

No. 667,832.

Patented Feb. 12, 1901.

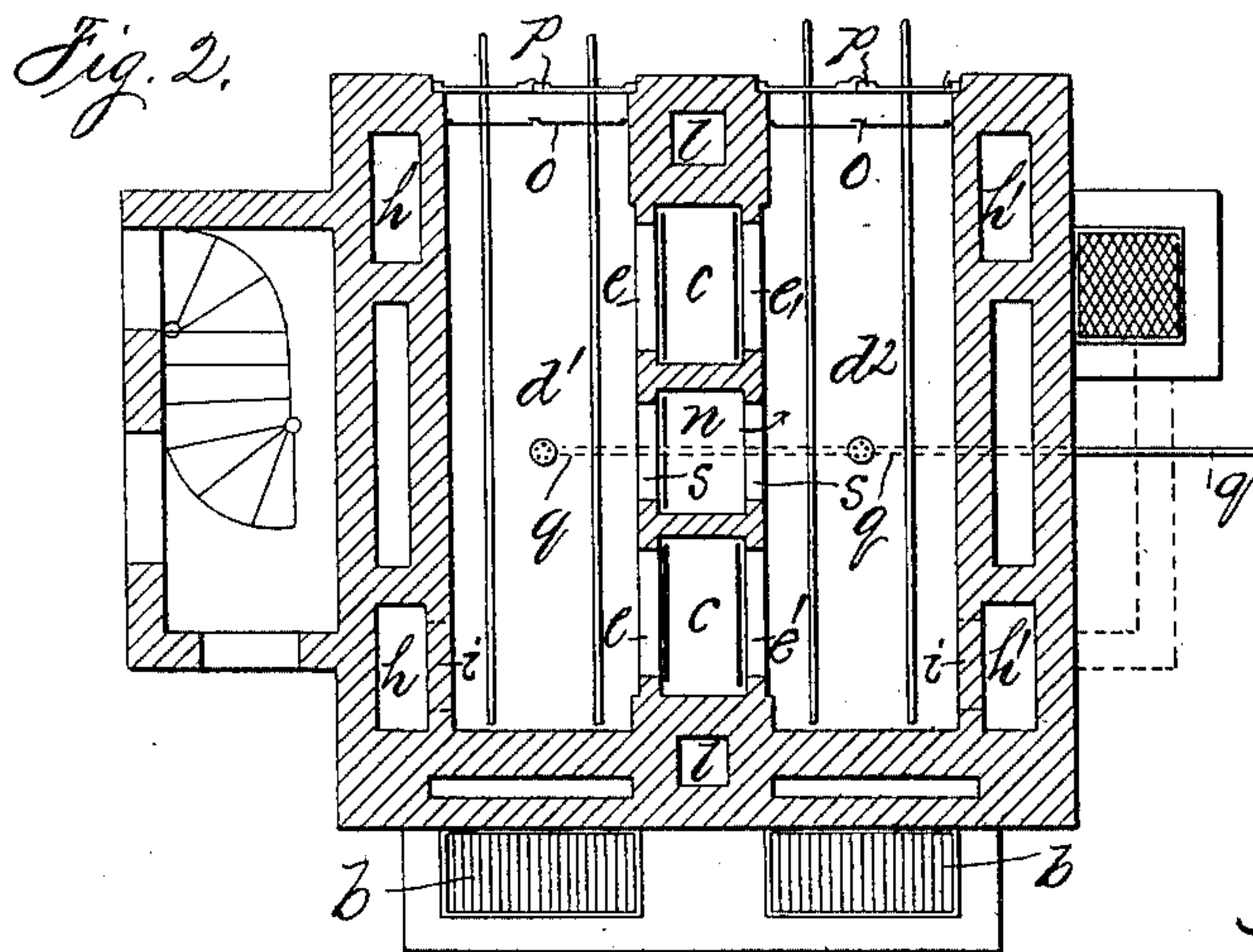
