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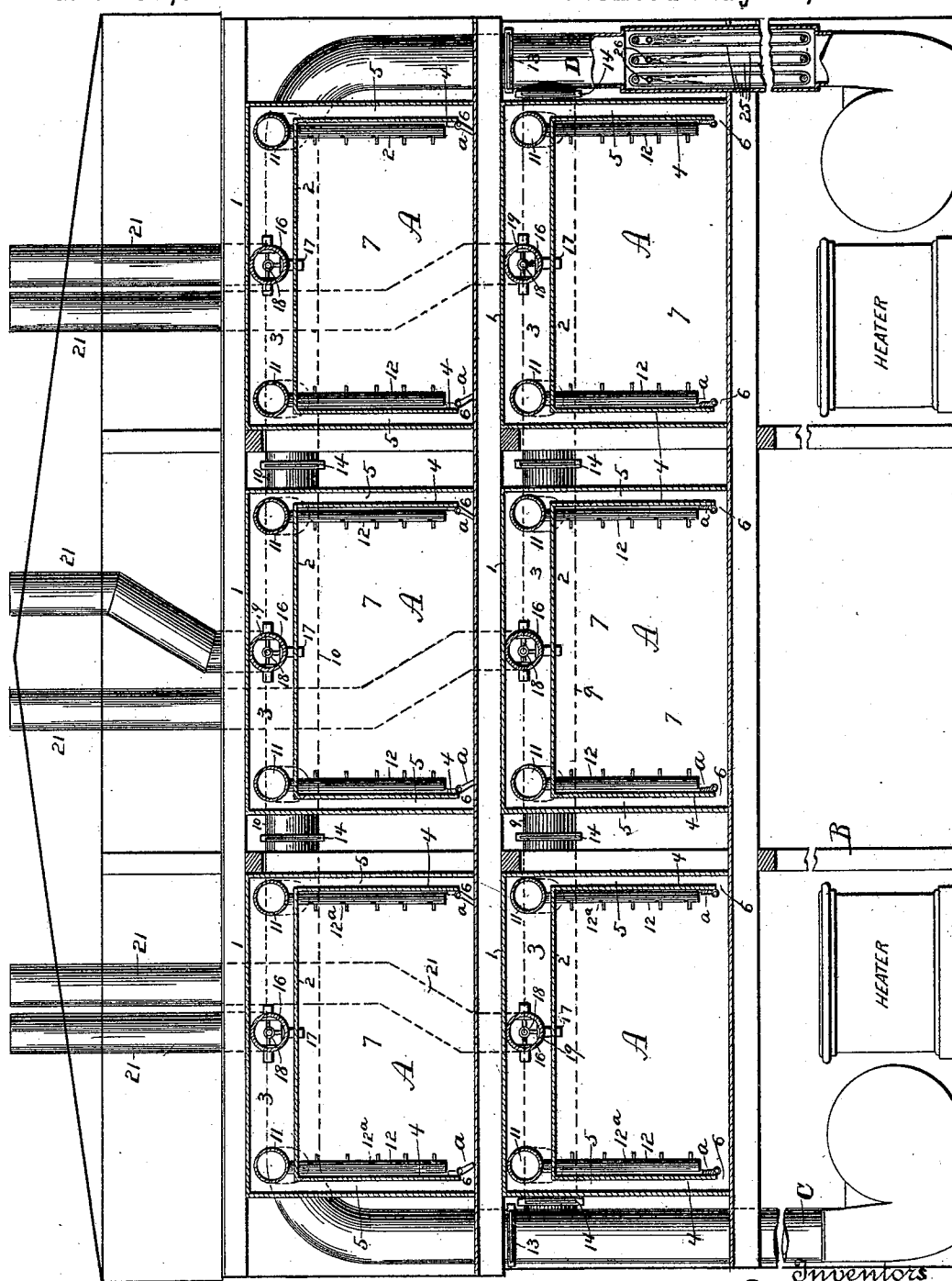
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S. P. MAYO & G. A. PEPLE.

