

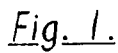
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Sterens, Davis, Miller & Mosser Attorneys

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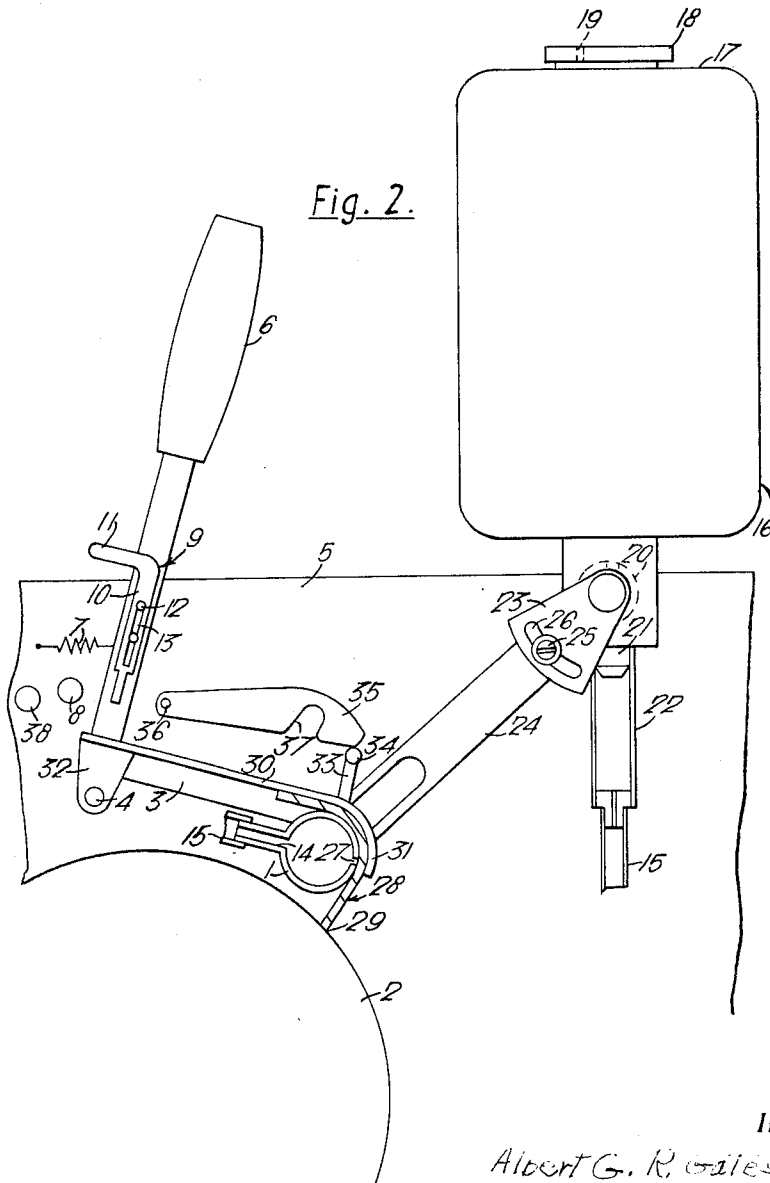
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2 Sheets-Sheet 2



Inventor

Albert G. R. Gates

By

Stevens, Kano, Miller & Mosher
Attorneys

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DAMPENER PAD WITH LIQUID SUPPLY CONTROL FOR LITHOGRAPHIC ROTARY PRINTING PRESSES

Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England, a British company

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11 Claims. (Cl. 101-147)

This invention concerns offset rotary printing machines which conventionally comprise a plate cylinder, a blanket cylinder, an impression cylinder, a delivery cylinder and means for applying ink and water to the plate cylinder.

In offset rotary printing machines, it is necessary, before commencement of the printing operation, to apply to the plate an aqueous ink repellent solution which desensitizes the non-image areas of the plate. This operation may be called "priming." For efficient operation of the machine, it is essential that a really thorough application of priming solution be effected. It is also necessary in lithographic printing that the plate during the printing operation be alternately inked or dampened. This dampening can be carried out with either plain water or a diluted solution of the type employed for priming.

