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DEVICE FOR IMPARTING FLUID TO ROTATING ROLLS

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2 Sheets-Sheet 1

Fig. 1.

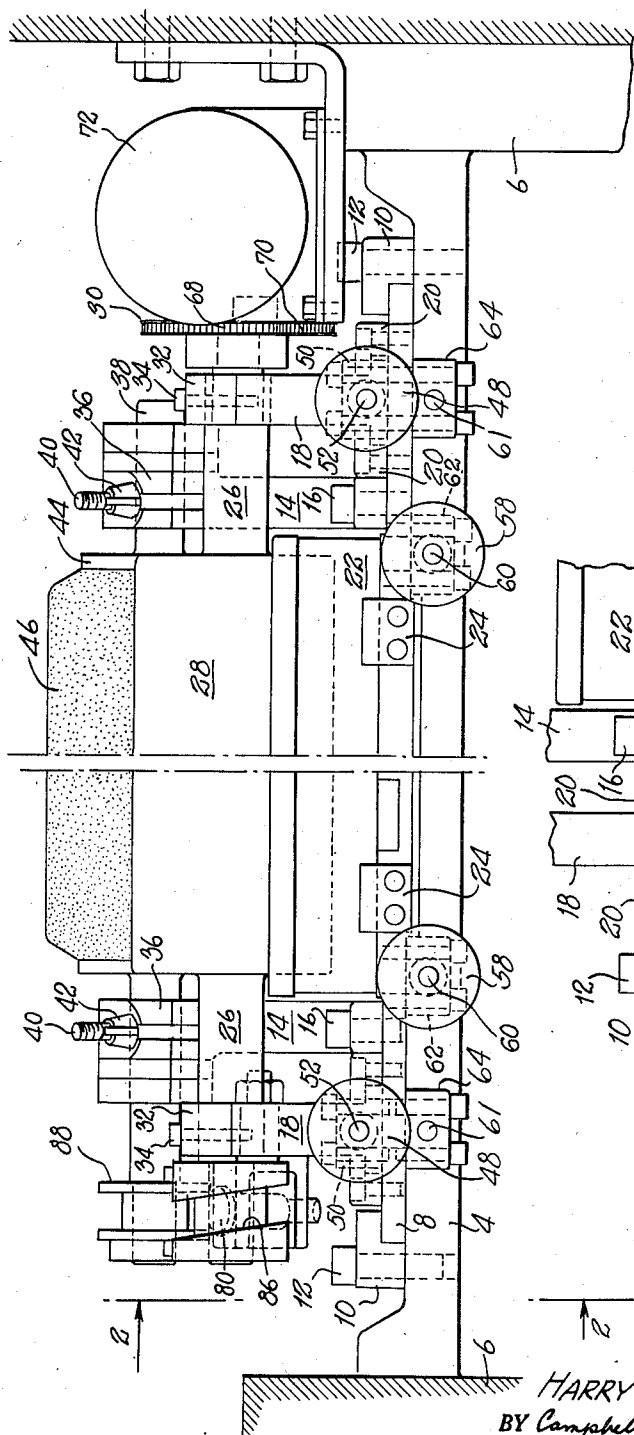
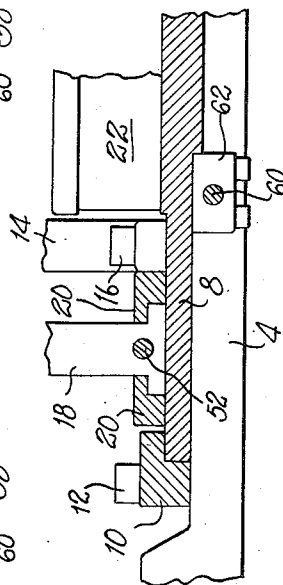


Fig. 3.



