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LIQUID CONTROLLING ATTACHMENT FOR WET ROLLERS

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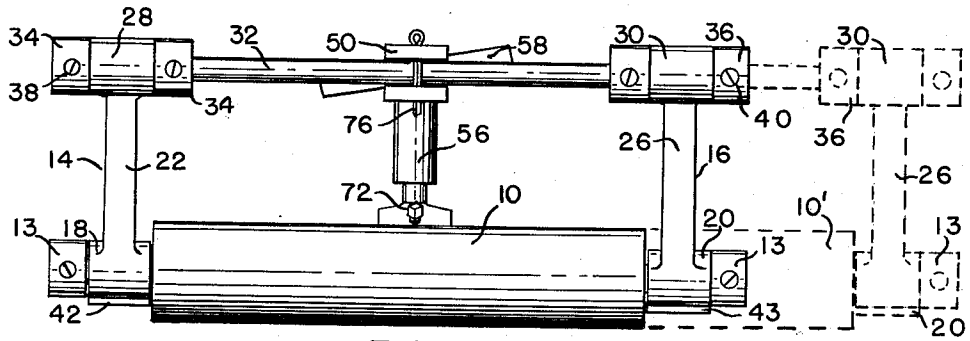



FIG. 1

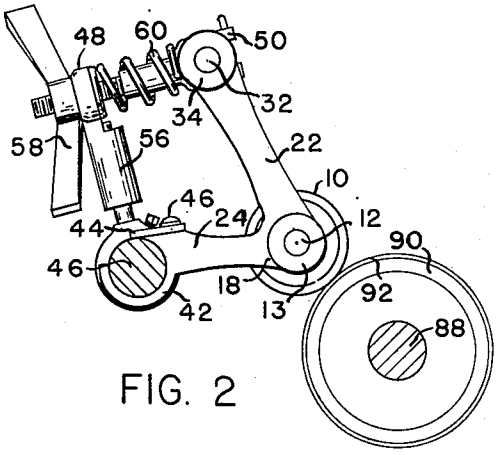



FIG. 2

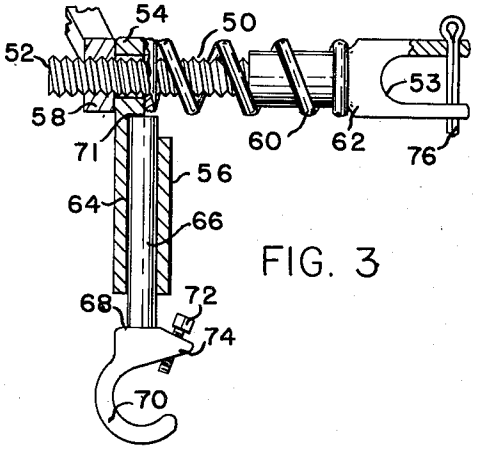



FIG. 3

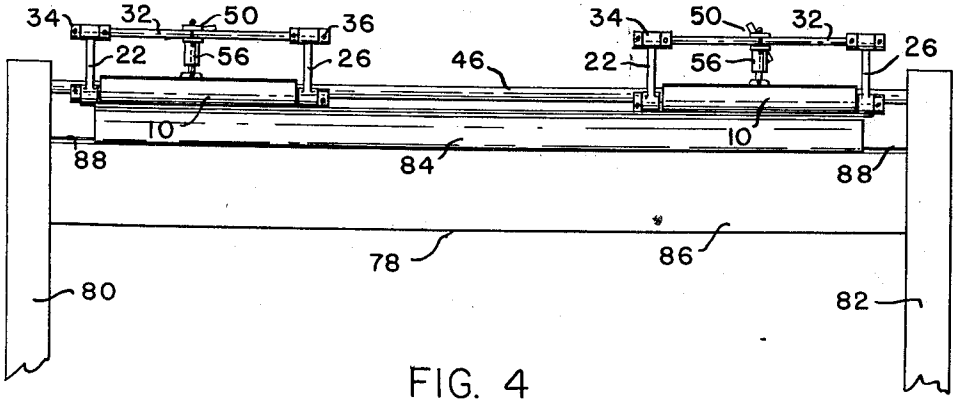



FIG. 4

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## LIQUID CONTROLLING ATTACHMENT FOR WET ROLLERS

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13 Claims. (Cl. 101—148)

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This invention relates to an attachment for wet rollers and more particularly to an auxiliary liquid control apparatus that is particularly adapted for attachment on a machine in conjunction with a driven wet roller.

