

J. COPE.

Apparatus for Preserving Fruit.

No. 133,413.

Patented Nov. 26, 1872.

Fig. 1.

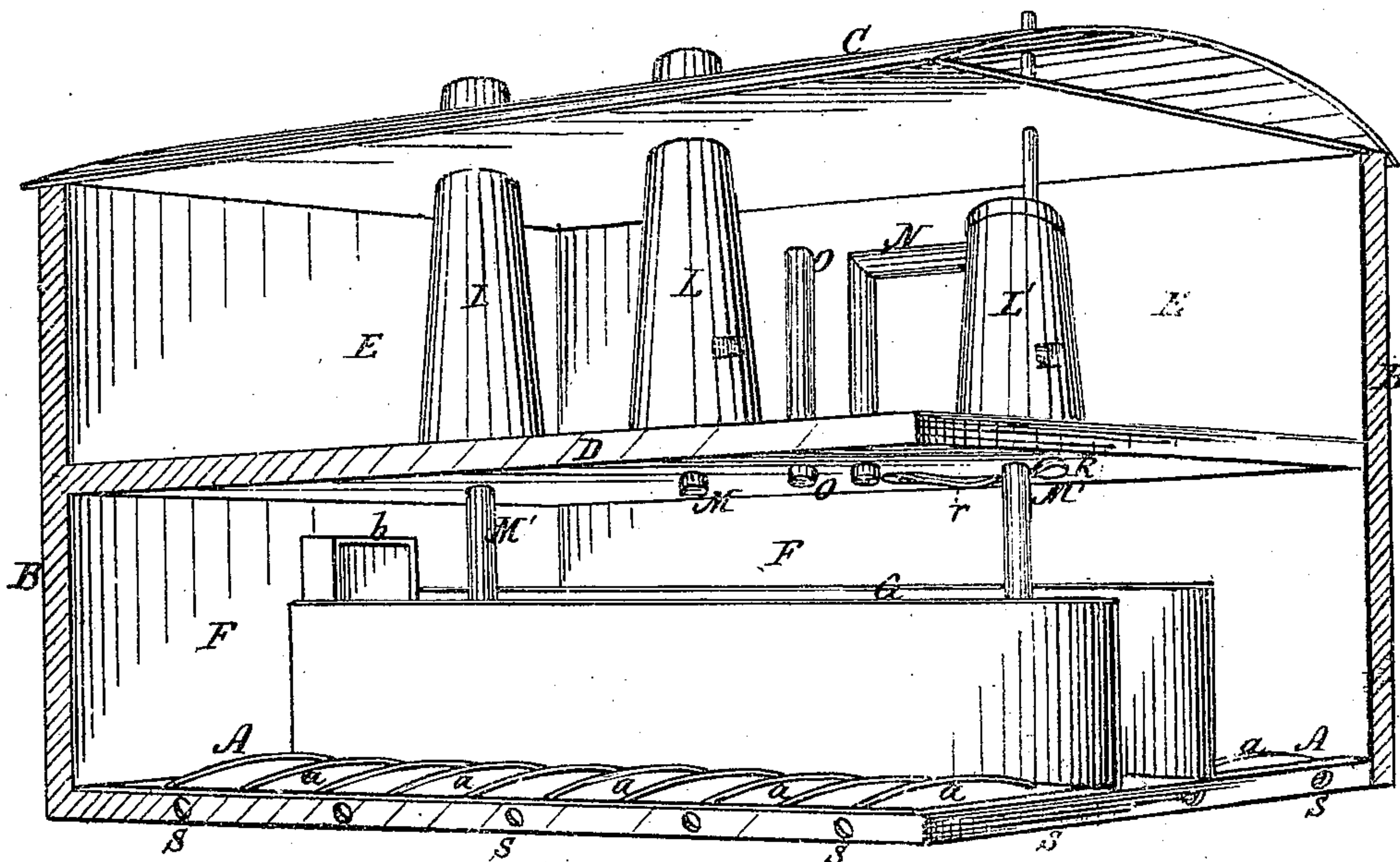
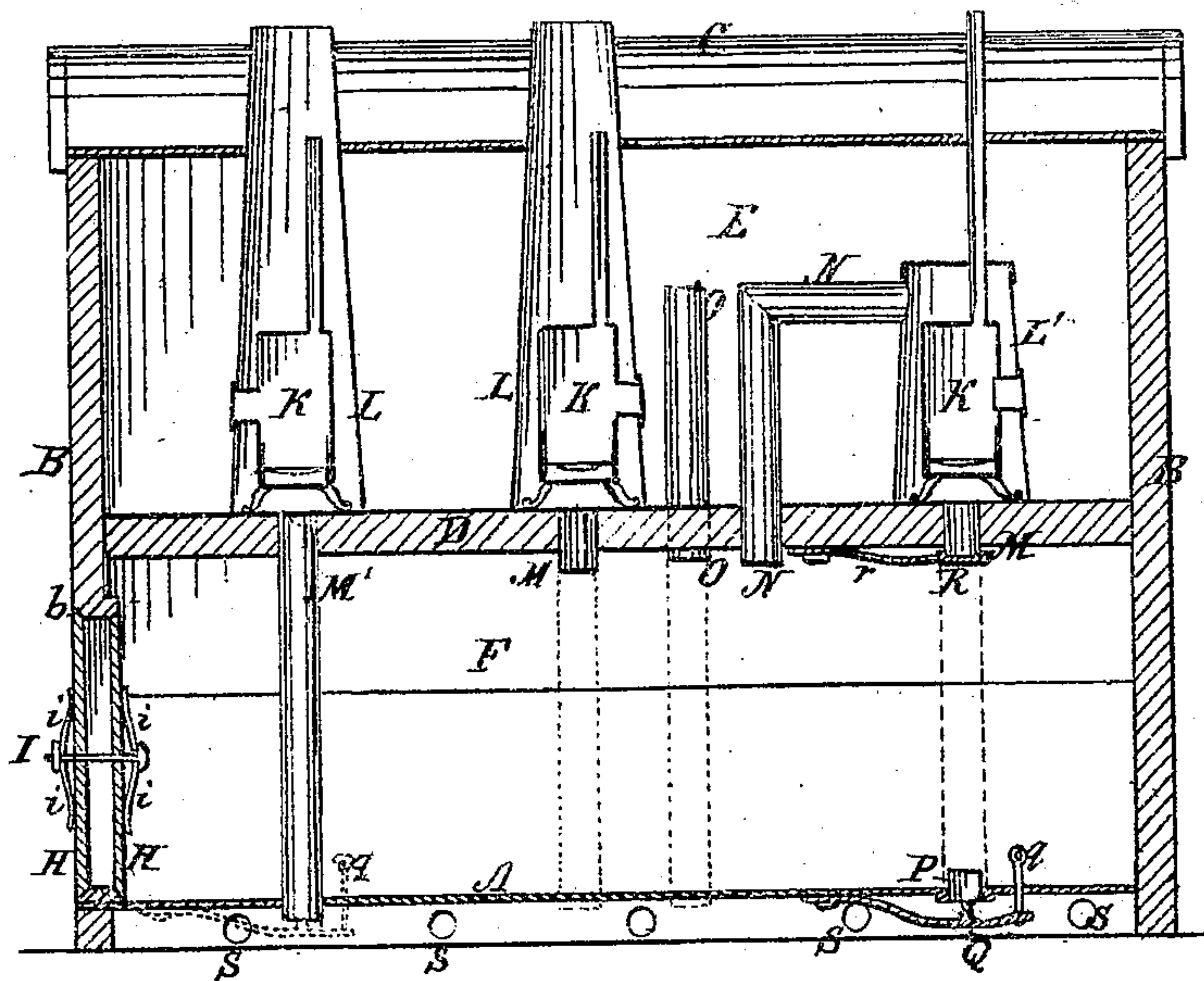


