UNITED STATES PATENT OFFICE.

LOUIS SCHULZE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN COOLING AND PURIFYING AIR IN BREWERIES, PACKING-HOUSES, AND OTHER BUILDINGS.

Specification forming part of Letters Patent No. **142,046**, dated August 19, 1873; application filed August 14, 1873.

To all whom it may concern:

Be it known that I, LOUIS SCHULZE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Cooling Breweries and other Buildings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a plan view; Fig. 2, a longitudinal vertical section in *x x* of Fig. 1. Fig. 3 is a vertical section of the ice-chamber. Fig. 4 shows a method of connecting the air ducts and flues.

The object of this invention is to cool breweries and other buildings by passing a forced current of air through a closed chest or box provided with divisions, so as to compel the air to come in contact with the ice, and then by suitable flues, channels, or pipes distribute it to the parts or apartments of the building to be cooled, and then return the air again to the cooling-chamber to be again acted upon by the ice to cool and purify it.

Heretofore air has been cooled by being forced through an ice-chest either in direct contact with the ice or through pipes, then passed to the room to be cooled, and again returned and recooled; but for effective working of such apparatus various details and arrangement of parts are required, and these are supplied by my present invention.

In Letters Patent issued to me, dated June 4, 1872, No. 127,647, I have described a good air-cooler. That used in my present invention is quite similar, but more simple.

The following description will enable others to make and use my invention:

In order to completely cool air it should be repeatedly brought in contact with ice under some pressure. This I effect by the arrangement of the divided cooler, having partitions extending alternately from the top and bottom, so as to compel the air to travel in a zigzag course through the ice. As the air is forced through the cooler it may carry with it a portion of water. This is collected in a suitable reservoir outside, so as not to enter the flues. Two systems of pipes with double valves are provided, one for carrying the cold air to the apartments to be cooled, and the other to draw the air out of the apartments by the suction of the blower.

The blower which I prefer to use is that now known as the "Root blower." This gives considerable force and pressure in the ice or cooling chamber. This principle of compressing the air in the cooling or ice chamber constitutes one of the leading features which distinguishes my invention from such as simply drive the air through or over the ice. By compressing the air in and among the ice, and then letting it escape into the room or compartment to be cooled, the degree of cold is much greater, and is effected in a much shorter time and in less space. Another important result is that the returned air, which is loaded with impurities from the rooms or articles through or over which it has passed, by being compressed into the ice-chambers, has all vapors condensed and removed by the water, which results from the ice as it melts. This makes it generally unnecessary to use any other means of purifying the air.

When coolers of the ordinary kind are used, and the air to be cooled is passed without compression over or through the ice, it is necessary very often to throw out the air that has been used by some means of ventilation, which occasions a great loss of cold and a consequent waste of ice.

In the drawing, A represents a building, such as a brewery, to be cooled. B is the cooler or ice-chamber, which is made strong and surrounded by non-conducting walls. The covers *a* to the opening through which the ice is introduced are secured by bars and the joints made tight by proper packing, so that the air under pressure is kept, while passing through, from leaking. A suitable number of partitions, *m m m*, with openings alternately above and below, as shown, compels the air to travel in a zigzag course as it goes through the ice. C is the blower-chamber, in which is placed one or more Root blowers, or other equivalent pressure-blower, which will force

2 Sheets--Sheet 1.

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Steering Apparatus.

No. 142,047. Patented August 19, 1873.

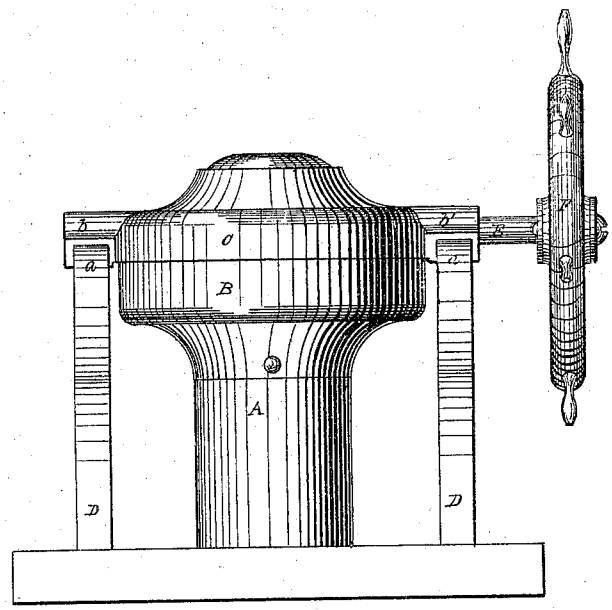

FIG. 1.

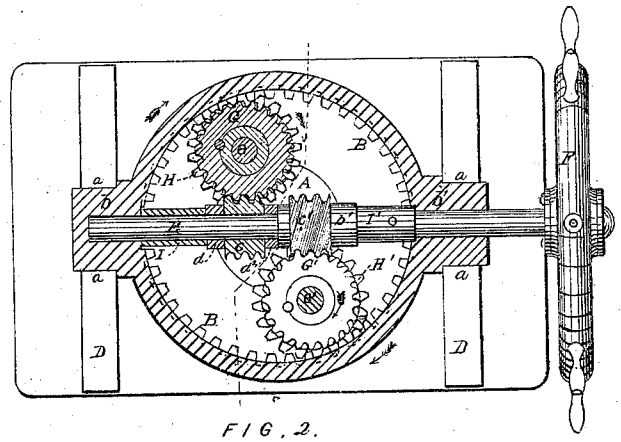

FIG. 2.

WITNESSES.

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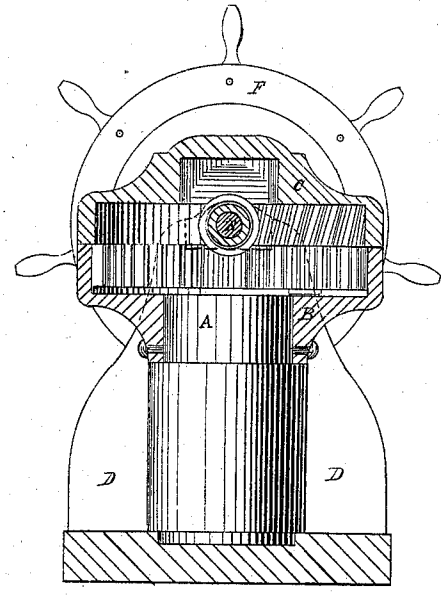

FIG. 3.

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