April 12, 1949. H. W. FAEBER 2,467,199

INK TRANSFER ROLLER

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Fig. 1.

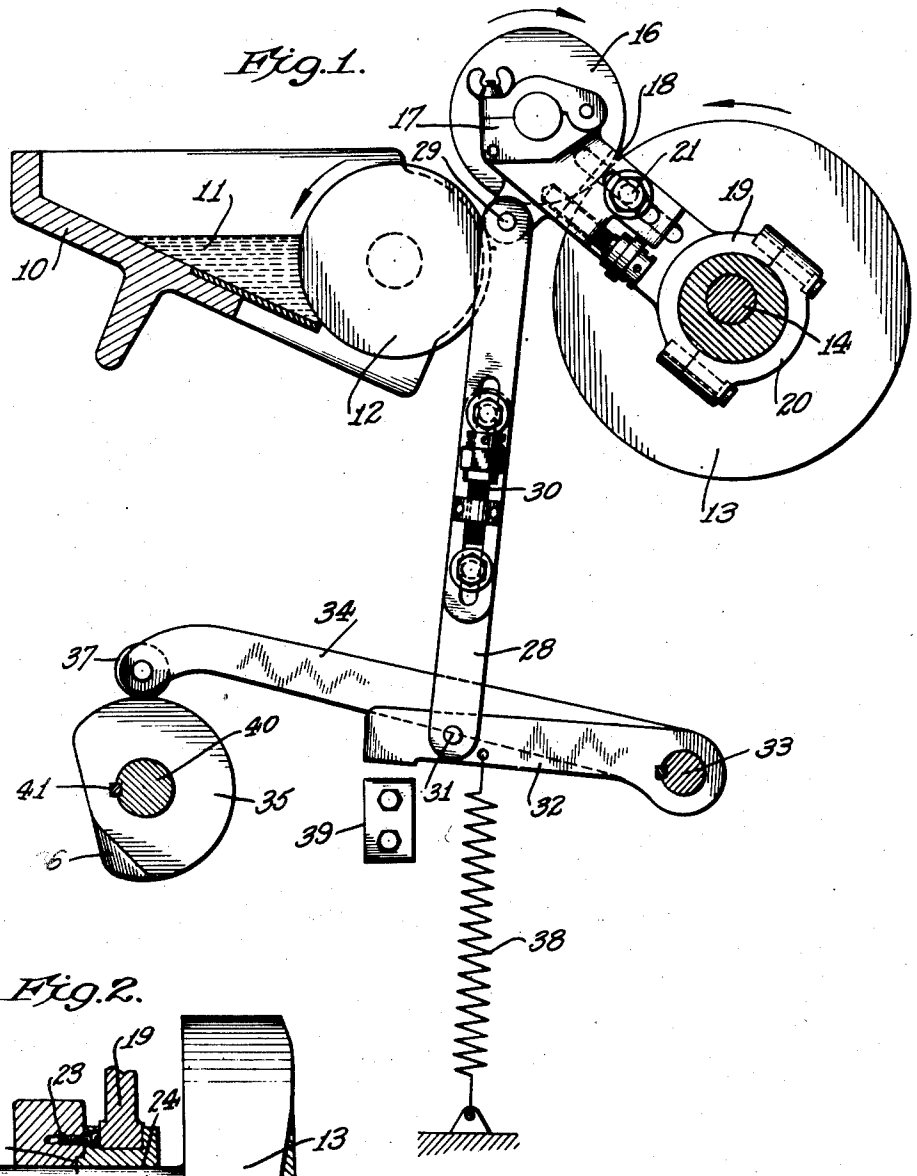
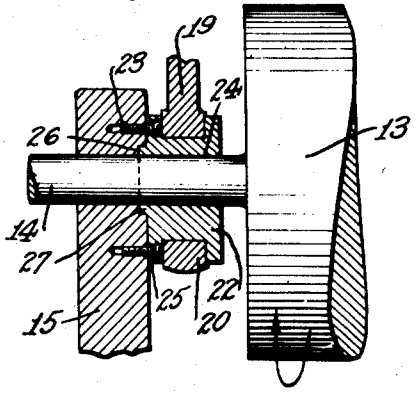


Fig. 2.



