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DAMPENING DEVICE FOR PLATE CYLINDERS IN OFFSET AND OTHER LITHOGRAPHIC PRINTING PRESSES

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Fig. 1.

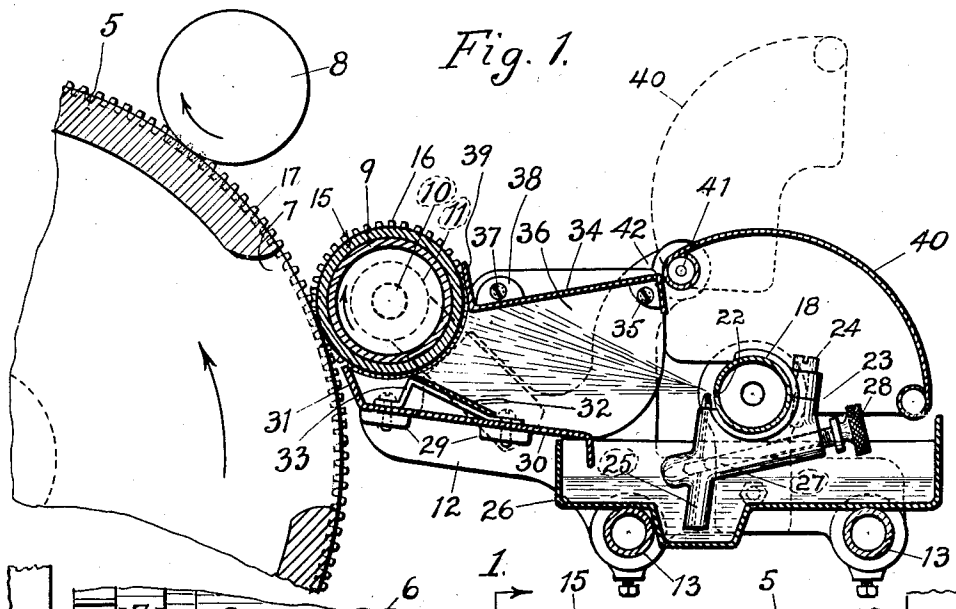


Fig. 2.

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DAMPENING DEVICE FOR PLATE CYLINDERS IN OFFSET AND OTHER LITHOGRAPHIC PRINTING PRESSES

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This invention relates to offset process printing presses and particularly to means for dampening the plate cylinders thereof.

One of the objects of the present invention is to provide a simple, practicable and efficient device for applying moisture to the plate cylinder of an offset process printing press.

Another object of the invention is to provide a simple and novel construction and arrangement whereby the application of moisture to various portions of the cylinder may be controlled as desired.

Another object of the invention is to supply the moisture for dampening the plate cylinder in the form of a fine spray or mist, and at the same time provide a structure wherein the mist or spray will be prevented from entering the gap or open portion formed in the face of the cylinder.

Another object of the invention is to provide a structure whereby the area of the cylinder to which the moisture is applied may be varied as desired, and wherein any excess of moisture resulting from the operation of the device may be returned to its source of supply.

Another object of the invention is to provide a novel construction wherein the moisture is applied to the plate cylinder by a suitably positioned dampening roller, and wherein the moisture is applied to said roller in the form of a very fine spray or mist.

A further object of the invention is to provide suitable means for controlling the application of moisture to the dampening roller.

A still further object of the invention is to improve devices of the character disclosed in sundry details hereinafter described and particularly pointed out in the appended claims.

One embodiment of the invention is shown for illustrative purposes in the accompanying drawings, in which

Fig. 1 is a sectional elevation through a portion of an offset process printing press, illustrating the application of our improved cylinder dampening device thereto, and taken approximately as indicated by the line 1—1 of Fig. 2.

Fig. 2 is a plan view illustrating substantially the arrangement of the parts shown in Fig. 1.

In the accompanying drawings only so much of an offset process printing press has been shown as is thought necessary for a clear understanding of the present invention and, in the illustrative embodiment, comprises a plate cylinder 5, to the outer surface of which an etched plate 6 (Fig. 2) is attached, the said cylinder being provided with a gap or opening 7 in its periphery to admit of the positioning of clamping or other suitable means (not shown) within the body of the cylinder 5 for securing the etched plate thereto.

