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[54] **LITHOGRAPHIC DAMPENER WITH FOUNTAIN
BRUSH DEFLECTION MEANS**
3 Claims, 4 Drawing Figs.

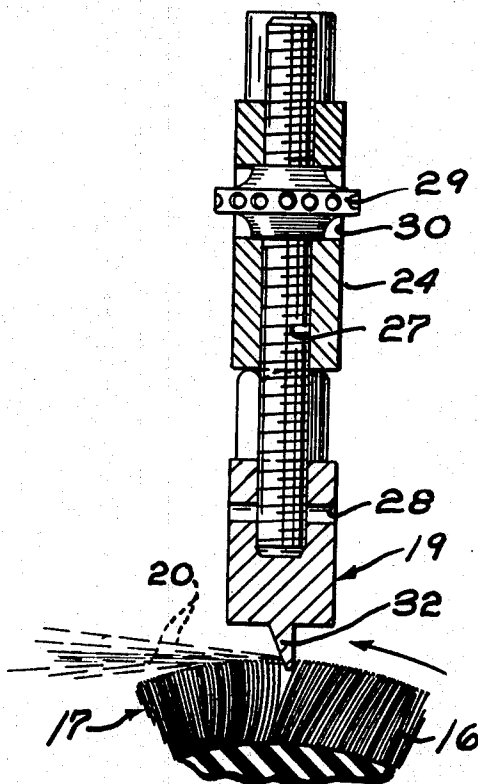
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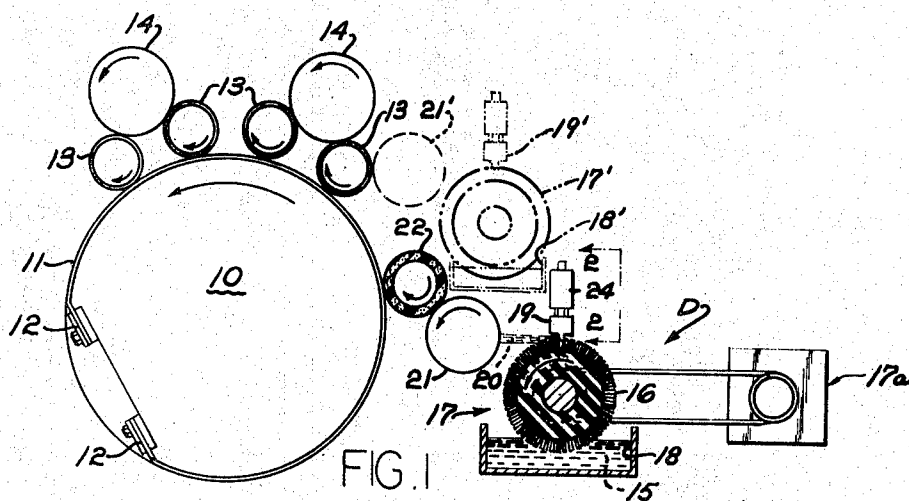
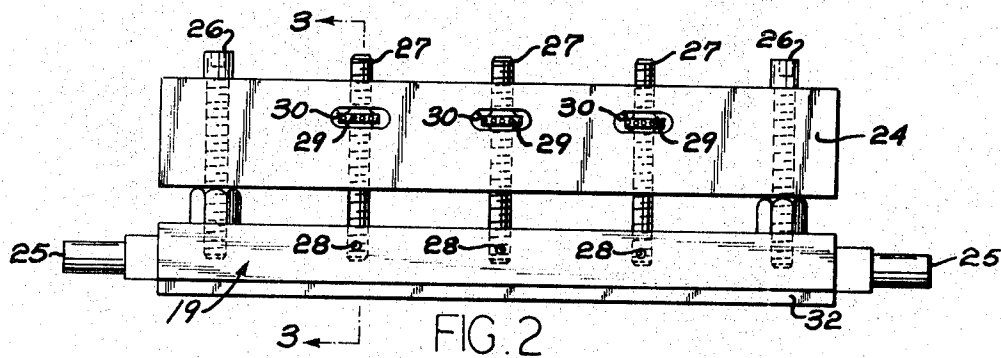
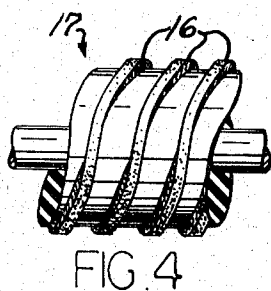
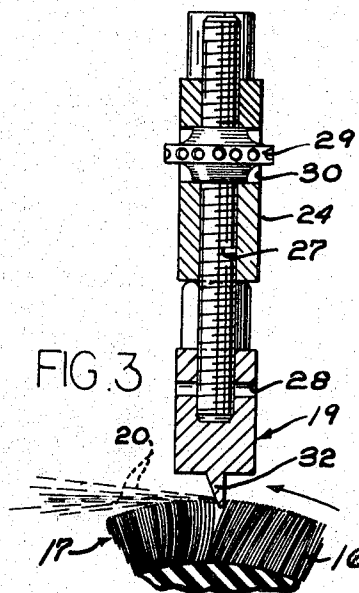
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ABSTRACT: Disclosed herein is a dampener for a lithographic printing press. The dampener is provided with a rotating brush roller which dips into an ink repellent liquid and thereafter has its surface contacted by an adjustably distortable deflector bar which engages the bristles of the brush in a manner providing controlled variations in the amount of liquid flicked from the bristles along the length of the roller.





