

May 17, 1938.

C. W. DAVIS

2,117,276

DRAW-OFF CONNECTION FOR HEAT INSULATED CONTAINERS

Filed Jan. 27, 1936

4 Sheets-Sheet 1

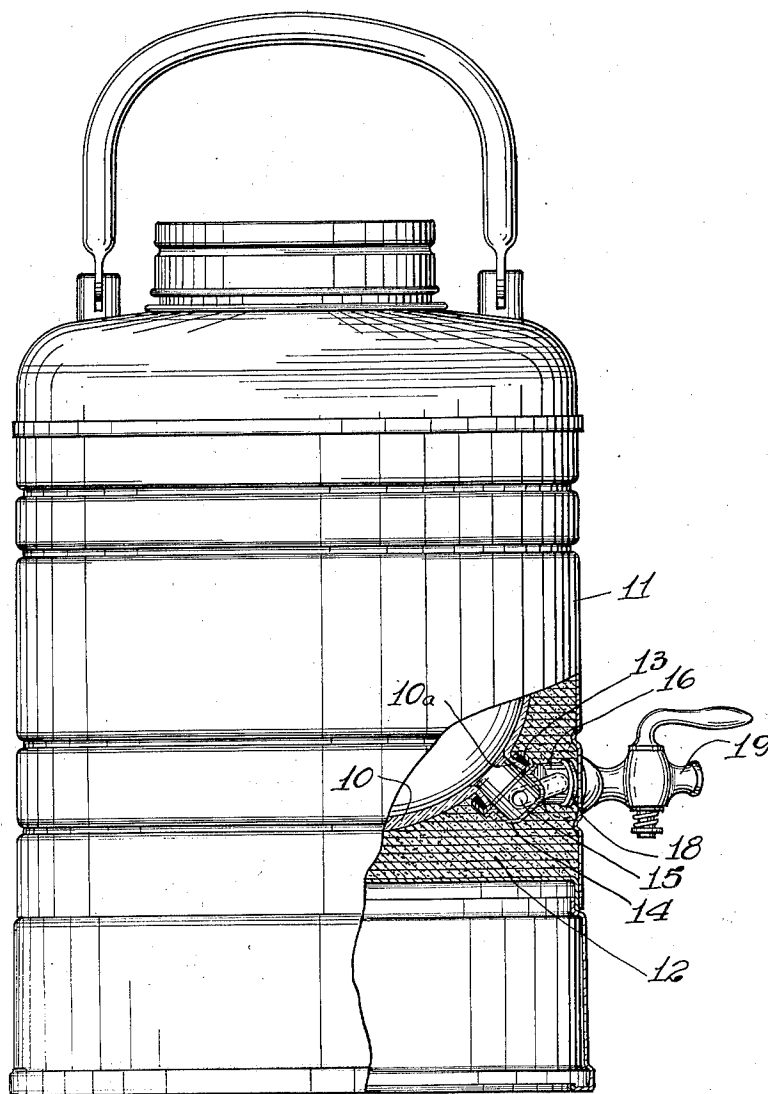


*Fig. 1.*

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4 Sheets-Sheet 2

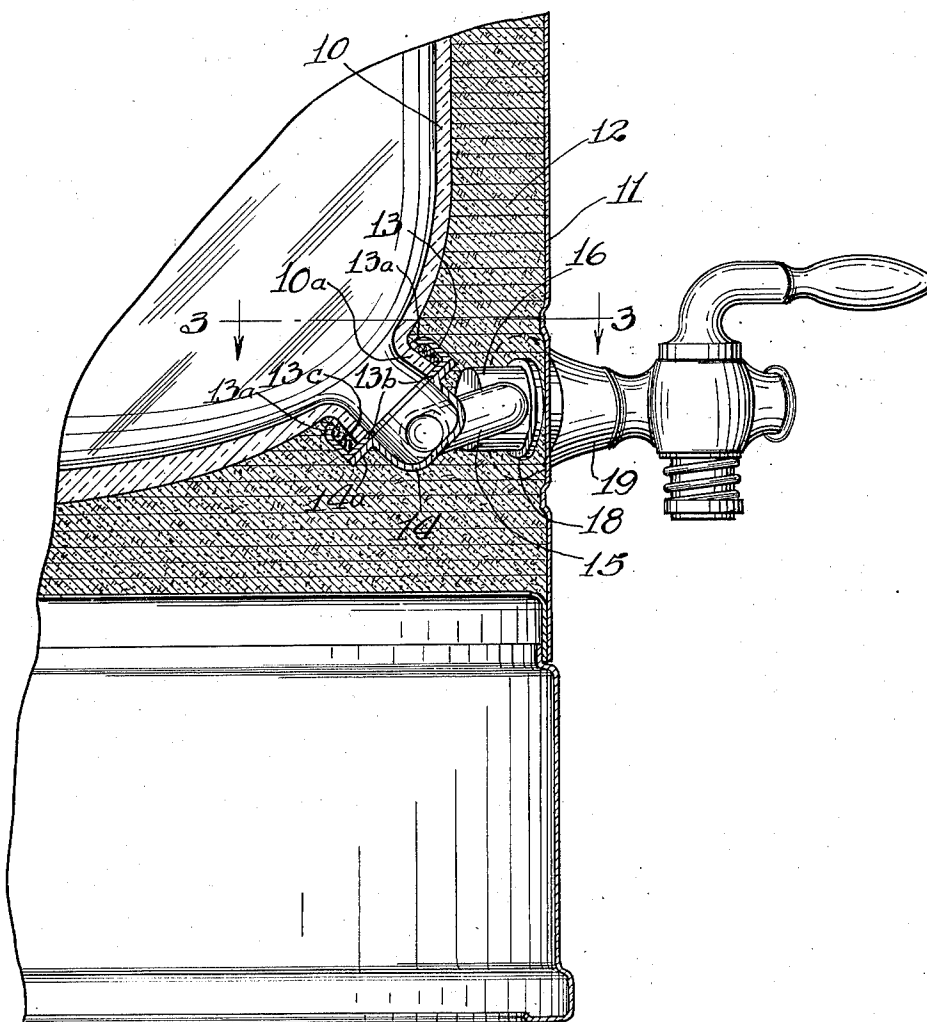


