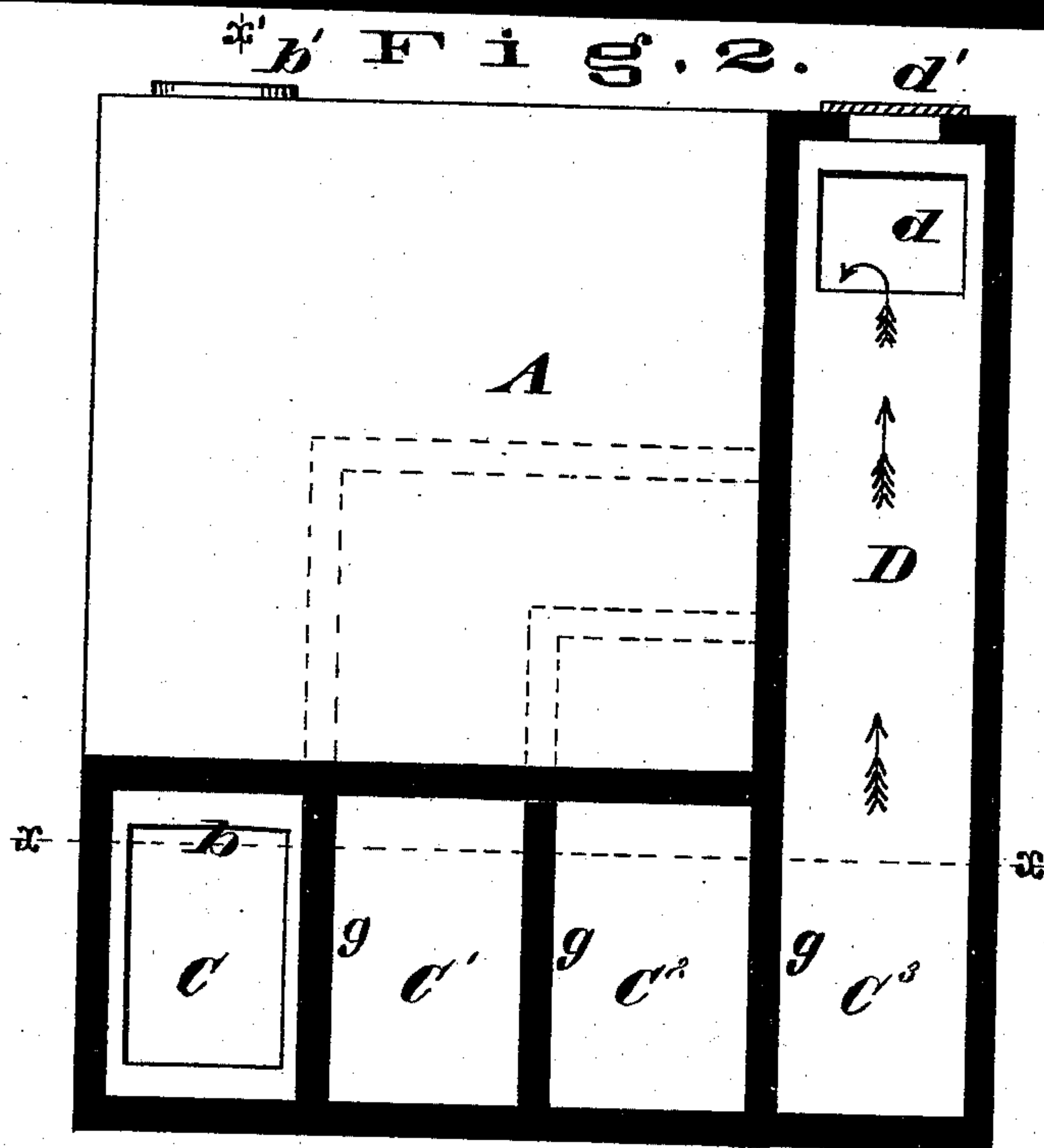
