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FIG. 2

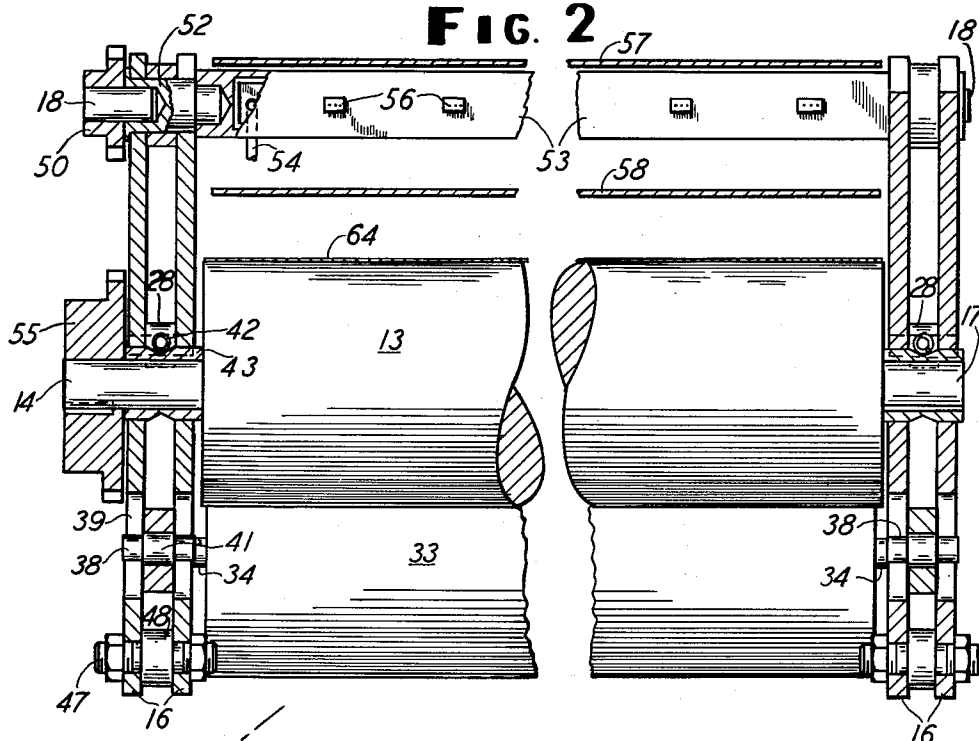
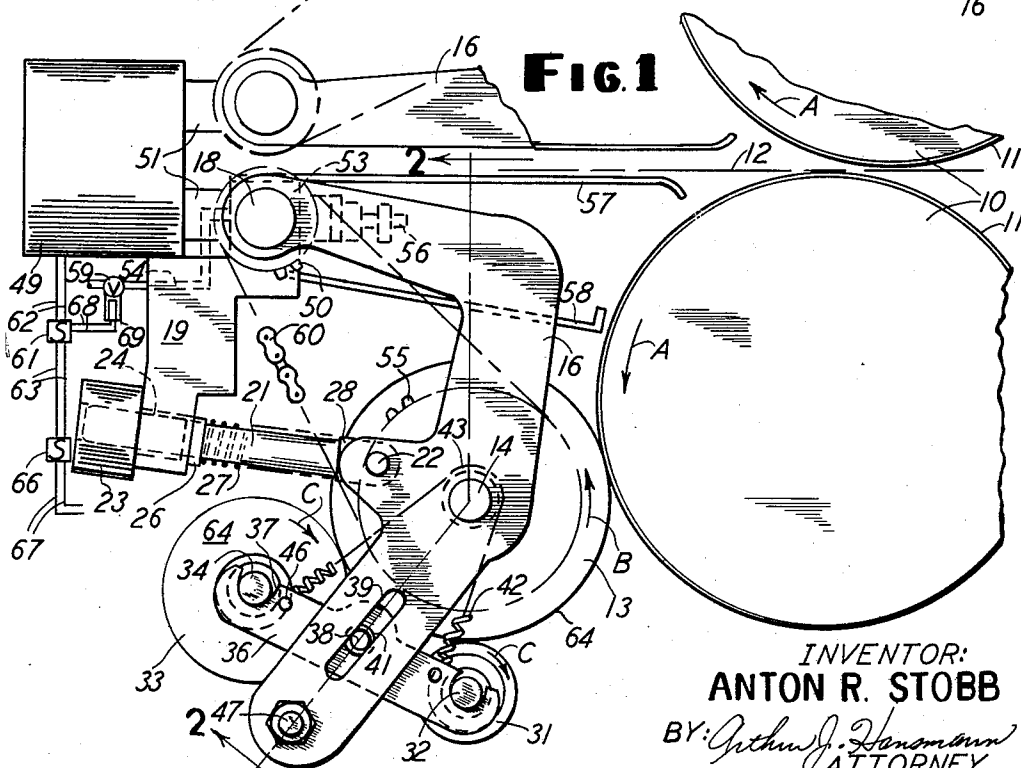