Suitably positioned in a manner to co-operate with the plate 6 are a plurality of rollers, only one of which is shown in the present instance, and indicated as 8, for applying inks of different colors to said plate, and as is well known in printing presses of the offset process type, a blanket cylinder or roller is provided to which the ink applied to the plate is transferred and from which the ink so transferred is applied to the paper or other material passing between the blanket roller and an impression cylinder or roller over which the material passes, all of which is common in printing presses of the character to which our improved dampening device is applied, and, for this reason, and the further fact that these elements of the press form no part of the present invention, only the plate cylinder and one of the inking rollers have been shown in the illustrative embodiment of our invention.

For dampening the plate 6, as is the common practice in the operation of printing presses of the character described, we have devised a novel construction and arrangement of elements for supplying and applying water to the plate 6 including a dampening roller 9 secured to a shaft 10, rotatably mounted in brackets 11 carried by the supplemental frame members 12, adjustably supported on cross bars 13 suitably secured in side frame members 14 of the press.

The roller 9 is provided on its outer cylin-

drical surface with a surface covering or padding 15 of suitable resilient material, such as felt or the like, capable of absorbing and retaining moisture applied thereto, and thereafter applying the said moisture to the plate 6, mounted on the cylinder 5.

For suitably driving the roller 9 at a peripheral speed equal to the peripheral speed of plate 6 and cylinder 5, a pinion 16 is secured to the shaft 10 in a position to co-operate with a gear member 17, shown in the present instance as secured to one end of the cylinder 5.

For supplying the surface covering of the roller 9 with a substantially uniform quantity of water throughout the portion of its length that it is desired to moisten, it has been found desirable to apply the moisture to the dampening roller in the form of a very fine spray or mist, and for this purpose we have provided a novel construction and arrangement, which comprises a tube 18 having a closed end portion 19, and having its opposite or open end portion 20 connected, by means of a hose or pipe 21, with an air compressor or other suitable means for supplying air under pressure to the tube 18.

Suitably spaced longitudinally of the tube 18 along one side thereof are a plurality of outlet ports 22, clearly shown in Fig. 1, and mounted on the tube 18 at intervals corresponding substantially to the spacing of the ports 22 are a plurality of split brackets 23 adapted to be secured to the tube 18 in fixed relation thereto by means of clamping screws 24.

Formed in a portion of each of the brackets 23 is a bore 25 adapted to extend in a substantially vertical direction and having its lower end portion submerged in the water of a supply tank or reservoir 26, mounted on the cross bars 13, secured to the side frame members 14, and having its upper or discharge end portion terminating in a nozzle adjacent one of the outlet ports 22 formed in the tube 18 and substantially in the plane of passage of the air emitted from said ports in a manner to cause the air pressure from the ports 22 to pass over or across the upper open nozzle end of the bore 25 in a direction substantially at right angles to the axial line of the bore, thereby creating a vacuum at the upper end of the bore for drawing water from the tank 26 and forcing it in the form of a fine spray or mist against the dampening roller 9. For controlling the passage of water through the bores 25. each of the brackets 23 is provided with a valve chamber 27 shown, in the present instance, as extending substantially transversely to the axial line of the bore 25 and communicating therewith, the said chamber being adapted to receive the lower or inner end of a longitudinally movable valve 28 having screw threaded engagement with a bracket 23, whereby the valve may be adjusted into or out of co-operative relationship with the bore 25. Inasmuch as the valves 28 are mounted in a manner to be operated independently of each other, it will be observed from the foregoing description that the application of moisture to various portions of the plate dampening roller 9 may be effectively and selectively controlled, or, if desired, may be shut off entirely, merely by manipulating the valves 28 to adjust their inner end portions into a position to close the bore 25 and prevent the passage of water therethrough.

Suitably mounted on lugs 29 formed on the supplemental frame members 12 and adapted to extend across the device, beneath the dampening roller 9, is an inclined plate or drain board 30, by which any excess moisture applied to the dampening roller may be returned to the supply tank 26, and formed adjacent the forward or plate cylinder end of the drain board 30 is an upstanding portion or baffle plate 31 extending toward the roller 9 to a point closely adjacent thereto for preventing any spray which may pass the dampening roller 9 from contacting the plate cylinder 5 or entering the gap or opening 7 formed in the cylinder.

For assisting in further preventing the passage of any spray or mist to the cylinder 5 and gap 7 formed therein, and for directing the spray against the dampening roller 9, an inclined deflector plate 32 is mounted beneath the dampening roller on stanchions 33 suitably positioned on the drain board 30, the lower edge of the plate 32 being spaced from the drain board 30 for permitting any water deposited upon the drain board between the deflector plate 32 and baffle 31 to pass between the stanchions 33 back to the supply tank 26.