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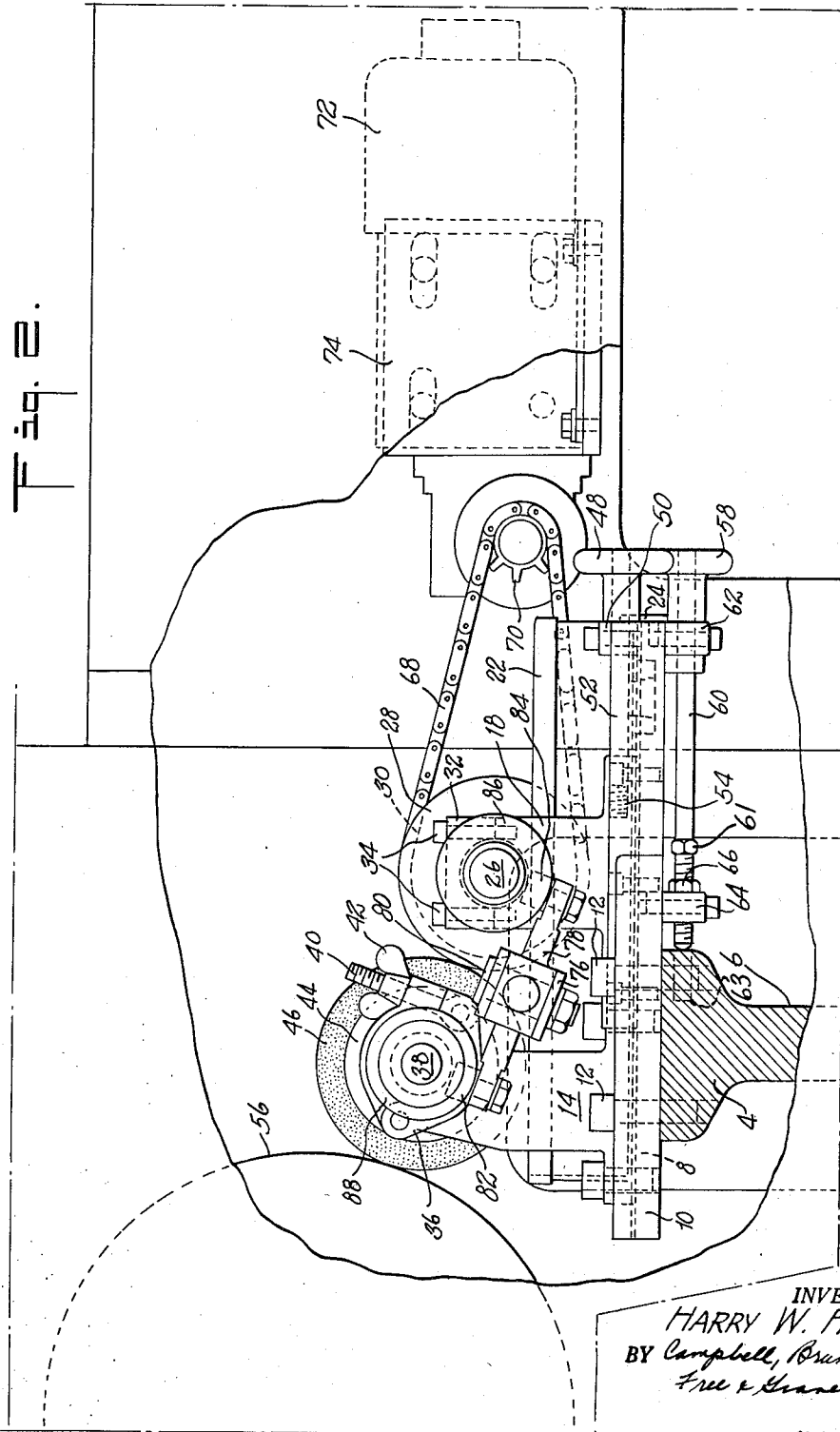
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Fig. 2.



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## DEVICE FOR IMPARTING FLUID TO ROTATING ROLLS

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2 Claims. (Cl. 101—425)

This invention relates to a method and apparatus for cleaning rotating rolls, and more particularly, to an apparatus for preventing "lick-off" on the impression cylinder of an offset printing press. The device can also be employed on web lead rolls contacted by the wet side of the web or on any other roll which is contacted by printing ink and the like.

In offset printing in which both sides of a paper are printed, the impression cylinder, i. e. the cylinder over which the web passes and by which it is impressed against the printing cylinder, often has ink transferred thereto from a previously printed impression on the contacting side of the paper web. This condition tends to cause smearing of the printed sheet and is a troublesome factor in many printing operations.