FIG. 1



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3,084,626 APPARATUS AND METHOD FOR WIPING A PRINTING CYLINDER

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This invention relates to apparatus and method for wiping a printing cylinder.

This particular invention is concerned with the cleaning of a printing cylinder, and more especially, it is concerned with removing the ink from the blanket of an offset printing press or in removing the ink from the printing cylinder. Accordingly, it is an object of this invention to provide an improved method and apparatus for cleaning a rotating printing cylinder.

A more specific object of this invention is to provide an inexpensive, compact, and simple but highly efficient method and apparatus for contacting the circumference of a printing cylinder with a cleaning fluid and also a wiping material for the purpose of cleaning the cylinder.

Still another object of this invention is to accomplish the foregoing objects and to effect the cleaning action during the time that the web of printing paper is not actually being printed upon, such time being when the web rolls are being changed and the printing machine is normally slowed in its operation. Thus, in accomplishing this object, both the change of the printing roll webs and the cleaning of the printing cylinders are simultaneously completed so that only a minimum of time and disturbance in the printing operation is required.

Also, in addition to the foregoing object, it is an object of this invention to provide a cleaning and wiping device for a printing cylinder such that when the printing cylinders are tripped for moving them out of printing position with a web of paper, the wiping mechanism will automatically be actuated to perform its function of moving a wiping material over the circumference of the printing cylinder, and further a cleaning fluid will be automatically applied to the printing cylinder for removing the ink therefrom in the wiping action.

Other objects and advantages will become apparent upon reading the following description in conjunction with the accompanying drawings wherein:

FIG. 1 is an end view of a preferred embodiment of this invention and diagrammatically showing certain parts and with certain parts broken away.

FIG. 2 is a front view of the embodiment shown in FIG. 1 with parts thereof broken away and it being substantially a sectional view taken on the line 2—2 of FIG. 1.

The same reference numerals refer to the same parts throughout the several views. Printing cylinders 10 are shown with the usual blankets or plates 11 mounted thereon for creating the desired impression on the web of paper indicated at 12. Of course the web will be moving through the printing machine and the cylinders 10 will be rotating in the direction shown by the arrows indicated "A." These printing cylinders 10 are of a conventional construction and are therefore not more completely shown, and it will be further understood that they are cylinders of the type which can be tripped or moved out of rolling contact in the position shown in FIG. 1 so that they are at that time not actually transferring their impressions to the web 12, and this is conventional for this type of printing cylinder.

It will then further be noted that a wiping cylinder or support member 13 is rotatably disposed adjacent the lower cylinder 10 to be rotated in the direction shown by the arrow indicated "B" such that the web of wiping material, preferably a crepe paper, is passed over the

blanket or printing plate 11 on the printing cylinder 10 to wipe the blanket clean of ink and any other matter thereon. Thus, the wiping cylinder 13 is rotatably mounted on a shaft 14 which in turn is disposed upon support arms 16 of which there are two pairs as shown in FIG. 2. Therefore, both ends of the wiping cylinder 13, namely the shaft end 14 and the shaft end 17 are rotatably mounted in the arms 16. Also, the arms 16 are pivotally mounted on a shaft 18 which in turn is supported upon the frame or base structure 19 which is stationarily disposed in a suitable manner.