For assisting further in directing the spray against the dampening roller 9 and for preventing the passage of spray thereover, an inclined top deflector plate 34 is pivotally mounted at 35 adjacent one edge portion thereof on the plates 36, providing end closure members for the spray throat formed by the drain board 30 and top plate 34, the plate 34 being supported adjacent its opposite edge portion by means of removable bolts 37 passing through the end plates 36 and ears 38 formed on the top plate 34. The lower edge of the top plate 34 adjacent the dampening roller 9 is provided with an upstanding flange portion 39 for preventing the accumulation of water by capillary attraction on top of the plate 34, which would be objectionable, in that if sufficient water accumulated it would be deposited on the roller 9 in quantities undesirable in a device of the character described. In the present instance any water that might by any chance accumulate on top of the plate 34 will be drained laterally to the side edges of the

plate and onto the drain board 30 and thence to the supply tank 26.

If desired, a cover member or hood 40 may be connected to a rod 41 pivotally mounted in uprights 42 formed in the supplemental frame members 12 in a manner to overlie the supply tank 26, tube 18 and brackets 23, together with their associated elements, for protecting them from the accumulation of dust or the like and preventing foreign matter from entering the spray applied to the dampening roller 9.

It will be observed from the foregoing specification that the present invention provides a device for applying moisture to plate cylinders of offset process printing presses by a roller to which the moisture has been previously applied in the form of an exceptionally fine spray or mist, and wherein the application of moisture to various portions of the cylinder may be controlled. Also that our invention provides means for preventing the moisture from entering the gap formed in the plate cylinder, and provides a structure contributing materially to the simplicity and effectual operation of the device, and to the low cost of manufacturing a novel and efficient dampening device for offset process printing presses.

Obviously, the present invention is not limited to the precise construction and arrangement shown and described, as the same may be variously modified. Moreover, all of the features of the invention need not be used conjointly, as the same may be used to advantage in variously different combinations and sub-combinations.

Furthermore, while our invention is shown described and claimed in conjunction with an offset type of printing press, the invention will be recognized by those skilled in the art as of value when used in connection with various types of lithographic presses.

What we claim as our invention and desire to secure by Letters Patent is:

1. In an offset process printing press, the combination with a plate cylinder, of means for applying moisture thereto, comprising a dampening roller co-operable with said cylinder, a source of water supply, a plurality of nozzles communicating therewith, and means for directing air under pressure toward and upon the peripheral surface of said dampening roller past the discharge ends of said nozzles at substantially right angles to the axes of the discharge openings in said nozzles whereby to create a vacuum in said discharge openings for drawing water from said source of supply and directing it in the form of a fine spray against said roller.

2. In an offset process printing press, the combination with a plate cylinder, of means for applying moisture thereto, comprising a dampening roller co-operable with said cylinder, a source of water supply, a plurality of nozzles communicating therewith, means for directing air under pressure toward and upon the peripheral surface of said dampening roller past the discharge ends of said nozzles at substantially right angles to the axes of the discharge openings in said nozzles whereby to create a vacuum in said discharge openings for drawing water from said source of supply and directing it in the form of a fine spray against said roller, and means for controlling the passage of water to the discharge end of said nozzles.

3. In an offset process printing press, the combination with a plate cylinder, of means for applying moisture thereto, comprising a dampening roller co-operable with said cylinder, means for spraying water therefrom onto said roller, upper and lower deflector plates for directing the spray toward said roller, and means adjacent one edge of said upper deflector plate for preventing the accumulation of moisture on the top thereof.

4. In an offset process printing press, the combination with a rotatable plate cylinder having a gap formed in the periphery thereof, of a dampening roller co-operable with said cylinder for applying moisture thereto, means for spraying moisture onto said roller, and means for preventing the entrance of moisture into said gap as the cylinder is rotated.

5. In an offset process printing press, the combination with a rotatable plate cylinder having a gap formed in the periphery thereof, of a dampening roller co-operable with said cylinder for applying moisture thereto, means for spraying moisture onto said roller, upper and lower deflector plates for directing the spray toward said roller, and a baffle plate co-operating with said lower deflector plate for preventing the entrance of moisture into said gap as the cylinder is rotated.

