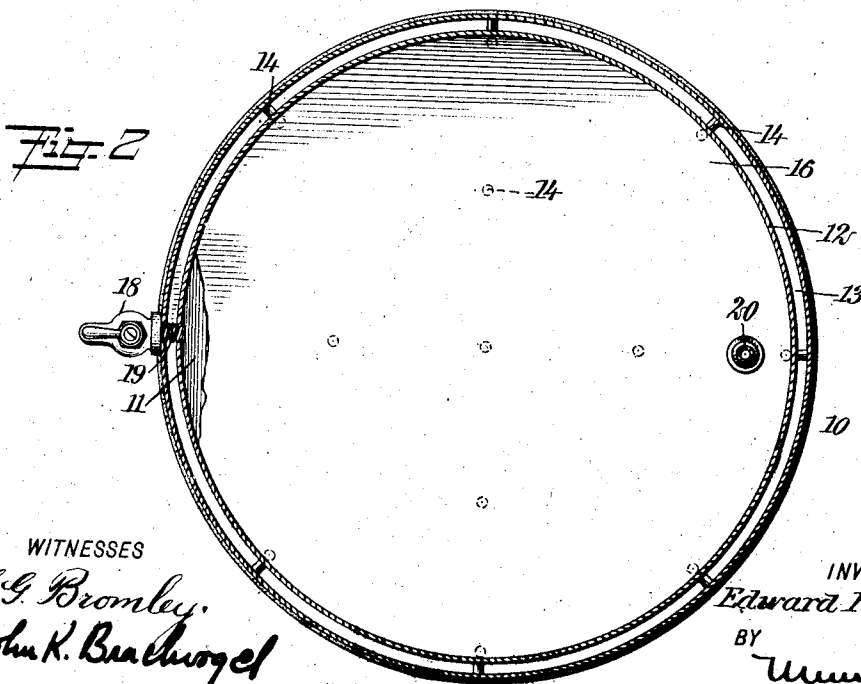
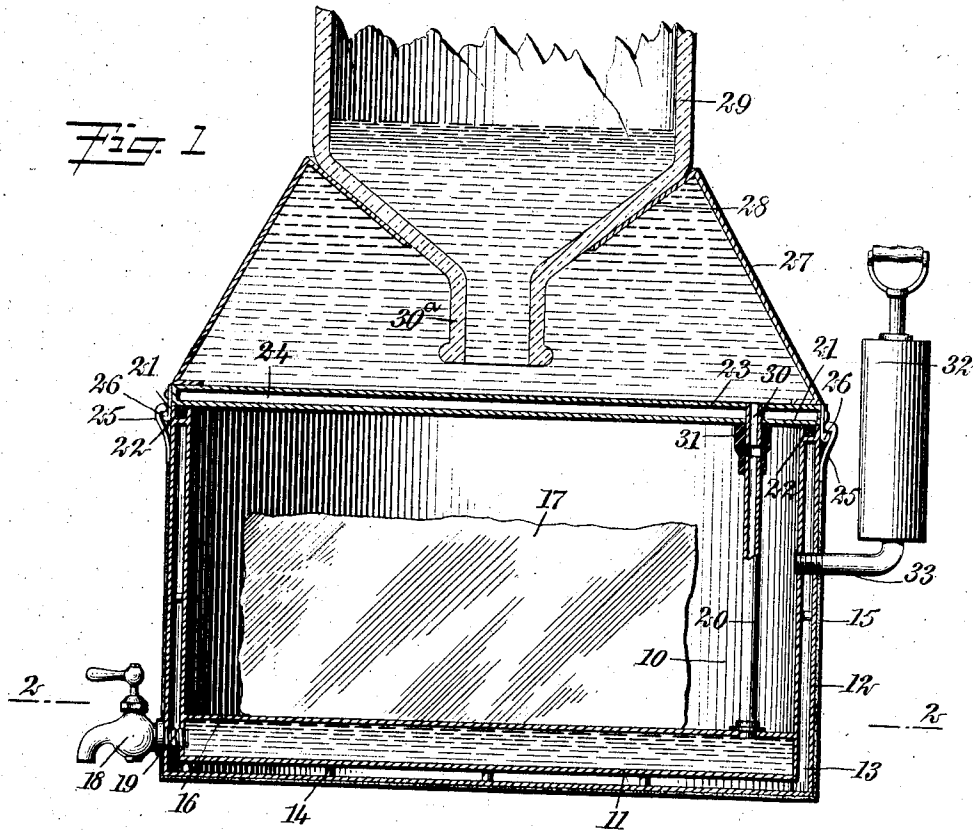


E. RUSSELL.
LIQUID COOLER.

APPLICATION FILED JULY 21, 1908.

948,252.

Patented Feb. 1, 1910.



WITNESSES

E. G. Bromley.
John K. Beachvogel

INVENTOR

Edward Russell

BY

Wm. J. Russell
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD RUSSELL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO ELMER E. BURLINGAME, OF NEW YORK, N. Y., AND ONE-FOURTH TO LOUISA D. WALKER AND ARIANA WALKER.

LIQUID-COOLER.

948,252.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed July 21, 1908. Serial No. 444,640.

To all whom it may concern:

Be it known that I, EDWARD RUSSELL, a subject of the King of Great Britain, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Liquid-Cooler, of which the following is a full, clear, and exact description.

