T. CLEGG.

Drying Apparatus.

No. 206,389. Patented July 30, 1878.

Fig. 1.

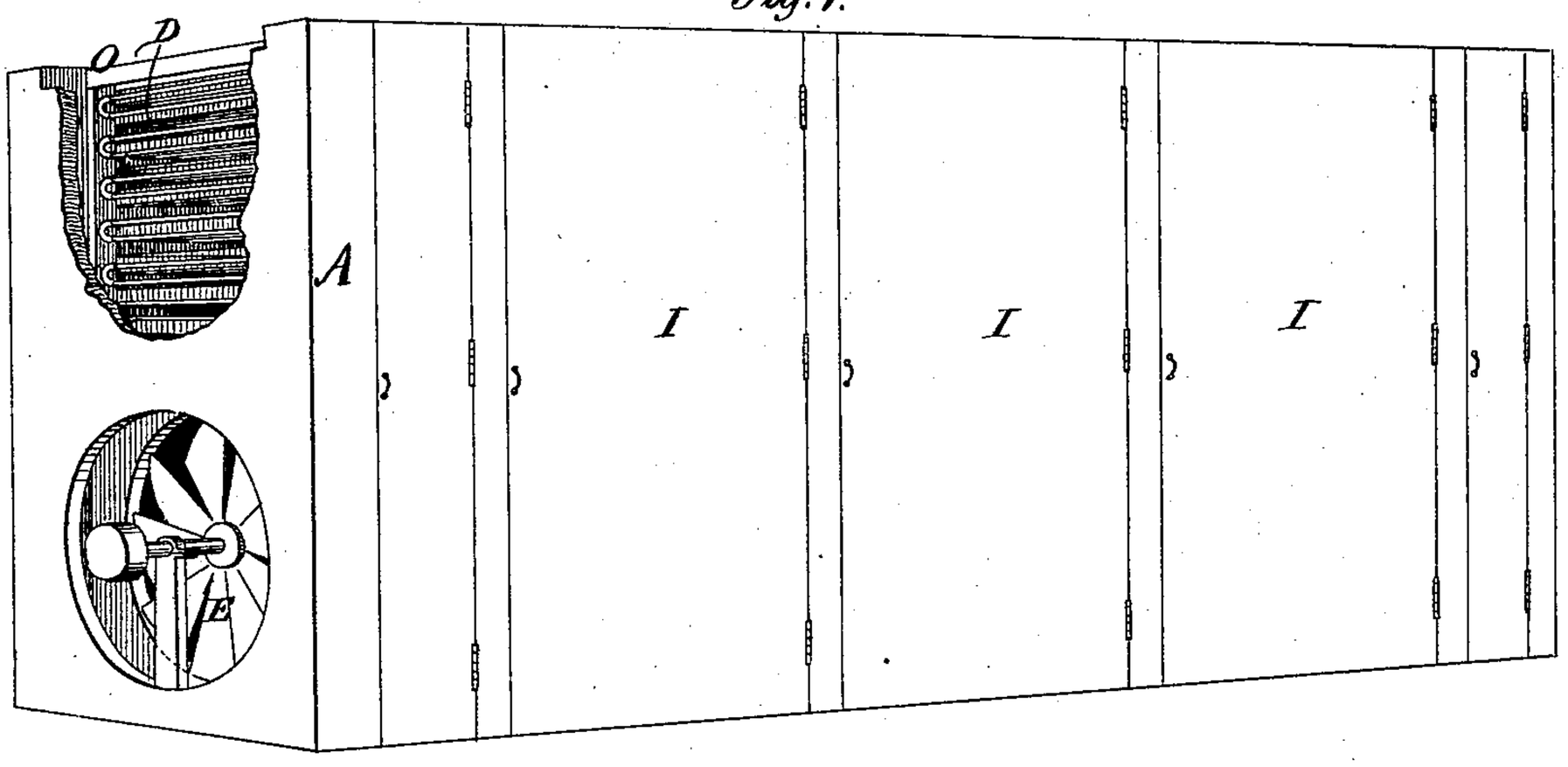


Fig. 2.