6. In an offset process printing press, the combination with a rotatable plate cylinder having a gap formed in the periphery thereof, of a dampening roller co-operable with said cylinder for applying moisture thereto, a device for spraying moisture onto said roller, a source of water supply, a drain board positioned beneath said roller and communicating with said source of supply, a lower deflector plate mounted on said drain board, a baffle plate adjacent the outer edge of said board and positioned to co-operate with said deflector plate for preventing the entrance of moisture into said gap as said cylinder is rotated, an upper deflector plate, and means formed adjacent one edge thereof for preventing the accumulation of moisture on top of said upper deflector plate.

7. In an offset process printing press, the combination with a rotatable plate cylinder having a gap formed in the periphery thereof, of a dampening roller co-operable with said cylinder for applying moisture thereto,

a source of water supply, a device communicating therewith for spraying moisture therefrom onto said roller, means for controlling the operation of said spraying device, a drain board positioned beneath said roller and communicating with said source of supply, an inclined lower deflector plate mounted on said drain board and spaced therefrom, a baffle plate formed adjacent the outer edge of said board and positioned to co-operate with said deflector plate for preventing the entrance of spray into said gap and onto said cylinder as the cylinder is rotated, an upper deflector plate, means formed adjacent one edge thereof and co-operable with said roller for preventing the accumulation of moisture on top of said upper deflector plate, and a hood pivotally mounted in a manner to cover said source of water supply and said spraying device.

8. In an offset process printing press, the combination with a rotatable plate cylinder of means for applying moisture thereto, including a dampening roller co-operable with said cylinder, a receptacle for water supply, an air pressure pipe provided with a plurality of radial spaced air vents adapted to direct air currents toward and upon the surface of said dampening roller, and a plurality of pipes each terminating in a discharge nozzle located adjacent to and in the path of air currents from said air vents, and having their inlet ends communicating with the interior of said water supply receptacle.

9. In an offset process printing press, the combination with a rotatable plate cylinder of means for applying moisture thereto, including a dampening roller co-operable with said cylinder, a receptacle for water supply, an air pressure pipe provided with a plurality of radial spaced air vents adapted to direct air currents toward and upon the surface of said dampening roller, and a plurality of valve controlled pipes each terminating in a discharge nozzle located adjacent to and in the path of air currents from said air vents, and having their inlet ends communicating with the interior of said water supply receptacle.

10. In an offset process printing press, the combination with a rotatable plate cylinder, of means for applying moisture thereto including a dampening roller co-operable with said cylinder, a receptacle for water supply, an air pressure pipe provided with a plurality of spaced radially extending air vents adapted to direct air currents toward and upon the surface of said damping roller, said air pressure pipe being positioned so that it extends approximately parallel with the axis of the said dampening roller, a receptacle for water supply positioned adjacent the said air pressure pipe, and a plurality of spray devices each comprising a two-part bracket adapted for detachable clamping upon the periphery of the said air pressure pipe, one of the parts of said bracket being provided with a substantially vertical valve controlled duct having its inlet within and communicating with the receptacle for water supply and terminating in a discharge nozzle adapted to be clamped upon the said air pressure pipe with the longitudinal axis of the said duct and discharge nozzle extending at substantially right angles to the normal direction of air currents from the vents in said air pressure pipe.

11. As an article of manufacture, a spray device adapted for applying moisture to the dampening roller of an offset printing press, comprising an air pressure pipe provided with a plurality of radially extending spaced apart air vents adapted to direct air currents toward and upon the surface of said dampening roller, and a plurality of detachable two-part brackets adapted to be clamped around said pipe in proximity to said air currents therein, one of each of said two-part brackets being provided with a substantially vertical body portion provided with a longitudinal bore with an inlet end and an upper discharge nozzle adapted to be clamped so as to discharge substantially tangentially to the peripheral surface of said air pressure pipe adjacent said radial air vents therein, and a valve in the bracket for controlling the bore leading to said nozzle.

12. In lithographic printing presses and the like the combination with a plate cylinder of means for applying moisture thereto comprising a liquid spraying device for directing jets of liquid spray toward said cylinder, said spraying device including and being adapted to discharge said jets of liquid spray between spaced apart upper and lower spray directing plates forming a passageway terminating at one end adjacent the plate cylinder, and a dampening roller contiguous to the surface of said plate cylinder and being adapted to substantially close the discharge outlet of said passageway formed by the spray directing plates, and to distribute said spray jets of moisture in a film upon said plate cylinder.

In testimony whereof we have signed our names to this specification, on this 2nd day of Feb., A. D. 1929.

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