*Fig. 2*

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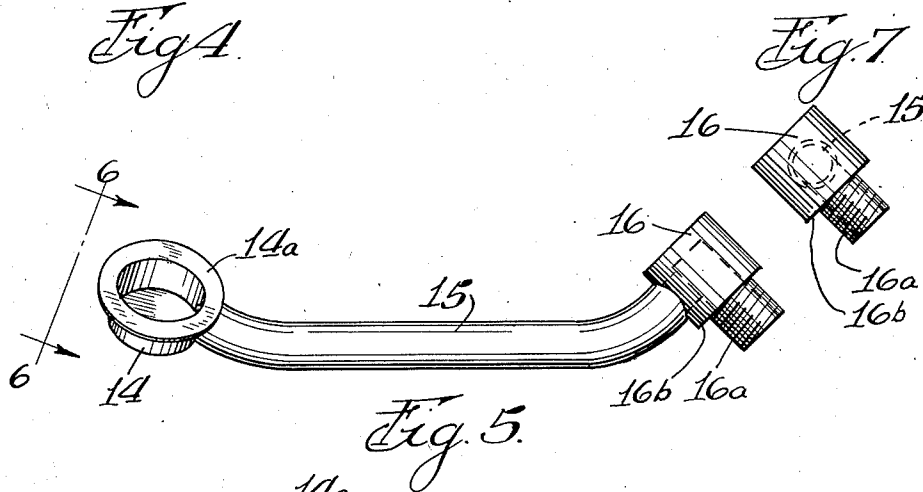
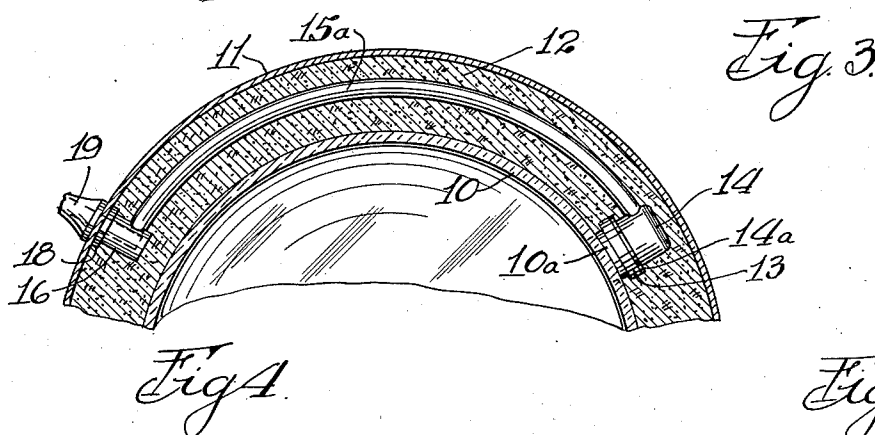
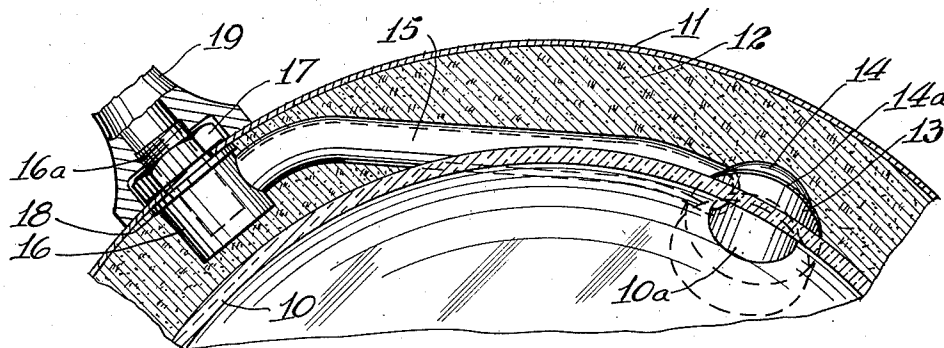
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4 Sheets-Sheet 3



