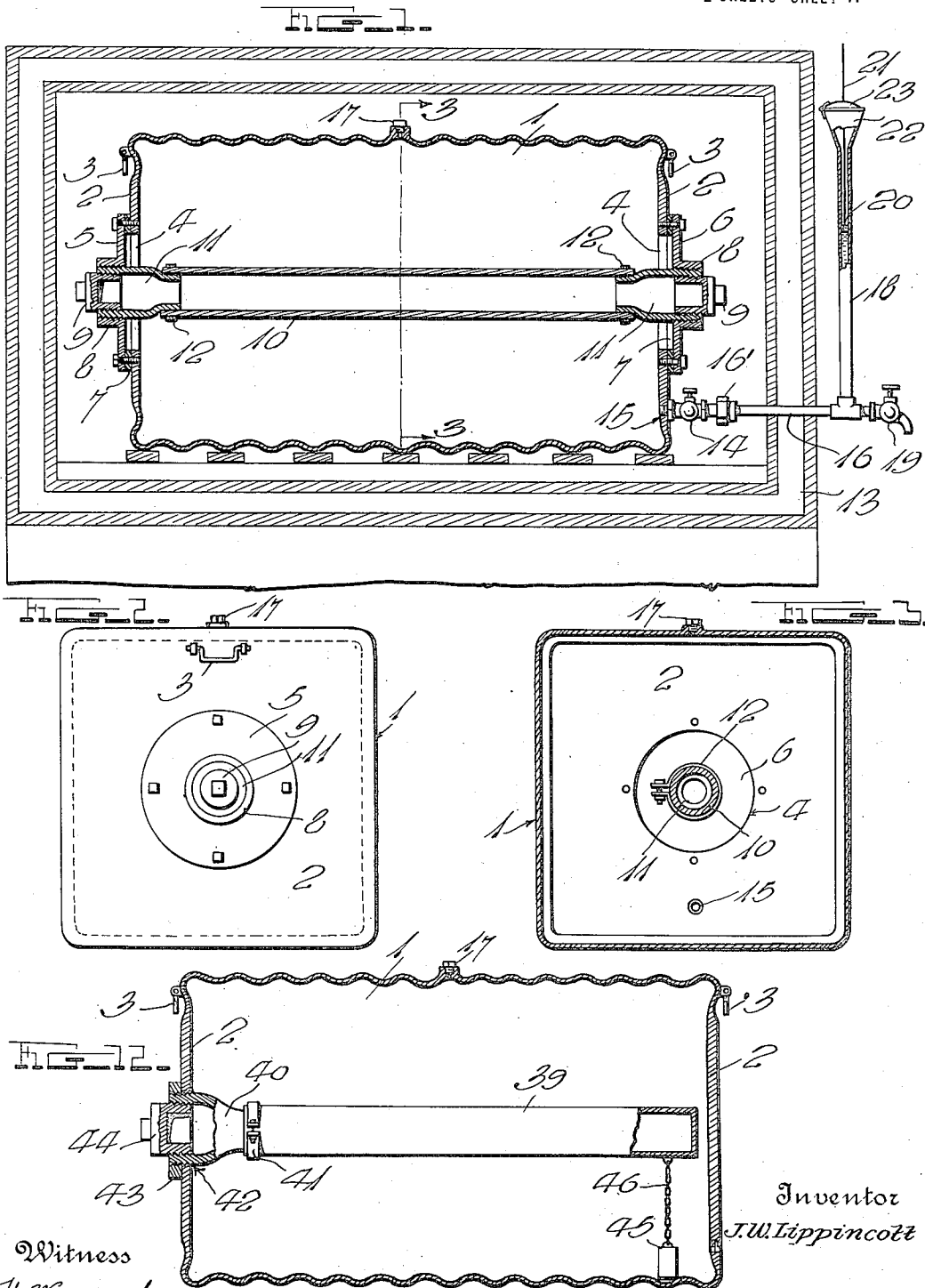


J. W. LIPPINCOTT.
 PORTABLE REFRIGERANT CONTAINER.
 APPLICATION FILED JUNE 14, 1920.

1,380,987.

