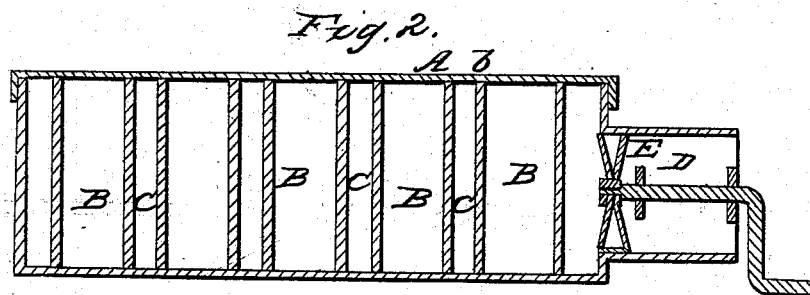
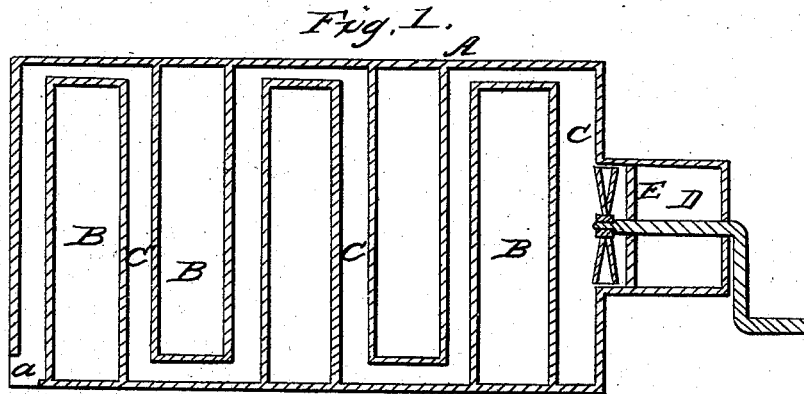


N. S. SHALER.
Air Cooling Apparatus.

No. 47,991.

Patented May 30, 1865.



Witnesses:
F. P. Hale Jr
H. C. Fisher

Inventor:
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By his Attorney
H. W. Eddy

UNITED STATES PATENT OFFICE.

NATHL. S. SHALER, OF NEWPORT, KENTUCKY.

IMPROVED AIR-COOLING APPARATUS.

Specification forming part of Letters Patent No. 47,991, dated May 30, 1865.

To all whom it may concern:

Be it known that I, NATHANIEL S. SHALER, of Newport, in the county of Campbell and State of Kentucky, have invented a new and useful Air-Cooling Apparatus; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 denotes a horizontal section, and Fig. 2 a longitudinal and vertical section, of it.

The apparatus in question is a combination consisting not only of a series of ice holders or cells, and a tortuous passage formed by them, and a case in which they are arranged, but a means of circulating or causing to pass either air or a gas through such passage and against the outer surfaces of the said cells, whereby such air or gas may be reduced in temperature.

In the drawings, A denotes a box or case having within it a series of cells, B B B, each of which is separate from that or those next contiguous to it. Every alternate cell is placed endwise against one side of the box or case, the remainder of the cells being placed against the opposite side of such case. Besides this, the cells are arranged so that there may be a passage extending on both sides and one end of each in such manner as to form a tortuous channel, C. This channel is open at one extremity, as shown at *a*, and at or near its other extremity it leads into a conduit, D, in which there is placed a screw-propeller or fan-wheel, E, so constructed and arranged that on being revolved in one direction it will draw air into and through the tortuous channel and into the conduit, while on being revolved in the opposite direction it—viz., the screw-propeller—will draw air into the conduit and force such air into and through the tortuous channel. The top *b* of the case may be hinged to one of the sides of such case, so as to serve as a cover for all the cells, each of which may be open at the top. By raising the said top, not only the cells but the tortuous passage will be uncovered.

It is intended that when in use the apparatus is to have some cooling material—such as snow or ice, or some refrigerating liquid or mixture—placed in each of the cells. Under these circumstances the outer surfaces of the cells will be kept at a cooling temperature. In

case of the temperature being below 32° Fahrenheit the moisture of the air which may pass through the tortuous passage will be condensed or frozen on the cells, and the current of air will be cooled or reduced to a refrigerating temperature.

Where it may be proposed to maintain an even and moderately-reduced temperature in the air of an apartment with which the apparatus may be combined or may be situated, rather than to suddenly cool such air to a very reduced temperature, an apparatus like that described, although modified in one of its elements or features, may be employed. In such case the said screw-propeller may be dispensed with, and in its stead air-conduits may be used, one of them being led out of each end of the tortuous passage, and so that one conduit may rise nearly to the ceiling, while the other would descend nearly to the floor of the apartment. The pipes or air-conduits as described and arranged may also be used with the propeller—that is, when it may be desirable to rapidly reduce the temperature of a room to a certain period, and afterward maintain such temperature without the aid of a propeller, and by the natural flowing of the air through the tortuous passage. Under these circumstances the air, as it may become warmer, will rise and flow through the tortuous passage, and by being cooled therein will flow out of it. This action of the apparatus may be sometimes attained to good advantage by dispensing with the auxiliaries or pipes, as described, and simply arranging the apparatus so as to stand lengthwise in an inclined position.

If desirable, chloride of lime or some other deliquescent or moisture absorbent may be placed within the tortuous passage and on its bottom, in order to assist in abstracting the moisture from the passing air.

I claim—

The apparatus substantially as explained—that is, consisting of the series of cells, the tortuous passage, and the propeller or the equivalent thereof—arranged in manner and so as to operate as and for the purpose specified.

N. S. SHALER,

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.