APPARATUS FOR DRYING, COOLING, AND ORDERING TOBACCO.

No. 497,586.

Patented May 16, 1893.



Witnesses

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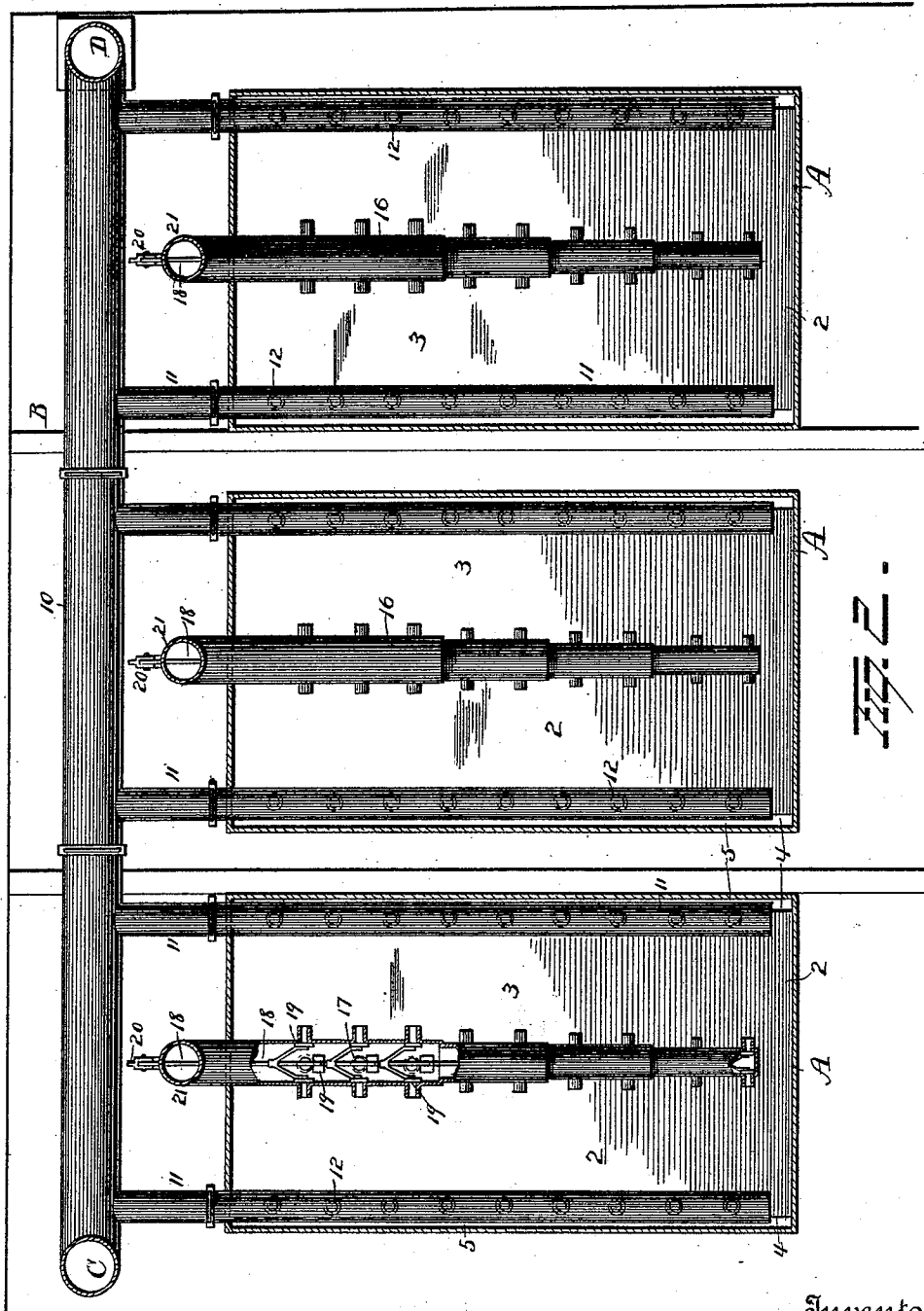
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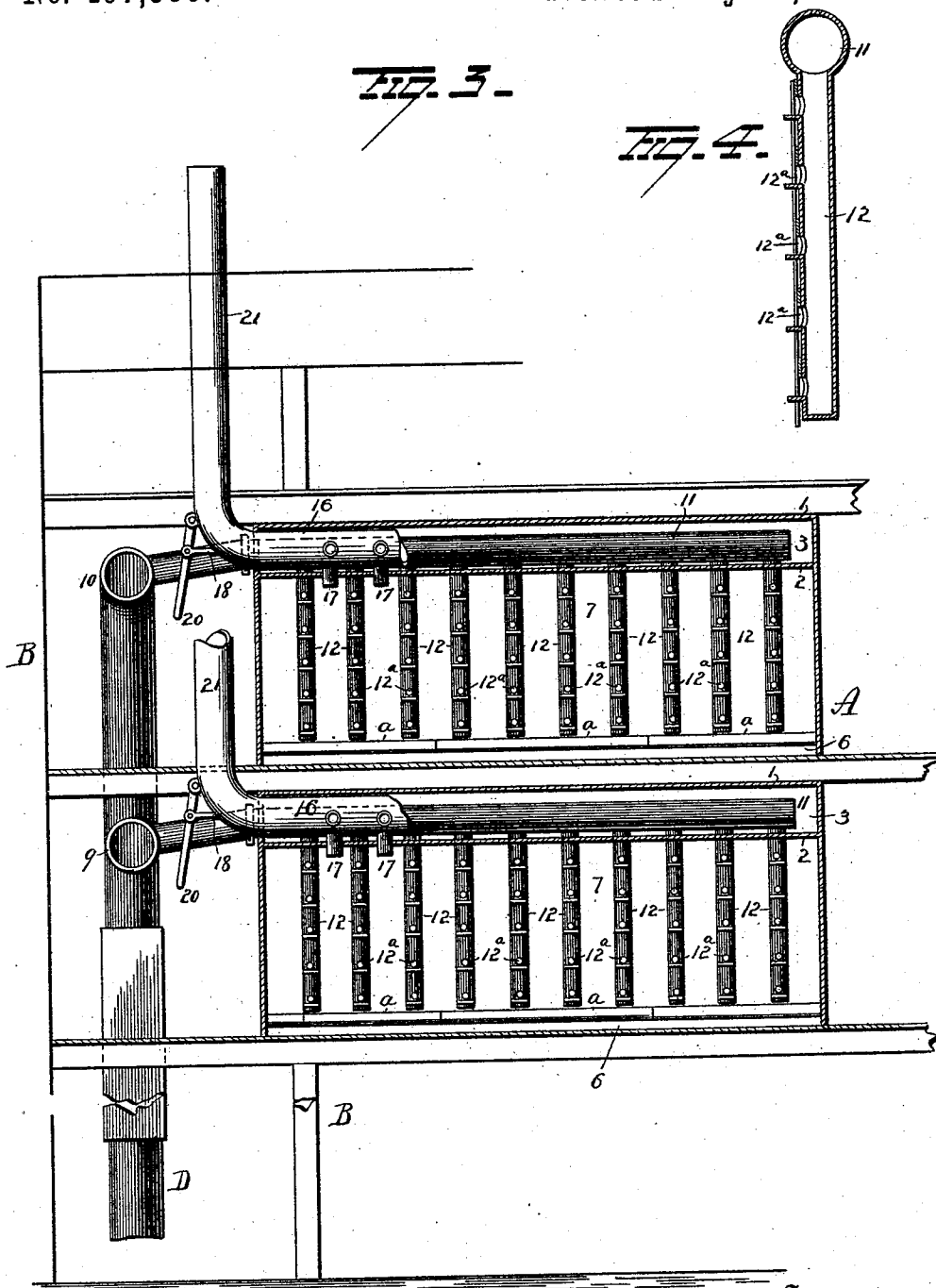
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Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL P. MAYO AND GUSTAVUS A. PEPLE, OF RICHMOND, VIRGINIA, ASSIGNORS TO THE MAYO TOBACCO DRYING AND ORDERING COMPANY, OF SAME PLACE.

