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DEVICE FOR DRYING THE BLANKET CYLINDERS IN OFFSET PRINTING MACHINES

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Fig. 1

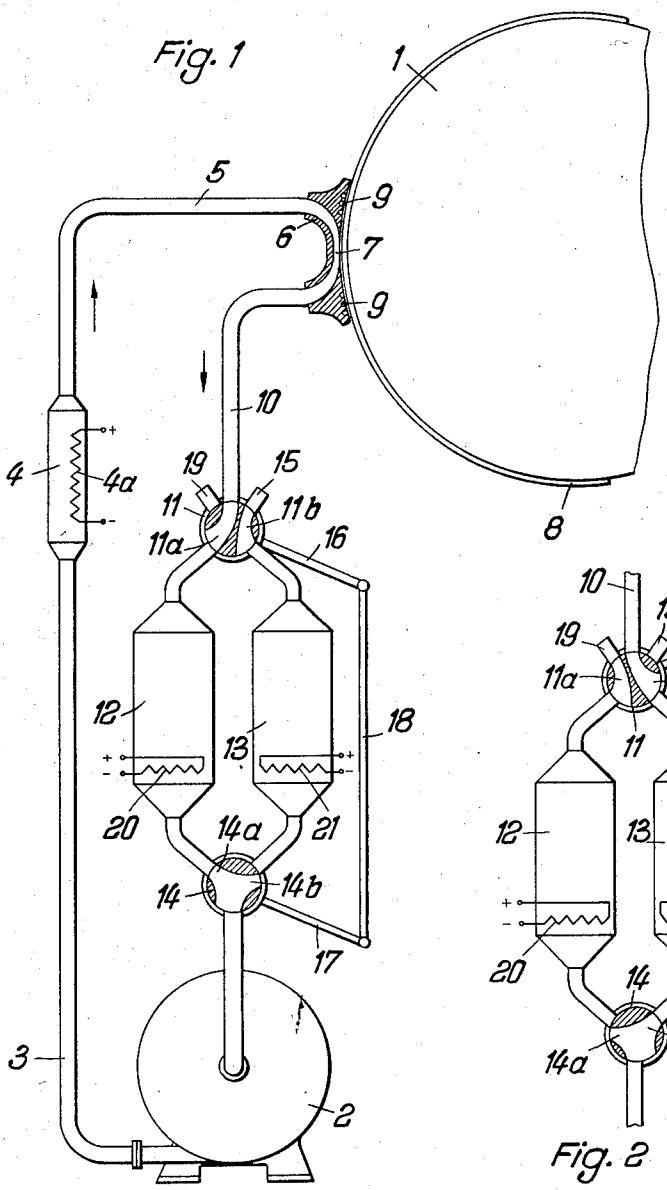


Fig. 2

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DEVICE FOR DRYING THE BLANKET CYLINDERS IN OFFSET PRINTING MACHINES

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This invention relates to the blanket cylinders of offset and the like printing machines and more particularly to the means which are used for drying the blankets of these cylinders from adherent moisture by means of air.

In this type of machine it is almost impossible to avoid the blanket taking up moisture from the nonprinting parts of the plate and its transference to the material to be printed upon. If this material happens to be of a hygroscopic nature, such as sized paper for instance, or composed of certain resinous substances, this moisture is eagerly attracted with the result, that the material begins to warp so that it becomes almost impossible to obtain a correct register. This disadvantage is particularly noticeable in connection with multiple color printing machines, when there is no possibility of the printing material disposing of the absorbed water prior to the application of the next color.

Devices have been proposed for the purpose of drying the blankets by air blown against them and to increase the surface action of the blast by heating. However, such devices were unable to produce the desired effect except under certain, very limited conditions, since in every instant their water absorbing capacity depends on the moisture which is contained in the drying air. Heating of the air is applicable only to a very small extent because of other difficulties which would arise from the transmission of the heat to the surrounding parts of the machine and even to the whole of the machine.

It is, therefore, the main object of the invention to provide a device for air-drying the blankets in offset printing machines in which the aforesaid disadvantages are avoided by circulating the drying air in a substantially closed conduit through which it is forced in circumferential direction over preferably the whole width of the blanket cylinder and in a manner in which the part of the blanket which is subjected to the air would form a part of the walls of the said conduit.