The devices employed for dampening during printing are not efficient to a high enough degree to carry out a priming operation. Consequently, priming has generally been carried out manually by the operator of the machine wiping across the plate an absorbent pad soaked in the priming solution. Such an operation is time consuming and unpleasant for the operator.

Devices for dampening are known in which a pad or roller is movable between a position in which the pad or roller engages a plate on the plate cylinder and an out-of-the-way position in which the pad or roller is spaced from the plate cylinder. It is also known for such pad or roller to have associated therewith a reservoir from which dampening liquid is transferred to the pad or roller and for the arrangement to be such that liquid is not so transferred from the reservoir when the pad or roller is in the out-of-the way position. Such devices suffer from the disadvantages that the degree of dampening of the pad or roller is not constant and considerable evaporation from the reservoir occurs.

It is an object of this invention to provide an apparatus capable of applying a priming solution to a plate quickly and efficiently and without the operator having to handle the priming solution.

According to this invention, the apparatus comprises a tube which extends across the machine adjacent the plate cylinder and over which is wrapped a priming pad of a suitable priming solution absorbent material, the tube having perforations over at least a part thereof covered by said pad, means for moving the tube between an operative position in which the priming pad contacts the plate cylinder across the width thereof and an out-of-the way position in which said pad is spaced from the plate cylinder, and a reservoir for priming solution having at its lower part a valve from which a pipe leads to the interior of said tube, the arrangement being such that the reservoir constitutes a drip feed system for the interior of the tube, solution lost from the latter through said perforations in replacing that removed from the pad in priming and evaporation being replaced by solution dripping from said valve into the pipe due to reduction in pressure therein, said valve being coupled to said tube so that the valve closes when the tube moves to its out-of-the-way position.

It will be appreciated that, in use of the apparatus according to this invention, the pad is when the tube is in its

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operative position, kept replenished with priming solution to a constant degree, but that, when the tube is in its out-of-the-way position, the supply of priming solution is cut off. Further with this form of feed the reservoir can be of relatively closed form and evaporation therefrom reduced.

The said valve may be of any suitable form, but is conveniently a rotary plug valve. The reservoir may conveniently be in the form of an upturned bottle having said valve in its neck and a filler cap with vent in its base.

A pad used for applying a priming solution becomes soiled after a while and easy replacement of pads is desirable. It is therefore advantageous for the priming apparatus to be so constructed that the pad is readily removable therefrom. Thus, although the said pad could, for example, be a sleeve on said tube and the latter arranges so that such sleeve could readily be slipped off one end of the tube and a replacement sleeve slipped thereover, preferably, according to a further feature of this invention, the said pad is a simple flat length of suitable material which is bent into arcuate form over a portion of the periphery of the tube so that that part of the pad projects therefrom in a position to engage the plate cylinder, when the tube is moved to its operative position, and which is clamped against the tube by readily releasable means.

Advantageously, the tube is movable between its operative and out-of-the-way positions by means of an operating lever and the said clamping means are arranged to be released by movement of said operating lever beyond the position it occupies when the tube is in its out-of-the-way position.

Conveniently, a latch lever bears on a pin carried by a clamping member arranged over the pad, such latch lever having therein a slot into which said pin locks when the tube is moved away from the plate cylinder beyond its out-of-the-way position so as thereafter to hold the clamping member against movement, whereby movement of the tube in the opposite direction moves this and the pad away from the clamping member.

Conveniently the closing of the clamping means may also be arranged to be effected by movement of the operating lever.

In order that this invention may more readily be understood, one apparatus incorporating the invention will now be described by way of example with reference to the accompanying drawings, in which:

FIGURE 1 is a diagrammatic side elevation of this embodiment with the priming tube in its out-of-the-way position, and

FIGURE 2 is a similar view with the priming tube in its operative position.

