

(No Model.)

2 Sheets—Sheet 1.

A. A. SIMONDS.
PAPER DRYING MACHINE.

No. 378,266.

Patented Feb. 21, 1888.

Fig. 1.

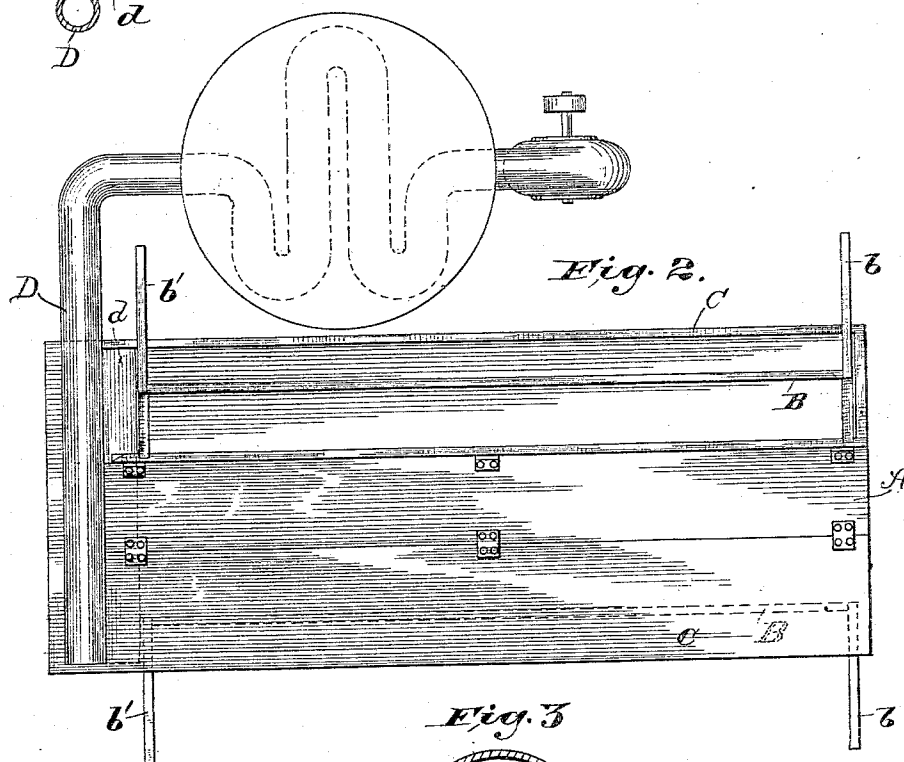
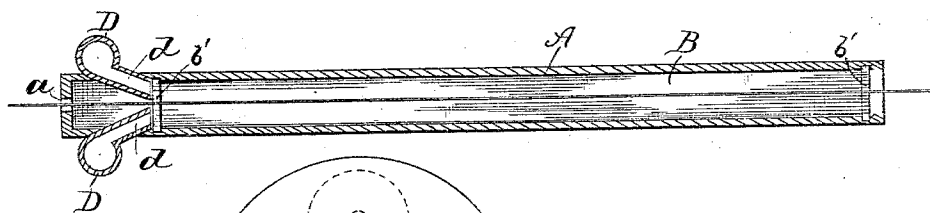
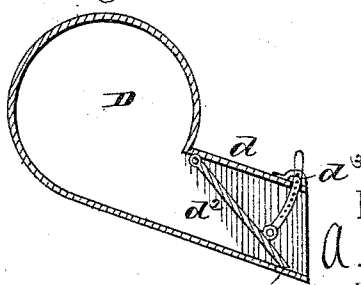


Fig. 3.



Witnesses:

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Inventor.

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By his atty

Whitaker & Pursh.

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Fig. 4.

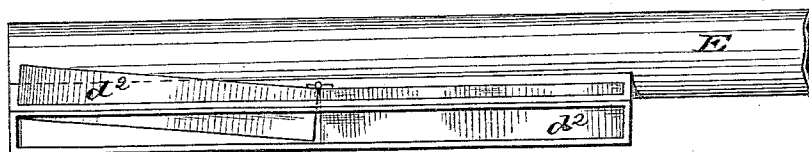


Fig. 6.

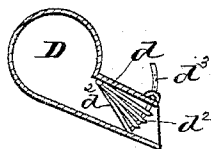
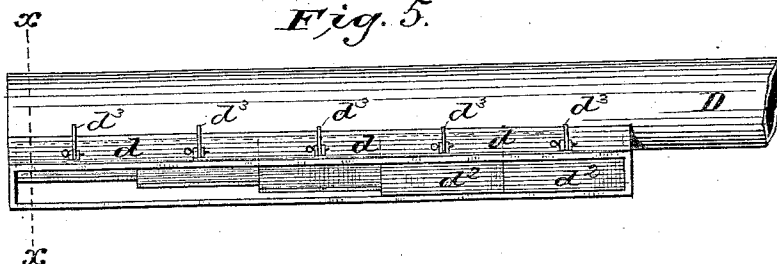


Fig. 5.



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By his atty.
Whitaker & Tamm.

UNITED STATES PATENT OFFICE.

ALVAN A. SIMONDS, OF DAYTON, OHIO.

PAPER-DRYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 378,266, dated February 21, 1888.

Application filed October 30, 1886. Serial No. 217,595. (No model.)

To all whom it may concern:

Be it known that I, ALVAN A. SIMONDS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Paper-Drying Machines; 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.