Another object of the invention is the provision, within the closed air conduit, of means for thoroughly evaporating practically all the moisture which the drying air has taken up during its circulation in a manner which ensures of the air becoming almost entirely free from any water or vapours independent of the moisture contents of the surrounding air, and to thus acquire a particularly high capacity for absorbing the moisture from the blanket cylinder.

A further object rests in so devising the drying means in the air current that they will only have to dissipate such vapours which are actually absorbed from the blanket and to thus ensure of the said drying means retaining their water evaporating capacity for a considerable extent of time and to remain fully effective also at low room temperature.

A still further object of the invention is the provision in the said air conduit of vapour dissipating means in which a multiple arrangement of such means is provided, in which one of these elements will always be free for the passage of the drying air therethrough, while the other is

cut out of the circulation and thus given time to recuperate. Heating devices may be provided to accelerate the evaporation of the moisture.

With these and other objects in view the invention broadly consists in a device in which a fan or ventilator is provided to circulate a stream of air through a substantially closed pipe system, of which one part is connected to a distributor or shield which extends over a part of the circumference of the blanket cylinder and over practically the full width thereof, and through which pipe system and distributor or shield, the moist air from the blanket is circulated. A heater which may be provided in the system keeps the circulating air at a comparatively high temperature to facilitate its drying action on the blanket.

In accordance with the invention the said pipe system is provided with a filter in which the moisture, which is taken up from the blanket of the blanket cylinder, is retained and dissipated, or evaporated, as for instance by the application of electric heat. The filter or drying device for the circulating air comprises a cylindrical or other receptacle which is filled with a porous, moisture absorbing material, such as infusorial earth for instance, through which the humidified air from the blanket cylinder is passed.

In order to further increase the efficiency of the device the invention provides for preferably a multiple arrangement of such filters, of which always at least one will be in communication with the pipe carrying the moisture from the blanket cylinder to the ventilator while the other, or others, is at rest. Its connection to the system is interrupted so that the material therein is given ample time to dry. An electric heating system may be provided to accelerate the evaporation of the moisture and the vapours are allowed to escape into the atmosphere. Interconnected multiway valves or cocks are provided to connect either the one or other of the devices into the drying air current.

It is evident that only a small quantity of air will be required for drying the blanket cylinder in accordance with the invention, which air is circulated by a comparatively small ventilator so that the whole installation remains of a moderate size. Further advantages are its low costs of production and maintenance and, notwithstanding, its high efficiency in use.

The accompanying drawings diagrammatically illustrate the invention by way of example. In these drawings,

Fig. 1 shows an air circulating system having two air drying or filter units with one of them in connection with the air circulating means and the other one at rest, and

Fig. 2 illustrates the position of the device with the other filter unit in the system and the former at rest.

The numeral **1** denotes the blanket cylinder of an offset or similar printing machine, while **2** is a ventilator, the pressure side of which is connected by means of the pipe **3** to a removable air heater **4**, in which a preferably electric heating element **4***a* is provided for the heating of the air flowing through the system. From the heater **4** a pipe **5** leads to a distributor or shield **6** through which it passes in form of a loop **7** closely following the curvature of the circumference of the blanket cylinder. The distributor **6** extends laterally over practically the whole width of the cylinder. At the side facing the blanket cylinder both the distributor and the loop **7** are open so that the blanket **8** actually forms the back wall of both the distributor and the loop at that place of the cylinder, leaving only a very thin space which, in addition, is provided with packing grooves **9**, so that losses of air are practically avoided.

From the exit side of the distributor **6** a pipe **10** leads over a multiway valve **11** to a drying set which consists of two units **12** and **13** filled with a suitable hygroscopic material, such as infusorial earth, and from there over a

threeway valve **14** to the suction side of the ventilator **2**. In the position shown in Fig. 1 the valve **11** is turned so that its passage **11***a* connects the pipe **10** to the drying unit **12**, whereas the unit **13** is disconnected from the pipe **10**. In this way the filter unit **13** is placed at rest so that the hygroscopic material therein is allowed to dry, the vapours escaping by the passage **11***b* of the multiway valve **11** through the open socket **15** into the atmosphere.

