

E. W. GIDDINGS.
Refrigerator.

No. 162,468.

Patented April 27, 1875.

Fig 1

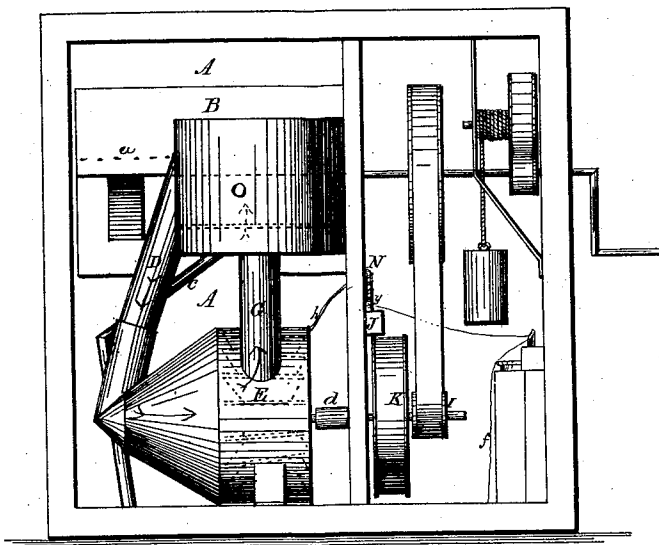


Fig. 3.

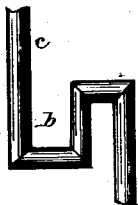


Fig. 4

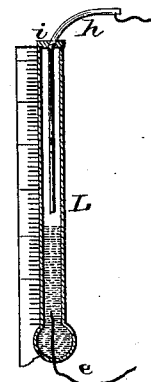
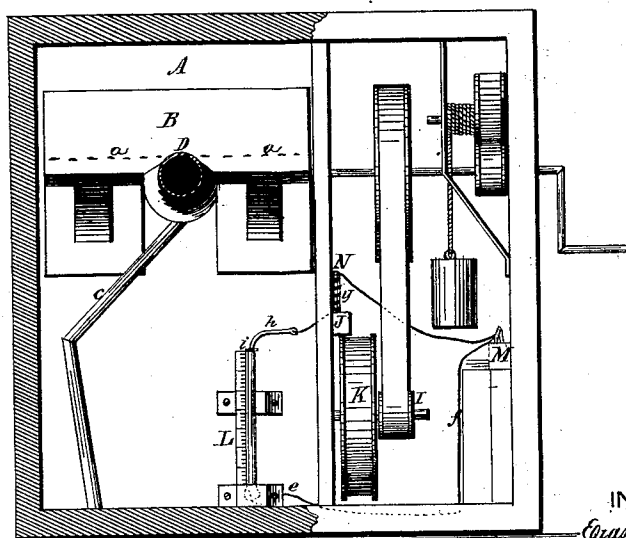


Fig 2



WITNESSES.

J. W. Larned,
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INVENTOR.

Erastus W. Giddings
per F. A. Lehmann, atty

UNITED STATES PATENT OFFICE.

ERASTUS WARREN GIDDINGS, OF JOHNSTOWN, PENNSYLVANIA.

IMPROVEMENT IN REFRIGERATORS.

Specification forming part of Letters Patent No. **162,468**, dated April 27, 1875; application filed April 12, 1875.

To all whom it may concern:

Be it known that I, ERASTUS WARREN GIDDINGS, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Refrigerators; 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.

My invention relates to an improvement in refrigerators; and it consists in the arrangement and combination of parts that will be more fully described hereafter, whereby the temperature is automatically regulated to suit different articles.

The accompanying drawing fully illustrates my apparatus.

A represents the refrigerating-chamber, the walls of which should be made of or lined with some non-conducting material, and the door or doors to said chamber made as near air-tight as possible, to exclude the outside air. This chamber should be provided with suitable open shelves, upon which the articles to be preserved are to be placed, the open shelves allowing free circulation of air. In the upper portion of the chamber A is the ice-pan B, provided with an interior perforated shelf or grating, *a*, upon which the ice is laid. The ice-pan is placed in an inclined position, so as to cause the waste-water to pass through the waste-pipe C, said pipe being provided with an ordinary seal at *b*, either inside or outside of the chamber, to prevent the ingress of air in the refrigerator. Under the ice-pan is arranged a pipe, D, communicating with a suction-fan, E, which draws the air through the ice into the fan, and forces it through a pipe, G, into any part of the refrigerating-chamber.

