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MOISTURE REMOVING MEANS FOR THE INKER OF LITHOGRAPHIC PRESSES AND THE LIKE

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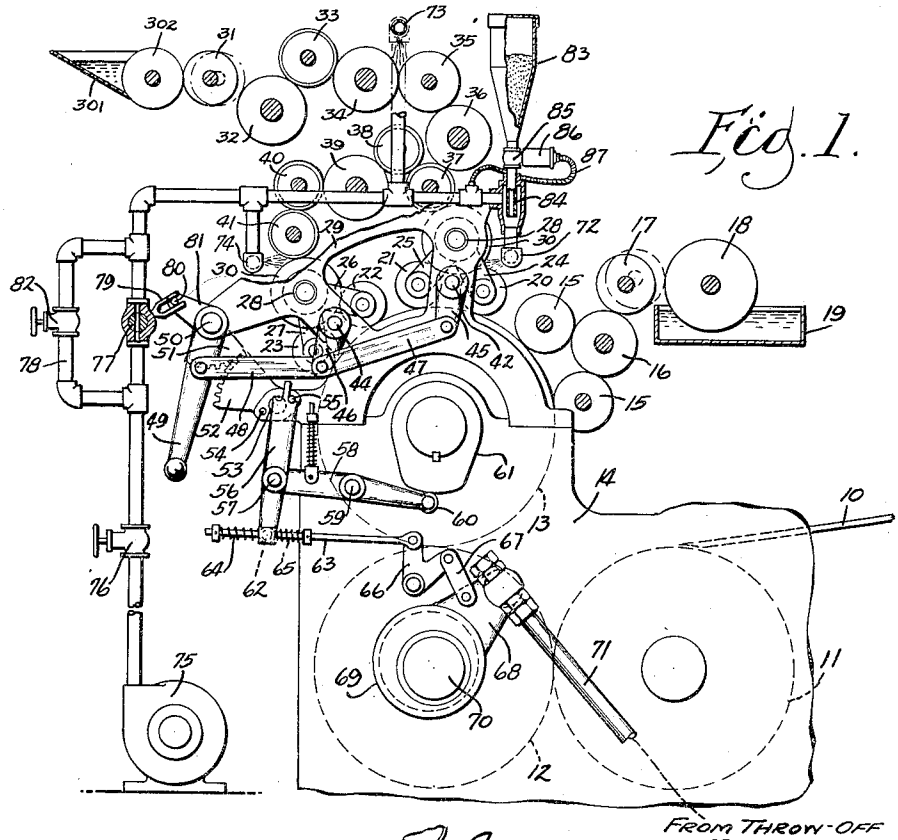


Fig. 1.

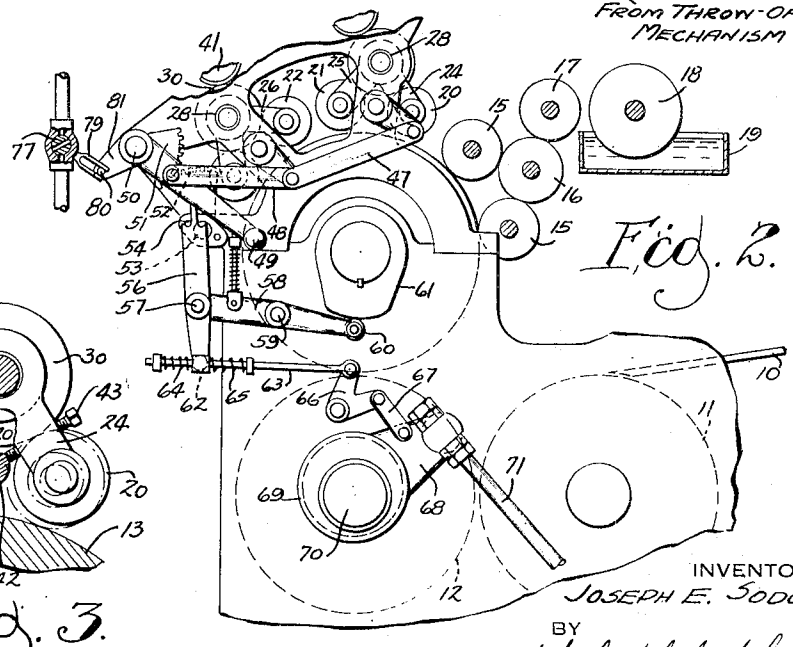


Fig. 2.