Referring to the drawings, this embodiment comprises a cylindrical priming tube 1 which extends across the width of the offset rotary printing machine adjacent the plate cylinder 2 thereof and is carried at each end on side members 3 in the form of elongate arms which at one end are secured to the tube 1 and at the other end are pivoted at 4 to a suitable part of the machine frame 5 so that the tube may be swung in an arcuate path towards and away from the plate cylinder 2 about an axis parallel to the axis of the latter.

Movement of the tube 1 is effected by an operating lever 6 which is coupled to one of the said side members 3 carrying the tube at the pivoted end of such member so as to pivot with the side member and tube. This operating lever is biased by a spring 7, or by any other suitable means, in a direction urging the tube 1 away from the plate cylinder 2 and is normally held, by the engagement with a stop 8 on a suitable part of the machine frame of a catch 9 carried by the operating lever, in a position such that the tube is in an out-of-the-way position well clear of

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the plate cylinder as shown in FIGURE 1. The catch 9 comprises a plate 10 slidable along the lever 6 so that the plate 10 can be moved out of engagement with the stop to enable the operating lever to be pivoted further away from the plate cylinder i.e. towards the left in FIGURE 1, for a purpose which will hereinafter be described. The catch plate 10 has at its upper end an outwardly projecting finger piece 11 in a position to be readily engageable for lifting of the plate by the finger of an operator's hand grasping the operating lever and is guided in its movement on the lever by guide pins 12 projecting from the operating lever engaging in a slot 13 in the catch plate.

Centrally of its length the tube 1 has a hollow spigot 14 projecting radially outwardly of the tube in a direction towards the pivoting axis of the tube. The spigot communicates with the interior of the tube and has fitted thereover a flexible tube or pipe 15, conveniently of a plastics material, which leads to a reservoir 16 carried in any suitably convenient position on the machine frame 5.

The reservoir 16 has the form of an inverted bottle. This bottle has in its base 17, i.e., at the top of the reservoir, a filler cap 18 provided with a vent 19 to atmosphere. Within the neck 19 of the bottle, i.e., at the bottom of the reservoir, is a rotary plug valve 20 which allows priming solution in the reservoir to drip from the valve outlet 21 when there is a reduced pressure at such outlet. A transparent sight tube 22 is fitted on the valve outlet 21 and the pipe 15 leading to the spigot 14 on the priming tube 1 is fitted on the lower end of the sight tube.

The valve 20 has externally thereof an operating member 23 of plate form, pivoting of which about the axis of the rotary plug of the valve 20, which axis is parallel to the pivoting axis of the priming tube, causes opening and closing of the valve by rotation thereof. This valve operating member 23 is coupled by a connecting link 24 to one of the side members 3 carrying the priming tube at the end of such side member 3 at which it is connected to the tube, the arrangement being such that movement of the priming tube from the operative position shown in FIGURE 2 to its out-of-the-way position shown in FIGURE 1 causes closing of the valve 20 and movement of the priming tube 1 from this position towards the plate cylinder 2 causes opening of the valve 20. The coupling between the connecting link 24 and the side member 3 is a sliding connection to allow for the change of distance between the tube 1 and the pivot of the valve operating member 23 as the tube swings about its pivoting axis. The coupling between the connecting link 24 and the valve operating member 23 is by means of a pin 25 on the link engaging in an arcuate slot 26 in the valve connecting member 23, the centre of curvature of the slot 26 being on the pivoting axis of the valve operating member. The pin 25 is lockable in any position in the arcuate slot 26, the pin and slot arrangement thereby enabling adjustment of the travel of the rotary plug of the valve to be made.