It is an object of this invention to prevent the smearing of printed paper in offset printing by largely preventing "lick-off" or transfer of ink from the printed sheet to the impression cylinder and removal of any ink from the cylinder which is transferred from the paper. This is accomplished by cleaning the impression cylinder as it revolves and thereby presenting at all times a clean surface to the printed paper passing thereover.

The invention will be further illustrated by reference to the accompanying drawings in which,

Figure 1 is a view in elevation of the device of the invention;

Figure 2 is a side view partly broken away and partly in section taken on line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is an enlarged view partly in section and partly broken away showing the manner in which the supporting brackets for the fountain and applicator rolls are secured to the bed plate of the device.

Referring to Figure 1, a supporting plate 4 is mounted on the frame 6 of an offset printing press. Mounted on the supporting plate 4 is a slidable bed plate 8 which is mounted for movement in the brackets 10 secured to the supporting plate 4 by the bolts 12.

As best shown in Figure 3, a pair of brackets 14 are secured to the bed plate 8 by the bolts 16. Slidably mounted on the bed plate 8 are a pair of brackets 18 which are secured to bed plate 8 by hold-down brackets 20. Mounted between the brackets 14 on the bed plate 8 is a pan or fountain 22 which holds a solution of a detergent. Any of the well-known detergents may be used, and those which are most efficacious in removing ink are preferred. The fountain 22 is retained on the bed plate 8 by the brackets 24.

Journalled in the brackets 18 is a shaft 26 which supports a fountain roll 28, this roll revolving in the detergent solution in the fountain 22 and being driven by a sprocket 30 mounted on the right-hand end of the shaft 26, as shown in Figure 1. As best seen in Figure 2, the brackets 18 have detachable bearing collars 32 secured to the upper ends thereof, these collars being secured to the brackets 18 by the bolts 34. Also, as best seen in Figure 2, the brackets 14 have hinged shaft hangers 36

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mounted on the upper ends thereof. A shaft 38 is journalled in the shaft hangers 36, being held in place by locking bolts 40 and wing nuts 42. The shaft 38 has an applicator roll 44 mounted thereon which is covered with a fabric 46 such as molleton or any other similar type of material and is freely rotatable in the brackets 14, being driven by friction from the fountain roll 28. As defined in the Callaway Textile Dictionary (published 1947 by the Callaway Mills, LaGrange, Georgia), the fabric "molleton" is a double faced fabric of plain or twill weave finish with a heavy nap on both sides. Thus molleton by virtue of its heavy nap is characterized, first, by high absorbency to either cleaning compounds or to ink traces to be removed by the applicator roll and, second, by a resiliency with respect to frictional contact with the fabric.

The position of the fountain roll 28 relative to the applicator roll 46 may be varied by turning the hand-wheels 48 which are journalled in the brackets 50 secured to the supporting plate 4. Hand-wheels 48 are secured to threaded shafts 52 which are threaded into brackets 18, as shown at 54 in Figure 2. When the desired degree of contact between the rolls 28 and 46 has been obtained, the entire assembly may then be moved into contact with the impression roll 56 by turning the hand-wheels 58 which are secured to the shafts 60. The shafts 60 are supported by the brackets 62, secured to the supporting plate 4, and are in threaded engagement with the frame member 6 at 63. Brackets 64 secured to the slidable bed plate 8 are threaded to engage with the co-operating threads on the setscrews 61. When hand-wheels 58 are rotated, the slidable plate 8 is caused to move across the supporting plate 4. When the desired degree of contact of the applicator roll 46 with the impression roll 56 is obtained, the assembly may be locked in place by means of setscrews 61 which in turn are secured by the lock nuts 66.

The fountain roll 28 is driven by a sprocket wheel 30 on shaft 26, chain 68, and a driving sprocket wheel 70. An electric motor 72 drives the sprocket wheel 70 through a variable speed gear reduction drive 74 so that the speed of the fountain roll may be varied. In practice a speed not exceeding 2 revolutions per minute is found to be satisfactory.

Referring again to Figures 1 and 2, a bifurcated arm 76 is carried by the bracket 18 on the left-hand side of the device as shown in Figure 1. The arm 76 carries a pivot pin 80 upon which is supported a rocker arm 78. A pair of cam followers 82 and 84 are mounted on the ends of the rocker arm as shown in Figure 2, these followers riding, respectively, in cam tracks on cams 88 and 86 which are carried by respective shafts 38 and 26. Thus it will be seen that the rotation of driven shaft 26 imparts a reciprocating motion to the applicator roll 46 through the rocker arm 78, this reciprocating motion facilitating the wiping of the impression roll 56 and improving the cleaning operation.