APPARATUS FOR DRYING, COOLING, AND ORDERING TOBACCO.

SPECIFICATION forming part of Letters Patent No. 497,586, dated May 16, 1893.

Application filed May 12, 1892; Serial No. 432,794. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL P. MAYO and GUSTAVUS A. PEPLE, of Richmond, in the county of Henrico and State of Virginia, have
5 invented certain new and useful Improvements in Apparatus for and Methods of Drying, Cooling, and Ordering Tobacco; and we do hereby declare the following to be a full, clear, and exact description of the invention,
10 such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in apparatus for drying, cooling and ordering tobacco, and it consists in certain novel features of construction and combinations of parts and a certain novel mode of operation which will be hereinafter described and pointed out in the claims.

20 In the accompanying drawings, Figure 1 is a view in end elevation of a building showing the ordering rooms or compartments arranged therein, the rear or front walls of the latter being removed, and the pipes appearing in their preferred arrangement. Fig. 2
25 is a plan view. Fig. 3 is a vertical sectional view taken at right angles to the section shown in Fig. 1, and Fig. 4 is a detail in section of one of the pipes 12.

30 A A represent a number of rooms or compartments, which may be of any desired shape or size or may be of the same or different sizes. Any number of these may be employed and we have shown six arranged in two rows, one
35 above the other and suitably supported in a frame or structure B which may be constructed for the purpose of any size or height. These several compartments are all preferably alike and therefore it is unnecessary to describe
40 more than one. As we usually construct them there are two ceilings 1 and 2 separated sufficiently from each other to leave an air space 3 between them. The two ceilings are of the same length but the lower or inner one
45 is narrower than the upper or outer one, and joining its edges are the inner side walls 4, 4, which extend down nearly to the floor of the compartment leaving air spaces 5, 5, between them and the outer side walls, which spaces
50 communicate at their upper ends with air

spaces 3 between the ceilings, and at their lower ends 6, 6, with the interior 7 of the room where the tobacco under treatment is placed.

The foregoing will give a general idea of the preferred form of rooms or compartments
55 in which the tobacco is treated. In addition to these rooms or compartments, a very necessary part of the invention consists in the pipes for supplying air to the rooms or compartments and for discharging it therefrom
60 and the system of valves for regulating and controlling the course of this air whereby a certain number of the rooms or compartments may be thrown into or out of operation, and
65 whereby the same rooms or compartments may be successively employed for drying, cooling and ordering the tobacco without requiring any intermediate manipulation or handling of the tobacco.

C represents the main hot air supply pipe. 70 This pipe leads from a suitable source of heat and the air is generally forced through it by means of a fan or blower.

D is a moist air supply pipe generally for convenience located on the opposite side of
75 the series of compartments from pipe C. This pipe also leads from a suitable source of heat and the air is forced through it by means of a fan or blower. We prefer to connect these pipes by means of one or more cross pipes 9
80 and 10, according to the number of stories or series of compartments. At any rate as shown in Fig. 1 these pipes 9 and 10 cross opposite the compartments and from them a pair of branch pipes 11, 11, enter each compartment,
85 they being located near the top of the compartments and at each side thereof and extending from one end to the other. From each of these branch pipes a series of depending pipes 12, 12 reach nearly to the bottom of the
90 compartments. These depending pipes are closed at the lower ends and are provided with discharge openings 12^a, 12^a through which the hot air or cool air or the moist air, as the case may be, is discharged into the compartments
95 and these discharge openings may be provided with air traces or guides. Suitable valves may be provided for opening or closing any number or all of these openings if
100 desired to provide for a greater or less dis-

