H. C. MacCONNELL.

PLATE DRYING APPARATUS.

APPLICATION FILED MAY 11, 1909.

944,800.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

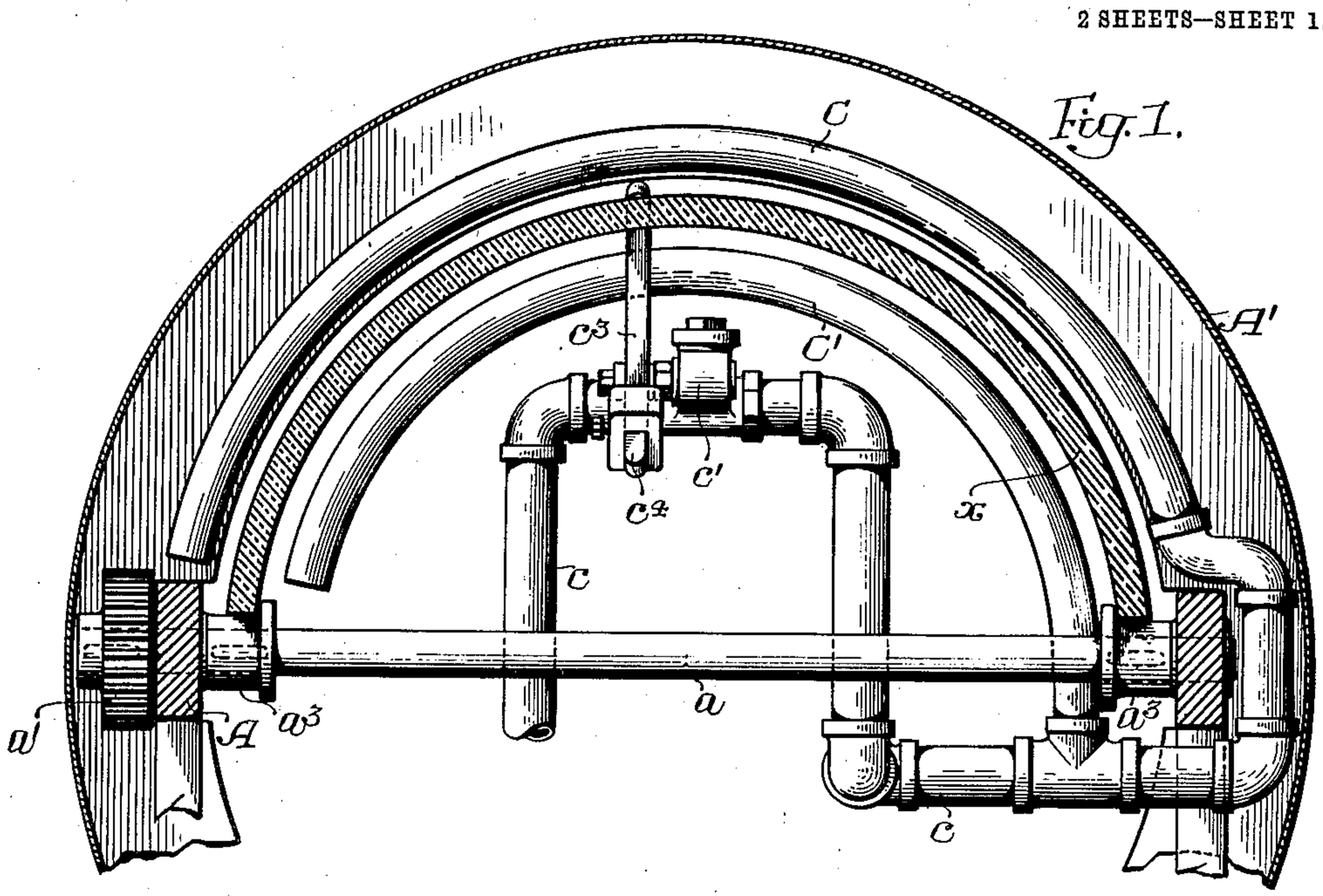
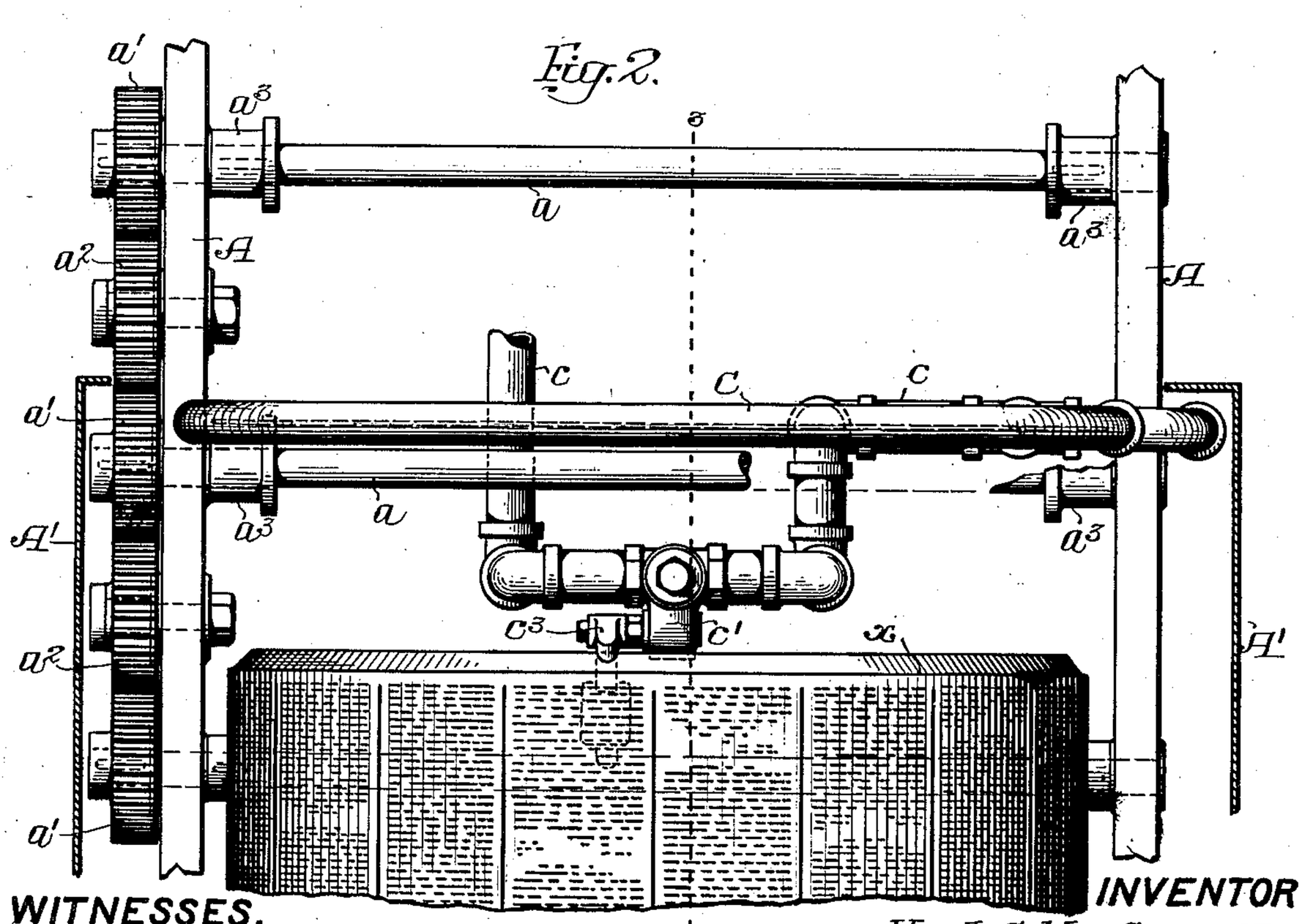