In operation, the pan or fountain 22 is supplied with a detergent solution, and the position of the fountain roll 28 is adjusted relative to the applicator roll 46 by turning the hand-wheels 48, thereby moving brackets 18 relative to the bed plate 8. When the desired degree of contact between the fountain roll 28 and the applicator roll 46 has been obtained, both rolls may be moved by turning the hand-wheels 58 which moves the bed plate 8, and the assembly supported thereby, across the supporting plate 4 so that any desired degree of contact between the applicator roll 46 and the impression roll 56 may be obtained.

The electric motor 72 is then energized and by controlling the variable speed reduction gear drive 74 any desired speed of the fountain roll may be obtained. As the

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applicator roll 46 rotates in contact with the impression roll 56 any ink adhering to the surface of the impression roll will be removed by the rotating applicator roll 46. The removal of the ink is facilitated by the reciprocating motion imparted to the applicator roll by the rocker arm 78. As the rolls 28 and 46 rotate, the detergent solution is continuously applied to the surface of the applicator roll 46 by the fountain roll 28.

The diameters of the fountain roll 28 and applicator roll 46 are not critical and may be varied over a wide range. However, good results have been obtained by making both of these rolls of approximately the same diameter, a diameter of  $3\frac{1}{2}$  inches for each roll having been found to give excellent results.

It will be obvious to those skilled in the art that many modifications may be made within the scope of the present invention without departing from the spirit thereof, and the invention is to be restricted only in accordance with the appended claims.

I claim:

1. Apparatus for imparting fluid to a rotating roll mounted on a frame and in contact with a web, said apparatus comprising in combination, a bed member fixed on said frame, first support means linearly adjustable in position on said bed member towards and away from said web contacting roll, an applicator roll mounted on said first support means, second support means linearly adjustable in position on said first support means towards and away from said applicator roll, a fountain roll mounted on said second support means to have the center thereof substantially on the line of centers of said applicator and web contacting rolls, drive means to rotate said fountain roll, said applicator roll being operatively disposed in friction contact with both said web contacting and fountain rolls to be rotated responsive to said contacts at a speed giving a slip with said web contacting roll, first adjusting means mechanically coupled with said first and second support means for positionally setting the latter with respect to the former to produce a pre-selected amount of contact pressure between said applicator and fountain rolls, and second adjusting means mechanically coupled with said first support means and said bed member for positionally setting the former with respect to the latter to produce a pre-selected amount of contact pressure between said applicator roll and said web contacting roll, the values of the respective contact pressures between said applicator-wiping roll and said other rolls determining the degree of slip between said web contacting and applicator rolls.

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2. Apparatus for imparting fluid to a rotating roll mounted on a frame and in contact with a web, said apparatus comprising in combination, a bed member fixed on said frame, first support means linearly adjustable in position on said bed member towards and away from said web contacting roll, an applicator roll mounted on said first support means, second support means linearly adjustable in position on said first support means towards and away from said applicator roll, a fountain roll mounted on said second support means to have the center thereof substantially on the line of centers of said applicator and web contacting rolls, said applicator roll being operatively disposed in friction contact with both said web contacting and fountain rolls to be rotated responsive to said contacts at a speed giving a slip with said web contacting roll, an electric motor mounted on said second support means, variable speed gear reduction drive means mechanically coupled between said motor and said fountain roll, said motor and variable drive means being adapted to together rotate said fountain roll at a set pre-selected speed below two revolution per minute, the setting of said speed determining the amount of fluid metered from said fountain roll to said applicator roll, first adjusting means mechanically coupled with said first and second support means for positionally setting the latter with respect to the former to produce a pre-selected amount of contact pressure between said applicator and fountain rolls, and second adjusting means mechanically coupled with said first support means and said bed member for positionally setting the former with respect to the latter to produce a pre-selected amount of contact pressure between said applicator and web contacting rolls, the values of the respective contact pressures between said applicator roll and said other rolls determining the degree of slip between said web contacting and applicator rolls.

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