Fig. 2.



Witnesses

Edmund Masson

John R. Young

Inventor.

Joseph Cope, by  
Orinelle and Co. his Attys



# UNITED STATES PATENT OFFICE.

JOSEPH COPE, OF EAST FAIRFIELD, OHIO.

## IMPROVEMENT IN APPARATUS FOR PRESERVING FRUIT.

Specification forming part of Letters Patent No. 133,413, dated November 26, 1872.

*To all whom it may concern:*

Be it known that I, JOSEPH COPE, of East Fairfield, in the county of Columbiana and in the State of Ohio, have invented certain new and useful Improvements in Apparatus for Preserving Fruit; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of my device with the side and end walls removed so as to show its interior arrangement, and Fig. 2 is a vertical central section of the same upon a line extending from front to rear.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to enable fruit, meat, &c., to be preserved for any reasonable length of time without injury in substance or flavor; and it consists principally in the peculiar construction of the house and the arrangement of its interior, substantially as and for the purpose hereinafter specified. It consists, further, in the means employed for producing a circulation of air from beneath the storage-floor upward through the articles being preserved, substantially as and for the purpose hereinafter shown. It consists, further, in the means employed for producing a current of air from above the storage-floor downward through the articles being preserved, substantially as and for the purpose hereinafter set forth. It consists, further, in the construction of the pipe, trap, or fastener, and its combination with the floor and with an adjustable pipe or trap, substantially as and for the purpose hereinafter shown and described. It consists, further, in the construction and combination of the air-flues and their heaters, substantially as and for the purpose hereinafter specified. It consists, finally, in the device as a whole, when its several parts are constructed and combined substantially as and for the purpose hereinafter shown.

In the annexed drawing, A represents the floor; B and B, the walls; and C, the roof of the building, which parts are constructed preferably double, and the space intervening filled with a suitable non-conductor of heat. The space between the floor and roof is divid-

ed horizontally by means of a double floor, D, so as to form two compartments, E and F, the upper one of which, E, is intended for the heating and air-circulating apparatus, while the lower compartment, F, is to be used for the storage of perishable articles. Through the longitudinal center of the lower compartment F extends a passage-way, G, which is inclosed at its sides to a height of about four feet, and is entered at its ends through suitable rectangular openings *b*, that are provided in and through the walls B. The openings *b* are inclosed and hermetically sealed by means of two doors or covers, H, which are slightly larger than the same, and, being placed upon opposite sides of said wall, are drawn inward so as to embrace the latter by means of a bolt, I, which passes horizontally through the centers of said doors, with its head upon the inner side and a nut upon the opposite or outer side. If desired, a clamp, *i*, may be placed beneath the bolt-head and nut so as to transfer the strain from the center to near the edges of the doors. The floor A, outside of the passage-way G, is composed of a series of bars, *a*, which are slightly arched, and extend transversely across the building. These bars are arranged in parallel lines and at suitable intervals, so that while permitting the free passage of air they shall not permit the fruit or other articles to be supported from falling through. Within the upper room or compartment E are placed three or more stoves, K, which have any desired construction, and are each surrounded by a cylindrical metal casing, L, that has preferably a slightly conical form, and extends from the floor D upward through the roof. Suitable openings are provided in and through the side of each casing for the purpose of permitting access to the stoves, while from the top of each stove extends upward the usual exit-flue for the passage of the heated escaping products of combustion. From the lower end of each casing a pipe or flue, M, extends downward through the floor D, while from each of the end casings said flues M are continued downward through the lower compartment F and the lower floor A, the arrangement of said pipes being such as to bring them within the passage-way G. From near the vertical center of one of the outer casings, L', a pipe or flue, N, extends horizontally in-