Patented June 7, 1921.

2 SHEETS—SHEET 1.



Witness
 H. Woodard

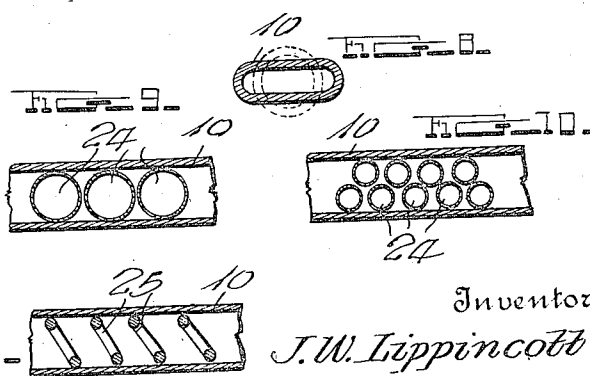
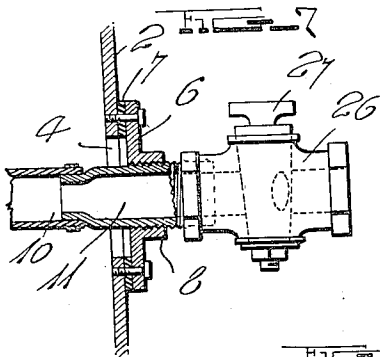
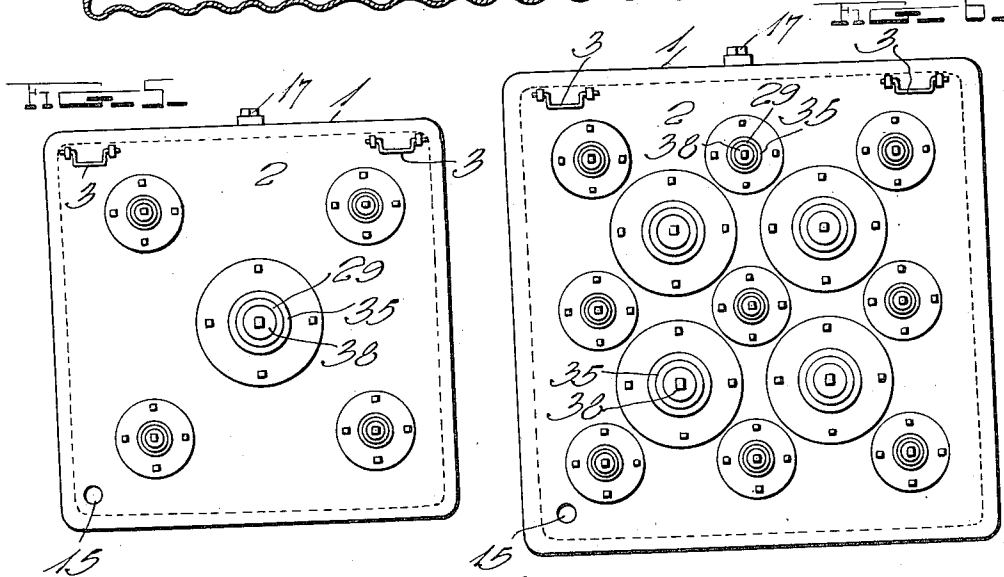
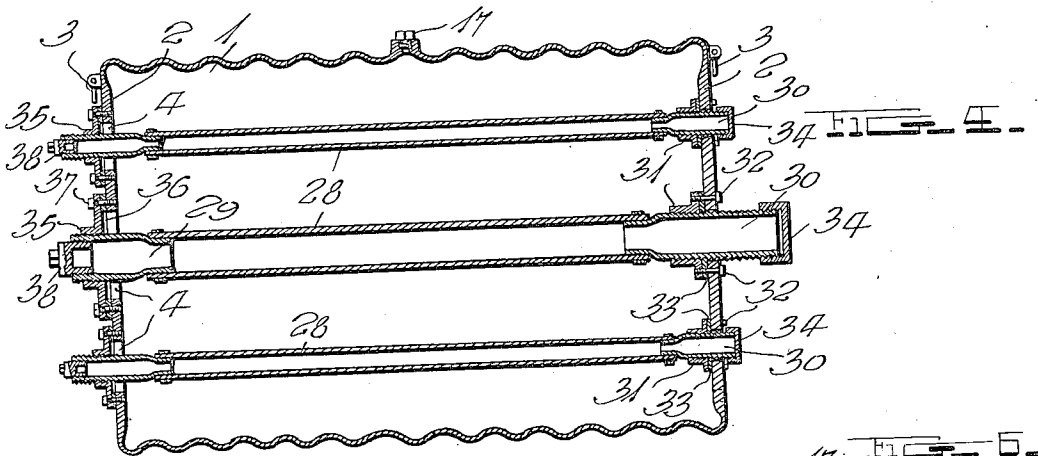
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UNITED STATES PATENT OFFICE.

