This invention relates to improvements in ink drying machines, and more particularly to air conditioned dryers for use in drying the ink on embossed or printed stationery. The primary object of my invention is to provide an improved ink drying machine capable of effectively drying the ink on engraved, embossed or printed stationery while at the same time retaining the natural moisture normally present in the stationery.

Other and further objects of my invention will be pointed out hereinafter, indicated in the appended claims, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application I have elected to show herein certain forms and details of an ink drying machine representative of my invention; it is to be understood, however, that the embodiment of my invention herein shown and described is for the purpose of illustration only, and that therefore it is not to be regarded as exhaustive of the variations of the invention, nor is it to be given an interpretation such as might have the effect of limiting the claims, short of the true and most comprehensive scope of the invention in the art.

In the accompanying drawings:

Fig. 1 is a side elevation of an ink drying machine embodying my invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1; and

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Referring to the drawings, the numeral 1 designates a suitably shaped supporting frame mounted on a plurality of independently adjustable legs 2. At the rear end of the frame 1 is pivotally mounted a rack 3 which has a pair of spaced rollers 4 and 5 supported thereon. Extending over the rollers 4 and 5 is an endless conveyor belt 6, the tension of which is adjusted by means of a pair of set screws 7 (only one showing on the drawings) engaging with a pair of blocks 6 slidably positioned on the rack 3 and within which the axial ends 5' of the roller 3 are rotatably supported. The rack rests on and is adjustable supported in a substantially horizontal position by set screws 8 extending through flanges 9 provided on the rear end of the frame 1. Rotatably mounted at the rear and front ends of the frame, respectively, are rollers 10 and 11 over which an endless conveyor belt 12 extends.

The conveyor belt also extends over a roller 13 which is mounted on the free ends of a pair of pivoted arms 14 secured to the frame 1, and spiral wire springs 15 exerting a downward pull upon the said arms provide a suited resilient adjustment 5 justing tensioning means on the conveyor belt 12 to compensate for the expansion and contraction thereof.

At the front end of the frame is pivotally mounted a normally inclined rack 16 which has 10 a pair of spaced rollers 17 and 18 supported thereon. Extending over the rollers 17 and 18 is an endless conveyor belt 19, the tension of which is adjusted by means of a pair of set screws 20 (only one being shown on the drawings) engaging with a pair of blocks 21 slidely positioned on the rack 16 and within which the axial ends 18' of the roller 18 are rotatably mounted. On the extreme forward end of the rack 16 is secured by means of screws 22 a receiving tray 23 for sheets of paper delivered thereto by the belt 19. The endless belts 6, 12 and 19 are so positioned with respect to one another that sheets of embossed or printed paper are delivered by the conveyor belt 6 to the intermediary conveyor belt 12, and from the latter to the inclined conveyor belt 19 mounted on a platform or shelf 24 secured to the frame 1 is an electric motor 25 having one end of its drive shaft 26 extending into a box 25 and connected to suitable reduction gears which are housed therein. The reduction gears housed in the box 25 are connected through a shaft 27 to a gear 28 which in turn is connected to a large gear 29. The large gear 28 has a small gear 30 keyed thereto and the latter is in mesh with another large gear 31, which in turn has a small gear 32 secured thereto. The small gear 32 meshes with a gear 33 which is secured to the roller 10, thereby completing the train of gear connections from the motor 25 to the said roller for the slow operation of the conveyor belt 12. An idler gear 34 is in mesh with the gear 33 and with a similar gear 35 which is secured to the roller 4 completes the connection to the latter, thereby causing the conveyor belt 6 to move in the same direction as the belt 12 and at about the same speed.

Secured to the roller 17 is a ratchet wheel 36 and engaging therewith is a pawl 37 pivotally mounted on the upper free end of a lever 38 which is pivoted as at 39 to the frame 1. Secured to an end of the roller 11 is a cam 40 which is adapted to engage with the pawl 37 when the said roller rotates. A spiral spring 41.
exerts a pulling force on the lever in a direction toward the cam 40. As the roller 11 is rotated by the conveyor belt 12 the cam 40 is carried into engagement with the lever 38, thereby actuating the lever forwardly as the pawl 37 engaging with a tooth of the ratchet wheel 36 may cause the latter and the roller 17 to rotate a fraction of a revolution. The conveyor-belt 19 is thereby slowly moved in the same direction as the other conveyor belts 6 and 12. The spring 41 moves the lever 38 rearwardly after each disengagement of the cam 40 therewith, thereby carrying the pawl into a position where it engages with the next succeeding tooth of the ratchet wheel 36. The speed at which the conveyor belts 6, 12 and 16 travel may be varied by changing the relative sizes of the reduction gears connecting the motor 25 with the roller 10.