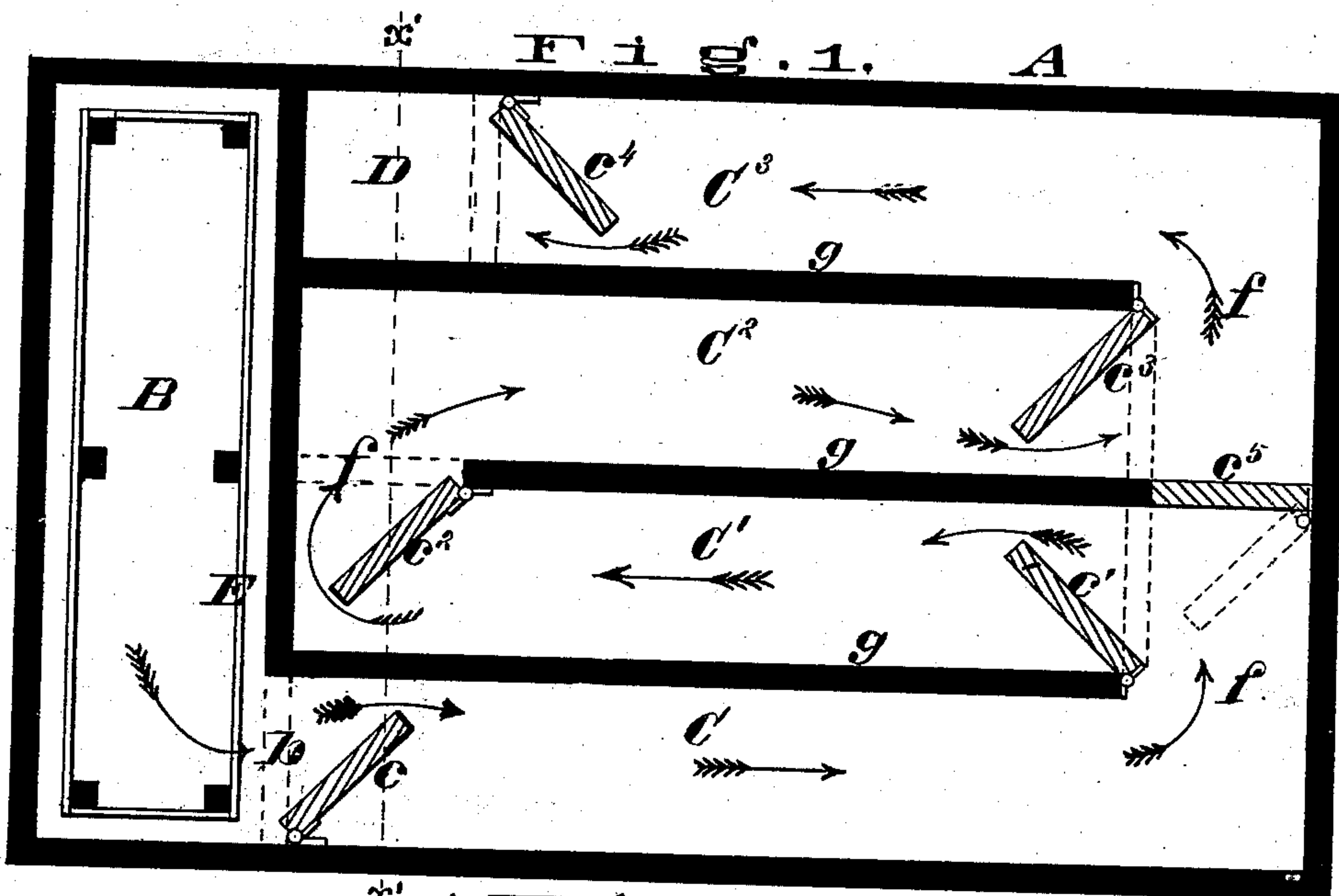