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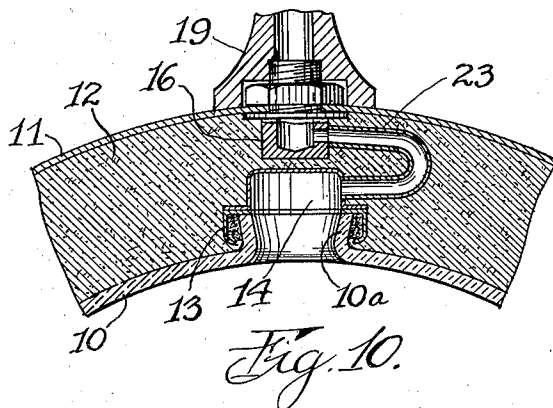
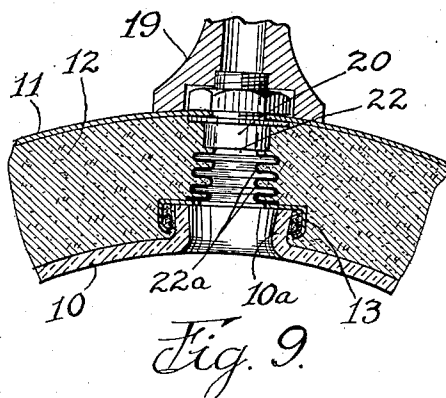
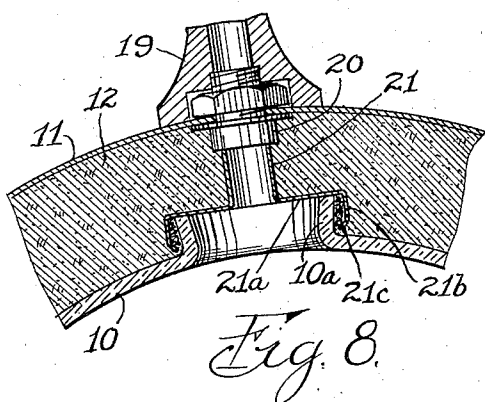
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DRAW-OFF CONNECTION FOR HEAT INSULATED CONTAINERS

Filed Jan. 27, 1936

4 Sheets-Sheet 4



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## UNITED STATES PATENT OFFICE

2,117,276

## DRAW-OFF CONNECTION FOR HEAT-INSULATED CONTAINERS

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Application January 27, 1936, Serial No. 61,007

17 Claims. (Cl. 220—14)

My invention pertains to insulated containers of the type which may be conveniently carried by hand from place to place, in which an inner vessel or container for liquids, made of frangible material such as stoneware, glass, or other vitreous material, is mounted in and spaced from an outer protective shell, the space between said container and said shell being usually filled with resilient material affording thermal insulation and also shock insulation to the container, for example comminuted cork.