ward and then downward through the floor D, while between the same and the central casing is provided another pipe, O, which is open at both ends, and extends from the lower compartment upward to or near the vertical center of the compartment E. At a point immediately above the pipe N the casing L' is provided with suitable means whereby its upper portion can be cut off and communication between its lower portion and the outer air prevented. As the pipes M', which extend between the floors A and D, will occasionally require removal, the upper end of each is made of sufficient size to enable it to pass over the end of the pipe M, while its lower end rests upon said floor A, and is held in place by means of thimble, P, which passes upward through a corresponding opening in the floor into said end. At its lower end the thimble P is secured to or upon one end of a flat spring, Q, the opposite end of which is attached to the lower side of the floor, and the whole so arranged as to cause said spring to hold said thimble in position, except when purposely depressed, for which operation a rod, q, is attached to said spring, and passes upward through said floor. If, now, the rod q is pressed downward the thimble P will be withdrawn from the end of the pipe, and said end permitted to be moved outward, so as to enable said pipe to be withdrawn. The lower end of each pipe or flue which passes through the floor D is closed, when desired, by means of a valve or stopper, R, that is secured to or upon one end of a flat spring, r, the opposite end of which is pivoted upon the lower side of said floor, so as to enable said valve to be swung beneath or away from said pipes, against which, when in position, said valves are held by the upward force or pressure of said springs. A number of openings, S, are provided in and through the foundation of the building, so as to admit the external air directly into the space beneath the floor, said openings being provided with suitable valves for closing the same when desired.

The device is now complete, and is operated as follows: When first placed within the house it is advisable that fruit should be "wilted" in order that it may be in the best possible condition for preservation. To accomplish this result communication is effected between the left-hand and central heaters and the space beneath the lower floor, and fires are started in said heaters. The upward draft of the heater-casings now draws the damp, cold air from beneath the fruit-floor, and causes a downward current of heated air from the upper room to pass through the pipe O into the lower compartment, where it is diffused over the entire surface of the fruit, and is finally drawn downward through the same into said space beneath the floor, and from thence passes through said heater-casings to the outside of the building. After a few hours the pipes M are to be removed from said heaters, the corresponding thimbles P in the floor closed,

and one of said pipes, M', placed between the lower end of the pipe O and the lower floor. The fruit being now in the desired condition, the fires are removed from the left-hand and central heaters, their openings M closed, the pipe M' transferred from the pipe O to the right-hand heater, and the lower end of said pipe and its thimble P inclosed; after which a fire is started within said right-hand heater, by which means a gentle circulation of air will be caused from within the casing of said heater, through the pipe N, into the lower compartment, from whence it will be drawn beneath the fruit, and again pass upward to said heater.

Air may be supplied to the upper room by doors, windows, registers, or any device deemed most desirable.

Should the outer air have the desired temperature and relative humidity it may be admitted to the building, and drawn downward through the fruit without being heated, and thereby insure perfect ventilation of said fruit, and the removal therefrom of all injurious odors. When the fruit is too much shrunk, and it is desired to restore it to its original plumpness, damp air from without is admitted to the space beneath the fruit-floor, drawn upward through the fruit, and then discharged from or through the top of the building.

It will be readily seen that by making the dimensions of the air-passages variable at will the quantity and temperature of the air passing through the fruit can be regulated with exactness, by which means the condition of said fruit is placed entirely within the operator's control.

Although my improvements are more especially designed for use in connection with fruit-houses constructed separate from other buildings, it will be seen that they are equally applicable to the ventilation of cellars, and the preservation of their contents, or to the ventilation of ordinary dwelling-houses.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The hereinbefore-described house, provided with the open floor A, the compartments E and F, the passage G, the doors H, and the air-passages S, when constructed and arranged to operate substantially as and for the purpose specified.

2. The means employed for producing an upward current of air through the fruit, consisting of the stove or heater K, the casing L, and the pipe M', when constructed and arranged within the house, and combined with the space beneath the floor and with the air-passages S, substantially as shown.

3. The means employed for producing a downward current of air through the fruit, consisting of the stove or heater K, the casing L, and the pipes M', N, and O', when constructed and combined with each other and with the house, substantially as set forth.

4. The means employed for locking in place and for releasing the pipe M', consisting of



the thimble P, the spring Q, and the rod q, when constructed as shown, and combined with each other, said pipe M', and with the floor A, substantially as shown and described.

5. The heaters K, and air flues or casings L, when constructed and combined, substantially as and for the purpose specified.

6. The hereinbefore-described apparatus as a whole, when its parts are constructed and

arranged to operate substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of October, 1872.

JOSEPH COPE.

Witnesses:

JOSEPH KANNAL,

J. J. CADWALADER.