It will thus be understood that the two pairs of arms 16 can be pivoted about the shafts 18 to be swung toward and away from the lower cylinder 10. One end of a rod 21 is pivotally engaged through a shaft 22 with the arms 16 while the opposite end of the rod 21 is threadedly engaged with a nut 23. Thus, the shaft or rod 21 has a threaded section indicated 24 which extends into the nut 23, and it will be also noted that the nut 23 is on one side of the support or frame 19 while a collar 26 is on the other side of the frame 19, and the rod 21 extends through these pieces as shown. A compression coil spring 27 is disposed between a yoke or connector 28, on one end of the rod 21, and the collar 26 so that the spring 27 yieldingly urges the arms 16 into a counterclockwise position as viewed in FIG. 1 and thus the cylinder 13 is spring loaded against the printing cylinder 10. It will therefore be also understood that the rod 21 can slide through the collar 26 when the arms 16 are urged in a clockwise direction about the center of pivot at shaft 18, and the threaded shaft 21 and the nut 23 provide an actuating means for moving the wiping cylinder 13 into and out of contact with the printing cylinder 10.

At this time it will also be mentioned that a crepe paper or the like supply roll 31 is rotatably mounted on its shaft and core 32 while a rewind or wind-up roll 33 is similarly rotatably mounted on its shaft or core 34. The shafts 32 and 34 of course extend across the respective rolls 31 and 33 and they are rotatably supported in a rocker arm 36 which has sockets or bearings 37 therein for easy insertion and removal of the shaft ends with regard to shafts 32 and 34. Thus it will be understood that a web of crepe paper or other wiping material will extend from the supply roll 31 and around most of the circumference of the wiping cylinder 13 and between that cylinder and the printing cylinder 10 and continue on to wind up on the rewind roll 33.

It will further be noted that the rocker arm or support member 36 is both rotatably and linearly movably mounted on the support arms 16 by virtue of a trunnion or shaft 38 projecting to two sides of the arms 36 and into a slot 39 in the two pairs of arms 16. The shaft 38 preferably provides a central spacer 41 between the two arms 16 so that the rocker arm 36 is rotatably and slideably mounted between the arms 16. Further, a tension coil spring 42 connects between the opposite ends of the arm 36 and around a cylindrical support or sheave 43 mounted on the shaft 14. Thus the spring 42 urges the two rolls 31 and 33 toward the wiping cylinder 13 so that the two rolls are in rolling contact with the cylinder and they therefore rotate in the direction shown by the arrows "C" on the rolls 31 and 33. This arrangement of rolling contact between the rolls and the wiping cylinder, of course insures that the web of wiping material will be continuously passed around with the rotation of the wiping cylinder 13 for clean wiping of the blanket 11. The ends of the spring 42 can be connected to the arm 36 by means of the pins 46 located in the arm 36 as shown.

It will also be noted that a stud 47 extends between the pairs of arms 16 and a spacer 48 is disposed between the arms 16 so that the stud 47 can maintain the assembly while permitting the desired space between the arms 16

for the pivotal and slideable relation of the rocker arm 36 with the support arms 16.

The drawings further show a sprocket 50 is rotatably mounted on the shaft 18 and a second sprocket 55 is shown keyed to the cylinder shaft 14. Further, an electric motor or other prime mover 49 is suitably mounted on the machine for drivingly connecting to the sprocket 50 by means of a shaft 51 such that the sprocket 50 is rotated and in turn rotates the sprocket 55 through the drive chain 60. In this manner the wiping cylinder 13 is rotated, and correspondingly, the rolls 31 and 33 are rotated off the cylinder 13. Further, a shaft and socket 52 are mounted on the shaft 18 and this in turn is shown to pivotally support the arms 16 off the shaft 18.

The drawings further show a fluid supply line or pipe 53 extending between the two pairs of arms 16, and a fluid supply line 54 is shown entering the pipe 53 to carry a cleaning fluid into the pipe. This fluid may be kerosene or water or naphtha or any similar, suitable cleaning fluid for dissolving or removing the ink from the blanket 11. A spray nozzle or outlet 56 extends forwardly of the pipe 53 and is directed toward the printing cylinder 10 such that when pressure is applied to the pipe 53, a spray of the cleaning fluid will be released to the printing blanket 11. It is preferred that several such outlets or spray nozzles 56 be disposed across the width of the apparatus as shown in FIG. 2 and thus the entire blanket 11 is wetted with the cleaning fluid. Spray shields 57 and 58 are also mounted in the frame 19 to protect the surrounding parts and paper from receiving the cleaning fluid when sprayed.