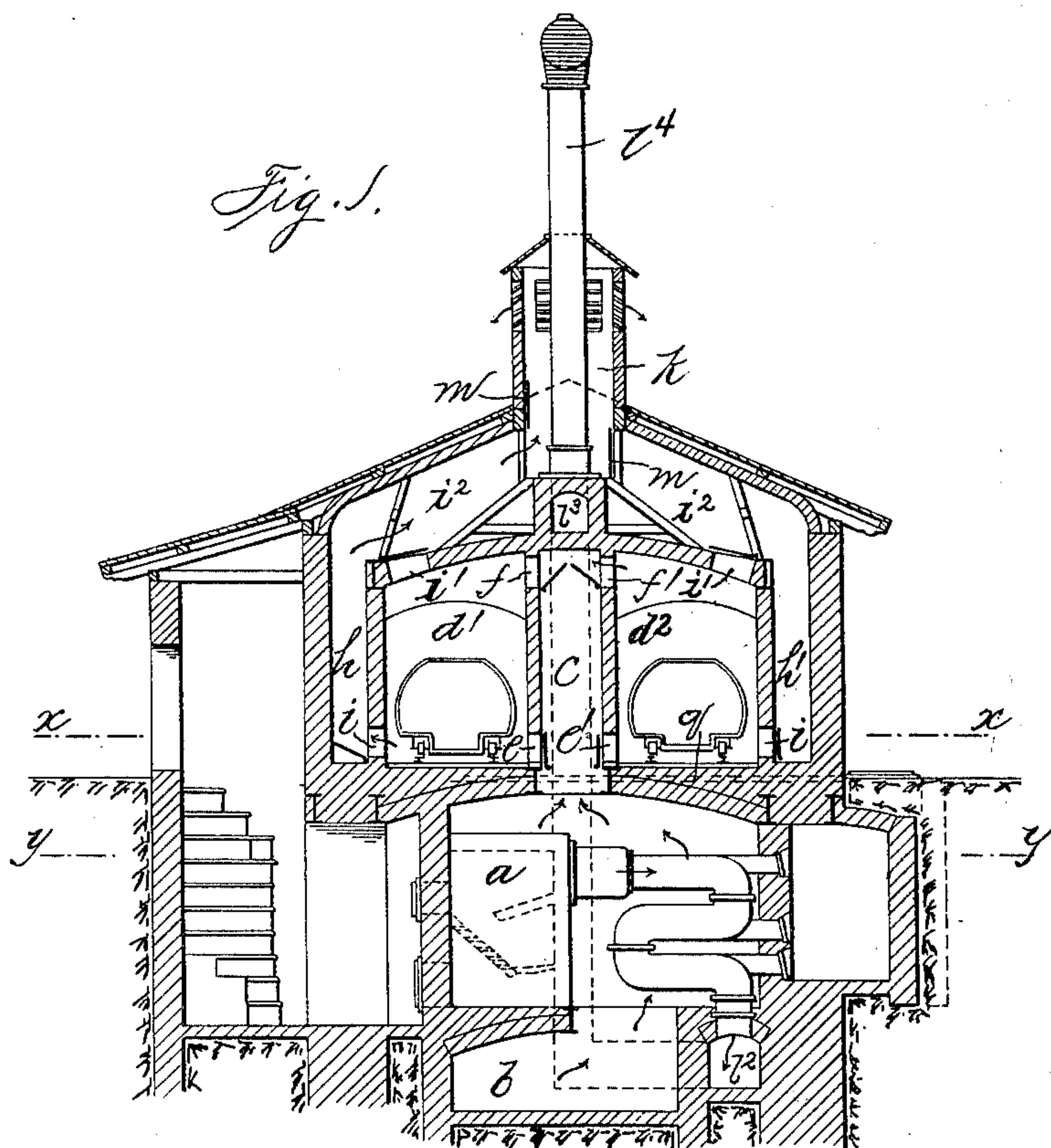
C. TSCHURL.

