Nov. 26, 1929. W. J. PRICE 1,737,174

HOT AIR BRUSH AND DRIER FOR PRINTING PRESSES

Filed July 11, 1928

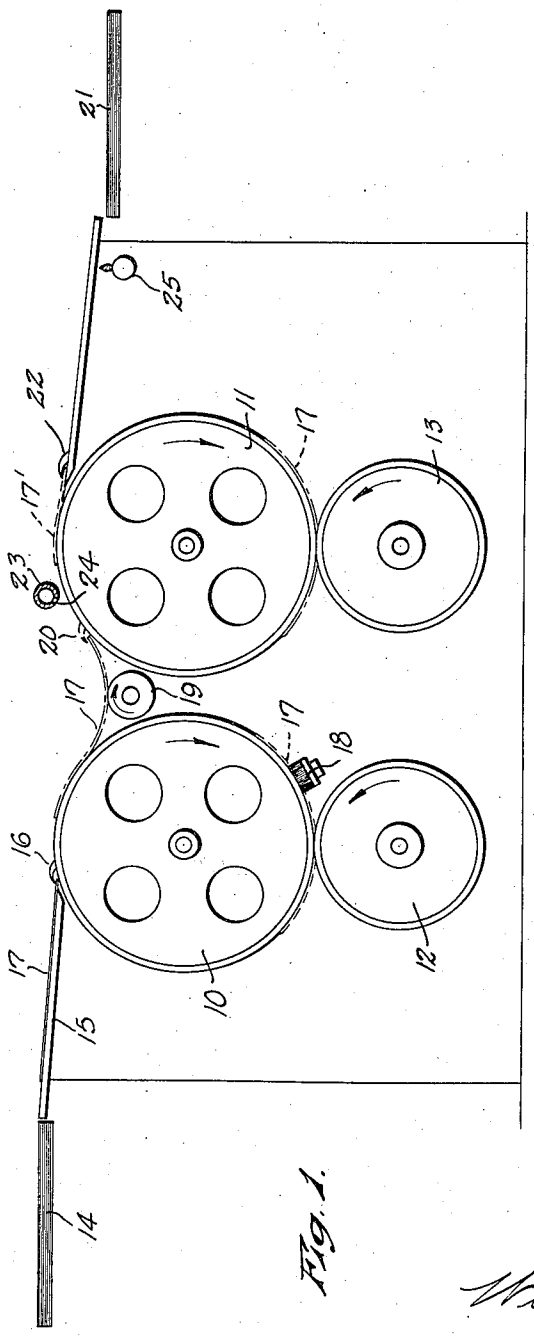


Fig. 1.

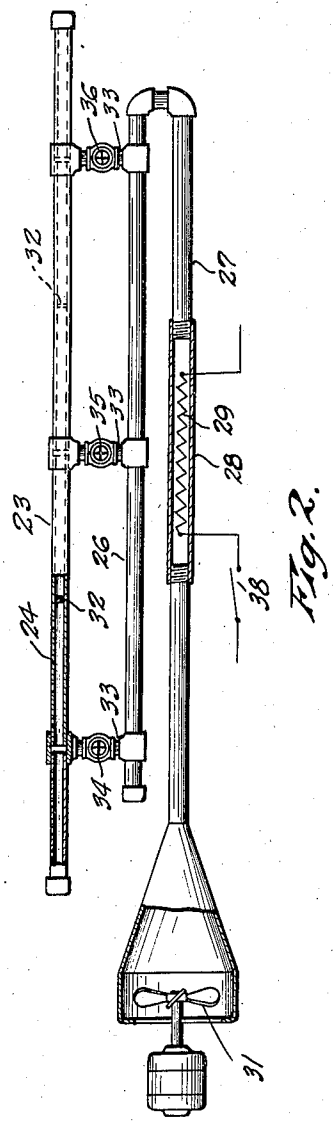


Fig. 2.