It will also be noted that a valve indicated at 59 is disposed in the fluid line 54 for controlling the pressure in the pipe 53 and therefore the outlet of the cleaning fluid through the nozzle 56 and onto the blanket 11. Further, an electric switch 61 is shown connected to the motor 49 by means of the wire 62, and a wire 63 extends beyond the switch into an electric control which is electrically connected to the electric control operating the printing cylinder 10. Since the control of the printing cylinder 10 is conventional, as mentioned, no further parts thereof are shown and no further description thereof is deemed to be necessary, however it will be readily understood by one skilled in the art that upon tripping the cylinders 10, they separate as mentioned and as shown in FIG. 1 and when this occurs, the valve 59 is actuated by a solenoid, indicated 69 to open the valve so that the pressure of the cleaning fluid enters the pipe 53 and the cylinder 10 is then sprayed as desired and also the switch 61 is closed so that the motor 49 is operated to rotate the wiping cylinder 13. Thus, the operation of the wiping cylinder 13 and the spray nozzles 56 are automatic upon tripping of the printing cylinders 10. Still further, it is preferred that the valve 59 be initially closed when the cleaning by the cleaning fluid is completed and secondly, then the motor 49 would be shut off after the wiping cylinder 13 has had opportunity to wipe all of the cleaning fluid from the blanket 11.

FIG. 1 further includes the upper portion of the apparatus by simply showing only a fragment thereof, such as the arms 16 and the printing cylinder 10. It will of course be understood that the apparatus described on the lower portion thereof in FIG. 1 is simply duplicated in the upper portion if it is desired to have two printing blankets 11 applied to the paper web 12. Also, FIG. 2 shows the wiping material 64 trained over the wiping cylinder 13 and extending across the length thereof.

An electric switch 66 is diagrammatically shown and it can be used for controlling the tripping of the printing cylinders 10 and connections 67 would extend to the conventional mechanism, which is generally pneumatic, used for the tripping purpose. It will also be noted that the wires 63 connect between the switches 61 and 66 such that upon actuating the switch 66, the switch 61 could be energized or closed to energize the motor 49, as men-

tioned. Also, the switch 61 could have electrical wires 63 extending therefrom to a solenoid 69 which actuates the valve 59 in the fluid supply line 54. The switch 61 could have a time delay mechanism in it so that the operation of the solenoid 69 was such that it would next be actuated to close the valve 54 and therefore stop the spray of fluid onto the blanket 11 prior to the time that the motor 49 is stopped and thus the wiping action 13 would continue to wipe the blanket dry before the wiping and cleaning action is needed. These electrical connections and parts are conventional in their elements and are therefore only shown diagrammatically in combination with this invention.

It will also be obvious that the wiping action can be carried on without tripping the printing cylinders by manually moving the wiping cylinder about the trunnions 18 by the adjusting nut 23.

While a specific method and apparatus have been shown and described, it should be obvious that certain changes could be made therein and the invention should therefore be limited only by the scope of the appended claims.

What is claimed is:

1. A wiping mechanism for a rotary printing cylinder of the type movable away from the web of paper when electrically tripped, comprising in combination a wiping support disposable parallel to said printing cylinder and being in contact therewith for supporting a cleaning material against the circumference of said printing cylinder when the latter is electrically tripped, a cleaning fluid supply line disposed adjacent said printing cylinder for wetting the latter, and an electrically operated valve disposed in said supply line for opening and closing the latter in synchronization with the tripping of said printing cylinder.

2. A wiping mechanism for a rotary printing cylinder of the type movable away from the web of paper when electrically tripped, comprising in combination a rotary wiping cylinder disposable parallel to said printing cylinder and being rotatably mounted in rolling contact therewith for supporting a cleaning material against the circumference of said wiping cylinder and in contact with said printing cylinder when the latter is tripped, a crepe paper web supply roll and a wind-up roll both rotatably mounted adjacent said wiping cylinder, a cleaning fluid supply line disposed adjacent said printing cylinder for wetting the latter, an electrically operated valve disposed in said supply line for opening and closing the latter in synchronization with the tripping of said printing cylinder, and an electric motor connected to said wiping cylinder in a manner to rotate the latter in synchronization with the tripping of said cylinder.