DeW. C. SANFORD.  
Refrigerator.

No. 223,764.

Patented Jan. 20, 1880.



Attest.

Charles Pickles  
Elias J. Harlato

Inventor.

D. W. C. Sanford.  
by C. Moody.  
atty.

# UNITED STATES PATENT OFFICE.

DE WITT C. SANFORD, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF  
OF HIS RIGHT TO ELIZABETH H. SANFORD, OF SAME PLACE.

## REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 223,764, dated January 20, 1880.

Application filed July 9, 1879.

*To all whom it may concern:*

Be it known that I, DE WITT C. SANFORD, of St. Louis, Missouri, have made a new and useful Improvement in Refrigerating-Houses, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a horizontal section taken on the line  $xx$  of Fig. 2, and Fig. 2 a vertical section taken on the line  $x'x'$  of Fig. 1.

The same letters denote the same parts.

I have heretofore made and patented an improvement in refrigerators and refrigerating-houses based upon the principle of employing refrigerating air-currents in a horizontal direction, and consisting, in practice, mainly of an apartment wherein air is cooled and a series of refrigerating-apartments through which the air, after being cooled, travels to and fro in a horizontal direction, the air leaving the air-cooling apartment at the lower level thereof, and, after traversing the refrigerating-apartment, passing into the air-cooling apartment again at the upper level thereof, the current being due to the difference in weight of the colder air in the air-cooling apartment and the warmer air in the refrigerating-apartments.

In the construction used in illustrating the improvement referred to the refrigerating-apartments are arranged one above the other, forming what may be termed a "vertical series."

The present improvement is based upon the same principle of using refrigerating-currents in a horizontal direction; but in place of arranging the refrigerating-apartments in the form of a vertical series, they are arranged side by side, forming a horizontal series of refrigerating-apartments; and the improvement relates to this arrangement specially.

Referring to the drawings, A represents a refrigerator or refrigerating-house embodying the present improvement, having the air-cooling chamber B and the refrigerating-apartments C C' C<sup>2</sup> C<sup>3</sup>, the series consisting of any desirable number.

The first apartment, C, is connected with the air-cooling chamber B by means of the

opening or flue  $b$ , and the last apartment, C<sup>3</sup>, is connected with the air-cooling chamber by means of a flue, D, which at its lower end connects with the apartment C<sup>3</sup>, and at its upper end, at  $d$ , leads into the chamber B.

Suitable doors or valves  $c$   $c^4$  may be used to close, when desired, the exit from and entrance to the chamber B. Also, doors or partitions  $c'$   $c^2$   $c^3$   $c^5$  may be employed to close any of the refrigerating-apartments, as desired, and so as to direct the refrigerating-current through any of the refrigerating-apartments at will.

In operation, the air, after being cooled in the chamber B—say by means of ice in the crib E—passes thence through the opening  $b$  into the apartments C C' C<sup>2</sup> C<sup>3</sup>, (passing through the openings  $fff$  at the ends of the partitions  $g g g$ ), and thence, by way of the flue D, back into the air-cooling chamber.

The flue D is used because it is preferable to employ an air-cooling chamber that is higher than the refrigerating-apartments. Where the two are of the same height and adjoin each other the refrigerating apartment or apartments may open directly into the air-cooling chamber. In such case the opening  $b$  into the refrigerating-apartment should be at or near the bottom of the latter, and the exit therefrom should be at or near the top of the refrigerating-apartment.

Either of the apartments C C' C<sup>2</sup> C<sup>3</sup> may be connected directly with the flue D or the upper part of the air-cooling chamber by constructing suitable flues for that purpose—for instance, as indicated by the dotted lines in Fig. 2. If desired, but one (C, for instance) apartment only may be used for refrigerating purposes, the remaining apartment or apartments serving simply as a return-flue for passing the air back into the air-cooling chamber. In all cases suitable doors or valves, properly adjusted to direct the air-current in the various courses as described, may be used.

The air may be allowed to pass out of the top of the flue D instead of returning it into the chamber B. In such case the opening  $d$  should be closed and the valve  $d'$  opened.

Air may be admitted into the chamber B by opening the valve  $b'$ .



Two or more horizontal series of apartments, C C', can be arranged in stories, one series above the other series.

I claim—

- 5 1. The combination, in a refrigerator or refrigerating house, of an air-cooling chamber and the apartments C C' C<sup>2</sup> C<sup>3</sup>, said apartments being arranged in the form of a horizontal series, and the series consisting of two or more  
10 apartments, substantially as described and shown.

2. The combination of the chamber B, apartments C C' C<sup>2</sup> C<sup>3</sup>, and flue D, substantially as described and shown.

Witness my hand this 3d July, 1879.

D. W. C. SANFORD.

Witnesses:

C. D. MOODY,  
C. C. COWEN.