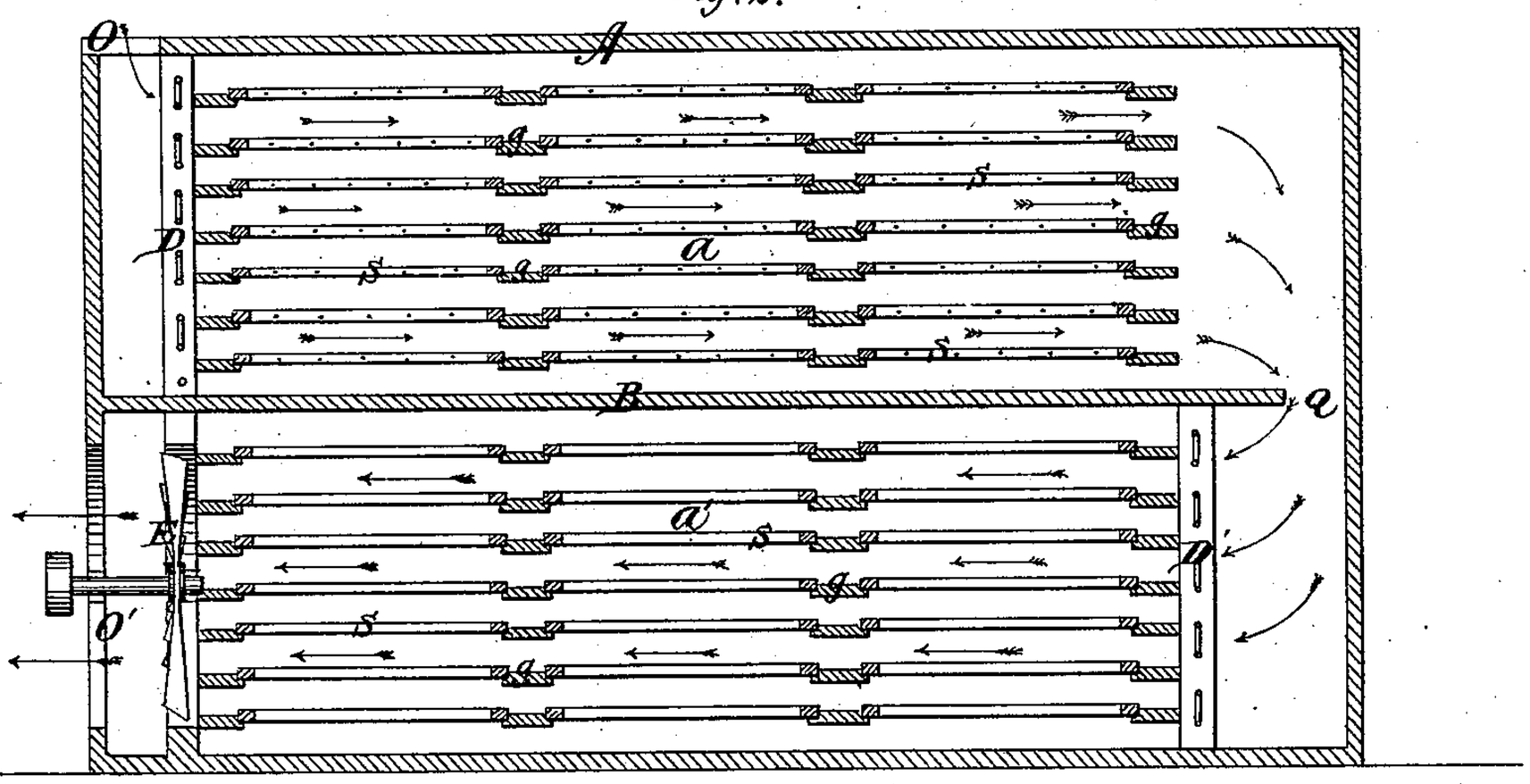
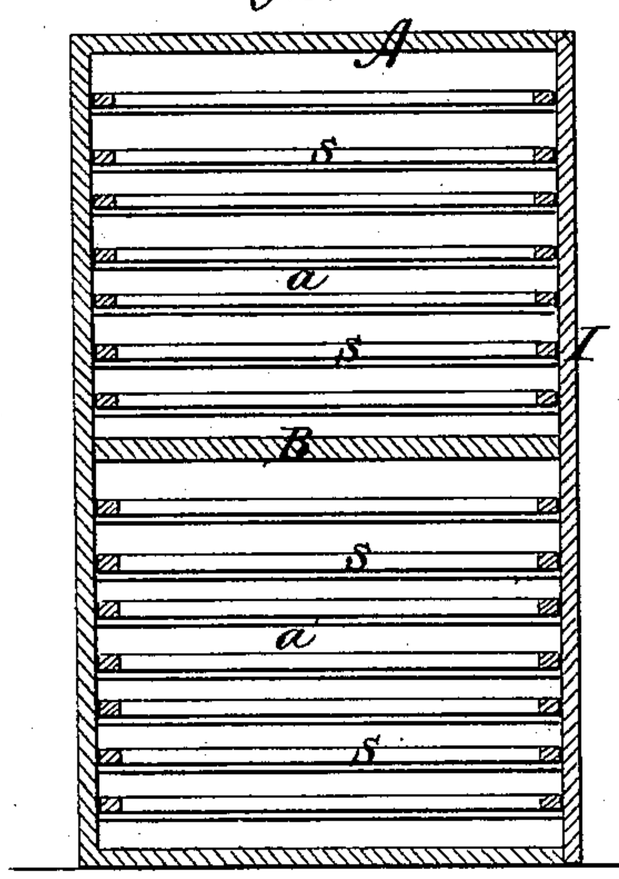


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS CLEGG, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN DRYING APPARATUS.