Fig. 2.



WITNESSES.

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Fig. 3.

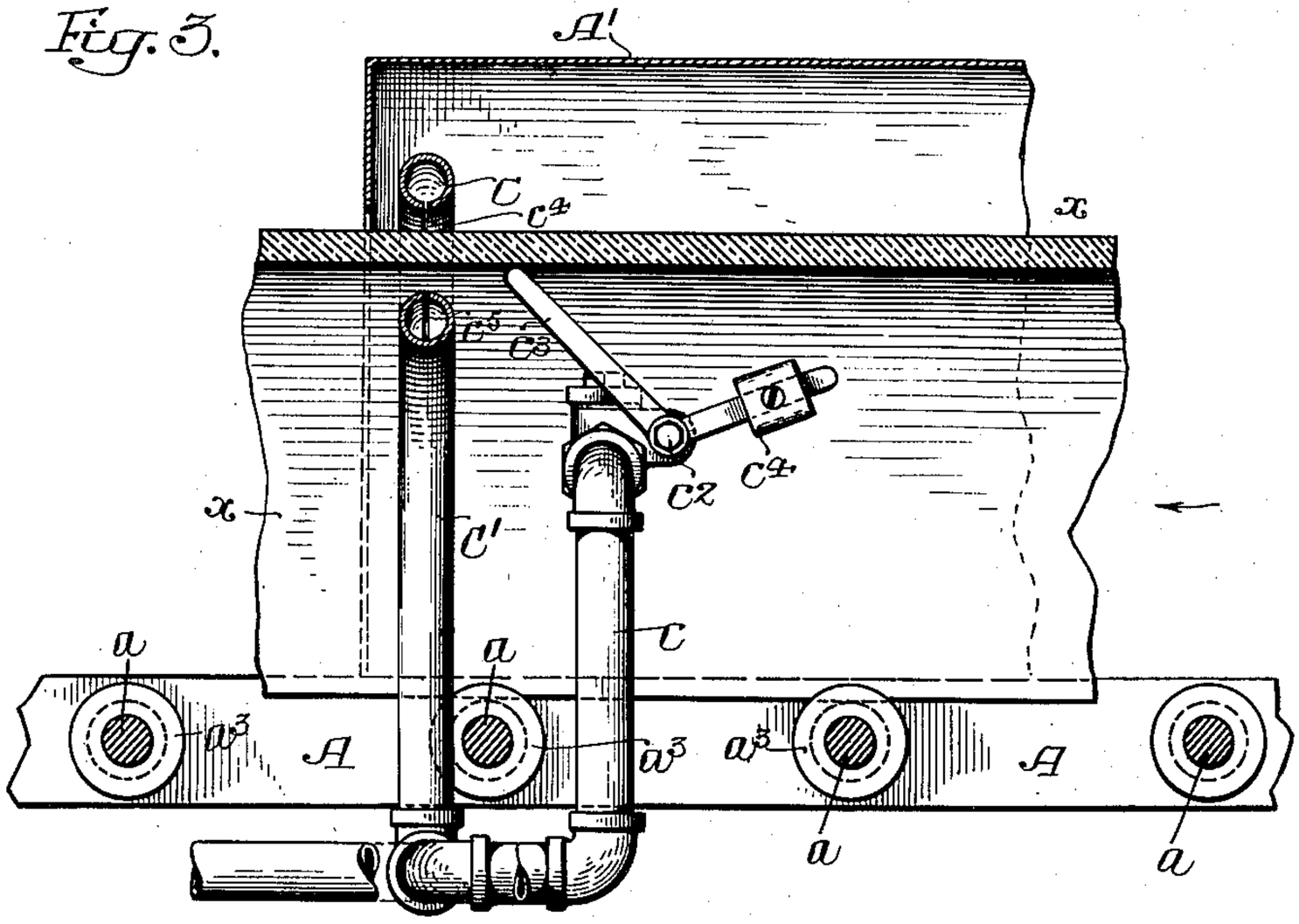


Fig. 5.

