J. O. ROSS.

DRYING APPARATUS.

APPLICATION FILED DEC. 8, 1913.

1,150,540. Patented Aug. 17, 1915

Fig. 2.

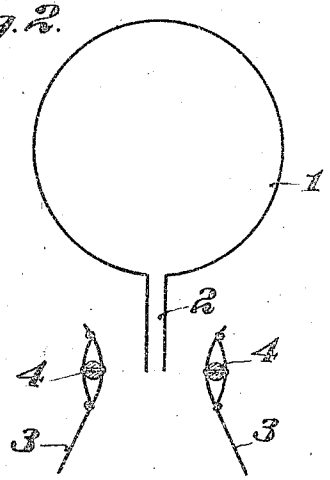
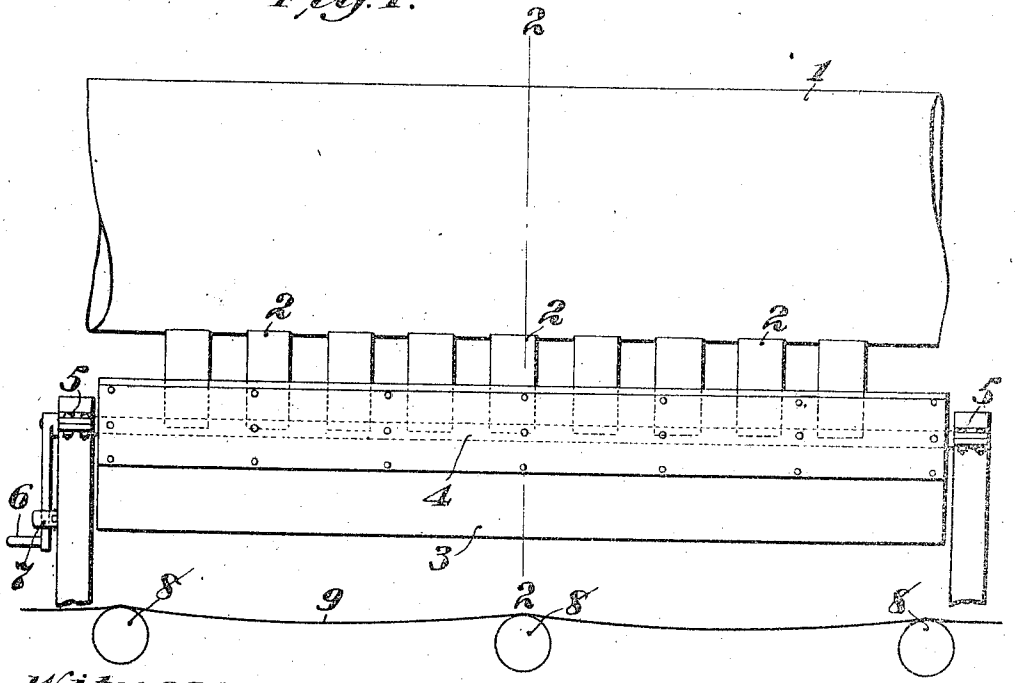


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

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DRYING APPARATUS.

1,150,540. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed December 8, 1913. Serial No. 805,430.

To all whom it may concern:

Be it known that I, JOHN O. ROSS, a citizen of the United States, residing at Roslindale, Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Drying Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to drying apparatus and more particularly to a device for better applying the air to the material to be dried.

The apparatus consists of a nozzle through which the air is discharged and guides or deflectors at the sides of the nozzle which serve to draw in additional air and to better distribute the air blast.

In the drawings which illustrate the preferred embodiment of the present invention, Figure 1 is a side elevation of the apparatus; and Fig. 2 is a section along the line 2—2 of Fig. 1.

