Nov. 11, 1924. 1,515,119

W. S. JOSEPHSON

REFRIGERATING DEVICE

Filed Oct. 3, 1922

Fig. 1.

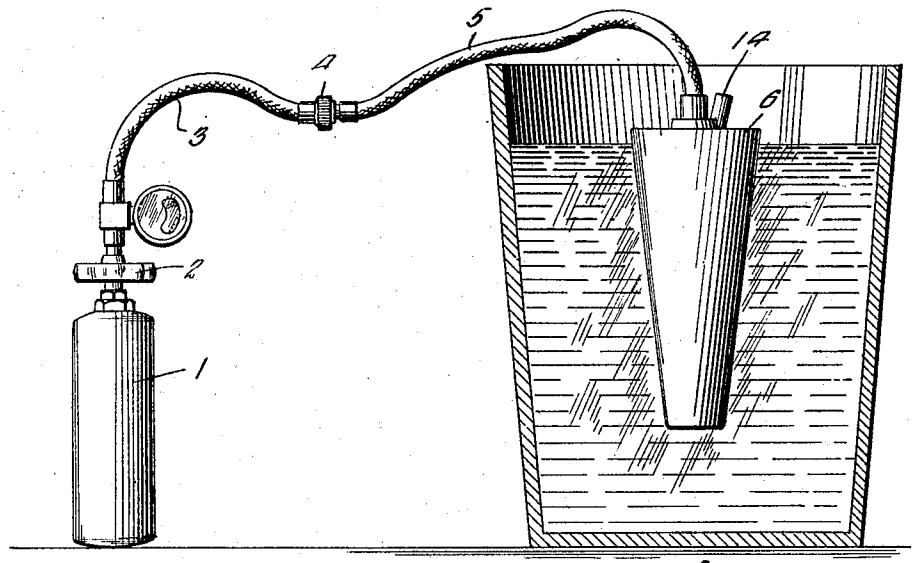


Fig. 3.

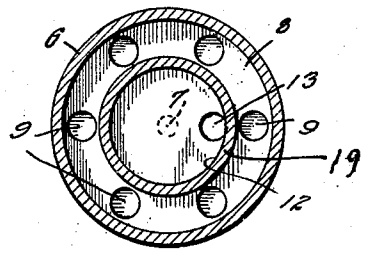


Fig. 2.

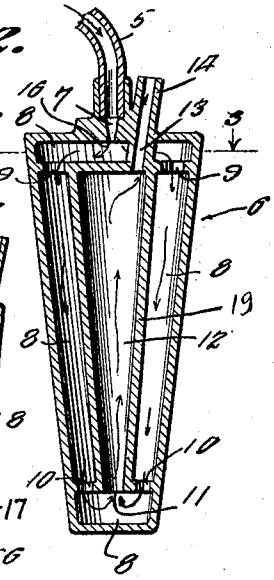
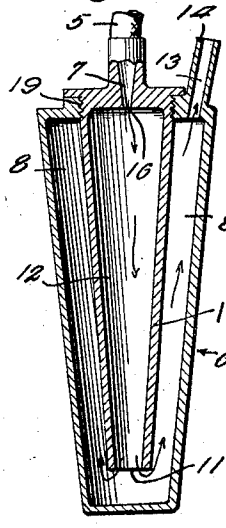


Fig. 4.



Inventor

Walter S. Josephson

By Lester L. Sargent.

Attorney

Patented Nov. 11, 1924. 1,515,119

UNITED STATES PATENT OFFICE.

WALTER S. JOSEPHSON, OF NEW YORK, N. Y., ASSIGNOR TO B. M. J. UTILITIES, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

REFRIGERATING DEVICE.

Application filed October 3, 1922. Serial No. 592,072.

To all whom it may concern:

Be it known that I, WALTER S. JOSEPHSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Refrigerating Device, of which the following is a specification.