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LITHOGRAPHIC DAMPENER WITH FOUNTAIN BRUSH DEFLECTION MEANS

The principal object of this invention is to provide means for controlling the amount of an ink repellent fluid delivered from various locations along the length of a brush-type dampener in a lithographic printing press.

Another object of the invention is to provide an even application of ink repellent fluid across a lithographic printing plate by a dampening means including a rotating brush roller and adjustable means engaging the bristles of the brush to enable the operator to control the amount of fluid flicked from various locations along the length of the roller.

A further object is to provide a new and improved dampening mechanism for a lithographic printing press in which a continuous blade engages a brush roller to flick dampening fluid therefrom and wherein the blade is distortable at various locations along its length to control the amount of fluid delivered at the locations.

Other objects and advantages will be apparent from the following description in which reference is made to the accompanying drawings:

FIG. 1 is a simplified side elevational view of a portion of a lithographic printing unit embodying the invention;

FIG. 2 is an elevational view of a deflector blade of the invention, and is taken along the line 2-2 of FIG. 1, the deflector blade being associated with a brush roller which has been omitted for purposes of clarity of illustration;

FIG. 3 is an enlarged fragmentary view, taken along lines 3-3 of FIG. 2, illustrating the deflector blade in association with the brush roller;

FIG. 4 is an enlarged fragmentary view of one form of the brush roller.

A lithographic printing press of the rotary type includes a plate cylinder 10 having a printing plate 11 wrapped therearound and tensioned on the surface of the cylinder 10 by conventional plate clamps 12. A plurality of ink form rollers 13 engage the surface of the plate 11 and receive ink from ink storage rollers 14, which in turn receive ink from additional rollers (not shown) constituting part of a conventional lithographic inker. As is known in the lithographic printing art, the lithographic plate 11 is dampened with an ink repellent solution 15, by a dampening mechanism D, prior to its being inked by the form rollers 13.

In the dampening mechanism D, the solution 15 is flicked from the bristles 16 of a rotating brush roller 17, which is preferably driven by a variable speed drive 17a for reasons well understood in the art. The outer ends of the bristles dip into a reservoir of solution 15 contained in a pan or reservoir 18. The bristles are then engaged by a deflector blade 19 which cooperates with the bristles to flick a very fine spray or mist 20 from the bristles to the surface of a roller 21.

Preferably, roller 21 has a hydrophilic surface, and oscillates axially to provide what is commonly termed in the trade as "vibration". The vibrating roller 21 transfers the thin film of moisture sprayed on its surface to a dampener form roller 22, which in turn contacts the surface of the plate 11. This provides a controlled amount of ink repellent solution thereon prior to contact of the given area of the plate by the form rollers 13 of the inker. The roller 22 may be nonabsorbent, or have any of several known absorbent coverings thereon. For purposes of the present invention, it should be understood that under certain circumstances, it may be desirable to omit rollers 21 and 22 and spray directly to the plate 11. Additionally, if desired, the dampener may supply solution 15 to the first form roller 13 of the inker, as shown in dotted lines and designated with prime (') numerals.