In the illustrated apparatus, dry air is blown through the conduit 1 and is discharged therefrom downwardly through a number of nozzles 2. These nozzles 2 consist of short rectangular pipes or collars projecting down from the conduit 1. The material to be dried is usually a web of paper, fabric or the like and is carried by a suitable conveyer longitudinally along beneath the conduit 1. The conveyer illustrated in the drawings consists of a number of supporting rolls 8 over which the web 9 is drawn horizontally. The web 9 is supported so that the conduit 1 lies substantially over the middle of the web and the air is discharged against the middle of the web so as to insure an even drying thereof, as described in my co-pending application for drying apparatus and method of drying, Serial No. 805,429, filed of even date herewith.

Upon opposite sides of the nozzles 2 are wings or deflectors 3. These wings or deflectors are curved as shown in the drawings. They are made of sheet metal and are mounted upon supporting rods 4 which are in turn supported in end bearings 5. Handles 6 and locking devices 7 serve to turn the supporting rods 4 and hold them in adjusted position.

As shown in Fig. 2, the deflectors are spaced at a little distance from each side of the nozzles 2, leaving intake openings between the nozzles 2 and the tops of the deflectors. The bottom of the deflectors diverge to leave a flaring or divergent mouth or passage between them. The blast of air coming through the nozzle 2 acts upon the aspirator principle to cause additional air to be drawn between the tops of the deflectors 3. This additional air mingles with the air coming from the nozzle 2 and forms a blast of much greater volume than the air from the nozzles alone. Moreover, because of the divergent passage between the deflectors, this blast is much more evenly and widely distributed than would be the blast blown from the nozzles 2 alone. Generally the air blown through the conduit is heated air. This air does not become saturated by a single contact with the material to be dried. Consequently, this heated, but not saturated air, may be advantageously again applied to the material. This is done in the present apparatus by the heated and partially saturated air in the neighborhood being drawn in between the tops of the deflectors and mingled with the fresh air coming from the nozzles 2. Thus the amount of air which has to be heated in the first instance is reduced. Moreover, since the deflectors serve to introduce additional air into the blast blown against the material, it is possible to have the air blown through the nozzles 2 of smaller amount and flowing at higher velocity than would be possible without the deflectors. This is economical in that smaller conduits and blowers may be used for blowing the air.

By adjusting the position of the deflectors 3 by means of the handles 6, the distribution of the air blast may be varied.

The present invention is not limited to the illustrated embodiment but may be embodied in other structures within the scope of the invention as pointed out in the following claims:—

1. Apparatus for drying webs of paper or fabric having, in combination, a conveyer for carrying the web, and means for delivering drying air against the web including a conduit for conveying the air extending longitudinally along the web, a nozzle for discharging air from the conduit and curved deflector plates extending longtiudinally of

the web and mounted upon opposite sides of the nozzle and spaced therefrom to leave an intake through which additional air is drawn by the blast of air issuing from the nozzle, said deflector plates having the ends next the web divergent to better distribute the air.

2. Apparatus for drying webs of paper or fabric having, in combination, a nozzle through which air is discharged against the web and deflector plates located upon opposite sides of the nozzle and spaced from it so as to form an intake between the deflectors and nozzles through which additional air may be drawn by the blast of air issuing from the nozzle, the ends of said deflector plates next the web being divergent to better distribute the air over the web.

3. Apparatus for drying webs of paper or fabric having, in combination, a nozzle through which air is discharged against the web and deflector plates located upon opposite sides of the nozzle and spaced from it so as to form an intake between the deflectors and nozzles through which additional air may be drawn by the blast of air issuing from the nozzle, the ends of said deflector plates next the web being divergent to better distribute the air over the web, and means for turning the deflector plates to vary the distribution of the air against the web.

4. Apparatus for drying webs of paper or fabric having, in combination, a conveyer for carrying the web, a conduit and a nozzle or nozzles for directing toward the web a blast of air, and means for supplying additional air to be blown against the web by the blast and for checking the velocity of the blast, including curved deflector plates upon opposite sides of the nozzle and spaced from it so as to form an intake between the deflector plates and nozzles into which additional air may be drawn by the blast issuing from the nozzle, said plates having their ends next the web divergent so as to check the velocity of the air and better distribute it over the web.

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Witnesses:
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