My invention relates to paper-drying machines in which hot air is used; and it consists of a certain construction of parts fully described in this specification, and more particularly pointed out in the claims.

The object of my invention is to provide a drying box or tube with certain devices which will prevent any waste of air when paper of different widths is to be dried, and also to provide the box or tube with hot-air inlets which are furnished with adjustable dampers, so that the supply of air may be regulated as desired. This mechanism is illustrated in the drawings which form a part of this specification, and identical parts are indicated by similar reference-letters.

Figure 1 is a longitudinal sectional view of the box or tube. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional view of the air-inlet with adjustable devices for increasing or diminishing the supply. Figs. 4 and 5 are views of modified forms of the hot-air dampers. Fig. 6 is a transverse sectional view on line *x x* of Fig. 5.

Inside of the box or tube A, extending nearly the entire length thereof, are two adjustable sides, B B. These sides are provided with arms *b b'*, which pass through and move readily in suitable openings in the fixed sides C.

One end of the box or tube A is provided with a narrow slot, *a*, to admit the paper, and the other end is open its full extent. Near one end in the top and bottom of the tube A are the hot-air inlets, consisting in my preferred construction of a pipe, D, extending across the entire width of the tube, having a longitudinal opening in one side and a chute, *d*, extending obliquely into the tube or box to near the center of the same, and consequently in close proximity to the paper as it passes through the box or tube.

In order to regulate the amount of air discharged into the tube so as to secure the results desired, I provide these chutes with dampers *d'*, Fig. 3. The damper *d'* is pivoted close to the upper side of the chute, and has its lower edge resting upon the lower side of the same, the main body of the damper lying in an oblique position. To this damper, near its lower edge, is pivoted an arm, *d''*, which passes up through an opening in the upper side of the chute. Means are provided for retaining this arm in any desired position, and thus secure the required regulation of the air-current. In the drawings the arm *d''* is shown as provided with openings therethrough to receive a pin, the top of the chute being provided with a projection having a corresponding opening, which is also engaged by the pin, whereby the arm *d''* and the damper are held in the position desired; but any other means of adjustment may be employed in place of this construction.

It is obvious that the damper might be divided into two parts hinged together at their centers and each part made independently adjustable, as shown in Fig. 4; or the damper might be divided into two or more entirely independent parts separately adjustable, whereby the same result might be secured, as shown in Figs. 5 and 6.

The arms *b'* of the adjustable sides B are made the full width of the interior of the box or tube and pass closely in front of the opening in the chute *d*, so that these arms close said chute as far as they extend in front of the same. In order that these arms *b* shall maintain their proper positions, grooves are provided for the reception of the same in the top and bottom of the tube or box, and these arms are made of such a width as to engage therewith.

The operation of the parts will be clearly understood from the foregoing description.

The paper web is inserted into and passed through the drier, and the sides B are then adjusted so as to reduce the size of the box to the proper width for the easy passage of the paper web. Upon forcing the air through the box it will be soon determined whether the amount admitted through the chutes *d d'* is in excess of the amount required to dry the paper. If found to be in excess, the dampers are so adjusted as to reduce it to the desired amount.

If one side of the paper web is found to dry faster than the other, an adjustment of the damper or dampers is made to remedy this and secure the even drying of the web.

5 It will be noticed that in all the forms shown the damper d^2 has a constant engagement with the side of the chute farthest from the paper web, and it is moved toward and from the side nearest the paper web to effect the regulation
10 of the air-current. This prevents the dispersion of the air when delivered from the chute, and causes the current of air on leaving said chute to impinge upon the paper web.

15 It is obvious that, instead of retaining the valves in the air-chute in the desired position by the method shown and described, a rack-and-pinion construction may be employed to raise and lower them, such construction also serving to retain them in the position desired.

20 I have shown and described a drier consisting of a narrow box or tube having air-inlets at the top and bottom at one end and an opening the full size of the tube at the other end; but this construction is not claimed herein, as
25 it forms the subject-matter of my application, No. 202,119, now pending.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with the narrow tube or
30 box having openings in its ends for the passage of a web of paper therethrough and an air-inlet near one end, of adjustable sides within the box, whereby the space therein may be limited to correspond with the width of the paper web,
35 substantially as described.

2. The combination, with a narrow tube or box having openings in its ends for the passage of a web of paper therethrough, of an air-inlet at one end extending within said box, and movable sides within said box, said movable sides
40 being provided at one end with a broad arm extending across the discharge end of the air-inlet, whereby the space within the box may be limited to the width of the paper web and the discharge of the air-inlets reduced, sub-
45 stantially as described.

3. The combination, with a paper-drier, of an air-tube connected to said drier by a chute discharging within the same, and a damper in
50 said chute having a constant engagement with the side of the chute farthest from the paper and adjustable to and from the side of the chute nearest the paper, said damper being capable of different adjustments at different points,
55 substantially as described.

4. The combination, with a narrow tube or box having openings at its ends for the passage of a paper web therethrough, of an air-pipe connected to said tube or box by a chute dis-
60 charging within the same, a damper in said chute to regulate the flow of air into said box, and movable sides within said box, said sides having at one end an arm closing said chute,
substantially as described.

In testimony whereof I affix my signature in
65 presence of two witnesses.

ALVAN A. SIMONDS.

Witnesses:

W. O. McCABE,
FRANK CONOVER.