In Fig. 2 the position is reversed, the unit **13** in this case being in communication with pipe **10** through the passage **11***b* while the threeway valve **14** connects it through the passage **14***b* to the ventilator **2**. It will be seen from Fig. 2 that this time the other unit **12** is at rest and that the vapours are allowed to escape through the socket **19**. The drying unit **12** is provided with a heating resistance **20** and the unit **13** with a similar heating resistance **21** through which the evaporation of the moisture from the filter material in the drying units can be expedited.

The valves **11** and **14** are provided with levers **16** and **17** respectively which are connected to one another by a hand bar **18**, by which either of the drying units **12** or **13** can be connected into the circulating system while the other is allowed to recuperate. Instead of the hand bar **18** the levers **16** and **17** may be connected to a driven part of the printing machine.

What I claim is:

1. In a device for drying the blankets of the blanket cylinders in offset and the like printing machines by air draft, a substantially closed pipe system, a ventilator for circulating air through the said pipe system, a loop formed by one of the pipes in the said system arranged approximately to follow the curvature of the blanket cylinder, an open side to the said loop facing the blanket, a shield receiving the open part of said loop for confining the air traversing the loop at the vicinity of the blanket, means in connection with said shield to prevent the influx of room atmosphere into the closed pipe system, filter means in connection with said pipe system for absorbing the moisture taken up by the circulating air from the blanket, and a heating device in the pipe system for heating the circulating air prior to its action on the blanket cylinder.

2. In a device for air-drying the blankets of the blanket cylinders in offset and the like printing machines by air draft, a substantially closed pipe system, a ventilator for circulating air through the said pipe system, a loop formed by one of the pipes in the said system arranged approximately to follow the curvature of the blanket cylinder, an open side in the said loop facing the blanket, a shield receiving the open part of said loop for confining the air traversing the loop at the vicinity of the blanket, means in connection with said shield to prevent the influx of room atmosphere into the closed pipe system, a filter in the said

pipe system for absorbing the liquid collected by the circulating air from the blanket, a housing for the said filter, a quantity of absorbing material in said housing for drying the air circulating therethrough, and pipe sockets for connecting said housing into the said pipe system.

3. In a device for drying the blankets of the blanket cylinders in offset and the like printing machines by air, comprising, a closed pipe system, a ventilator for circulating a volume of air through the said pipe system, a loop formed by one of the pipes in the said system arranged to follow the curvature of the blanket cylinder, an open side to the said loop facing the blanket, a distributor shield to receive the open part of said loop and extending over the full width of the cylinder to confine the air traversing the loop at the vicinity of the blanket and to prevent influx of room atmosphere into the closed pipe system, a plurality of drying filters in the pipe system, means for selectively connecting one of the drying filters into the stream of the circulating air while allowing the other, or others, to remain at rest, and a heating device in each of the said drying filters for accelerating the evaporation of the moisture absorbed by the said filter from the circulating stream of air.

4. In a device for drying the blankets of the blanket cylinders in offset and the like printing machines by air, comprising, a closed pipe system, a ventilator for circulating air through the said pipe system, a loop formed in one of the pipes in the said system arranged approximately to follow the curvature of the blanket cylinder, an open side in the said loop facing the blanket, means in connection with the said loop for preventing the influx of room atmosphere into the closed pipe system, a twin set of drying units in the pipe system intermediate the cylinder and the suction end of the ventilator, a multiway valve to selectively place either one of the said units into communication with that pipe of said pipe system which leads from the blanket cylinder in the direction of the ventilator, another multiway valve for placing the selected drying unit into communication with the suction side of the ventilator, and means for actuating the said two multiway valves simultaneously.

References Cited in the file of this patent

UNITED STATES PATENTS

1,757,948	Hockley	May 6, 1930
2,002,815	Harrold	May 28, 1935
2,083,732	Moore et al.	June 15, 1937
2,676,536	St. Marie	Apr. 27, 1954

FOREIGN PATENTS

584,240	Great Britain	Jan. 9, 1947