Specification forming part of Letters Patent No. **206,389**, dated July 30, 1878; application filed May 13, 1878.

To all whom it may concern:

Be it known that I, THOMAS CLEGG, of Lawrence, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Drying Apparatus, of which the following is a specification:

This invention relates to improvements in apparatus for drying sheets of fibrous material, such as leather-board. It is well known that this material, after it is run off from the wet-cylinder machine, on which it is made, contains a very large percentage of water, which must be removed to a great extent before the board is in a suitable condition to be calendered and finished.

My invention has for its object to provide an efficient and compact drying apparatus whereby a uniform degree of heat can be applied to all parts of the material without waste or loss of heat or excessive heating of the material, and all the steam arising from the drying material, together with the waste heat, can be carried away without escaping into the building or apartment in which the apparatus is located.

To these ends my invention consists in the arrangement and combination of parts, which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of the exterior of a drying apparatus embodying my improvements. Fig. 2 represents a longitudinal section of the same, and Fig. 3 represents a transverse section.

Similar letters of reference indicate corresponding parts.

In carrying out my invention, I provide an apartment or casing practically air-tight, excepting at two points, where openings O O′ are provided, connecting the interior of the casing with the external air. These openings are at the opposite ends of a passage which is formed by the casing, as will be described. I provide one side of this casing with a suitable number of tightly-fitting doors, I, which, when opened, permit access to the interior of the casing, and when closed render the side of the casing practically air-tight, and thus prevent the escape of heat and steam through the side of the casing.

In the construction represented in the drawing the passage formed by the casing is made to turn or double on itself. This arrangement is effected by a substantially horizontal partition, B, which extends from one end nearly to the other, and converts the casing into a double or returning passage, *a a′*, the part *a* above the partition being connected to the part *a′* below the same by the opening Q between the end of the partition and the closed end of the casing, as shown in Fig. 2.

The opening O of the casing communicates with the part *a* of the passage, and the opening O′ communicates with the part *a′* of the passage, as shown in Fig. 2, so that air entering one opening will take the course indicated by the arrows in Fig. 2, passing out at the other opening.

Near the opening O, I locate a suitable heating heating apparatus, D, which is preferably composed of a suitable number of steam pipes or radiators arranged vertically at uniform distances apart across the entire area of the passage, so as to heat uniformly all the air that passes into the passage, and at or near the middle of said passage I locate a similar heating apparatus, D′.

At the opposite end of the passage, in or near the opening O′, I locate a suction-fan or blower, E, which is rotated by any suitable power, and is arranged to draw air from the passage *a a′*.

The leather-board or other material to be dried is supported upon any desired number of horizontal racks or shelves S, arranged at a suitable distance apart in the passages. These shelves are preferably composed of slats or wires and a marginal frame, and are removable when the doors I are opened. The shelves rest upon the transverse cleats or guides *g* attached to the casing A. The cleats and shelves are arranged a sufficient distance apart to permit the free passage of air between all the shelves along the entire length of the casing.

The operation of my improved drying apparatus is as follows: The sheets of leather-board or other material to be dried having been placed on the racks or shelves, the fan E is rotated, creating a draft or current of air from one end of the casing to the other, as indicated by the arrows in Fig. 2. The air enters the passage through the opening O, and is heated by the heating apparatus D, and the heated air, passing over and under the sheets

of board on the shelves S, evaporates and carries away the moisture from the sheets, and passes out through the opening O′, in or near which the fan is located.

In order to prevent the condensation of the moisture which would ensue in the lower chamber in consequence of the cooling of the air, and result in preventing the drying of the sheets, I employ a supplementary heater, D′, which reheats the air, and enables it not only to retain its moisture, but also to take up that of the sheets in this chamber.

This arrangement is most important, as otherwise only a limited amount of material could be heated at one time, whereas by the use, at intervals, of such supplementary heaters a chamber of any desired extent may be employed.

Another most important result is that the air throughout the chamber may be maintained hot enough to retain the moisture without imparting an excessive heat to the entering air, which would unduly heat, dry, and crack the paper at this point.

I am aware that materials have been arranged on shelves in chambers and dried by air propelled through the same, and I do not claim this broadly; but

I claim—

The combination, with the chamber, its shelves, and air-propelling apparatus, of a heater, D, situated at the entrance, and a supplementary heater, D′, situated between the heater D and the outlet, as set forth.

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

THOMAS CLEGG.

Witnesses:

TERENCE MCNULTY,

C. F. BROWN.