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Patented Nov. 26, 1929 1,737,174

UNITED STATES PATENT OFFICE

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HOT-AIR BRUSH AND DRIER FOR PRINTING PRESSES

Application filed July 11, 1928. Serial No. 291,921.

This invention relates to printing presses, particularly to presses of the Babcock type or any cylinder press, and has for an object to provide improved means for drying the ink of the impression on the sheets of paper.

It is another object of the invention to so construct and arrange the drying device that a single device will dry the ink from the first impression before the second impression, and will also dry the second impression.

It is a further object of the invention to provide a device for this type of press which will remove the air under the sheets so that they will lie tight to the cylinder and will also eliminate static to a large extent.

With the foregoing and other objects in view, the invention consists in certain novel features of construction, combinations and arrangements of parts as will be more fully described in connection with the accompanying drawing. In this drawing,

Fig. 1 shows diagrammatically two successive printing and impression cylinders of a cylinder press with my improved device applied thereto, and

Fig. 2 is a partial plan view and partial sectional view of the drying device.

For the sake of clarity I have not shown the details of a printing press but I have shown merely diagrammatically a pair of impression cylinders 10 and 11 associated with plate cylinders 12 and 13 respectively for printing successive impressions on sheets of paper carried by the impression cylinders. 14 represents a pile of individual sheets of paper to be printed at the feeding end of the press, and these sheets are fed one at a time along the feeder tapes 15 to the first impression cylinder 10 where their forward ends are seized by the gripping element 16 on the cylinder, the individual sheet being shown at 17. This sheet is carried around the cylinder under the brush 18 and between the cylinder and the plate cylinder 12 which imparts an impression thereto. The brush 18 smooths the sheet out on the surface of the cylinder 10 and also forces it in close contact therewith. After passing between the cylinders 10 and 12 the sheet is carried around to the transfer cylinder 19 where it is released by the grip 16 and is transferred to the second impression cylinder 11 where its forward edge is gripped by the grips 20 and carried around this cylinder between it and the plate cylinder 13 for the second printing impression. It is then carried upwardly and forwardly where it is at the point 17′ seized by suitable graboff mechanism shown diagrammatically at 22, and taken from the cylinder 11, passed over the gas burner 25, and laid on the pile 21 at the outlet end of the machine. If further printing impressions are to be made it will go on to further impression cylinders as will be obvious.

At the present time the common practice in printing on sized paper an offset compound is added to the ink to quicken drying and to improve the impression. This is objectionable as adding to the cost of printing and it further tends to fill up the printing plates which then have to be cleaned, necessitating a stopping of the press, thus cutting down production.

I have provided a simple and effective means for drying the prints after each impression and so arrange this means that the single means dries both impressions. It dries the first impression before the second is applied and then dries the second impression. It eliminates static to a large extent. It acts as a brush to work out air between the sheets and cylinders so that the sheets will lie smooth and tight against the surface thereof, and as it rapidly dries the ink it does away to a large extent with the use of the offset compound, thus doing away with the filling up of the printing plates by this compound, and therefore, permitting continuous production. Still further it eliminates or reduces to a small amount the use of gas now generally employed for drying the ink.

This device comprises a pipe 23 extending longitudinally of the second impression cylinder 11 at the upper part thereof between the transfer cylinder 19 and the graboff mechanism at 22, and it has discharge outlets 24, preferably directed downwardly and forwardly, as indicated in Fig. 1. This pipe is used to discharge heated air against the printed surfaces of the sheets, and it will be