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INK TRANSFER ROLLER

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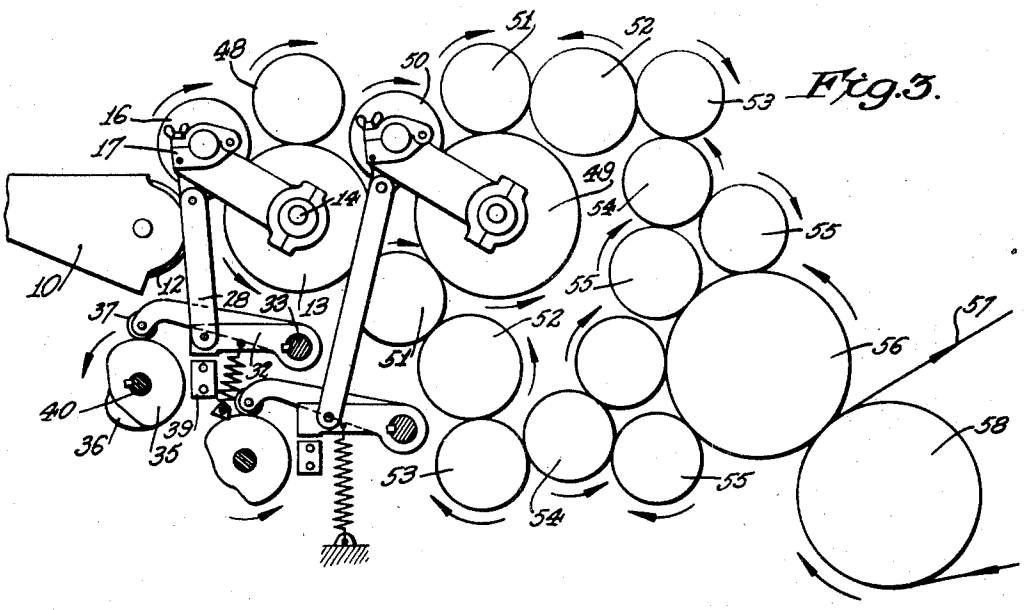


Fig. 3.

Fig. 4.

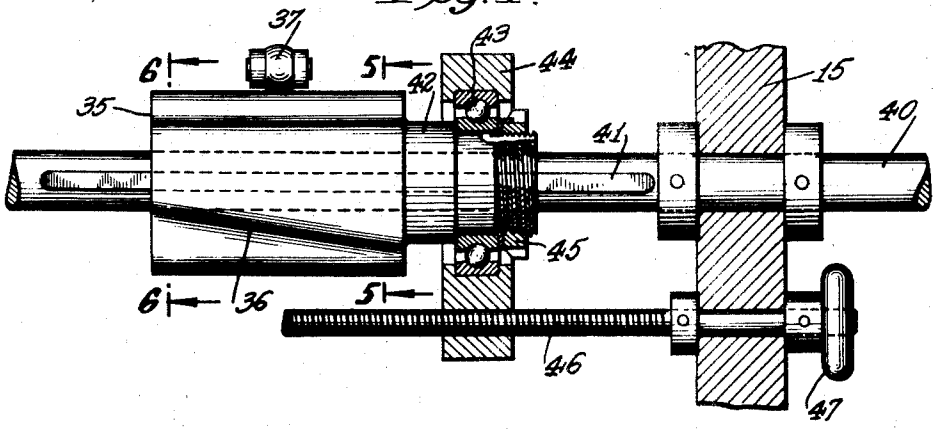


Fig. 6.

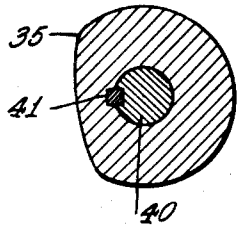
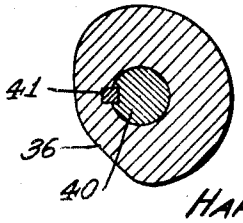


Fig. 5.