APPARATUS FOR PRESERVING WOOD.

(Application filed Aug. 19, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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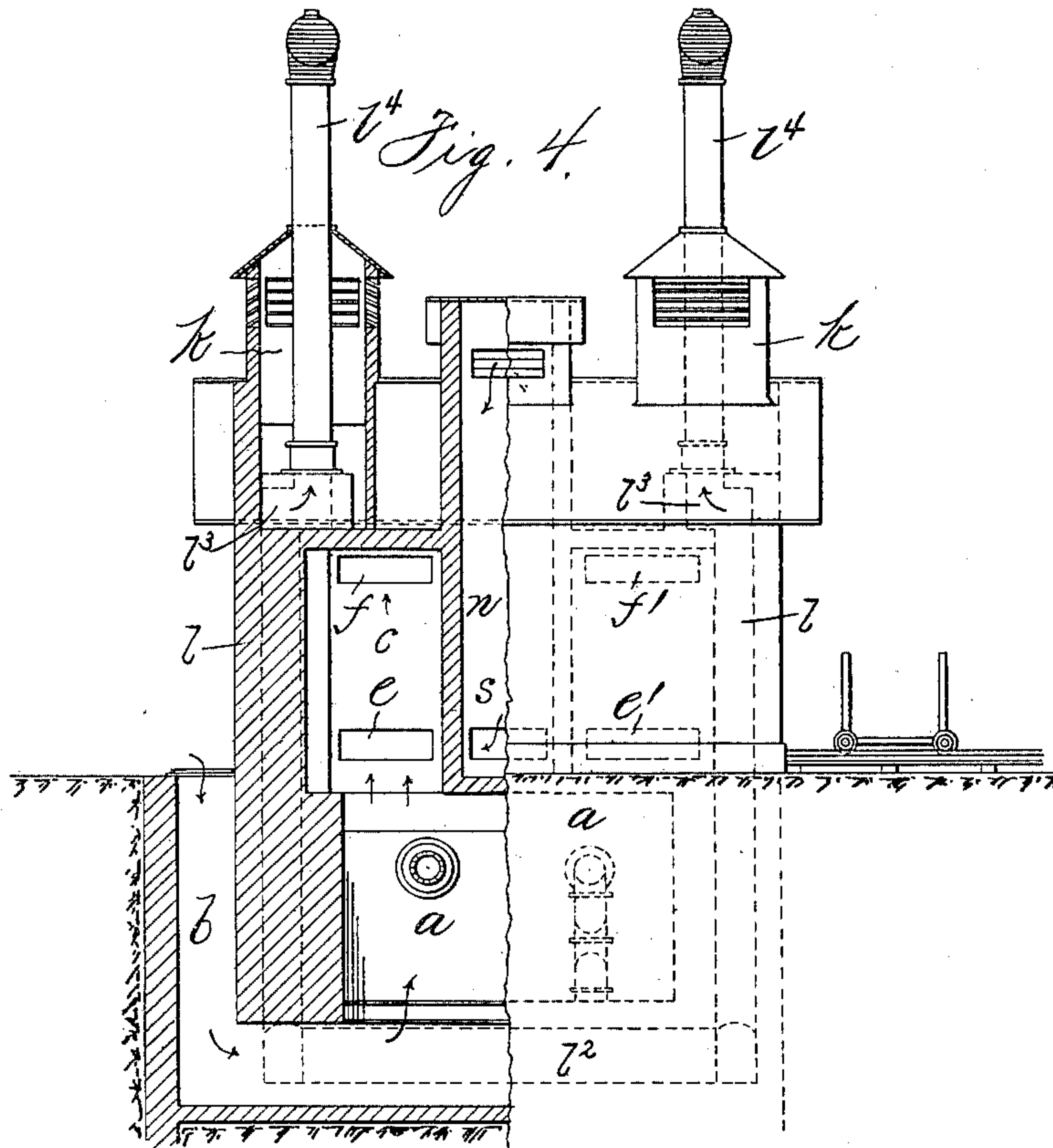
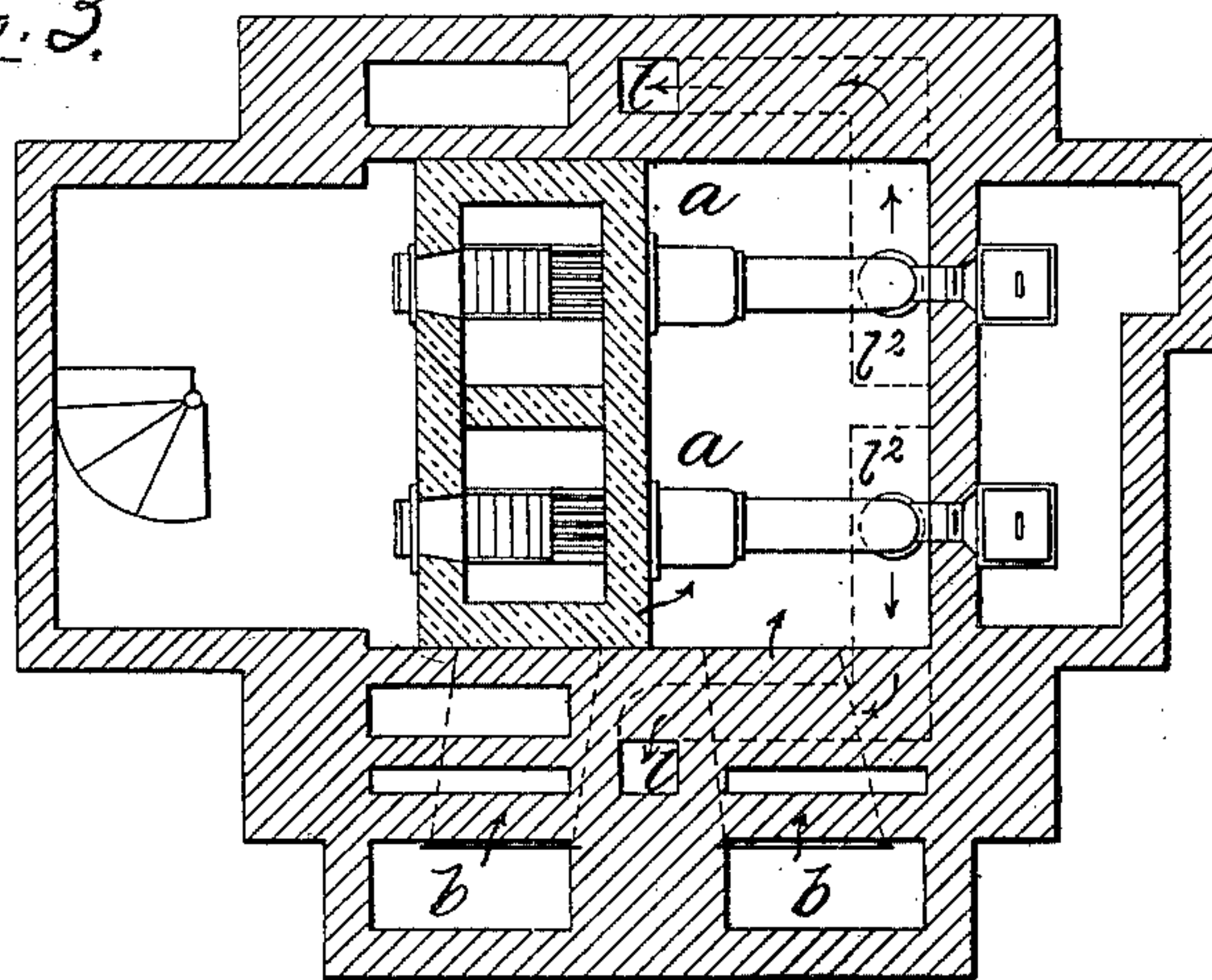