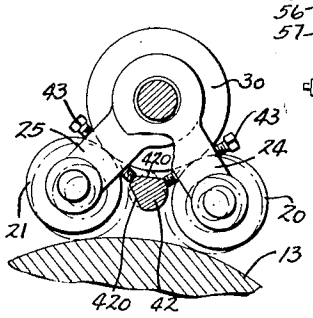


Fig. 3.

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MOISTURE REMOVING MEANS FOR THE INKER OF LITHOGRAPHIC PRESSES AND THE LIKE

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13 Claims. (Cl. 101—142)

1

This invention relates to improvements in lithographing presses and the like. The present application is a companion to my copending application 483,197, filed April 15, 1943, entitled "Lithographing presses and methods of preventing the emulsification of water with the ink," now Patent 2,395,151, issued February 19, 1946.

The objects of the invention disclosed in the companion application above identified are carried out by directing an air blast on one or more of the form rollers, particularly the form roller first encountered by the freshly moistened surface of the form cylinder. It is the object of the present invention to provide means for controlling the air blast automatically in accordance with the operation of the press to avoid wastage of air when the press is not in operation while assuring the functioning of the air blast at all times when the press is in operation to keep excess moisture from being picked up by the form rollers and emulsified with the ink.

A further object of the invention, in providing means for controlling the air blast automatically in accordance with the operation of the press, is to avoid overdrying of the ink in cases where a small amount of moisture is left in the ink normally during running of the press, and to avoid hardening of the ink itself during periods of running the press idle. Overdrying of the ink causes a somewhat abnormal printing condition during the first several revolutions of the press after printing is resumed, and consequently it is an object of the invention to provide mechanism for interrupting the air blast when the press is not in operation.

In the drawings:

Fig. 1 diagrammatically illustrates partially in section and partially in side elevation apparatus in the practice of the present invention.

Fig. 2 is a fragmentary view similar to Fig. 1 showing the parts adjusted to different positions.

Fig. 3 is a detailed view taken in section in plane behind that of Fig. 1.

While the invention is applicable to many other forms of presses, I have selected, for the purpose of exemplifying the invention, a sheet fed offset lithographic press having a feed board 10, impression cylinder 11, blanket or offset cylinder 12 and form cylinder 13 all supported in a suitable frame 14. The usual dampening rollers are shown at 15 together with their associated intermediate roller 16, ductor roller 17, pan roller 18 and water pan 19.

The form rollers 20, 21, 22, 23 are supported at

2

each end in arms 24, 25, 26, 27 which are pivotally carried on bushings 28 mounted in the inker frame 29. Storage rollers 30 are rotatably journaled in the bushings 28 and driven in the usual, or any, manner. Ink from a fountain comprising a reservoir 301 and a reservoir roller 302 is delivered to the storage rollers 30 by a train of rollers 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 and 41. In this train, rollers 37 and 41 are respectively in contact with the storage rollers 30. In accordance with usual practice, rollers 31, 32, 34, 36 and 39 are preferably metallic rollers, while rollers 33, 35, 37, 38, 40 and 41 are preferably composition rollers.

The form rollers 20, 21, 22 and 23 may be lifted from contact with the form cylinder 13 by movement of their supporting arms about the bushings 28 accomplished by the following mechanism:

At each side of the press a stub rock shaft 42 is provided with flattened surfaces 420 (Fig. 3) which, in the oscillation of such shaft, register with adjustable stop screws 43 threaded in the arms 24, 25. These screws are so adjusted that rollers 20, 21 will contact with the form roller 13 when the rock shaft 42 is in the position shown in Fig. 1. Rotation of either rock shaft 42 to the position shown in Figs. 2 and 3 will lift the form rollers out of contact with the form cylinder. A similar stub shaft 44 is provided at each side of the press for spreading the arms 26, 27, to adjust rollers 22, 23 to and from contact with the form cylinder.

The stub shafts 42, 44, are provided with rocker arm levers 45, 46 joined by a link 47. Arm 46 is also connected by link 48 to a control lever 49 secured to shaft 50 extending across the press.

Secured to shaft 50, preferably as an integral part of one of the arm 49, is a toothed sector 51 which engages toothed sector 52 pivotally mounted on stud 53 secured in frame 29. Sector 52 is provided with pins 54, 55, engageable at appropriate times by the shoulders of a plunger 56, whereby, on actuation of the plunger, to rock the sector 52 upon stud 53.