JOHN W. LIPPINCOTT, OF LITTLE ROCK, ARKANSAS.

PORTABLE REFRIGERANT-CONTAINER.

1,380,987.

Specification of Letters Patent.

Patented June 7, 1921.

Application filed June 14, 1920. Serial No. 388,898.

To all whom it may concern:

Be it known that I, JOHN W. LIPPINCOTT, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Portable Refrigerant-Containers; and I do 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 appertains to make and use the same.

This invention relates to an improved refrigerant container of the portable type and one object of the invention is to provide a container of the character described, so constructed that water may be placed therein and frozen, provision being made for compensating for the expansion which takes place during the freezing process and thus prevents the bursting of the container.

Another object of the invention is to so construct this compensating tube that the tube or tubes which permit of expansion may be compressed when the water is frozen and may return to the normal position when the ice has melted.

Another object of the invention is to so construct this container that removable closures may be provided for the tubes, thus permitting air to circulate through the tubes when the device is placed in a refrigerator and to also permit brine to pass through the tube or tubes if so desired while freezing the water in the container.

Another object of the invention is to so construct this container that it may be connected with a draw-off pipe so that the water resulting from the melting ice may be drawn off and used as drinking water.

Another object of the invention is to so construct the container and tubes that the tubes may be removably held in place in the container and removed when desired for cleaning or repairing.

Another object of the invention is to provide a container of the character described which will be strong and durable and not liable to be broken or punctured when in use.

This invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal sectional view showing the improved refrigerant container positioned in the cooling chamber of an ice box,

Fig. 2 is a view showing the container in end elevation,

Fig. 3 is a transverse sectional view taken along the line 3—3 of Fig. 1,

Fig. 4 is a longitudinal sectional view through a container having a slightly modified construction,

Fig. 5 is a view showing the container of Fig. 4 in end elevation,

Fig. 6 is a view similar to Fig. 5 showing a modified tube arrangement,

Fig. 7 is an enlarged detail view showing a valve connected with and closing the tube at one end thereof,

Fig. 8 is a transverse sectional view through the tubes in the compressed condition,

Figs. 9 and 10 are fragmentary longitudinal sectional views through the tubes having rubber balls positioned therein to normally hold the tube extended,

Fig. 11 is a view similar to Figs. 9 and 10 showing a coil spring substituted for the rubber balls of Figs. 9 and 10, and

Fig. 12 is a longitudinal sectional view through a container having a modified tube construction.