A well known example of such containers is the so called "picnic jug" intended to keep any desired liquid contents either hot or cold as the case may be, for a considerable time, and of a size and construction to be readily carried by hand, although I do not limit myself to that particular type of such containers in carrying out my invention.

With containers of the class referred to, it is desirable in some cases to provide the container with a draw-off faucet communicating with the bottom portion of the inner frangible vessel or container, and located outside of the protective shell of the container. In such cases, as far as I am aware, it has heretofore been the practice to connect one end of a substantial tubular connection to an outlet in the side near the bottom portion of said frangible container, and to extend said tubular connection directly outwardly through the protective shell to receive and support at its outer end, the draw-off device or faucet employed, said tubular connection in some cases being secured to said protective shell.

With draw-off connections of the kind described, experience has shown that shocks on the faucet resulting from impacts of any kind, are transmitted through the draw-off connection to the frangible container with so little decrease in force as to be dangerous, such frangible containers frequently having been broken in this way by impacts on the faucets that would seem to be inconsequential. Even where the draw-off connections have been secured to the protective shells, the same result has frequently occurred, because of it being practically impossible to make the protective shells sufficiently rigid to prevent communicating dangerous shocks to the frangible containers in the manner described.

By my invention, I eliminate the communicating of dangerous shocks to the frangible container through the draw-off connections, by differently constructing the tubular connection extending from the frangible container to the draw-off device or faucet. My improved draw-

off connection consists of a first fitting which is preferably cup-shaped, connected with the outlet of the frangible container, from which fitting a flexible tubular member extends laterally in the space between the frangible container and its protective shell, the other end of said tubular member being connected at a location substantially removed laterally from said outlet, with a second fitting extending through the protective shell to receive the draw-off device or faucet employed. Said tubular member is made preferably of thin-walled soft metal tubing, for example, copper or brass, of such length that it readily yields to shocks on the faucet and the fitting connected therewith, as a result of which any resultant minute shocks communicated to the outlet of the frangible container, are so small as to be much less than shocks that are dangerous thereto. To conserve space, I preferably extend said tubular member angularly around the frangible container, thereby displacing said outlet and said faucet from each other by a substantial amount angularly of the container, but I do not limit myself to this particular arrangement. Where the containers are intended for liquids for human consumption, I preferably provide my connection and particularly the tubular member thereof, with a lining of tin or equivalent material as far as protecting the liquids from contamination is concerned.

My invention will be best understood by reference to the accompanying drawings illustrating a preferred embodiment thereof, in which—

Fig. 1 shows in front elevation and partially in vertical, sectional view, a jug container in accordance with my invention;

Fig. 2 shows in vertical, central, sectional view and to an enlarged scale, a part of the container shown in Fig. 1;

Fig. 3 is a horizontal, sectional view of the structure shown in Fig. 2, taken along the line 3—3;

Fig. 4 shows in a view similar to Fig. 3, a modified construction of tubular connector;

Fig. 5 shows the tubular connector illustrated in Figs. 2 and 3, in plan view;

Fig. 6 is a left hand end view of the connector shown in Fig. 5, taken along the line 6—6;

Fig. 7 is a right hand end view of the connector shown in Fig. 5;

Figs. 8, 9 and 10 show further modified forms of connecting tubes, in view similar to Fig. 3.

Similar numerals refer to similar parts throughout the several views.

In Fig. 1, I illustrate in front elevation, a jug

container in accordance with my invention, the lower portion of the container structure thereof, as more clearly shown in Fig. 2, having an inner vessel or container 10, for example, of stone-ware, glass or other vitreous material, surrounded by and spaced from a protective shell or jacket 11, for example, of metal such as sheet brass or steel. The space between the parts 10 and 11 is shown as filled with resilient insulating material 12, for example, comminuted cork, to provide heat insulation and also shock insulation for the container 10.