A transversely disposed housing 42 having a forwardly extending hood member 432 follows therefrom. The front side of the housing 42 is open thereby permitting moving air entering the housing to freely proceed in a forward direction into and through the hood member 43. The housing 42 and the hood member 43 extend over the conveyor belt 12 so as to confine a forwardly moving current of air within an area directly over the said conveyor belt. The hood member 43 is so shaped that its top side is inclined rearwardly from a narrow air discharge opening located at its front end, thereby providing means which tends to set up a back pressure upon the air discharged from the housing into the said hood member. The gradually restricted air channel in the hood member 43 retards the flow of air therethrough, thereby preventing the sheets of paper normally conveyed in a forward direction by the conveyor belt 12 from becoming displaced and blown from the latter. The hood member 43 preferably rests on the frame 1 and its front end is held in place by lugs 44 on the frame engaging with its opposite sides, a while a rearwardly disposed flange 45 at its top side engaging with the top of the housing 42 serves to maintain the rear end of the said hood in place. Secured, preferably, to the top side of the hood 42 are a plurality of spaced baffles 46 which are each provided with a series of openings 47 for the forward movement therethrough of some of the air discharged into the hood. The baffles 46 are adapted to direct forwardly moving air passing through the hood 43 in a downward direction upon sheets of printed or embossed paper being conveyed in a forward direction by the conveyor belt 12. The openings 47 in the baffles 46 allow some of the forwardly moving air to pass therethrough without being directed in a downward direction, thereby permitting the air to curve therefrom and to be deflected downwardly at different points along the length of the hood, and thus bringing moving air into engagement with the conveyed sheets of paper throughout the greater length of the belt 12.

Extending transversely across the top of the housing 42 are a series of curved air deflecting members 48 which define a series of air channels that are closed at their lower sides by a transversely disposed plate 49. The air channels are comparatively small in cross-section and considerably enlarged at their discharge ends. The intake ends of the channels are supplied with air under pressure by a conduit 50 which is connected to a suitable blower fan 51, the latter being connected to and actuated by the shaft 25 of the motor 25. A valve 56 on the conduit 50 serves to regulate the flow of air therethrough. The various air deflecting members 48 in the upper portion of the housing 42 serve to evenly distribute the current of air passing into the hood 43 along its entire width.

The speed at which the motor 25 is actuated may be varied by changing the relative sizes of its reduction gears connecting the motor 25 with the fan 51.

Having described my invention, what I claim is:

1. In a drying machine, an elongated enclosure having air inlet means at one end and air outlet means at its other end, and a conveying device extending through the enclosure, means for discharging air under pressure into and through the enclosure, means for heating air admitted to the enclosure, and plurality of aligned baffle members positioned in the enclosure for deflecting currents of air upon the conveyor, the said baffle members having
openings therein for the passage therethrough to the succeeding baffle members of some of the air, whereby a series of deflected currents of air may at spaced intervals be directed upon the conveyor.

2. In a drying machine, an elongated enclosure having a gradually inclined top side, a series of perforated baffle members extending downwardly from the top side of the enclosure and positioned to deflect air passing through the enclosure in a downward direction, a conveyor extending longitudinally through the enclosure and positioned beneath the baffle members, air inlet means at the enlarged end of the enclosure, air outlet means at the opposite end of the enclosure, means for discharging air under pressure into the enclosure, means at the enlarged end of the enclosure for heating the air admitted to the enclosure, and means for humidifying the air discharged into the enclosure.

3. In a drying machine, an elongated enclosure having an enlarged end and a narrowed end, the said enclosure having an inclined top side extending from its narrowed end to its enlarged end, air inlet means at the enlarged end of the enclosure, air outlet means at the opposite end of the enclosure, means for discharging air under pressure into the enclosure, means at the enlarged end of the enclosure for heating air admitted thereto, a conveyor belt extending lengthwise through the enclosure and positioned to enclose the lower side of the enclosure, means for actuating the conveyor belt in a direction whereby material to be dried may be conveyed from the enlarged end of the enclosure to its narrowed end, and a plurality of spaced and perforated baffle members extending downwardly from the top side of the enclosure for intercepting air passing through the enclosure and directing it downwardly upon the conveyor belt.

4. In a drying machine, an elongated enclosure having an enlarged end and a narrowed end, the said enclosure having an inclined top side extending from its narrowed end to its enlarged end, air inlet means at the enlarged end of the enclosure, air outlet means at the narrowed end of the enclosure, means for discharging air under pressure into and through the enclosure, means at the enlarged end of the enclosure for heating air admitted thereto, means at the enlarged end of the enclosure for intercepting and distributing the incoming air across the enclosure, a conveyor belt extending lengthwise through the enclosure and positioned to enclose the lower side of the enclosure, means for actuating the conveyor belt in a direction whereby material to be dried may be conveyed from the enlarged end of the enclosure to its narrowed end, and a plurality of spaced and perforated baffle members extending downwardly from the top side of the enclosure for intercepting air passing through the enclosure and directing it downwardly onto the conveyor belt.

JOHN SCHNEIDER.