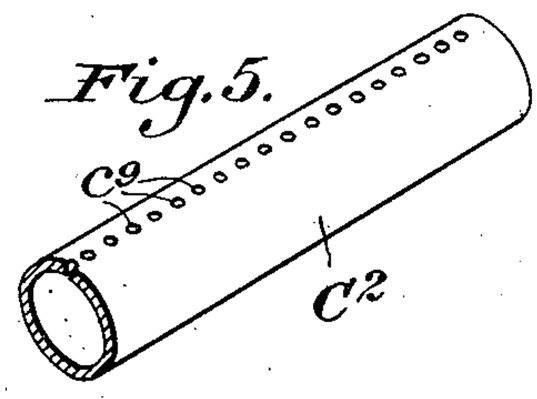
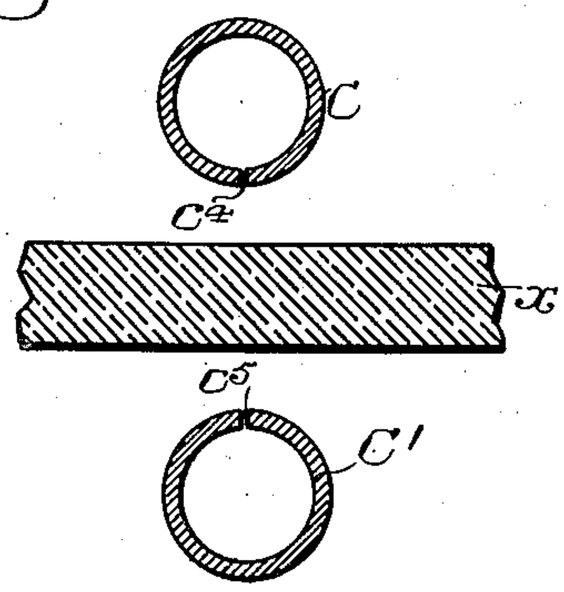


Fig. 4



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UNITED STATES PATENT OFFICE.

HUGH C. MAC CONNELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ROBERT HOE, OF NEW YORK, N. Y.

PLATE-DRYING APPARATUS.

944,800. Specification of Letters Patent. **Patented Dec. 28, 1909.**

Application filed May 11, 1909. Serial No. 495,350.

To all whom it may concern:

Be it known that I, HUGH C. MAC CONNELL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Plate-Drying Apparatus, of which the following is a specification.

One object of my invention is to provide a device for automatically drying stereotype plates as they are delivered from the cooling bath of a plate finishing machine; it being further desired that the operation of the apparatus shall be governed by the plate under treatment.

Another object of the invention is to provide means for utilizing air under pressure for the purpose of drying stereotype plates or any similar structures.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which,—

Figure 1, is an elevation, partly in vertical section, illustrating my invention, Fig. 2, is a plan, Fig. 3, is a vertical section on the line 3—3, Fig. 2, Fig. 4, is a full sized section illustrating the relative positions of the plate to be dried and the blast pipes, and Fig. 5, is a perspective view of a modification.

According to the customary treatment of the stereotype plates these, after being cast and while still in a hot condition, are passed in quick succession through a finishing machine in which the gates are removed and their edges as well as their inside surfaces are trimmed, after which it is necessary that they shall be cooled. For this purpose the plates are carried into or through a tank or spraying bath, and as it is necessary that the plates be perfectly dry before they are put in use, in order to prevent damage to the composition rollers of the printing press, it has been customary to use rags or waste, whereby the water is removed from them. This method of treatment has been very unsatisfactory, as not only does the waste or other material used very quickly become wet, but lint and other foreign matter usually sticks to the plates, and hard substances, such as buttons. frequently injure the plates. Above all, however, this method of treatment involved a loss of time and required extra handling and my device was particularly designed to obviate these objections.

In the above drawings, A represents a portion of the frame of a finishing machine, whose rear portion is provided with a casing A′ in which are mounted spraying pipes, (not shown) for delivering cold water to the plates to be cooled. Within this casing is mounted a plate conveyer which in the present instance consists of a series of horizontal shafts or spindles a mounted in bearings in the frame and each provided with a gear a'. Alternating with these gears and operatively connecting them are intermediate gears a^2, so that all of the spindles a under operating conditions are turned at the same speed by power which may be applied to said gears in any desired manner. Each shaft or spindle has fixed to it, just within the side members A of the frame, a flanged collar a^3 designed to form supports for the plates under treatment, so that these will be moved through the casing A′ when the shafts a are turned.

A plate to be dried is indicated at X and is of the well known semi-cylindrical form.