10 This invention relates to liquid coolers and more particularly to a cooler for drinking water, beer and other fluids, which has hollow walls constituting vacuum chambers to minimize the transmission of heat from the outer air to a receptacle serving as a container for a refrigerating substance, such as ice, and itself forming a vacuum chamber, so that the refrigerating substance is contained in a vacuum and is surrounded by vacuum chambers.

20 An object of the invention is to provide a simple and inexpensive cooler for fluids of various kinds, in which ice or other refrigerating substance is contained in a vacuum and is surrounded by vacuum chambers, to minimize the melting of the refrigerating substance, owing to the transmission chamber, and which has means for conducting the fluid to be cooled, through the refrigerating chamber.

30 A further object of the invention is to provide a device of the class described in which the ice or other refrigerant is contained in a vacuum chamber, the walls of which constitute further vacuum chambers to insulate the refrigerant thoroughly from the outside atmosphere, in which the refrigerant container has a removable cover to permit of the introduction of the refrigerant, the cover itself, constituting a vacuum chamber, and which is provided further with a pump for exhausting the air from the container.

40 The invention consists in the construction and combination of parts to be more fully described hereinafter and fully set forth in the claim.

50 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a vertical longitudinal section of an embodiment of my invention; and

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the same is particularly useful in cooling water, beer and other potable liquids, it can also be advantageously employed for cooling or refrigerating other fluids. For example, the device can be used in certain chemical operations for cooling gases or for condensing gases.

It is well known that the vacuum constitutes one of the best known insulators against the radiation or convection of heat. Consequently, I provide a refrigerant container, the top, the bottom and the side walls of which constitute vacuum chambers to prevent the heat of the surrounding atmosphere from penetrating to the refrigerant and causing the same to melt rapidly. In order to preserve the refrigerant as long as possible I provide means for exhausting the air within the container, so that the refrigerant, which may consist of ice, cooled brine or any other suitable substance, is not only surrounded by vacuum chambers, but is actually located in a partial vacuum.

Referring more particularly to the drawings, in the form of the device shown in Figs. 1 and 2, I provide a substantially cylindrical container 10, the bottom 11 and the sides 12 of which are double and form a continuous vacuum chamber 13. Braces 14 are located between the double walls of the bottom and the sides, to prevent the collapse of the same, owing to the pressure of the outside air. It will be understood that the device may be fashioned from any suitable material, preferably from sheet metal. At the outside, the container is covered with a layer of heat insulating material 15 such as asbestos fabric or the like. Above the bottom 11 of the container and spaced therefrom, is arranged a floor 16 which serves to support a block of ice 17 or any other refrigerant. A cock 18 is located at the side of the container and has a stem 19 extending through suitable openings of the side walls into the space between the floor 16 and the bottom 11. A pipe 20 extends upwardly from the floor 16 and communicates with the space between the latter and the bottom. At the upper rim, the side walls of the con-

tainer have substantially parallel, upwardly extending flanges 21, between which is located an annular gasket or washer 22, consisting preferably of a ring of rubber, of circular cross-section. A cover 23 is mounted upon the upper rim of the container and seats upon the washer. The cover is double, and has a vacuum chamber 24 formed therein. Spring keepers 25 are mounted upon the sides of the container and are arranged to engage detents 26 carried by the cover, whereby the latter can be secured and held in position upon the container, an air-tight joint being formed by the gasket 22. Upon the cover is mounted an upwardly tapered casing 27 having a substantially central, inwardly and downwardly inclined flange 28 arranged to receive and support an inverted water bottle 29 or other similarly formed liquid container. The neck 30* of the bottle projects into the casing 27, which consequently fills with liquid from the bottle 29. The cover has an outlet pipe 30 extending therethrough into the container 10 and arranged to be received by a socket 31 fashioned from rubber or other resilient material and carried at the upper end of the pipe 20, whereby communication is effected between the interior of the casing 27 and the space between the bottom 14 and the floor 16 of the container.

I provide an air pump 32 which may be of any suitable form and has a pipe 33 extending through suitable openings in the side of the container so that the air can be exhausted from within the container by means of the pump. After the ice or other refrigerant has been placed in the container the cover is secured upon the same and a bottle is inverted and placed upon the supporting casing 27. The liquid will flow from the bottle, through the outlet 30 and the pipe 20 into the space under the floor 16, where it

will be cooled by the refrigerant. It can be withdrawn from the container by means of the cock 18, as desired. The air is exhausted from within the container by means of the air pump, so that the refrigerant is actually located in a vacuum.

It may be found unnecessary to provide the covers for the container, with vacuum chambers, and in that case the covers may consist of simple plates, or be of any other suitable form.

I wish to emphasize that my invention does not reside in certain of the details of construction illustrated herewith, but consists in the underlying principles embodied in the device shown for example; that is, in the provision of a container for a refrigerant, the container constituting a vacuum chamber and having vacuum chambers in the walls thereof, as well as in the provision of a suitable cover, means for exhausting the air in the container, and means for passing the fluid to be cooled through the same.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:

In a device of the class described, a receptacle for a refrigerant, a removable cover carried by said receptacle and provided with means for supporting a fluid container, a compartment in said receptacle, a pipe extending toward said cover and communicating with said compartment, said pipe having a socket of resilient material at the free end, and an outlet pipe carried by said cover and removably received by said socket.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD RUSSELL.

Witnesses:

JOHN K. BRACHVOGEL,
JOHN P. DAVIS.