Fig. 3.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PRESERVING WOOD.

SPECIFICATION forming part of Letters Patent No. 667,832, dated February 12, 1901.

Application filed August 19, 1898. Serial No. 689,018. (No model.)

To all whom it may concern:

Be it known that I, CARL TSCHURL, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, Empire of Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Preserving Wood; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has relation to the preservation of wood, and more particularly to apparatus for thoroughly drying the wood before treatment with preservative agents and for cooling the wood after treatment with such agents.

Before my invention it has been the practice to first leach the wood before treatment with preservative agents, then subject the same to a so-called "mummifying" process by impregnating it with tar or other suitable antiseptic, the wood being taken from the mummifying-boiler and cooled in the open air. These operations present disadvantages, in that the wood is generally insufficiently dried before it is mummified, while the cooling in the open air retards and in fact renders incomplete the action of the antiseptic agent.

This invention has for one object an apparatus wherein wood or previously-leached wood can be thoroughly dried and mummified wood after it leaves the boiler gradually cooled.

A further object of this invention lies in the construction of the apparatus so that the drying of wood before treatment and the cooling of wood after treatment can be carried on continuously, simultaneously, and economically.

These objects I attain as will now be described in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of an apparatus embodying my invention. Figs. 2 and 3 are cross-sections taken, respectively, on lines $x x$ and $y y$ of Fig. 1; and Fig. 4 shows

the apparatus partly in side elevation and partly in vertical section.

The apparatus has two chambers d' and d^2 , one on each side of a partition-wall in which are formed three flues $c n c$, (presently referred to,) each chamber having at one end double doors $o p$ and a track for carriages, on which the wood is loaded, Figs. 1 and 2. On the outer side of the chambers d' and d^2 are provided flues $h h$ and $h' h'$, the flues $h h$ communicating with chamber d' at opposite ends through openings i near the floor and provided with suitable dampers. Similar openings controlled by suitable dampers place the chamber d^2 in communication with the flues $h' h'$. The flues $h h$ and $h' h'$ communicate with air-escape flues $i^2 i^2$ between the roof of the chambers $d' d^2$ and the roof of the structure and leading to air outtakes or stacks $k k$, respectively, the passages leading to said air-outtakes being controlled by dampers m . In the roof of the two chambers $d' d^2$ are openings $i' i'$, controlled by dampers and communicating with the aforesaid flues i^2 .

It has hereinbefore been stated that three flues are formed in the partition-wall between the chambers d' and d^2 , and in the end walls on a line with said partition-wall are formed two flues $l l$.

The flues $c c$ are hot-air flues communicating with the chambers $d' d^2$ near the floor and roof thereof through openings $e f$ and $e' f'$, respectively, said openings being provided with suitable dampers. These hot-air flues $c c$ are in direct communication with an air-heating chamber containing heaters a , the products of combustion passing from said heaters through suitable pipes in a downward direction to flues l^2 , (shown in dotted lines in Fig. 3,) which flues l^2 communicate with the vertical flues l , and these discharge into stacks l^4 at l^3 , said stacks extending through the air-outtake flues k , so that the waste heat is caused to circulate through the end walls of the structure, giving up its heat thereto.

The central flue n is a cold-air intake and extends through the roof of the structure, Fig. 4, and communicates with both chambers $d' d^2$ through openings $s s$, controlled by suitable dampers, Fig. 2.

The air to be heated is supplied to the air-

heating chambers a through grated flues b . A steam-pipe q opens into both chambers d' d^2 , as shown in Fig. 2.

The operation of the kiln is as follows, it being supposed that chamber d' has been used for cooling treated wood and is thoroughly cooled, while chamber d^2 has been previously used for drying wood prior to its being treated and is heated to a temperature of, say, 100° centigrade: Wood to be dried previous to its being treated and loaded on a car or cars is run into cold chamber d' , while treated wood to be cooled, loaded on a car or cars, is run into hot chamber d^2 . The double doors o p of said chambers are then closed. The various dampers should now be set to control the flow of air, as follows: The damper m , controlling the flow of air from chamber d' through flues h h^2 and air-outtake k , is open, as also the dampers controlling the passages i , leading from said chamber d' to flues h h , while the dampers controlling the corresponding flues and passages of chamber d^2 are closed, as also the dampers controlling the openings or passages i' i' in the roof of both chambers. The damper controlling the passage s , leading from cold-air-intake flue n to chamber d^2 , is open, the damper for the like passage leading to chamber d' being closed, while the dampers controlling the passages f' , leading from the hot-air flues c into chambers d' d^2 , are open and so set as to form a dome for the hot-air flues c and prevent heat from flowing from said flues directly into either chamber d' or d^2 through passages f and f' . When the various dampers are set as described, a draft is established in chamber d' through flues h h^2 and its air-outtake k , resulting in a partial vacuum being formed in said chamber, whereby the hot air in chamber d^2 is exhausted through passages f' f and chamber d' to the atmosphere through i h i^2 k , thereby gradually heating the wood in said chamber, the hot air combining with and carrying away the evaporated moisture, while cold air at the same time enters chamber d^2 , gradually cooling the treated wood therein, so that the heat otherwise lost in cooling the treated wood is thus employed for drying the wood in chamber d' . Should the air taken in through flue n be too cold and cool the treated wood in chamber d^2 too rapidly, some hot air from the heating-chamber may be admitted thereto through passages e' in suitably-regulated quantity by a proper adjustment of the dampers controlling said passages.