Plunger 56 is pivotally connected by means of stud 57 to lever 58. The lever is pivoted on stud 59 and carries a cam follower roller 60 engaged with the periphery of cam 61 keyed to the shaft of the form cylinder 13.

At the lower end of plunger 56 is a noddle pin 62 through which loosely passes rod 63 carrying opposing springs 64, 65. Rod 63 is connected to bell crank 66 which, in turn, is connected by link 67 to arm 68 of an eccentric journal box 69 which

carries the shaft 70 of blanket cylinder 12. Eccentric 69 is connected in the usual way by rod 71 to the conventional throw-off mechanism of the press (not shown) so that when it becomes necessary to stop the printing operation, the tripping devices cause the eccentric to be moved from the position in which it is shown in Fig. 1 to the position in which it is shown in Fig. 2, thereby moving the blanket cylinder 12 out of contact with the impression cylinder and the plate cylinder.

The eccentric arm 68 is shown in Fig. 1 in operative printing position. As long as sheets continue to be fed properly to the impression cylinder 11, the arm 68 remains in this position, rod 63 holds plunger 56 resiliently against pin 55, and cam arm 58 moves the plunger 56 down and up. The movement of plunger 56 has no effect on pin 55 so that sectors 52, 51 remain stationary and the rollers 20, 21, 22, 23 remain in contact with cylinder 13.

However, if the feed of sheets to cylinder 11 is interrupted, or for any other reason the throw-off mechanism of the press is operated, eccentric arm 68 is thereby moved to the position shown in Fig. 2. When this occurs, the connections act to swing plunger 56 resiliently against pin 54 so that, on its next upward movement the shouldered plunger 56 engages pin 54 and lifts the latter to its upward position shown in Fig. 2. Thereafter the plunger 56 continues to move up and down without effect on pin 54. The movement of pin 54 causes rotation of segments 52, 51 which, in turn, causes a turning movement of stub shafts 42, 44, whereby the form rollers are lifted off the cylinder 13.

Transverse nozzle pipes 72, 73, 74, each have a series of holes for directing drying air against adjacent rollers. Pipe 72 directs drying air particularly against roller 20 and adjacent portions of roller 30. Pipe 73 directs drying air against rollers 34, 35. Pipe 74 directs drying air against rollers 30, 41. The motor-driven pump 75 supplies air subject of the control of manually operable valve 76, which regulates maximum pressure in the air lines. Communication with the air lines is further controlled by the automatically operable shut-off valve 77 whose slotted lever 79 is engaged by a pin 80 on the arm 81 of rock shaft 50. When shaft 50 is in its Fig. 1 position the valve 77 is open, whereas the oscillation of shaft 50 to its Fig. 2 position, such as occurs incident to the functioning of the throw-off mechanism to lift the form rollers from the cylinder, causes the valve 77 to be oscillated to cut off the flow of air. When shaft 50 returns to operative position, so that the form rollers contact the cylinder, the air is turned on. I may provide at 78 a by-pass pipe around the automatic valve 77 and a manually operable by-pass valve 82 which is normally closed but which may be opened if it be desired to admit drying air to the pipes 72, 73, 74 when the press is not in operation.

When it is desired to blow powder onto the form roller 20, a supply of powder in the hopper 83 may be delivered through the tube 84 into the pipe leading to the nozzle pipe 72, the flow of powder being controlled by a valve at 85 automatically actuated by a pressure motor 86 connected by flexible tube 87 with the air supply line. When the air is flowing in the line, the valve 85 will automatically be opened and at all other times such valve will be closed.

During normal use of the press, the supply of drying air will be entirely automatic, being

turned on mechanically whenever the press is in operation and turned off mechanically whenever the press is not in operation.

I claim:

1. In a lithographic printing press having a form carrying member, means for dampening said form, and means for inking said form adapted in one position to contact said form and in another position to be out of contact with said form, the combination of means for removing moisture from said inking means and control means operable, consequent on movement of said inking means out of contact with said form, to interrupt operation of the moisture removing means.

2. In a lithographic printing press having a form carrying member, means for dampening said form, means having contact with said form for inking the latter, and means for interrupting said contact, the combination of means for removing moisture from said inking means and means operable in response to interruption of said contact for interrupting operation of said moisture removing means.