The priming tube 1 has in its periphery at a position opposite that from which the spigot 14 projects a line of perforations 27, such line extending the length of the tube parallel to the axis thereof. Over this perforated portion of the tube is bent a priming pad 28 of a suitable flexible priming solution absorbent material. The priming pad 28 in its unbent state is of simple flat elongated rectangular form. This pad is bent round the tube 1 so that one longitudinal edge portion 29 projects tangentially of the tube downwardly towards the plate cylinder 2. To clamp the pad 28 releasably on the tube, a clamping member 30 is provided over said pad, this member comprising a sheet metal, e.g., stainless steel, plate of a width to extend fully across the apparatus and having one longitudinal edge 31 curled downwardly with a radius of curvature slightly less than that of the periphery of the priming tube and having at the ends of the opposite

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longitudinal edge downwardly directed lugs 32 mounted for pivoting about the pivot 4 of the priming tube, but free to pivot independently of the latter. The springing of the curled edge 31 of the clamping plate over the tube clamps the pad firmly against the tube. At a position above the priming tube there projects upwardly from the clamping plate 30 centrally of the width thereof a bracket 33 which carries a pin 34 engaged with the lower edge of a latch member 35 pivoted at 36 to a suitable part of the machine frame and biased downwardly by its weight. The pivoting axis of the latch member 35 is different from that of the priming tube, the arrangement therefore being such that, as the tube is pivoted between the out-of-the-way position and the operative position in which the projecting edge 29 of the pad 28 engages the plate cylinder 21, the pin 34 moves back and forth along the lower edge of the latch member 35, the latter riding on the pin during the whole of this movement.

The latch member 35 has in its lower edge a gap leading to a slot 37 in the member, the size of the slot 37 being such as to be capable of receiving the pin 34 and the position of the gap being such that the pin 34 moves towards it as the tube is moved to its out-of-the-way position, but has not quite reached it in the latter position as is clearly shown in FIGURE 1. When, however, the catch 9 on the operating lever is raised and the operating lever moved beyond this position, i.e., to the left in FIGURE 1, a stop 38 being provided to prevent excessive movement of the operating lever, the pin 34 registers with the said gap and the latch member moves downwardly, the pin 34 thus entering the slot 37. Movement of the operating lever 6 downwardly again, i.e., to the right in FIGURE 1, moves the priming tube 1 towards its operative position, but the clamping plate 30 is held from descending by the latch member 35 and the tube 1 and pad 28 move downwardly away from the clamping plate and enable the pad 28 to be removed and replaced. The clamping plate 30 can be released again by manually raising the latch member 35.

I claim:

1. In an offset rotary printing machine including a plate cylinder, apparatus for applying a priming solution to a plate on the cylinder, such apparatus comprising a tube extending across the machine adjacent the plate cylinder, a priming pad of suitable material wrapped over at least part of said tube, said tube having perforations over at least a part thereof covered by said pad, said tube being pivotal between an operative position in which the priming pad contacts the plate cylinder across the width thereof and an out-of-the-way position in which said pad is spaced from the plate cylinder, means for moving the tube between said operative and out-of-the-way positions, a reservoir for priming solution, a drip feed connection between said reservoir and the interior of said tube, a rotary plug valve in said drip feed connection, a link coupled to said tube and said valve and pivotal about the axis of the latter so as to be responsive to the movement of the tube for acting to close the valve when the tube moves to the out-of-the-way position.

2. The apparatus specified in claim 1 in which the reservoir comprises at its bottom a restricted outlet, said valve being located therein, and at its top a filler cap having a vent therein.

3. In an offset rotary printing machine including a plate cylinder, apparatus for applying a priming solution to a plate on the cylinder, such apparatus comprising a tube extending across the machine adjacent the plate cylinder, a priming pad of suitable material wrapped over at least a part of said tube, said tube having perforations over at least a part thereof covered by said pad, a clamping plate located above said tube and extending the length thereof, a downwardly curled longitudinal edge portion to said plate, of a radius of curvature slightly less than that of said tube, snap fitted onto said pad and tube, means for moving the tube between an operative

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position in which the priming pad contacts the plate cylinder across the width thereof and an out-of-the-way position in which said pad is spaced from the plate cylinder, a reservoir for priming solution, a drip feed connection between said reservoir and the interior of said tube, a valve in said drip feed connection and means coupling said tube to said valve and responsive to the movement of the tube for acting to close the valve when the tube moves to the out-of-the-way position.