In this improved refrigerating device, there has been provided a receptacle 1 which is formed of corrugated metal so as to provide a relatively large amount of surface for exposure to the freezing medium and for cooling. This receptacle which may be formed of metal as stated or of any material desired and in the form shown is provided with heads 2 which are relatively thick and will, therefore, be very strong. These heads are provided with handles 3 so that the receptacle may be easily carried and these heads will be provided with openings 4 which will be closed by plates 5 and 6, gaskets 7 being provided to prevent leakage and the plates having internally threaded necks 8 for receiving the nipples 11 which carry closure plugs or caps 9. It will thus be seen that these caps 9 may be removed when desired as will be hereinafter brought out. A pipe 10 which may be formed of rubber, water-proof canvas or any other suitable material which will be compressible but at the same time water-proof, connects the nipples 11 and is held in place by clamps 12 which are of the type ordinarily used for securing a hose pipe. When the caps 9 are removed from the outer ends of

the nipples, air may circulate through this pipe or brine may pass through the pipe and thus permit the water in the receptacle to be frozen about the pipes as well as at the sides and ends of the receptacle. A given volume of ice occupies more space than the water from which it is formed and the ice expansion compensating tubes or tube will be compressed to the shape shown in Fig. 8, thus taking up the expansion incidental to the formation of ice and preventing bursting of the container.

After the ice has formed, the receptacle will be moved from the freezing tank and can be placed in the refrigerator 13. The valve 14 which is connected with the heads of the receptacle at the filling opening 15 may be left closed or if this valve is connected with the pipe 16 by the coupling 16', the valve may be opened and the plug 17 may be removed to admit air to the receptacle. The icewater formed by the melting ice will then flow into the pipe 16 and up into the pipe 18 and may be drawn off through the spigot 19. This pipe 18 will form a gage pipe and may be provided with a glass section if desired so that the height of the water in the pipe may be readily ascertained or a float 20 may be placed in this pipe and provided with a rod 21 which will extend upwardly through the funnel-shaped upper end portion of the pipe and through an opening formed in the cap 23 which closes the funnel-shaped upper end portion 22. If the melted water has all been drawn off and it is desired to provide an additional supply of drinking water, this water may be poured into the pipe 18 through the funnel at the upper end and will pass down through this pipe into the pipe 16 and through the pipe 16 into the receptacle.

When the ice has melted, the resiliency of the tube 10 will cause it to return to its original shape as indicated by the dotted lines in Fig. 8 but in order to insure the return of the tube to its original circular form in cross section, the tube may be filled with rubber balls 24 which may be of substantially the same diameter as the interior of the tube 10 as shown in Fig. 9 or may be smaller as shown in Fig. 10. It should be further noted that if desired a coil spring 25 may be substituted in place of the rubber balls 24, the spring having a loose coil and having its convolutions extending diagonally of the pipe so that the spring may be easily compressed. It has been previously stated that the nipples 11 will have their outer ends closed by caps 9 but it is to be understood that if desired, the caps 9 may be done away with and valves 26 substituted in place of these caps, the valves being in threaded engagement with the nipples and having turning heads 27 so that the valves may be opened or closed as desired.