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2,467,199

INK TRANSFER ROLLER

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Application March 29, 1945, Serial No. 585,403

10 Claims. (Cl. 101—348)

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The present invention relates to liquid transfer mechanisms and embodies, more specifically, a mechanism by means of which ink may be transferred from one element to another in an ink distributing mechanism such as, for example, that used on printing presses.

The difficulty of transferring liquids, such as inks, from one movable element to another in a liquid distributing mechanism is well known, and considerable attention has heretofore been addressed to the problem of supplying liquid, such as ink, from a liquid source to a mechanism which distributes the liquid to form a continuous and uniform film for application to a desired mechanism.

In ink transfer mechanisms, for example, the distribution of such liquid is desirably such as to present to the printing cylinder a uniform layer of ink in certain desired quantities. The most expedient mechanism by means of which this has heretofore been accomplished has been by means of a transfer roller that periodically makes contact with a first roller that is directly in contact with the source of liquid and, between such periodical contacts therewith, the transfer roller is in contact with a second roller which furnishes the liquid to the distributing system to be distributed and applied to the ultimate device for which the liquid is destined.

Difficulty has heretofore been encountered in the foregoing mechanisms by reason of the periodical contact of the transfer roller between the first and second rollers above mentioned and, more specifically, by reason of the disturbance of the surface of such rollers to produce uneven wear and thus to impair the manner in which the liquid is distributed.

An object of the present invention is to provide a liquid transfer mechanism, such as an ink transfer device, wherein the liquid is transferred effectively from one roller to the other without impairing the surface of the respective rollers.

A further object of the invention is to provide a transfer mechanism of the above character, wherein the relationship between the surface of the transfer roller and the surfaces of the other rollers with which the transfer roller contacts may be effectively controlled to afford a variable and controllable time of contact therebetween.

Yet another object of the invention is to provide a transfer mechanism of the above character, wherein means is provided for preventing simultaneous frictional engagement between the surface of the transfer roller and the surfaces of the respective rollers with which the transfer

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roller co-acts to accomplish the liquid transfer operation.

Further objects of the invention will be apparent as it is described in greater detail in connection with the accompanying drawings, wherein

Figure 1 is a view in transverse vertical section, taken through a liquid transfer mechanism constructed in accordance with the present invention;

Figure 2 is a partial view in section, taken through the axis of the transfer roller mounting shown in Figure 1;

Figure 3 is a schematic diagram of a liquid transfer and distributing mechanism in which the invention is shown as incorporated;

Figure 4 is an enlarged view showing the apparatus by means of which the oscillating motion of the transfer roller may be controlled;

Figure 5 is a view in section taken on line 5—5 of Figure 4 and looking in the direction of the arrows, showing a control cam constructed in accordance with the present invention; and

Figure 6 is a view similar to Figure 5, taken on line 6—6 of Figure 4, and looking in the direction of the arrows.

While the invention is described in connection with an ink transfer mechanism, it will be apparent that it is equally applicable to the transfer of any liquid.

Referring to Figure 1, an ink fountain is shown at 10 within which a supply of ink 11 is maintained, a fountain roller 12 being journaled in the fountain and adapted to rotate in the direction of the arrow. The mechanism for rotating the fountain roller may be a ratchet mechanism, such as in common use in inking mechanisms for printing presses, this particular mechanism forming no part of the present invention.

Ink from the fountain roller 12 is to be applied to a drum 13 provided with a shaft 14 journaled in a frame member 15 (Figure 2).

In order to transfer ink from the fountain roller 12 to the drum 13, a transfer roller 16 is provided, the roller being journaled upon a suitable mounting 17 provided with arms 18 having bearing members 19 and caps 20. The arms 18 are provided with adjusting mechanism 21 in order to position the mounting member 17 properly with respect to the axis of the shaft 14.