The bottom portion of the container 10, as more clearly shown in Fig. 2, is provided with an outwardly extending tubular outlet 10a integral with the container 10, which outlet increases in size or flares outwardly. A metal sleeve 13 is secured to the outlet 10a as follows:

The body portion of the sleeve 13 is of somewhat larger internal diameter than the outer diameter of the outer end of the outlet 10a, the inner end of said sleeve being inturned at 13a so that it will just clear the outer end of said outlet in assembling said sleeve, the outer end of said sleeve having an inturned flange 13b resting against and fitting the outer end surface of the outlet 10a when the sleeve 13 is assembled thereon, for which relation of the parts, there is a clearance space between the inturned end 13a of the sleeve and the outer surface of the container 10, which insures snug engagement between the sleeve flange 13b and the outer end of the outlet 10a. In assembling the sleeve 13, cement 13c, for example, water insoluble vitreous cement, is used to fill the space between the sleeve and the outlet 10a, and with the cement in place, the sleeve is pressed towards the container 10, to press the flange 13b snugly against the outer end of the outlet 10a. When the cement has hardened, the sleeve 13 is interlocked in place on the outlet 10a by the relation to the hardened cement 13c, of the inturned end 13a, of the flange 13b, and of the outward flare of the outlet 10a.

As shown in Figs. 2 and 3, the sleeve 13 has secured to it in any convenient manner, for example, by soldering, the flange 14a of a flanged cup 14 of metal, which constitutes a first end fitting of my improved connector. The cup 14 has secured thereto, for example, by soldering, brazing or welding, one end of a connecting tube 15 of metal, the other end of which is similarly connected to a second and hollow fitting 16 of metal, having a hollow threaded end portion 16a extending through the shell 11, and secured to said shell by a lock nut 17 outside of said shell. A washer 18 of suitable material, is disposed between the fitting 16 and the inner surface of the shell 11. The fitting end portion 16a extends through the nut 17 and engages a draw-off faucet 19 to support the latter outside of the shell 11. The tube 15 opens into the cup 14 and into the fitting 16, thus establishing open communication between the container outlet 10a and the faucet 19. To tightly hold the fitting 16 against movement relatively to the shell 11 when mounting the faucet 19 on, or removing the same from said fitting when desired, I prefer to rigidly secure said fitting 16 and the locknut 17 to the shell 11 by soldering, brazing or other known means, thereby protecting the tube 15 from damage that might result from turning movement of said fitting. This permits the use of a very thin walled tube 15, which not only eliminates the communication of appreciable shock to the container outlet 10a by impacts on the faucet 19, but also ma-

terially reduces the heat conductivity of the tube 15 below that of thick-walled tubes used for directly connecting the container outlets with faucets, thus preventing undue loss of heat through the draw-off connection where the container is used to keep its contents hot, and also preventing the undue communication of heat through the draw-off connection to the container contents where the container is used to keep its contents cold.

The construction of the tubular connector is more clearly shown in Figs. 5, 6, and 7. In Figs. 5 and 7 it will be noted that the fitting 16 is provided with a shoulder 16b adjacent its threaded extension 16a, to engage the washer 18 when the parts are assembled as shown in Figs. 2 and 3. The tube 15 is preferably of soft metal, for example, copper or brass, and very thin walled, as a result of which any shocks exerted upon the faucet 19, readily bend the tube 15 and appreciable resultant shocks are not communicated to the container outlet 10a, the length of the tube 15 being sufficient to accomplish this result. To make the connector structure sanitary and wholesome for domestic purposes, I line said structure and particularly the tube 15 with tin, or similar material inert to liquids for human consumption.

In Fig. 4 I illustrate a connector structure similar to that above described, the difference being that the cup fitting 14 and the fitting 16 are more widely separated than shown in Fig. 3, the connecting tube 15a being correspondingly longer than the tube 15 shown in Fig. 3. This gives greater flexibility to the tube 15a and correspondingly greater shock protection to the fragile container outlet 10a. It will also be noted that the curved condition of the tube 15a shown in Fig. 4 permits said tube to bend more readily under impacts on the faucet 19 than where the connecting tube is straighter as shown in Fig. 3.

