cam mounted on the ink fountain roller shaft for independent oscillating movement, said cam having one portion for camming the ductor roller into contact with the distributor roller and said cam having a second portion which permits the ductor roller to return for contact with the fountain roller, and means including a control member located in a fixed position remote from said cam for adjusting the position of the cam angularly relative to the ductor roller to thereby vary the duration of contact of the ductor roller with the fountain roller during each oscillating cycle of the cam.

7. In inking mechanism for a printing press, the combination with a side frame of the press, of an ink fountain roller having a shaft journaled in said side frame, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and with the distributor roller, means for effecting said oscillating movement of the ductor roller including a cam mounted on the ink fountain roller shaft for independent oscillating movement, means normally maintaining the ductor roller in

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contact with the fountain roller, other means having operative connection with the drive means for oscillating said cam, said cam having a high portion for camming the ductor roller into contact with the distributor roller and said cam having a low portion which permits the ductor roller to return for contact with the fountain roller, and means including a control member adapted to be manually actuated and which is mounted on the side frame remote from said cam for adjusting the position of the cam angularly relative to the ductor roller, whereby to vary the duration of contact of the ductor roller with the fountain roller during each oscillating cycle of the cam.

8. In an inking mechanism for a printing press, the combination with frame structure including spaced side frames, of an ink fountain roller shaft journaled by the spaced side frames and having one end of said shaft extending through and projecting from one side frame, an ink fountain roller on said shaft and disposed between the side frames, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller journaled by the side frames and also disposed between the side frames, a ductor roller supported for oscillating movement and adapted to have alternate contact with the fountain roller and with the distributor roller, a yoke member mounted on the projecting end of the ink fountain roller shaft for pivotal adjustment, a cam associated with the yoke member and mounted on the said projecting end of the shaft for independent movement, means carried by the yoke member and rotated by the drive means for oscillating said cam, said cam having a high portion for camming the ductor roller into contact with the distributor roller, and means for adjusting the yoke member about said shaft to thereby vary the length of time during each cycle wherein the high portion of said cam maintains the ductor roller in contact with the distributor roller.

9. In inking mechanism for a printing press the combination with frame structure including spaced side frames, of an ink fountain roller shaft journaled by the spaced side frames and having one end of said shaft extending through and projecting from one side frame, an ink fountain roller on said shaft and disposed between the side frames, drive means for rotating the shaft and thus the ink fountain roller, a distributor roller journaled by the side frames and also disposed between the side frames, a ductor roller supported for oscillating movement and adapted to alternately contact the fountain roller and the distributor roller, means for effecting said oscillating movement including a yoke member pivotally mounted on the projecting end of the ink fountain roller shaft and having a gear segment formed thereon, a cam associated with the yoke member and being mounted on said projecting end of said shaft for independent movement, means carried by the yoke member and rotated by the drive means for oscillating said cam through a predetermined angle, said cam having a high portion for camming the ductor roller into contact with the distributor roller and said cam having a low portion which permits the ductor roller to return for contact with the fountain roller, and manual control means including a gear journaled on the frame and having meshing relation with the gear segment for adjusting the angular position of the yoke member and thereby the range of oscillation of said cam, whereby the time during each cycle that the high portion of said cam maintains the ductor roller in contact with the distributor roller can be varied.

10. In fluid transfer mechanism for a printing press, the combination including a fountain roller, a distributor roller, a ductor roller for transferring a fluid substance from the fountain roller to the distributor roller, said ductor roller being supported for oscillating movement and adapted to have intermittent contact with the foun-

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tain roller, means for effecting said oscillating movement of the ductor roller including an oscillatable cam having a portion thereon for causing the ductor roller to contact the fountain roller for a predetermined period during each cycle of operation, drive means oscillating said cam through a fixed range of oscillation, and adjustment means including a manually actuated control member located in a fixed position remote from said cam for shifting said cam and thus the range of oscillation of said

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cam angularly about the cam axis, thereby increasing or decreasing the duration of said predetermined period of contact of the ductor roller with the fountain roller.

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