charge of hot, cool or moist air. Also valves or gates 13 and 14 are located in pipes C and D and in the cross-pipes 9 and 10 respectively for the purpose of shutting off the hot, cool or the moist air, or of directing it to any one or more of the compartments. For instance, supposing tobacco has been placed in the three lower compartments and it is desired to dry it, the left hand valve 13 (see Fig. 1) is closed and all except the extreme right hand valve 14 in pipe 9 are opened. This right hand valve is closed. In this manner the hot air is directed to each of the lower compartments. Supposing it is desired to discharge it into the left hand one only, then the left hand valve 14 is opened and the one next to the right of it is closed. Supposing now on the other hand the drying is completed and moist air is required, the left hand valve 14 is closed, all the rest of the valves in pipe 9 are opened, and valve 13 in pipe D is closed. If it is desired for any purpose to keep hot air or moist air from any one intermediate compartment, this may be done by closing the valves in pipes 11, 11, leading into the desired compartment.

The means for ventilating, and for removing the air from the interior of the compartments will now be described. It has already been explained that an air chamber is formed between the two walls and ceilings of each compartment and that these air chambers communicate at their lower ends with the interiors of the compartments. A pipe 16 preferably graduated extends the entire length of each air space 3 between the ceilings. Each of these pipes is provided with air ducts 17, 17 on the lower sides which enter the lower ceiling 2, and through which the air from the upper portions of the rooms or compartments escapes into the graduated ventilating pipe. This ventilating pipe 16 is also furnished with openings along its sides in direct communication with the air in the space 3 for removing air from said chamber. Inside of the ventilating pipe there is an arrangement of valves an approved construction of which is as follows:—A rod 18 extends centrally through the pipe. Connected with this central rod are valves 19, 19, the latter being connected to the rod by spring arms which tend to keep the valves tight against the inner walls of the pipe. These valves are so arranged that they are all operated simultaneously, but also the arrangement is such that the ducts at the bottom are closed when the side openings are opened and vice versa, the object of which will be explained. The central rod 18 is preferably reciprocated by a lever 20, or in any suitable manner. The ventilating pipe has a chimney 21 at one end for conducting off the air as fast as it enters the ventilating pipe and for creating a free circulation of air therein. The advantage of graduating or tapering the ventilating pipe is simply that by means of this formation,

the ventilation is made approximately uniform throughout the entire room and a uniform circulation of air is thereby produced, as the supply is at one end, the larger end only, but we desire it understood that this construction is not absolutely necessary.

The operation of this part of our invention is simple and is as follows: After the compartments have been filled with tobacco, which is to be dried, the gates *a, a*, over the openings 6, are opened and the ducts 17, 17, leading from ventilating pipes 16 are closed and at the same time the ducts leading into the space 3 are opened as before described, the hot air passing from the hot air supply pipe, into the cross branch 9 or 10, thence into pipes 11, 11, thence into pipes 12, 12 and is finally discharged into the compartments through openings 12^a, 12^a, being directed upon the tobacco by the air tracers or guides above mentioned. Absorbing moisture from the tobacco, it sinks to the floor of the compartment, passes through the openings 6, 6, thence into the spaces 5, 5; thence into the space 3, passing thence into pipe 16 and thence up the chimney 21.

After the tobacco has been sufficiently dried it may be cooled as follows: The gates *a, a*, over the openings 6 are closed. The lower valves in the ventilating pipes are opened to allow the air from the top of the compartments to escape through the ducts 17, 17, and to be conducted off out of the rooms or compartments. Cold air is then blown in through the moist air supply pipe into the pipes 11, 11, thence into vertical pipes 12, 12, and thence into the room through the openings 12^a, 12^a; the proper changes having been made in the valves as described above (namely, the changes necessary to cut off the supply of hot air, and introduce the supply of cool air or moist air, as the case may be). The cool air blowing over the hot tobacco absorbs its heat and rises to the top of the room whence it passes through the ducts 17, 17, and is conducted off as before described. After the tobacco has been cooled to the proper temperature, the moist air for the purpose of ordering the tobacco is introduced in the same manner as cool air and through the same supply pipe, but at an increased temperature; the gates *a, a*, remaining closed in order to prevent its escape from the bottom of the rooms or compartments and the ducts 17, 17, remaining open to a sufficient extent to carry off any surplus heat and thus prevent the temperature in the rooms rising to too great a degree during the process of ordering. After the tobacco has been properly ordered in one or more compartments, such compartments may be cut off, as above described, and the tobacco removed and a fresh supply introduced without interfering with any part of the process which may be going on in any of the other compartments. In the moistening pipe a series of cloths 25 and 25 is arranged with spaces between them,

through which the air circulates. These cloths are kept constantly moist by water jets 26 above. As the air passes through these channels it is properly moistened.