For various reasons, it is oftentimes found that the lateral distribution of ink repellent solution across the printing press (in the direction of extension of the axes of the cylinder 10 and roller 17) is unbalanced. This can be due to one or more of several factors including possible sag in any of the rollers 17, 21, or 22. Also, pressure adjustment between roller 22 and roller 21, or between the roller 22 and the plate cylinder 10 may result in slightly increased "squeeze" at the ends of the

rollers rather than in the middle. These and other factors may cause an excess of ink repellent solution to be applied to the center area or "middle" of the plate. By "middle" of the plate, I refer to the section which corresponds to the "middle" of the brush roller 17, i.e., an area approximately midway between its ends. As an additional factor in the cause of imbalance, some lithographers insist that the endwise "vibration" of the storage rollers 14 of the inker causes greater evaporation of solution from ends of the rollers 14. This refers to solution which works itself upwardly into the inker during press operation. The evaporation is said to cause drying at the ends of the plate, resulting in the imbalance between the ends and the middle of the plate in terms of the thickness of the film of ink repellent solution distributed between the ends.

In order to provide for a predetermined distribution of ink repellent solution across the plate, I provide a means for laterally controlling the mist or spray 20 which leaves the bristles 16 of the brush roller 17. If the plate requires a greater amount of solution in the "middle" of the plate, I can cause the middle portion of the blade 19 to have greater depth of contact with the bristles 16 and thereby effect a greater flicking action and rate of transfer of the solution carried by the bristles in the middle portion of the brush roller 17. If one the other hand, as is more common, a greater amount of solution is required at the "ends" of the plate, as compared to the "middle", the blade 19 can be adjustably deflected to cause greater depth of contact of the blade with the bristles 16 and a corresponding greater flicking and rate of transfer solution from the bristles at the ends of the roller 17 than in the middle.

To illustrate how this is accomplished, let us now refer to FIG. 2, which shows the blade 19 and a substantially rigid bar 24 supported on the blade 19. In the present form of my invention the blade 19 has end portions 25 which are mounted in side frames (not shown). The end portions 25 are capable of some adjustment in a vertical direction as viewed in FIG. 1 to enable the blade to have proper depth of engagement with the bristles 16 of the roller 17. Of course, the end portions 25 could, if desired, be formed on the bar 24. The bar 24 is fastened by means of bolts 26 to the ends of the blade 19, and is of substantial cross section so as to be relatively rigid in comparison to the blade 19. At a plurality of points along the length of the bar 24 are provided adjusting screws 27 which are adapted to distort the blade 19 relative to the bar 24 by either pushing it away from or drawing it toward the bar 24. On lithographic presses of narrow width, one centrally located adjusting screw 27 may be sufficient to provide all the distortion of blade 19 that is necessary. For presses of substantial width, it may be necessary to have several adjusting screws 27, as is shown in FIG. 2.

Referring now to FIG. 3, it will be seen that each adjusting screw 27 is anchored in the blade 19 by means of a pin 28. The upwardly extending portion of the screw 27 passes freely through a hole drilled in the bar 24, and has a nut 29 threaded thereon. The nut 29 is received in a slot 30 provided horizontally through the bar 24. The nut 29 preferably is provided with a plurality of radial holes 31 into which a pin wrench may be placed to turn the nut 29 on the screw. The slot 30 is of a width closely encompassing the sides of the nut 29 in order to provide translation of rotation of the nut 29 into a closely and finely controlled deflection of the blade 19 by being pulled toward or pushed away from the bar 24.