According to the present invention, an attachment is provided for use in conjunction with a rotating wet roller to prevent an over accumulation of liquid at certain points on the wet roller and to provide a means of controlling the accumulation of the liquid. In many types of machines, as for example printing and lithographing machinery, absorbent covered rollers extending the width of the machines rotate in a pan of liquid for the purpose of saturating the absorbent material on each rotation. These rollers operate in conjunction with other rollers and transfer small quantities of the liquid. In this manner, a series of rollers are wet on their surface with a fine film of liquid that is being supplied from the primary roller.

At times, the demand for the liquid is not as great as other times and the liquid has a tendency to accumulate on the primary wet roller. When this occurs, the centrifugal and centripital forces cause the liquid to be slung from the roller down into the machinery and onto the machinery parts or on the material passing through the machine. For example, occasionally in the operation of lithographing presses sheets of paper less than full roller width are run down the middle of the machine positioned in alignment with the center of the rollers. When the machines are being run in this manner with less than full sheets, the liquid near the ends of the wet roller is not being carried away and it accumulates. The present invention provides an attachment for the machine which cooperates with the wet roller in an adjustable manner to eliminate the over accumulation.

Briefly described, the present invention comprises a short roller rotatably mounted on support members and the support members are in turn mounted on the machine frame. An adjustable pressure means is associated with the short roller and support members and is arranged to provide an accurate adjustment when the short roller cooperates with the wet roller on the machine. The entire device is provided with means for quick detachment from the machine frame and for the substitution of other sizes of short rollers.

Other objects and advantages of my invention will be apparent from the following description taken in conjunction with the accompanying drawings in which:

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Fig. 1 is a top plan view of the present invention with dotted lines to illustrate an adjustment.

Fig. 2 is a side view of the device of Fig. 1.

Fig. 3 is an enlarged view of a detail.

Fig. 4 is a diagrammatic view of a portion of a machine with the device of the present invention mounted thereon.

Referring to the drawings for more detail, a short roller 10 is supported for rotation on a shaft 12 and retained thereon by a collar 13. A pair of spaced, opposed levers 14 and 16 having respective journal portions 18 and 20 at each elbow are positioned one at each end of the roller 10 with the respective ends of the shaft 12 being supported for rotation in the journals 18 and 20. Lever 14 comprises angularly disposed arm members 22 and 24, and lever 16 is constructed in an identical manner, one of the arms 26 of lever 16 being in alignment with the arm 22 of lever 14, as is seen in Figure 1.

Arms 22 and 26 have end journal portions 28 and 30 respectively formed thereon which portions 28, 30 are in alignment to receive a connecting rod 32 extending between the levers 14 and 16 substantially parallel to the roller 10. The ends of the connecting rod 32 are retained in the respective journals 28, 30 by means of pairs of collar members 34, 36, respectively, mounted on the rod 32 and retained in place by respective set screws 38 and 40. The arm 24 of lever 14, as is seen in Figure 2, has its end portion 42 formed as an open collar of hook-like fashion and lever 16 is formed in an identical manner with a portion 43. A locking tab 44 is mounted on a pivot 46 on the arm 24 in such a manner as to extend across a portion of the open end 42 in one position and being movable out of the open portion in another position. With this arrangement, both the levers 14 and 16 may be detachably mounted on a frame member of the machine, such as a brace rod 46 (see Fig. 2).

Referring to Figures 2 and 3, an adjustable pressure device designated generally at 48 is arranged in conjunction with the short roller 10 and the levers 14 and 16. This pressure device comprises a bifurcated shackle member 50 having a threaded stud 52 extending in an opposite direction from a bifurcated portion 53. The stud 52 passes through an open shoulder member 54 formed at the upper end of a tubular connecting link 56 and is retained in place therein by a butterfly nut 58. A coil spring 60 is interposed under compression between the shoulder 54 and an abutment 62 formed adjacent to the bifurcated portion 53.

