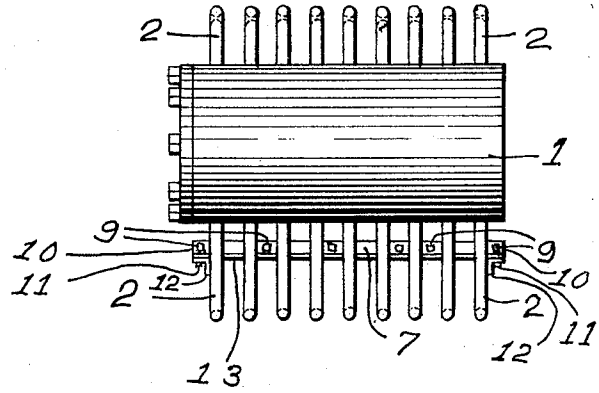
March 13, 1928. 1,662,353

F. E. WILLIAMS

REFRIGERATING APPARATUS

Filed Aug. 6, 1925

Fig. 1.



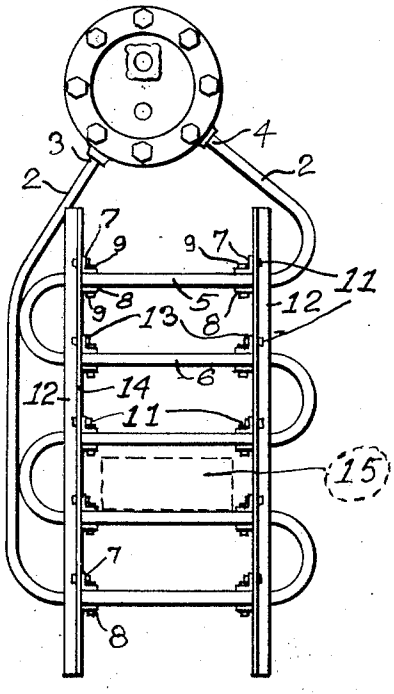


Fig. 2.

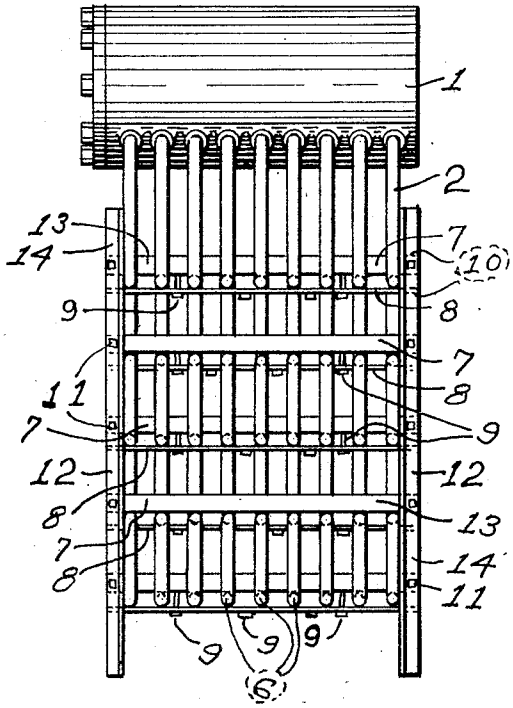


Fig. 3.

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Patented Mar. 13, 1928. 1,662,353

UNITED STATES PATENT OFFICE.

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REFRIGERATING APPARATUS.

Application filed August 6, 1925. Serial No. 48,513.

This invention relates to refrigerating apparatus, and more specifically to an evaporator for a refrigerant especially applicable to household refrigeration purposes. Two other applications for modified forms of refrigerating apparatus and one for a refrigerated cabinet embodying such apparatus have been filed by the same inventor concurrently with the present application.

An object of the present invention is to provide a refrigerant vaporizer having shelves or compartments adapted to receive and cool containers for making ice cubes and the like.

Another object is to provide means for cooling such shelves or compartments directly by the evaporation of the refrigerant, without the intervention of a brine cooler.