As illustrated in Figure 2, an eccentric drum or sleeve 22 is secured to the frame 15 by means of screws 23, the sleeve 22 being formed with a journal 24 within which the shaft 14 extends. If desired, slots 25 may be formed in the sleeve 22 to permit the sleeve to be adjustably mount-

ed upon the frame 15 in order to control the relation of the eccentricity of the sleeve to the arms 18. In order to facilitate the mounting of the sleeve 22 on frame 15, the frame is recessed at 26 concentric to the shaft 14, and the sleeve 22 is formed with a boss 27 concentric to the journal 24, the boss 27 being received within the recess 26. The foregoing mechanism thus enables the sleeve 22 to be so adjusted or mounted upon the frame 15 that movement of the mounting member 17 and transfer roller 16 about the axis of the shaft 14 may be accomplished while providing for a desired degree of radial movement of the roller 16 with respect to the axis of the shaft 14.

In order that the roller 16 may be moved about the axis of the shaft 14, links 28 are pivotally connected at 29 to the mounting member 17. The links are formed with adjusting mechanism 30 to vary the effective lengths of the links and, at the lower ends, the links are pivotally connected at 31 to arms 32, which are carried by a rock shaft 33. An arm 34 is mounted upon the rock shaft 33 and is adapted to engage a cam 35 having a variable face 36, as more fully seen in Figure 4. A roller 37 may be journaled upon the end of arm 34 and a spring 38 is provided normally to maintain the roller 37 against the face 36 of the cam 35. A limit stop 39 is also provided to limit the motion of arm 32 downwardly as viewed in Figure 1.

The extent of motion of the links 28 is controlled by an operating mechanism, such as illustrated in Figure 4, in which a shaft 40 is secured to the frame 15 and provided with an elongated spline 41. The cam 35 is slidably mounted on the shaft 40 and spline 41, and is provided with a hub 42 carrying a bearing 43 provided with an outer sleeve 44. Bearing 43 is secured in position by means of a nut 45, so that it accommodates thrust forces, and a threaded shaft 46 is received in the sleeve 44, being journaled in the frame 15 and provided with a manually adjustable operating handle 47. By means of the foregoing mechanism, the cam 35 may be adjusted axially along the shaft 40 to vary the relation of its variable face 36 with respect to the roller 37. Figures 5 and 6 illustrate the manner in which the face 36 of the cam varies. In this fashion, a longer or shorter dwell of the motion of the roller 37 and, therefore, the links 28, may be provided, depending upon the position of the roller 37 with respect to the cam 35.

By means of the eccentric sleeve 22, the roller 16 may be lifted wholly or in part from the surface of the drum 13 as it moves into contact with the fountain roller 12. This prevents sliding motion of the roller 16 with respect to the surfaces of the members 12 and 13. The extent of relief of the surface of the roller 16 from the surface of drum 13 may be adjusted to suit requirements, as will be readily apparent.

The remaining distributing system illustrated in Figure 3 may follow standard practice and forms no part of the present invention, save to the extent that additional transfer rollers are incorporated therein. For purposes of illustration this distributing system may include a vibrator roller 48, which may be reciprocated or vibrated axially to distribute the ink over the surface of the drum 13, and then the liquid may be transferred from the drum 13 to a second drum 49 similar to the drum 13 by means of a second transfer roller 50. The transfer roller 50 may be similar in every respect to the roller 16, and its mounting and operation may likewise be similar.

Composition rollers 51 may cooperate with the drum 49 and carry the liquid to larger steel vibrator rollers 52 which, in turn, transfer the ink to composition rollers 53 and then to smaller steel vibrator rollers 54. Form rollers 55 then carry the ink to the plate or printing cylinder 56, or such other mechanism for which the liquid is destined. In the illustration, the printing cylinder 56 applies the ink to a paper web 57 that is running over a tympan cylinder 58.

While the invention has been described with reference to the specific structure illustrated in the accompanying drawings, it is not to be limited, save as defined in the appended claims.