The connecting link 56 is formed with a bore 64 which receives the shaft 66 of a fastener 68 having a hook-like member 70 formed integrally therewith. Link 56 is formed with an internal shoulder 71 at the upper end of the bore 64 and the upper end of the shaft 66 abuts this shoulder 71 upon full insertion in the bore 64. Member 70 has an adjusting and locking screw 72 threadedly engaging a protrusion 74 and locking screw 72 is adapted to operate toward the center of the hook portion. With this arrangement, the hook-like portion 70 is placed on the brace rod 46 inbetween the levers 14 and 16, and the adjusting screw 72 is tightened against the rod 46 to lock the portion 70 and shaft 66 in place. The connecting link 56 and shackle member 50 is then swiveled around the shaft 66 to a location substantially perpendicular to the rod 32 in which position the bifurcated portion 53 engages the rod 32. The bifurcated portion 53 is locked in place by a removable pin 76.

Referring to Figure 4, a conventional machine, designated generally at 78, comprises vertical frame members 80, 82 supporting a transverse power driven wet roller 84 turning in a bath of liquid contained in a pan 86. The wet roller 84 operates on a shaft 88 and is usually covered with absorbent materials 90 and 92. The apparatus of the present invention is mounted on the transverse brace rod 46. In assembling the apparatus on the brace rod 46 the end portions 42 and 45 and the fastener 68 are loosely connected until all the parts are properly placed. Then the adjusting screw 72 is tightened and the short roller 10 lies in position against the wet roller 84. In placing the levers 14 and 16 on the rod 46, the tab 44 is moved across the top of rod 46 to prevent vertical displacement.

With the apparatus in position on the machine 78, a quadrilateral pattern of forces is formed through the action of the links 14 and 16, the connecting link 56, fastener 68, and the coil spring 60 in conjunction with the shackle member 50. Since the spring 60 is under compression, the normal action of the links 14 and 16 under the force of the shackle 50 is to force the roller 10 against the wet roller 84. Both the links 14 and 16 are free to pivot about the rod 32 on one end and the rod 46 on the other end, being limited in pressure by the action of the spring 60. Tightening the butterfly nut 58 on the stud 52 compresses the spring 60 and relieves the pressure of the short roller 10 on the wet roller 84. Conversely, loosening the nut 58 causes more pressure on the roller 84. This provides a very accurate adjustment between the two rollers 10 and 84. If it is desired to bring the roller 10 out of contact with the roller 84, the entire apparatus may be dis-assembled in the manner of assembly previously explained or the adjusting screw 72 may be loosened and the entire apparatus pivoted relative to the rod 46 without disassembly. Once the apparatus is out of position, the screw 72 is tightened to hold the apparatus in place out of position.

In the particular application illustrated in Figure 4, the demand for the liquid would be primarily in the center portion of the wet roller 84 and therefore the liquid absorbed on the ends of the roller 84 would normally tend to accumulate. If this were permitted to take place, the accumulated liquid would be thrown by the rotational forces away from the roller 84 into other parts of the machine. Two of the apparatuses of the present invention are mounted on the brace



rod 46 in the manner previously described, there being one placed at each end of the roller 84. After the roller 84 turns in the pan 86 a few times and begins to absorb moisture, the rate of absorption is observed and the pressure between the rollers 10 and the wet roller 84 is adjusted accordingly by means of the butterfly nut 58. The machine continues to run in this manner under the observance of the press operator. If it is necessary, as can be readily observed from casual checking, the two liquid controllers may be adjusted from time to time to maintain an accurate absorption of liquid.

If the type of run for the machine is changed, it may be desirable to change the width of the roller 10, either to shorten or lengthen it according to the expected rate of absorption. This is easily effected, as is seen by the dotted lines in Figure 1, by loosening the innermost collars, 36 on the left hand and 34 on the right hand, on the connecting rod 32 and one of the collars 13 on the roller shaft 12. Then the respective arms 22 and 26 are moved toward or away from the other respective arm on each unit.

In the example of Figure 1, the roller 10 is being widened to a roller 10'. After the arm 26 has been moved, the roller 10 is removed and the new roller 10' substituted in its place. Now the collars 36 and 13 are tightened. If desired, a telescopic type roller may be employed so that the width of the roller may be altered without substitution of a complete new one. When it is not necessary to use the present liquid controller, the entire apparatus may be moved out of place in the manner as explained previously.

It is apparent that I have provided an apparatus that is effective and may be readily fabricated and assembled. Further, the present invention may be installed on machinery already in use or may be incorporated in the initial construction of the machine.