Other objects and advantages will appear in the course of the following description of a preferred embodiment of this invention.

In the accompanying drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur,

Figure 1 is a plan view of the vaporizer;

Figure 2 is a front end elevation of the same; and

Figure 3 is a side elevation.

The illustrated structure comprises a header 1, preferably a cylinder of the usual type and including suitable means for connection to a refrigerant circulating system, the header, also, preferably having associated therewith means for controlling the level of liquid refrigerant, such for instance, as is disclosed in the concurrent application for a refrigerating cabinet, abc e referred to. A series of depending tubes 2 have their opposite ends 3 and 4 connected to respective opposite sides of the header 1, the tubes being convoluted in side by side spaced relation to form a series of superposed shelves 5, consisting of the straight intermediate horizontal portions 6 of the tubes 2. The corresponding ends of the portions 6 are connected together and held in proper spaced relation or alinement by bars 7 and 8, bearing on the upper and lower sides, respectively, of the portions 6, and connected together preferably by means of bolts 9. The ends 10 of the bars 7 and 8 project beyond the pipes 2, and the said ends 10 are secured by means of bolts 11 to posts 12, the lower ends of which rest on the floor or other suitable support. Bars 7 and posts 12 are preferably formed of angle iron, the vertically projecting flanges 13 of the former being secured to the longitudinally projecting flanges 14 of the latter by means of the bolts 11.

Containers 15, such as are commonly used in electrical household refrigerators to freeze water therein in making cubes of ice, may be placed directly on the shelves 5, the direct contact of the uniformly spaced pipe portions 6 therewith producing an even and efficient cooling of the containers, thus obviating the necessity of providing circulating brine as an intermediate agent to transmit cold evenly from the vaporizer to the container.

The vaporizer, of course, receives liquid refrigerant, such, for instance, as sulphur dioxide, from a suitable compressing and liquefying apparatus included in the system, which in turn receives the refrigerant in the gaseous state from the vaporizer. The boiling of the liquid refrigerant in the header 1 and in the pipes 2, of course, produces the lowering of the temperature, as will be understood by those skilled in the art. The vaporizer of this invention, when placed in a household refrigerator, also cools the same by convection of air currents therein, as well as by absorbing radiated heat.

Having thus fully described this invention, I hereby reserve the benefit of all changes in form, arrangement, order, or use of parts, as it is evident that many minor changes may be made therein without departing from the spirit of this invention or the scope of the following claims.

I claim:

1. In a refrigerating apparatus, a header, a plurality of depending tubes having their opposite ends connected to the respective opposite sides of said header, one branch of said tubes being convoluted in side by side spaced relation to form a series of superposed shelves, the other branch of said tubes extending from the lowermost convolution to the opposite side of said header and means for maintaining at least the several convoluted branches in spaced relation.

2. In a refrigerating apparatus, a header,

a pluraltiy of depending tubes having their opposite ends connected to the respective opposite sides of said header, one branch of said tubes being convoluted in side by side spaced relation to form a series of superposed shelves consisting of straight intermediate horizontal portions and alignment means comprising bars connecting said portions together and maintaining the same in spaced relation.

3. In a refrigerating apparatus, a header, a plurality of depending tubes having their opposite ends connected to the respective opposite sides of said header, one branch of said tubes being convoluted in side by side spaced relation to form a series of superposed shelves consisting of straight intermediate horizontal portions, alignment means comprising bars connecting said portions together and maintaining the same in spaced relation, and posts secured to the extremities of said bars and adapted to support the apparatus.

4. In a refrigerating apparatus, a header, a plurality of depending tubes having their opposite ends connected to the respective opposite sides of said header, one branch of each of said tubes being convoluted in the same vertical plane to collectively define a series of superposed shelves consisting of straight horizontal portions intermediate the bight of each convolution, the other branch of each tube extending from the lowermost convolution to the opposite side of said header, means for maintaining the branches in spaced relation and posts secured to the extremities of said means and adapted to support the apparatus.

In testimony whereof I hereunto affix my signature.

FRANK E. WILLIAMS.