It will be noticed that by the use of a suction-fan, instead of the ordinary blower, as heretofore generally employed, the air is taken from the top of the chamber, where it is the warmest, and drawn through the ice, (instead of blown or forced through it,) and in its cold state enters the fan, from where it may be conducted by the pipe G to any part of the

chamber, and thus keep a constant and steady circulation of air.

It is, of course, understood that I do not confine myself to the use of ice alone, as any freezing or refrigerating mixture or compound may be used in the same manner.

The air, as it is forced through the pipe G, may be conducted into a suitable vessel, *o*, containing charcoal or other purifying substance, and forced through the same, thereby becoming perfectly pure and sweet; or, in other words, freed from all the impurities collected or absorbed by it in its circulation around the articles in the refrigerator.

d is the fan-shaft, passing to the outside of the chamber A, or to a chamber adjoining the same, and is provided with a wheel or pulley, I. This pulley is, by a belt, cord, or other device, connected with a gearing or clock-work, or other mechanism, operated by weight, springs, or other power; or, if desired, it may be operated by electricity.

J represents a brake, to operate on the periphery of the fly-wheel K, placed upon the fan-shaft *d*, which brake may be held down on said fly-wheel by a spring or other mechanical means.

At any suitable point in the refrigerating-chamber A is placed a thermometer, L. Through the lower part of the glass tube of the thermometer is passed a fine platinum wire, *e*; and through the upper end of said glass tube is passed a metal rod, *h*, provided with screw-threads, on which is placed a nut, *i*, to adjust the lower end of the rod to any desired height within the thermometer-tube. The platinum wire *e* is, by an electric wire, *f*, connected with one pole of a battery, M, and the rod *h* is, by a similar wire, *y*, connected with the other pole thereof; one of these wires, (*f* *y*), however, on its way, passing around an electro-magnet, N, located above the brake J.

It is well known that different articles require different temperature to be properly preserved. The required temperature having been ascertained, the rod *h* is adjusted by means of the nut *i*, so that its lower end will be at or immediately above the degree required. Mercury being a conductor of electricity, it follows that as soon as the tempera-

ture in the chamber A rises to or above said degree, the electric circuit will at once be completed by the mercury coming in contact with the lower end of the rod *h*. The magnet N then at once lifts the brake J from the wheel K, and the fan is put in motion, drawing the warmer air from the top of the chamber through the ice or refrigerating mixture, and cooling the same. As the required temperature is re-established the mercury falls and breaks the current, allowing the brake to act on the fly-wheel, and by this means automatically regulating and maintaining a uniform temperature in the refrigerator.

The mechanism for operating the fan, as well as the electric devices, may be dispensed with, if desired, in small refrigerators, when the fan can be operated as required by a crank or other suitable means by hand. Sucking the warm air in at the top of the chamber and drawing it through the ice condenses any moisture it may contain, and assists in freeing the chamber from all noxious vapors.

My invention may be applied on railroad-cars, steamboats, dwelling-houses, or in any desired place, and may also be used for cooling beer or other liquids.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a refrigerating-chamber, the combination of the thermometer L, screw-rod *h*, nut *i*, and wire *e*, substantially as shown.

2. In a refrigerating-chamber, the combination of an adjustable circuit-closing device, a battery, and a starting and stopping mechanism, whereby the temperature can be regulated at will to suit various articles, as specified.

3. The combination of the thermometer L, platinum wire *e*, adjustable rod *h*, electric wires *f y*, battery M, and electro-magnet N, all arranged as described, with a refrigerating-chamber, an automatically-operating suction-fan therein, and a stopping and starting mechanism therefor, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of April, 1875.

ERASTUS WARREN GIDDINGS.

Witnesses:

T. F. LEHMANN,

F. A. LEHMANN.