4. The apparatus specified in claim 3 and further comprising a pivoted latch lever mounted above said plate and having a slot in its underside and a pin carried by said clamping plate at a position above the latter and in engagement with the underside of said latch lever.

5. The apparatus specified in claim 4 and further comprising arms carrying said tube, a pivot on which said arms are mounted and the axis of which is parallel to said tube, said pivot being spaced from said tube, lugs projecting from said clamping plate mounted on said pivot so as to be capable of pivoting relatively to said tube and an operating lever connected to said arms at the position of said pivot.

6. In an offset rotary printing machine including a plate cylinder, apparatus for applying a priming solution to a plate on the cylinder such apparatus comprising a tube which extends across the machine adjacent the plate cylinder, means for supplying a priming solution to the interior of said tube, a priming pad of flexible priming solution absorbent material bent over a portion of said tube, said portion of said tube being perforate, a portion of said pad projecting from the tube towards said plate cylinder, means for moving said tube between an operative position in which the said portion of the pad engages the plate cylinder and an out-of-the-way position in which such pad portion is spaced from the plate cylinder, a clamping plate located above said tube and extending the length thereof, and a downwardly curled longitudinal edge portion to said plate, of a radius of curvature slightly less than that of said tube, snap fitted onto said pad and tube to clamp the pad against the periphery of the tube.

7. The apparatus specified in claim 6 and further comprising a pivoted latch lever mounted above said plate and having a slot in its underside and a pin carried by said clamping plate at a position above the latter and in engagement with the underside of said latch lever.

8. The apparatus specified in claim 7, and further comprising arms carrying said tube, a pivot on which said arms are mounted and the axis of which is parallel to said tube, said pivot being spaced from said tube, lugs projecting from said clamping plate mounted on said pivot so as to be capable of pivoting relatively to said tube and an operating lever connected to said arms at the position of said pivot.

9. In an offset rotary printing machine including a frame and a plate cylinder rotatable about an axis, apparatus for applying a priming solution to a plate on

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the plate cylinder, such apparatus comprising arms pivoted on said frame about an axis parallel to the axis of the plate cylinder, a cylindrical tube extending parallel to said axis and carried by said arms for pivoting towards and away from said plate cylinder, a reservoir for priming solution mounted on said frame and having a drip feed outlet at the bottom of the reservoir a valve in the bottom of the reservoir acting to control flow of solution to said drip feed outlet, a pipe communicating said valve with the interior of said tube, a priming pad wrapped over part of said tube, the part of said tube over which said priming pad is wrapped being perforate, a plate located above said tube and extending the length thereof and a downwardly curled longitudinal edge portion to said plate, of a radius of curvature slightly less than that of said tube, snap fitted onto said pad and tube to clamp the pad on the tube, a portion of said pad projecting downwardly from said tube towards the plate cylinder in a position such that movement of the tube towards and away from the plate cylinder moves the said pad portion from an operative position in which it engages the plate cylinder to an out-of-the-way position spaced from the latter, and means linking said tube to said valve responsive to movement of the tube to close the valve when the pad portion is in the out-of-the-way position.

10. The apparatus specified in claim 9, and further comprising a pivoted latch lever mounted above said plate and having a slot in its underside and a pin carried by said clamping plate at a position above the latter and in engagement with the underside of said latch lever, said slot being positioned relatively to said pin such that movement of the tube and pad away from the plate cylinder beyond the out-of-the-way position of the pad moves said pin along the underside of said latch lever to the position of said slot.

11. The apparatus specified in claim 10 and further comprising an operating lever affixed to one of said arms at the pivot thereof, means biasing said operating lever in a direction tending to move the tube and pad to the out-of-the-way position of the latter, a catch movable on said operating lever and a stop on said frame in a position normally to be engaged by said catch in the out-of-the-way position of the pad.

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55 ROBERT E. PULFREY, *Primary Examiner.*

EUGENE R. CAPOZIO, *Examiner.*

JULIUS R. FISHER, *Assistant Examiner.*