Although a preferred embodiment is presented for the purpose of illustration and one application of the invention is shown, other and further modifications, substitutions, and applications may be made without departing from the scope of the invention as defined in the appended claims.

I claim:

1. In a device of the class described, a pair of opposed levers, a short roller rotatably supported on said levers, a connecting member joining said levers, means on said levers for attachment to a machine frame, a first pressure member detachably engaging said connecting member, a second pressure member associated with said first pressure member and having means thereon permitting movement therebetween, said second pressure member having other means thereon for connecting to a machine frame to provide a selectively fixed adjustment support, spring means interposed between said first and second connecting members, and spring adjustment means for varying the pressure exerted by said spring, whereby said roller may be detachably mounted in cooperation with a rotatable wet machine element and the pressure therebetween readily adjusted.

2. In a device of the class described, a pair of opposed levers each comprising first and second rigidly connected angularly spaced arm members, a roller rotatably supported on said first arm members, a connecting member joining said second arm members, means on said second arm members for movable attachment to a machine

frame, a shackle member associated with said connecting member, said shackle member having means thereon for connection to a machine frame, and adjustable pressure means associated with said shackle member and said machine frame, whereby said roller may be detachably mounted in cooperation with a rotatable wet machine element.

3. In a device of the class described, a pair of opposed levers, a roller rotatably supported on said levers, a first connecting member joining said levers, means on said levers for attachment to and quick detachment from a machine frame, a shackle member detachably engaging said first connecting member, a second connecting member movably engaging said shackle member and having means thereon permitting relative movement therebetween, said second connecting member having other means thereon for connecting to a machine frame to provide a selectively fixed adjustment support, pressure means interposed between said shackle member and said connecting member, and means for varying the pressure exerted by said means, whereby said roller may be detachably mounted in cooperation with a rotatable wet machine element and the pressure therebetween readily adjusted.

4. In a device of the class described, a pair of opposed levers each comprising first and second angularly spaced arm members, a roller rotatably supported on said levers, a first connecting member joining said first arm members, means on said second arm members for quick attachment to and detachment from a machine frame, a shackle member detachably engaging said first connecting member, a second connecting member movably engaging said shackle member permitting relative movement therebetween, said second connecting member having means thereon for connecting to a machine frame forming part of a quadrilateral pressure adjustment, spring means interposed between said shackle member and said second connecting member, and spring adjustment means for varying the pressure exerted by said spring, whereby said roller may be detachably mounted in cooperation with a rotatable wet machine element and the pressure therebetween readily adjusted.

5. In an attachment for the rigid frame of a wet roller machine, a short roller movably mounted on supports on said machine and being positioned to contact the wet roller, a pressure adjustment means in the form of a distortional quadrilateral with the rigid machine frame as one corner thereof comprising the roller supports on the machine frame, a fixed member on the machine frame, a radially extending member mounted on the short roller, and a connecting shackle member adjustably associated with the upper end of said fixed member and with said radially extending member, resilient pressure means cooperating with said fixed member and said shackle member, and adjustment means for said pressure means.

6. In an attachment for wet roller machines, a short roller movably mounted on opposed arms on the machine and adapted for tangential contact with the surface of the wet roller, opposed support arms pivotally mounted on the roller and extending radially above, an upstanding pressure adjustment member fixed on said machine intermediate said roller and being separate from said support arms, a movable upper section on said adjustment member, a pressure supporting member opposed to said roller support arms and cooperating with the movable upper end of said pressure adjustment member forming a distortional quadrilateral with said roller positioned for movement therewith, and adjustable pressure means cooperating with said pressure adjustment member and said pressure connecting member exerting resilient pressure in said quadrilateral and permitting increasing or decreasing the pressure of said short roller on said long roller.

7. In a device of the class described, a roller rotatably mounted and pivotally supported on a rigid machine frame, a first connecting member mounted on said roller and having a portion thereof extending to a point in spaced relationship thereto, a shackle member detachably engaging said first connecting member for limited movement thereon, a fastener adapted to be fixedly and detachably mounted on a rigid machine element in spaced relationship to said roller, an adjustment connecting member associated with said fastener for rotational and extensible movement thereon, means movably joining said adjustment connecting member and said shackle member, pressure means between said connecting member and said shackle member, and adjustment means for said pressure means.