3. In a lithographic printing press having a form carrying member, means for dampening said form, means adjustable from a retracted position to a position of contact with said form for inking the latter, and means for establishing said contact to effect the inking of said form, the combination of means for removing moisture from said inking means and means operable in response to establishment of said contact for correspondingly establishing operation of said moisture removing means.

4. In a lithographic printing press having a cylinder adapted to carry a lithographic plate, means for dampening said plate, mechanism for inking said plate including form rollers adapted to contact said plate, and means for lifting said form rollers off said plate, the combination of means for directing an air blast against said inking mechanism for the removal of moisture picked up by said form rollers from said plate and means operable responsive to the lifting of said form rollers from said plate to interrupt operation of said air blast means.

5. In a lithographic printing press having a cylinder and plate, means for dampening the plate, mechanism for inking the plate including form rollers movable to and from contact with the plate, and means for moving said form rollers to contact with the plate, the combination with the means for moving the form rollers, of means for drying a portion of said inking mechanism, and mechanism for rendering said drying means operative responsive to movement of said form rollers to contact said plate.

6. The combination with a lithographic printing press having ink transfer parts movable between operative and inoperative positions and having dampening means and inking means, of an air nozzle directed toward a portion of said inking means for the evaporation of excess dampness therefrom, an air supply line leading to said nozzle and provided with a valve, and means for automatically actuating said valve in accordance with the movement of said ink transfer parts between operative and inoperative positions whereby to open the valve responsive to movement of said parts to operative position and to close the valve responsive to movement of said parts to inoperative position.

7. In a press having a blanket cylinder and a form cylinder, inking means for the form cylin-

der including a form roller mounted for movement to and from operative relation to said form cylinder, dampening means for said form cylinder, and a throw-off mechanism for moving said blanket cylinder and said form cylinder to and from mutual contact, the combination of drying means for the form roller, a control for said drying means, means for moving said form roller to and from operative relation to the form cylinder, and mechanism operable by said throw-off mechanism for actuating said control and the means for moving the form roller whereby said drying means is operative when the form roller is in operative relation to the form cylinder and said drying means is inoperative when the form roller is in inoperative relation to the form cylinder.

8. In a press having a rotatable cylinder and means for the inking thereof comprising of plurality of rollers for ultimately transferring ink to said cylinder, said press further including a form roller as a part of said inking means and movable to and from operative relation to the cylinder, and means for moistening the form cylinder, the combination with said form roller of a nozzle arranged to direct a drying blast upon one of the rollers of said inking means, a supply line to said nozzle provided with a valve, and a motion-transmitting connection between said valve and the movable form roller whereby the operation of either said valve or said form roller assures operation of the other, said connections being arranged and adapted to open the valve in the movement of the form roller to the form cylinder and to close the valve in the movement of the form roller from the form cylinder.

9. In a press having in combination a form cylinder, means for the moistening thereof, and inking means including a form roller and an oscillatory mounting member upon which said form roller is carried for movement to and from operative relation to said cylinder, the combination of drying mechanism including an air nozzle directed to a portion of said inking means for removing surplus moisture therefrom, and air supply line leading to said nozzle and provided with a valve movable toward opened and closed positions, and motion-transmitting connections operatively connected between said valve and member for assuring mechanical movement thereof in a direction to open the valve upon the movement of said member in a direction to associate the form roller with the cylinder, and to close the valve upon movement of said member in a direction to disassociate the form roller from the cylinder.

10. The device of claim 9 in which said nozzle is directed toward said form roller.

11. In a press having a blanket cylinder and a form cylinder, inking means for the form cylinder including a form roller mounted for movement to and from operative relation to said form cylinder, dampening means for said form cylinder, and a throw-off mechanism for moving said blanket cylinder and said form cylinder to and from mutual contact, the combination of drying means for the form roller, a control for said drying means, means for moving said form roller to and from operative relation to the form cylinder, and mechanism operable by said throw-off mechanism for actuating said control and the means for moving the form roller, the said mechanism comprising a rockable member having force transmission connection to said control and to said means for moving the form roller, said rockable member having a plurality of positions defining operative and inoperative positions of the drying means control and means for moving the form roller.

12. The device of claim 11 wherein the rockable member is provided with a shaft and with pins disposed at either side of the shaft, said mechanism further comprising a plunger selectively movable against one or the other of said pins whereby to rock the member on its shaft to effectuate said change of position.

13. The device of claim 12 wherein said rockable member carries a toothed sector, said sector teeth being in mesh with a second toothed sector, said second sector comprising said force transmission connection.

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