5 For promoting evaporation from the moistened cloths the air blown through the moistened channels is preferably heated either by means of a suitable heater attached to the moist air supply pipe, preferably as shown in 10 the drawings, or by means of a connecting pipe between the hot air supply pipe and the moist air supply pipe at the source of heat.

By this arrangement of mechanism the compartments one and all or any number 15 may be alternately provided with a dry and moist or cooled atmosphere and the tobacco may be dried, cooled and ordered in a continuous successive process without removal or rearrangement of the tobacco and the tem- 20 perature and humidity of the air may be regulated at will.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

25 1. The combination with a room or compartment having a double ceiling and double walls, and a communicating air space between said ceilings and walls, and the spaces between the two walls in communication with 30 the interior of the room or compartment at or near the bottom, of a ventilating pipe in communication with the interior of the room or compartment and with the space between the ceilings and valves for the openings into the 35 interior of the room, substantially as set forth.

2. The combination with a room or compartment having a double ceiling and double walls, and a communicating air space between said ceilings and walls, and the spaces 40 between the two walls in communication with the interior of the room or compartment at or near the bottom, of a ventilating pipe in communication with the interior of the room or compartment and with the space between the 45 ceilings and valves for opening communication with the interior and opening communication with the air space or vice versa.

3. The combination with a room or compartment having double ceilings and walls 50 and means of communication between the space formed between said ceilings and walls and the interior of the room or compartment, of hot air and moist air pipes leading to the room or compartment, valves for shutting off 55 the hot air or moist air, a ventilating pipe in communication with the interior of the room or compartment and the space between the ceilings and walls, and valves for simultaneously opening one set of communicating

openings in the ventilating pipe and closing 60 the others, substantially as set forth.

4. The combination with a room or compartment having a double ceiling and double walls with an air space formed between the ceilings and between the walls, a ventilating 65 pipe, said pipe having openings into the surrounding air space, and ducts extending through the inner ceiling, a rod extending through the pipe, and valves connected with 70 the rod for controlling the openings in the pipe, said valves being arranged to simultaneously open one set of openings and close the other set, substantially as set forth.

5. The combination with one or more rooms or compartments, of hot air and moist air 75 pipes in communication with each other and in communication with the said rooms or compartments, valves in these pipes, and moistening medium in the moist air pipe consisting of dampened cloths suitably sepa- 80 rated for the passage of air and means for wetting these cloths, substantially as set forth.

6. The combination with one or more rooms or compartments having double ceilings and double walls, whereby air spaces are formed 85 between said ceilings and walls, the side air spaces opening at their lower ends into the interior of the room or compartment, and valves for controlling these openings, of hot air and moist air pipes, means for heating 90 and moistening the air in these pipes, valves in the hot air and moist air pipes, and ventilating pipe having openings whereby communication is had with the interior of the room 95 or compartment and the space between the ceilings and walls and valves for controlling said openings, substantially as set forth.

7. The combination with a room or compartment having double ceilings and walls, of pipes leading into the interior for supply- 100 ing air thereto, and ventilating pipe located in the space between the double ceiling, substantially as set forth.

8. The combination with one or more rooms or compartments, of hot air and moist air 105 pipes connected together and in communication with the room or rooms, and valves for controlling the passage of air to the room or rooms, substantially as set forth.

In testimony whereof we have signed this 110 specification in the presence of two subscribing witnesses.

SAML. P. MAYO.
GUSTAVUS A. PEPLE.

Witnesses:

JOHN F. T. ANDERSON,
H. B. OWEN.