By considering FIGS. 2 and 3, it will be seen that if the middle nut 29 is turned in a direction to push the central portion of the blade 19 away from the bar 24, the blade will be bowed or flexed downwardly in the middle toward and axis of rotation of the brush roller 17. There will then be more extensive engagement between the bristles 16 and blade 19 at the central portion of the brush roller 17 than at the end portions of the brush roller. This variation in the extent of engagement between the bristles 16 and blade 19 will result in the bristles 16 at the central portion of the brush roller 17 being deflected to a greater extent than the bristles at the end portions of the brush roller 17 upon rotation of the brush roller relative to the

blade. Of course, the greater the deflection of the bristles 16 by the blade 19, the greater will be the flicking interaction between the blade and bristles and the rate of transfer or spray of ink repellent solution from the bristles. By providing varying longitudinal extents of flexing or bowing of the blade 19, the rate of transfer or spray of ink repellent solution from the bristles 16 can be varied longitudinally along the brush roller 17 and the roller 21. By providing suitable deflection of the blade 19, the thickness of a film of ink repellent solution applied to the lithographic plate 11 by the roller 22 can be varied to enable predetermined positions of the plate to be dampened to different extents.

If the blade 19 is drawn toward the bar 24 by rotating the nut 29 in the opposite direction, the deflection of the blade 19 will be such as to cause lesser depth of engagement of the blade 19 with the bristles in the middle portion of the roller 17. This will result in a relatively large deflection of the bristles 16 at the end portions of the roller 17 and a relatively high rate of transfer of ink repellent solution to the portions of the plate 11 located adjacent to the ends of the cylinder 10. Obviously where more than one adjusting screw 27 is utilized, the blade 19 may be flexed several times to take a controlled shape which may, if necessary, even be undulating in form along the length of the blade 19. Thus, the extent of deflection of the blade 19 can be varied longitudinally along the blade to provide a spray pattern from the brush roller 17 which will give a desired variation in dampening of the plate 11.

Referring again to FIG. 3, it will be noticed that the blade 19 has a thin rib 32 which actually engages with the bristles 16 of the roller 17. In its preferred form, this rib 32 has its side from which the rotating bristles approach at right angles to the axis of the roller 17 and is beveled slightly on the opposite side. This has proven successful in tests.

Referring now to FIG. 4, the preferred form of brush is one in which a plurality of spiral rolls of bristles 16 are mounted in helical grooves (not shown) in the body of the roller 17. Such brushes are known in the art. If desired, the bristles may be in tufted form or possibly even in straight, parallel rows extending from one end of the brush to the other.

In addition to the form of my invention shown and described, instead of using the blade 19, a very thin blade such as that which is used in lithographic ink fountains may be pro-

vided. When such a blade is utilized, it is preferably provided with a plurality of closely spaced adjusting screws which enable the blade to be distorted along its length in the fashion normally used in connection with ink fountains.

Various other changes may be made in the construction without departing from the spirit and scope of my invention.

I claim:

1. An apparatus for dampening a rotating lithographic surface with ink repellent solution, said apparatus comprising a reservoir of the ink repellent solution, a rotatable brush roller having bristles which engage the ink repellent solution upon rotation of said brush roller and which at least partially define a peripheral surface of said brush roller, a continuous blade extending longitudinally of said brush roller, said continuous blade having a longitudinal edge portion which extends transversely through the peripheral surface of said brush roller and into engagement with said bristles to cause a flicking of the ink repellent solution from said bristles upon rotation of said brush roller, and adjusting means for transversely deflecting said longitudinal edge portion to varying extents along the length of said continuous blade to thereby enable the extent to which said longitudinal edge portion extends through the peripheral surface of said brush roller to be varied longitudinally of said continuous blade so that dampening fluid can be flicked from said bristles at rates which vary longitudinally of said brush roller, said adjusting means including a plurality of members each of which is connected to said continuous blade and is movable in one direction to deflect said longitudinal edge portion in a first direction from an undeflected condition and is movable in another direction to deflect said longitudinal edge portion in a second direction from the undeflected condition.

2. An apparatus as set forth in claim 1 wherein said adjusting means further includes a substantially rigid bar associated with said continuous blade and parallel therewith when said continuous blade is in the undeflected condition, each of said members being operatively connected to said blade and said bar and movable relative to said bar to effect deflection of said blade.

3. Apparatus as set forth in claim 1 wherein said continuous blade extends for substantially the entire length of said brush roller.

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