The object of my invention is to provide a portable device capable of convenient attachment to a cylinder of carbonic acid or other compressed and liquefied gas. It is an especial object of my invention to provide a device which can be conviently utilized by automobile tourists whereby the compressed gas container which is provided for other purposes, such as the inflation of tires, etc., may also be used for the purpose of a readily portable refigerating device. I attain these and other objects of my invention by the mechanism disclosed in the accompanying drawings, in which—

Figure 1 is a side elevation of the device in use;

Fig. 2 is a vertical section of same;

Fig. 3 is a horizontal section on line 3—3 of Fig. 2; and

Fig. 4 is a vertical section of a modification of the form shown in Fig. 2.

Like numerals indicate like parts in each of the several views.

Referring to the accompanying drawings, 1 designates the conventional carbonic acid gas tank or cylinder having the usual valve 2 and a flexible discharge pipe 3. I provide a suitable connection 4 which may be readily attached to pipe 3 to connect pipe 3 with pipe 5. I provide a suitable and preferably frusto-conical casing 6, having an inlet channel 7 with which the pipe 5 connects. I provide an outer expansion chamber 8 and an inner expansion chamber 12, separated by a suitable wall 19. Inlet 7 has a mouth 16 of reduced size to retard the flow of gas into the expansion chambers. Opening out of the upper end of chamber 6, I provide a suitable extension 14 for the gas escape or outlet channel 13.

Referring particularly to the form of the invention shown in Fig. 2, I provide suitable passages 9, 10 and 11 for the continuous flow of the refrigerant from one expansion chamber to the other.

In operation the flow of gas or refrigerant into the refrigerating device is restricted by the narrow mouth 16 of inlet 7 so as to retard the liquefied or partially liquefied gas or refrigerant until it reaches the refrigerating device. It is then allowed to expand and thus reduce the temperature of the walls of the device in either of the forms of the device shown, and thus effect the refrigeration. The mouths 14 and 18 in each instance are of relatively large size to allow free escape of the gas, these mouths being positioned above the rest of the device so that the device itself may be immersed in any container of fluid which it is desired to chill.

In the form of the device shown in Fig. 2, inlet 7 opens into chamber 8, the gas thus flowing into chamber 12 and out through outlet 13, as indicated by the arrows.

In the form of the device shown in Fig. 4 the inlet opens into the inner chamber 16 and thence flows out to the outer chamber 8 and outlet 13.

In the form of the invention shown in Fig. 4, the inner wall 17 is provided with a threaded portion 19 whereby it is secured to the outer wall 6 in the manner shown, thereby providing a construction which can be manufactured at less cost than the form of the device disclosed in Fig. 2.

What I claim is:

1. In a device of the class described, an expansion chamber having an outer wall of frusto-conical form, of an inner spaced wall of like form, the chamber within said inner wall being in open communication at the lower end with the chamber intermediate of the two walls, an inlet having a reducing valve for the inflow of refrigerant to one of the chambers, and an outlet having a mouth of relatively large size for the outflow of expanded gas from the other of the two chambers, and means for detachably connecting the apparatus with a suitable source of supply of a liquefied gas.

2. In a refrigerating device using a liquefied gas as the refrigerant, a refrigerating chamber comprising spaced frusto-conical walls, the chambers formed by said walls being in open communication at the lower end of the device, an inlet opening into the outer chamber, said inlet including a reducing valve arranged in the outer wall of the chamber to permit of expansion of the refrigerant on entering the chamber, said chamber having a relatively large outlet opening out of the inner chamber and com-

municating direct with the outside atmosphere, and means for detachably connecting the apparatus with a suitable source of supply of a liquefied gas.

3. In a device for utilizing a liquefied gas as a refrigerant, the combination of an expansion chamber having spaced walls of frusto-conical form, the chambers formed by said walls being in open communication at their lower end, a relatively large outlet opening out of one of the chambers direct to the outside atmosphere and in a plane above the uppermost wall of the chamber, an inlet opening into the other chamber, said inlet including a reducing valve arranged in the wall of said chamber, and a conduit for operatively connecting the device with a suitable source of supply of a liquefied gas, said pipe including suitable detachable connections, substantially as shown and described.

WALTER S. JOSEPHSON.