apparent that as it is located between the transfer cylinder 19 and the graboff mechanism 22 the sheet after being printed on the impression cylinder 10 passes under this pipe on the cylinder 11 so as to dry the first printing impression on the sheet. It is then carried by the cylinder 11 past the plate cylinder 13 for the second printing impression and is then continued on the cylinder 11 under the pipe 23 for the second time to the graboff mechanism at 22. It will thus be apparent that the heated air blast from the pipe 23 dries the ink of the first impression before the second impression is applied, and then dries the ink of the second impression before the sheet is taken off the second impression cylinder. This heated air blast also acts as a brush to force out the air between the sheet and the impression cylinder 11 causing it to lie tightly and smoothly against the surface of the cylinder thus giving a better second impression and making it easier to accurately impress the second printing in proper relation to the first printing. It also eliminates to a great extent static ordinarily in the paper, and as the first impression is dried before the second impression is applied the necessity of using the offset compound is done away with and a better printing job is the result. Still further as the second impression is dried the use of the ordinary gas burner 25 is greatly reduced if not entirely eliminated, thus saving in the cost of gas.

Heated air may be supplied to the pipe 23 in any suitable manner, but a convenient and effective way is to have a feed pipe 26 running along side the pipe 23 connected to a pipe 27 leading from a heating chamber 28 in which there is any suitable type of heating element 29, such as an electrical resistance heating element controlled from any suitable source of electrical current by a switch 38. A motor driven fan 31 forces air over this heater to the pipe 23 from which it is directed against the surface of the paper as described. In order to give a more uniform distribution of the air onto the sheet of paper the pipe 23 may be divided by partitions 32 into any desired number of sections with branch feed pipes 33 leading from the pipe 26 to these sections and controlled by any suitable valves 34, 35 and 36. This arrangement also permits saving of the cost of heated air when narrower sheets are being printed. For example, if a narrow sheet is being printed it is not necessary to feed heated air from the entire length of the pipe 23. By closing the valves 34 and 36 air will be discharged only from the central section of the pipe 23 supplied by the valve 35.

It will be apparent that the drying device as described is a very simple one, and that the single device will dry both first and second impressions individually, that it gives better work, greatly reduces the cost of printing and increases production without in any way changing or reconstructing the press itself.

Having thus set forth the nature of my invention, what I claim is:

1. In a printing press, a plurality of impression cylinders for successive printings, a transfer roll between the cylinders, and separate means outside the transfer roll for directing a blast of heated air against the outer surface of the printed sheet after it leaves the transfer roll and goes onto the second cylinder.

2. In a printing press, a pair of impression cylinders, plate cylinders associated with the respective impression cylinders, a transfer cylinder between the impression cylinders, means for conducting individual sheets to the first impression cylinder, a transverse pipe extending longitudinally of the second impression cylinder having discharge openings to direct a blast of air against the outer surface of the sheet after it passes onto the cylinder and means for supplying heated air to said pipe.

3. In a printing press, a plurality of impression cylinders for successive printing of individual sheets, a transfer cylinder for transferring the sheets from the first to the second impression cylinder, means for taking off the printed sheets from the second impression cylinder, a conduit extending longitudinally of the second cylinder between the transfer cylinder and said takeoff device and provided with discharge openings directed toward the outer surfaces of the printed sheets, and means for forcing heated air from said conduit.

4. In a printing press, a pair of impression cylinders arranged for successive printing of individual sheets, means for transferring the sheets from the first to the second cylinder after the first printing, and separate means outside the transfer roll for directing a blast of heated air against the printed surface of the sheet on the second cylinder both before and after the second printing.

5. In a printing press, a pair of impression cylinders arranged for successive printing of individual sheets, plate cylinders cooperating with the respective impression cylinders, means for transferring the printed sheets from the first to the second impression cylinder, and separate means outside the transfer roll extending across the sheet for directing a blast of heated air against the sheet after it is transferred to the second impression roll and also in position to direct this blast of air against the sheeet after the second printing.

6. In a printing press, an impression cylinder, a conduit extending longitudinally of the cylinder and transversely the sheet as it is carried around by the cylinder, said conduit being provided with transverse walls dividing it into sections and provided with discharge

openings from said sections directed toward the surface of the cylinder, supply pipes leading to the individual sections, control valves for said pipes, a blower for forcing air to said pipes, and a heater for the air.

In testimony whereof I affix my signature.

WILLIAM J. PRICE.