Mounted concentrically within the casing A′ are a pair of blast pipes C—C′, both connected through an air supply pipe c to any source of air under pressure, and provided with a controlling valve c'. This valve as shown in Fig. 3, is provided with a spindle c^2 to which is fixed a lever c^3 having a weighted arm; these parts being so proportioned and mounted that the lever arm c^3 is normally held by the weight c^4 in a substantially vertical position, so that it extends into the path of movement of the stereotype plate A as this is conveyed through the machine by the shaft a. When in this position the valve in the supply pipe c is closed, but is so constructed as to be opened when said arm c^3 has been moved to one side of the vertical to an extent of about 45°.

The air blast pipe C has extending for its entire length a narrow slot c^4 placed in that portion of its surface nearest the plate, while the blast pipe C′ has a similar slot c^5 formed in its uppermost portion, which likewise is that nearest the plate X. In the present instance the blast pipes are mounted just inside of the extreme rear end of the inclosing casing A′, so that as a finished and cooled

stereotype plate is about to be discharged from said casing, its advancing edge strikes the lever arm c^3 and inclines it to the position shown in Fig. 3. The valve c' is thus opened and air under pressure is delivered from said pipes in two very thin jets directly toward the adjacent inner and outer surfaces of the wet plate, and under these conditions the air under pressure blows back and to some extent evaporates the water adhering to the plate, so that the latter passes out of the casing in a perfectly dry condition. As soon as the rear edge of such plate passes out of engagement with the lever c^3, this latter is returned to its vertical position under the action of its weighted arm c^4, thereby cutting off the supply of air to the blast pipes.

I preferably cut the slots in said blast pipes about .012 of an inch in width, so that the streams of air delivered are very thin and of high velocity, and it will be seen that regardless of the rapidity with which the plates are passed through the machine, they are delivered in a perfectly dry condition without requiring extra handling or loss of time.

Obviously, the apparatus is not limited in its use to the drying of plates of a semi-cylindrical form, as it may without in any way departing from my invention be modified to dry plates or other structures of materially different shape and construction.

While I have shown and preferably employ slots c^4 and c^5 for delivering the air from the pipes C and C′ to the plate to be dried, I may, if desired, employ instead of these, series of small holes placed close together in said pipes as shown in Fig. 5 so that the air is discharged therefrom in a manner accomplishing the desired object.

I claim:—

1. A drying apparatus consisting of two pipes curved so as to be substantially concentric and connected to a source of air supply, said pipes having outlets extending in lines substantially parallel with their axes, with a conveyer for supporting a curved plate, said conveyer being placed adjacent to the pipes so as to move a plate between the same.

2. The combination in a drying apparatus of a conveyer, a blast pipe connected to a source of air under pressure, and a controlling valve for said pipe placed to be automatically actuated by a body carried by the conveyer.

3. The combination of two curved and substantially parallel air blast pipes each having a slot extending parallel with its axis and connected to a source of air under pressure, with a conveyer having means for engaging the edges of a curved plate to be trimmed and placed to permit the curved body of such plate to extend between the air pipes.

4. The combination of two substantially parallel air blast pipes each having an air outlet and connected to a source of air under pressure, means for passing between said plates an object to be dried, an air controlled valve and operating means for the valve placed to be operated by the object under treatment just before it is passed between the pipes.

5. The combination of a conveyer for a curved stereotype plate, and a longitudinally slotted blast pipe curved to be substantially parallel with the curved surface of said plate, with means for controlling the flow of air to said blast pipe.

6. The combination of two pipes each curved to a substantially semicircular form and each provided with a narrow longitudinally extending slot in that portion of its body adjacent to the other pipe, means for passing a stereotype plate between said pipes, and means for controlling the flow of air to the pipes.

7. The combination of two pipes each curved to a substantially semicircular form and each provided with a narrow longitudinally extending slot in that portion of its body adjacent to the other pipe, means for passing a stereotype plate between said pipes, and means for controlling the flow of air to the pipes, said means including a supply pipe for the blast pipes and a normally closed valve therein, with an arm for said valve placed to be moved to and held in an open position by a plate under treatment.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HUGH C. MAC CONNELL.

Witnesses:

WILLIAM E. BRADLEY,

WM. A. BARR.