8. In a device of the class described, a pair of opposed levers each having a pair of arm members with an arm on one lever being opposed to a respective arm on the other lever, a roller journaled for rotation on said levers, a connecting member extending between a respective pair of opposed arm members and spaced from said roller, adjustable retaining means for said connecting member, attachment means on the other pair of opposed arm members for quick attachment on and detachment from a machine element, a fastener adapted for rigid attachment on and detachment from a machine element intermediate said opposed arm members and having an adjustment connecting member mounted thereon, pressure means acting on said connecting member and adapted to be compressed by said adjustment connecting member, and an adjustment means for adjusting the pressure exerted by said pressure means.

9. In a device of the class described, a pair of opposed levers each having a pair of arm members with an arm on one lever being opposed to a respective arm on the other lever, a roller journaled for rotation on said levers, a first connecting member extending between a respective pair of opposed arm members and spaced from said roller, adjustable retaining means for said first connecting member, attachment means on the other pair of opposed arm members for quick attachment on and detachment from a machine element, an adjustment connecting member for rotational and extensible movement on the machine, a shackle member having one end thereof retained in loose engagement with said connecting member and having the other end thereof movably engaging said adjustment connecting member, spring means adapted to be compressed by said adjustment connecting member and exerting pressure on said first connecting member, and an adjustment means for said spring.

10. In a device of the class described, a roller adapted to be pivotally mounted and journaled for rotation on a machine frame, a first connecting member mounted on said roller and having a portion thereof in spaced relation thereto, a fastener adapted for rigid attachment on and detachment from a machine element, an adjustment connecting member having a portion there-

of mounted on said fastener for rotational and extensible movement, an aperture in said connecting member, a shackle member having one end thereof retained in loose engagement with said first connecting member and having the other end thereof threaded, said threaded end being inserted through said aperture in said adjustment connecting member, spring means adapted to be compressed by said adjustment connecting member, and an adjustment nut on said threaded end bearing against said adjustment connecting member.

11. In a device of the class described, a pair of opposed levers having a pair of arm members on each with an arm on one lever being opposed to a respective arm on the other lever, a roller journaled for rotation on said levers, a connecting member extending between a respective pair of opposed arm members and spaced from said roller, adjustable retaining means for said connecting member, attachment means on the other pair of opposed arm members for quick attachment on and detachment from a machine element, a fastener adapted for rigid attachment on and detachment from a machine element, an adjustment connecting member having a portion thereof mounted on said fastener for rotational and extensible movement, an aperture in said connecting member, a shackle member having one end thereof retained in loose engagement with said connecting member and having the other end thereof threaded, said threaded end being inserted through said aperture in said adjustment connecting member, spring means adapted to be compressed by said adjustment connecting member, and an adjustment nut on said threaded end bearing against said adjustment connecting member.

12. A liquid controlling device for attachment to a machine frame on which a wet roller is journaled comprising, a short roller pivotally and detachably mounted adjacent the wet roller on opposed arms extending from a rigid machine



element, a first member detachably fixed on the machine frame in spaced relation to said roller and having an upwardly extending portion thereof rotatable and extensible, a second member fixed on said roller arms and having a portion thereof protruding therefrom substantially above the periphery of said roller in spaced relation to said first member, pressure means interposed between said first member and the protruding portion of said second member, and adjustment means for said pressure means.

13. In a device of the class described for attachment to a rigid machine element to control the liquid supply on a rotatable wet roller, a short roller, support members fastened on said machine rotatably supporting the roller and having means thereon permitting limited movement of said roller against the surface of the wet roller, a pressure adjustment member detachably fixed on the machine and having a shoulder portion spaced away from and above the short roller, first means associated with the short roller and having an engageable surface for receiving and transferring pressure exerted thereon to move the short roller against the wet roller, resilient means interposed under pressure between said pressure adjustment shoulder portion and the engageable surface of said first means, and adjustment means for varying the pressure exerted by said resilient means on said first means thereby varying the pressure exerted by said first means on said roller.

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References Cited in the file of this patent

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,364,257 | Dobbertin | Jan. 4, 1921 |
| 2,162,248 | Delaplane | June 13, 1939 |
| 2,178,069 | Crafts | Oct. 31, 1939 |
| 2,584,380 | Delaplane | Feb. 5, 1952 |