3. A cleaning and wiping mechanism for a rotary printing cylinder, comprising in combination a wiping cylinder disposable parallel to said printing cylinder and being rotatably mounted in rolling contact therewith for supporting a cleaning material against the circumference of said printing cylinder, a cleaning fluid supply line disposed adjacent said printing cylinder for directing fluid onto an area across said printing cylinder, drive means connected to said wiping cylinder for rotating the latter at a speed relative to the speed of said printing cylinder and in a direction toward said area on said printing cylinder, a rocker arm rotatably and linearly movably mounted adjacent and with respect to said wiping cylinder and having roll receiving sockets on opposite ends thereof, a supply roll and a re-wind roll rotatably mounted in said sockets to be in rolling contact with said wiping cylinder, said cleaning material consisting of a web of material trained over said wiping cylinder and extending from said supply roll to said re-wind roll, and means attached to said rocker arm for urging the latter toward said wiping cylinder according to the diameters of said rolls.

4. A cleaning and wiping mechanism for a rotary printing cylinder, comprising in combination a pivotal mounting member, a wiping cylinder disposable parallel to said printing cylinder and being rotatably mounted in said

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mounting member in rolling contact with said printing cylinder for supporting a cleaning material against the circumference of said printing cylinder, a cleaning fluid supply line disposed adjacent said printing cylinder for directing fluid onto an area across said printing cylinder, drive means connected to said wiping cylinder for rotating the latter at a speed relative to the speed of said printing cylinder and in a direction toward said area on said printing cylinder, a rocker arm rotatably and linearly movably mounted on said mounting member adjacent and with respect to said wiping cylinder and having roll receiving sockets on opposite ends thereof, adjustable resilient means connected to said pivotal mounting member for yieldingly urging the latter toward said printing cylinder, a supply roll and a re-wind roll rotatably mounted in said sockets to be in rolling contact with said wiping cylinder, said cleaning material consisting of a web of material trained over said wiping cylinder and extending from said supply roll to said re-wind roll, and means attached to said rocker arm for urging the latter toward said wiping cylinder according to the diameters of said rolls.

5. A wiping mechanism for a rotary printing cylinder, comprising a pivot arm, a wiping cylinder mounted on said pivot arm and capable of being disposed axially parallel to said printing cylinder and being rotatably mounted to be in rolling contact therewith for supporting a web of cleaning material trained over the circumference of said wiping cylinder and in contact with said printing cylinder, a cleaning fluid supply line disposed adjacent said printing cylinder for wetting the latter, prime mover means connected to said wiping cylinder for rotating the latter at a speed relative to the rotation of said printing cylinder, a support mounted on said pivot arm, means attached to each of the ends of said web and mounted on said support for respective pulling and feeding of said web in synchronization with said wiping cylinder.

6. A wiping mechanism for a rotary printing cylinder, comprising in combination a support member movably mounted for movement toward and away from said printing cylinder, a wiping cylinder mounted on said support member to be parallel to said printing cylinder and being rotatably mounted in rolling contact therewith for supporting a cleaning material against the circumference of said printing cylinder, a prime mover, self-adjusting drive means connected between said prime mover and said wiping cylinder for rotating the latter at a speed relative to the speed of said printing cylinder in all positions

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of said wiping cylinder, a supply roll and a re-wind roll rotatably mounted on said support member to be in rolling contact with said wiping cylinder to be rotatable and movable with the latter, said cleaning material consisting of a web of material trained over said wiping cylinder and extending from said supply roll to said re-wind roll in rolling contact directions on said wiping cylinder and both said rolls.

7. A cleaning and wiping mechanism for a rotary printing cylinder, comprising in combination a support member pivotally mounted for movement toward and away from said printing cylinder, a wiping cylinder mounted on said support member and disposable parallel to said printing cylinder and being rotatably mounted in rolling contact with said printing cylinder for supporting a cleaning material against the circumference of said printing cylinder, yielding means attached to said support member for yieldingly urging the latter toward said printing cylinder, a cleaning fluid supply line disposed adjacent said printing cylinder for directing fluid onto an area across said printing cylinder, drive means connected to said wiping cylinder for rotating the latter at a speed relative to the speed of said printing cylinder and in a direction toward said area on said printing cylinder, a supply roll and a re-wind roll rotatably and movably mounted on said support member to be in rolling contact with said wiping cylinder, said cleaning material consisting of a web of material trained over said wiping cylinder and extending from said supply roll to said re-wind roll in a direction of rolling contact throughout its extent, and resilient means connected between said support member and said rolls for urging the latter into rolling contact with said wiping cylinder.

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