In Figs. 4, 5 and 6 there has been shown modified constructions wherein the receptacle may be larger than that shown in the form disclosed in Figs. 1, 2 and 3. In the form shown in Figs. 4 and 5, there has been provided a centrally located air and brine passage and auxiliary passages which will be positioned about the central passage. The central passage and the auxiliary passages positioned about this central passage will have duplicate constructions but the central passage will be larger than the auxiliary passages. Each of these passages is provided with a tube 28 which will have its ends connected with the nipples 29 and 30, the nipple 30 being threaded throughout its length as shown and carrying a collar 31 which will engage the inner face of the head and be held in place by the bolts 32, a gasket 33 being provided to insure a water-tight fit. The cap 34 will be screwed upon this nipple and will provide a removable closure. It should be noted that the cap for the nipple 30 of the auxiliary air passage will preferably be positioned close to the head of the container but the cap for the main passage may be positioned in spaced relation to the head of the receptacle where it can be easily turned. At the opposite end of the receptacle, the collars will be screwed upon the nipples 29 and will engage the outer face of the head, gaskets 36 being provided and the collars being held in engagement with the head by the securing screws 37. It should be noted that the openings 4 in this head will be of sufficient size to permit the collars 31 to pass through the head of the receptacle. These nipples 29 may be closed by caps similar to the caps 34 or may be closed by plugs 38. Of course, it is obvious that if desired valves similar to the valves 26 may be provided for the nipples 29 and 30 in place of the plugs 38 and caps 34. It has been stated that the tubes 28 will be similar to the tubes 10 but it is to be understood that if desired, the tubes for the auxiliary air passages may be compressible and the tube for the main air and brine passage may be formed of non-compressible material. The form shown in Fig. 6 is similar to that shown in Figs. 4 and 5 except that there has been shown a plurality of main passages and auxiliary passages positioned about the main passages.

In the form shown in Fig. 12, there has been shown a receptacle having heads which are similar to the heads of the tank shown in Figs. 1 and 4, except that only one of the heads is provided with an opening for admitting the expansion compensating tube. This tube 39 extends longitudinally of the receptacle and has its inner end closed and its outer end secured about the nipple 40 by means of the collar 41, the nipple being externally threaded and extending through the

opening 42 of the receptacle head and carrying a securing nut 43 so that the nipple can be secured in place. A closure plug 44 is provided for this nipple similar to the plugs 5 9 and 38 so that the closure for the nipple may be removed. It should be noted that the inner end portion of the tube 39 is unsupported and, therefore, when the receptacle is filled with water, it would have a tendency 10 to move upwardly when the container is resting upon one of its longitudinal sides. In order to prevent this, there has been provided a weight 45 which is connected with the free end of the tube by a chain 46 and 15 will serve as anchoring means to prevent the tube from moving upwardly in the container. Therefore, the container may be placed upon its side as shown and the water will freeze and form a cake of ice having 20 the tube extending longitudinally thereof through its center.

It will thus be seen that there has been provided a receptacle in which water may be placed and then frozen with the caps of 25 the tubes in place or removed, the tubes compensating for the expansion of the water in the container and preventing the container from being burst by the ice. It will be further noted that there has been provided a refrigerating device so constructed 30 that the water formed from the melted ice may be retained in the receptacle and again frozen or may be drawn off and used as drinking water.

35 What is claimed is:—

1. A refrigerating appliance comprising a container, open ended tubes extending through the container and formed of material compressible transversely and comprising 40 compensating means for expansion when water in the receptacle is frozen, and removable means for closing the ends of the tubes.

2. A refrigerating appliance comprising a receptacle having heads, nipples passing through the heads and connected with the 45 same, removable means for closing the outer ends of the nipples, and a tube extending longitudinally of the receptacle and connected with the inner ends of the nipples, the tube being formed of material permitting 50 transverse compression of the tube to compensate for expansion when water is frozen in the receptacle.

3. A refrigerating appliance comprising a receptacle having a tube positioned in the 55 same and formed of material permitting the side walls of the tube to be compressed and compensate for expansion when water is frozen in the receptacle.

4. The structure of claim 3 and removable 60 means in the tubes for yieldably retaining the tubes in a distended condition.

5. The structure of claim 3 having the tube distending means consisting of a spiral spring positioned in the tube and having its 65 convolutions positioned in spaced relation and extending diagonally of the tube.

6. A refrigerating appliance comprising a receptacle having heads, nipples passing through the heads, collars carried by the 70 nipples and connected with the heads to retain the nipples in engagement therewith, a tube connected with the nipples and compressible transversely to compensate for expansion in the tank when water is frozen 75 therein, and removable means for closing the outer ends of the nipples.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. LIPPINCOTT.

Witnesses:

EDWIN J. BOOTH,

BESSIE A. LIPPINCOTT.