I claim:

1. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact with the second roller, means to move the intermediate roller into and out of contact with the first roller, said moving means including a variable faced cam and linkage and means to adjust the axial position of the cam with respect to the linkage, and a support for the intermediate roller upon which the latter is rotatably mounted, said support being mounted eccentrically at the axis of the second roller to permit the intermediate roller to revolve about the second roller in peripheral contact therewith, to relieve the pressure of contact between the surfaces of said intermediate and second rollers when the former moves into contact with the said first roller and to increase the pressure of contact between the surfaces of said intermediate and second rollers when the former moves out of contact with the first roller.

2. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact with the second roller, means to move the intermediate roller into and out of contact with the first roller, and a support for the intermediate roller upon which the latter is rotatably mounted, said support being adjustable and mounted eccentrically at the axis of the second roller to permit the intermediate roller to revolve about the second roller in peripheral contact therewith and to relieve the pressure of contact between the surfaces of said intermediate and second rollers when the former moves into contact with the first roller.

3. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact with the second roller, means to move the intermediate roller into and out of contact with the first roller, and a support for the intermediate roller upon which the latter is rotatably mounted, said support being mounted eccentrically at the axis of the second roller to permit the intermediate roller to revolve about the second roller in peripheral contact therewith and to relieve the pressure of contact between the surfaces of said intermediate and second rollers when the former moves into contact with the first roller.

4. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact under variable pressure with the second roller, a support for the intermediate roller mounted eccentrically at the axis of the second roller and upon which the latter is rotatably mounted, and means to move the intermediate roller into and out of contact with the first roller while retaining the peripheral contact of said intermediate roller with the sec-

ond roller and relieving the pressure of contact between said intermediate roller and said second roller when the former moves into contact with the first roller.

5. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact with the second roller, a support for the intermediate roller mounted eccentrically at the axis of the second roller and upon which the latter is rotatably mounted, and means to move the intermediate roller into and out of contact with the first roller while retaining the peripheral contact of said intermediate roller with the second roller.

6. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller in peripheral contact with one of said first and second rollers, a support for the intermediate roller mounted eccentrically at the axis of one of said first and second rollers and upon which the latter is rotatably mounted, and means to move the intermediate roller into and out of contact with the other of said first and second rollers while retaining said peripheral contact.

7. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller, a support for the intermediate roller mounted eccentrically at the axis of the second roller and upon which the latter is rotatably mounted, means to move the intermediate roller substantially circumferentially about and in peripheral contact under variable pressure with the second roller while moving said intermediate roller into and out of contact with the first roller.

8. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller, a support for the intermediate roller mounted eccentrically at the axis of one of said first and second rollers and upon which the latter is rotatably mounted, means to move the intermediate roller substantially circumferentially about and in peripheral contact under variable pressure with said one of the said first and second rollers while moving said intermediate roller into and out of contact with the other of the said first and second rollers.

9. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller, a support for the intermediate roller mounted eccentrically at the axis of the second roller and upon which the latter is rotatably mounted, means to move the intermediate roller substantially circumferentially about and in peripheral contact with the second roller while moving said intermediate roller into and out of contact with the first roller.

10. Means to transfer liquid from a first roller to a second roller, comprising an intermediate roller, a support for the intermediate roller mounted eccentrically at the axis of one of said first and second rollers and upon which the latter is rotatably mounted, means to move the intermediate roller substantially circumferentially about and in peripheral contact with said one of the said first and second rollers while moving said intermediate roller into and out of contact with the other of the said first and second rollers.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
124,460	Tucker	Mar. 12, 1872
626,872	Scott	June 13, 1899
701,119	Wood	May 27, 1902
742,249	Spalckhaver	Oct. 27, 1903
767,125	Scott	Aug. 9, 1904
1,210,559	Story	Jan. 2, 1917
1,981,912	Frankboner	Nov. 27, 1934
2,177,261	Lembcke	Oct. 24, 1939

FOREIGN PATENTS

Number	Country	Date
574,658	France	Apr. 3, 1924