The described operation is continued until the temperature in both chambers is the same, when the dampers controlling passages f f' are closed, while the dampers i' m for chamber d^2 are opened, thus placing said chamber in communication with the atmosphere through its air-outtake k , the admission of cold air to said chamber d^2 through n s being continued to completely cool the treated wood therein. The dampers controlling the passages e and f , leading from the hot-

air flues c c to chamber d' , are now set to cause hot air to flow either through f i h i^2 k or through e i' i^2 k to further heat said chamber d' to a temperature of, say, 100° centigrade, after which the cars therein, as well as those in chamber d^2 , are run out, and cars loaded with wood to be dried and wood to be cooled are run into chambers d^2 d' , respectively, and the dampers controlling the flow of air set for chamber d^2 as above described relatively to chamber d' , and the dampers for the latter chamber are set as above described relatively to chamber d^2 or, in other words, d' is placed in communication with the cold-air intake and with chamber d^2 and the latter with the atmosphere to exhaust the heat from d' through d^2 for purposes above set forth, after which cold air is caused to flow through chamber d' to again prepare the same for the reception of wood to be dried, while hot air is caused to flow through chamber d^2 to again prepare the same for the reception of treated wood to be cooled.

It is obvious that in the operation of drying wood to be treated and simultaneously cooling the treated wood the communications between the two chambers d' d^2 might be established through the passages e e' , in which case the communication between the drying-chamber and the atmosphere is established through the passages i' in said chamber opening directly into i^2 , the heated air from the cooling-chamber flowing through the latter in a downward direction and through the heating-chamber in an upward direction, the dampers for passages f f' , as well as those for passages i , being of course closed.

In order to expedite the heating of the chamber in which the wood is to be dried before treating or mummifying the same, steam from pipe q can be admitted to said chamber, said pipe q being provided with suitable stop-cocks, so that steam may be admitted to one or the other chamber d' or d^2 .

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. Apparatus such as described comprising two working chambers, a cold-air downtake extending above the structure, and a hot-air flue on each side of said downtake formed in the partition between the chambers, an air-outtake for each chamber, passages provided with dampers placing each chamber at top and bottom in communication with said hot-air flues and with the air-outtakes respectively, a passage provided with a suitable damper at the bottom of each chamber leading to the cold-air downtake, the dampers controlling the passages leading from the upper part of the chamber into the hot-air flues being arranged to move reciprocally, and when open to close the upper end of said hot-air flues, in combination with a source of heat-supply below the chambers in communication with the aforesaid heating-flues, for the purpose set forth.

2. In apparatus such as described comprising two chambers, a cold-air downtake extending above the structure, and a hot-air flue on each side of said downtake formed in the partition between the chambers, an air-outtake for each chamber also extending above the structure, passages provided with dampers placing each chamber at top and bottom in communication with said hot-air flues and with their air-outtakes respectively, and a passage at the bottom of each chamber provided with suitable dampers and leading to the cold-air outtake; the combination with an air-heater in a chamber below the working chambers and in communication with the hot-air flues, a cold-air intake for the heater, a downtake for the products of combustion, and flues in the walls of the structure connected with said downtake and extending through the air-outtakes for the working chambers, for the purpose set forth.

3. Apparatus such as described comprising two working chambers, a cold-air downtake extending above the structure, and a hot-air flue on each side of said downtake formed in

the partition between the chambers, an air-outtake for each chamber, passages provided with dampers placing each chamber at top and bottom in communication with said hot-air flues and with the air-outtakes respectively, a passage provided with a suitable damper at the bottom of each chamber leading to the cold-air downtake, the dampers controlling the passages leading from the upper part of the chamber into the hot-air flues being arranged to move reciprocally, and when open to close the upper end of said hot-air flues; in combination with means for supplying steam in jets to each chamber and a source of heat-supply below the chambers in communication with the aforesaid heating-flues, for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CARL TSCHURL.

Witnesses:

HENRY C. CARPENTER,
ALVESTO S. HOGUE.