A. JAS.

Apparatus for Cooling and Circulating Air in Buildings.

No. 162,660. Patented April 27, 1875.

Fig. 1.

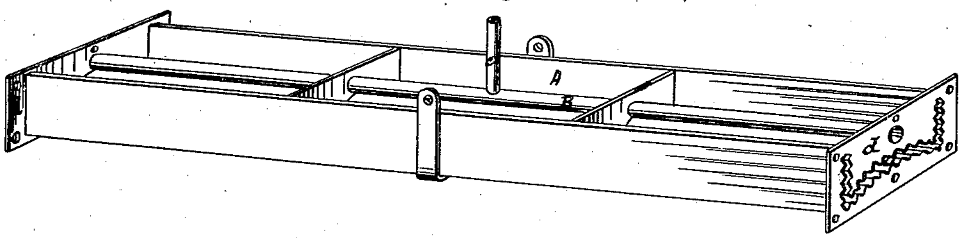


Fig. 2.

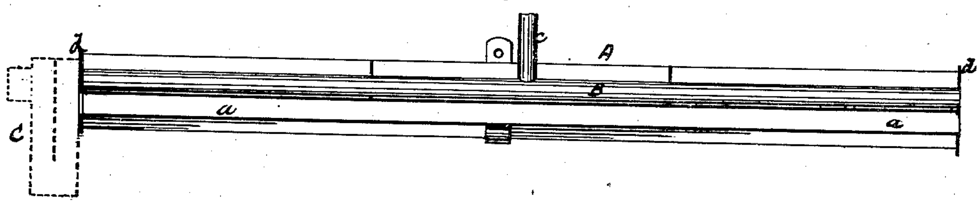
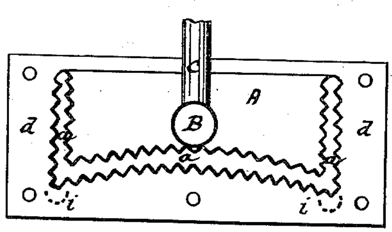


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTE JAS, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALBERT C. JANIN, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR COOLING AND CIRCULATING AIR IN BUILDINGS.

Specification forming part of Letters Patent No. **162,660**, dated April 27, 1875; application filed April 6, 1875.

To all whom it may concern:

Be it known that I, AUGUSTE JAS, of New Orleans, Louisiana, have invented certain new and useful Improvements in Apparatus for Ventilating and Cooling Buildings, &c., of which the following is a specification:

This invention contemplates the ventilating and cooling of rooms, buildings, and other structures by means of metallic surfaces arranged in said structures, and cooled by contact with a refrigerant, (such as the volatile agents used in machinery for making ice,) and also by means of air which is first cooled by the action of the refrigerant, and then is discharged into said structures.

I am aware that this method of cooling and ventilating is, broadly considered, not new. My invention is directed to improvements on apparatus required for the purpose.

Following a plan which heretofore has been suggested—as, for instance, in Letters Patent to Mühl, No. 146,267, dated January 6, 1874—I arrange the refrigerating apparatus in the upper part of the room or other structure. In such proximity to said apparatus as to be acted on by the refrigerant, I locate the ducts which convey and supply air to the room, the air being thus cooled before its discharge. The metallic structure that forms the conduit for the refrigerant is formed with or surmounted by a trough designed to contain a liquid, such as salt and water, that will not easily congeal. The air-duct is immersed in and led through this bath, to the end that the full effect of the refrigerating action upon the air may be obtained.

The manner in which I prefer to carry my improvements into effect will be understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of a portion or section of an apparatus embodying my invention. Fig. 2 is a longitudinal vertical central section, and Fig. 3 is a transverse vertical section, on an enlarged scale, of the same.

The apparatus here shown is a long trough-like structure, with a double bottom, or double bottom and sides, by which is formed the conduit *a* for the passage of the refrigerating agent, such as ammonia, ether, rhigoline, &c. The double bottom may be plane or curved; it preferably has the latter form, as shown in the drawing, the two plates being concavo-convex, with the convex face uppermost. I also prefer to make them of corrugated metal, the corrugations running lengthwise of the structure. This formation enables me to double or triple, for the same amount of gas, the number of points of contact with the air to be cooled. The double bottom is preferably formed by the union of two plates of copper, which are brazed together at their side edges, and are further united by external bands and ties, if required. The trough, however, can be made of other metal or material, and its parts, instead of being soldered or brazed together, can be united by other means—as, for instance, by bolts and nuts, with packing, such as rubber, interposed between their edges, in order to make a tight joint. As shown in the drawing, the sides of the trough are double, as well as the bottom. This, however, while preferable, is not a necessity.

Within the trough A, and extending along its longitudinal center, is an air-duct, B. Air is supplied to this duct by suitable means, such as a fan, by which a current of air will be caused to flow through the duct. The air is discharged into the room from openings *c*, with which the duct is provided at suitable intervals.

The device represented in the drawing is a single section, to which other sections, as many as desired, may be joined. The section is provided with end plates or flanges *d*, to which are united, by bolts or nuts, the plates on the contiguous ends of the other sections. A rubber packing is interposed between the plates to secure a tight joint.

It is manifest, without further explanation, that a number of sections can be thus put together to maintain a continuous air-duct and an uninterrupted conduit for the refrigerant. The air-pipe sections may have thimbles or projecting ends, which will fit into the adjoining air-tubes when the sections are brought together.

The refrigerant is supplied to the apparatus by means ordinarily used in ice machinery, the apparatus occupying the same position with

relation to the supply and condensing apparatus that the freezing-vessel does to the same apparatus in ordinary ice-machines.

At the inlet end of the apparatus I locate a trap, C, indicated by dotted lines in Fig. 2. This trap has an internal transverse partition extending nearly to its bottom, which compels the refrigerant to pass down under the partition before it can reach the conduit *a*. The object and effect of this trap are to cause the foreign and less volatile matters that may be brought in by the gas to be deposited in the bottom of the trap, and prevented from entering and clogging the conduit. These matters can be drawn off from the trap from time to time through an opening closed by a screw-plug, a valve, or otherwise.

The trough which surmounts the refrigerant-conduit is, as before stated, designed to contain a liquid which will congeal only at a very low temperature.

To avoid all danger of humidity in the chamber, which might otherwise occur on cessation of the use of the apparatus, I, in practice, provide the lower side edges of the apparatus with small channels or gutters *i*, which conduct whatever water there may be on the exterior of the apparatus to a suitable reservoir, as, for instance, the tank that contains the condenser.

The apparatus is placed the proper distance below the ceiling of the room, and it, as a whole, has such an inclination as will enable the water or condensed moisture that gathers on it to flow to some determinate point or points, as provided in the preceding paragraph.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. In apparatus for ventilating and cooling buildings and other structures, the combination of a refrigerant-conduit, a surmounting trough, and an air duct or pipe arranged within the trough, for operation substantially as shown and set forth.

2. The cooling-trough, designed to contain a liquid congealable at a low temperature, and provided with a concavo-convex double bottom, which constitutes the conduit for the refrigerating agent, substantially as set forth.

3. The trough-sections, constructed substantially as described, and provided with end plates or flanges, by which the said sections may be fitted and secured together end to end, substantially as and for the purposes shown and set forth.

In testimony whereof I have hereunto signed my name this 19th day of March, A. D. 1875.

AUGUSTE JAS.

Witnesses:
ALBERT C. JANIN,
E. FIXARU.