In Fig. 8, I show the container outlet 10a connected with a fitting 20 mounted on the shell 11 and supporting a faucet 19 as above described, by a thin-walled metal tube 21 integral at its inner end with an annular diaphragm 21a resting at its outer portion against the outer end of the outlet 10a, said diaphragm at its outer edge being integral with a sleeve portion 21b surrounding the outlet 10a and inturned at its inner end at 21c, said sleeve being secured to said outlet by suitable cement as above described. The outlet 10a is of substantially larger diameter than the tube 21, to constitute the diaphragm 21a a readily yielding member incapable of communicating dangerous shocks from the fitting 20 to the outlet 10a.

In Fig. 9, I show the container outlet 10a connected with the fitting 20 mounted on the shell 11 and supporting a faucet 19 as above described, by a thin-walled metal tube 22 having flexible circumferential folds 22a throughout its length, which tube 22 is secured to the sleeve 13 mounted on the outlet 10a as above described. The size and number of the folds 22a are such that the tube 22 constitutes a readily yielding member incapable of communicating dangerous shocks from the fitting 20 to the outlet 10a.

In Fig. 10, I show the container outlet 10a connected with the fitting 16, by a thin-walled metal tube 23 having a U-shaped conformation and secured at its inner end to the cup-shaped member 14 in the manner above described for the tube 15. The length of the tube 23 is such that for the thickness of wall of the tube and the kind of metal that may be selected in making the tube, 75

said tube constitutes a readily yielding member incapable of communicating dangerous shocks from the fitting 16 to the outlet 13a.

While I have shown my invention in the particular embodiment above described, it will be understood that I do not limit myself thereto, as I may employ equivalents thereof known to the art at the time of the filing of this application, without departing from the scope of the appended claims.

Having thus described my invention, what I claim is:

1. In combination, a frangible container of a structure readily carried by hand and having a tubular outlet extending therefrom, a metal sleeve around and cemented to said outlet, a flanged cup-shaped member secured to said sleeve, a protective metal jacket around and spaced from said container, means between the jacket and the frangible container for insulating purposes, a hollow metal fitting in the space between said container and said jacket and having a threaded extension projecting through said jacket, a draw-off device secured to the outer portion of said threaded extension, and a flexible metal tube connecting said cup-shaped member with said fitting, said tube being of soft metal and thin-walled, whereby impacts on said fitting will readily bend said tube.

2. In combination, a frangible container of a structure readily carried by hand and having a tubular outlet extending therefrom, a metal sleeve around and cemented to said outlet, a flanged cup-shaped member secured to said sleeve, a protective metal jacket around and spaced from said container, means between the jacket and the frangible container for insulating purposes, a hollow metal fitting in the space between said container and said jacket and having a threaded extension projecting through said jacket, a draw-off device secured to the outer portion of said threaded extension, and a flexible metal tube connecting said cup-shaped member with said fitting, said cup-shaped member and said fitting being spaced angularly from each other by an amount insulating said container from impacts on said fitting.

3. In combination, a frangible container of a structure readily carried by hand and having a tubular outlet extending therefrom, a metal sleeve around and cemented to said outlet, a flanged cup-shaped member secured to said sleeve, a metal jacket around and spaced from said container, a hollow metal fitting in the space between said container and said jacket and having a threaded extension projecting through said jacket, a draw-off device secured to the outer portion of said threaded extension, and a flexible metal tube connecting said cup-shaped member with said fitting, said tubular outlet flaring outwardly to an increased diameter, and said metal sleeve being intumed at its inner end, said sleeve having an intumed flange at its outer end resting against the outer end of said tubular outlet, whereby said sleeve is interlocked on said tubular outlet by the cement holding it in place.

4. A receptacle for carrying liquids, including in combination, a frangible container for liquids and having an outlet, a protective jacket of non-frangible material around and spaced from said container and constituting a structure readily carried by hand, means between the jacket and the frangible container for insulating purposes, a first hollow fitting secured to said outlet, a second hollow fitting extending

through said jacket, a draw-off device removably secured to the outer portion of said second fitting, and a readily flexible tubular connection of non-frangible material between said fittings, said second fitting being secured to said jacket.

5. A heat insulated receptacle including a frangible container having an outlet in its lower portion, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, a draw-off device carried by said jacket, and a conduit connecting said outlet with said draw-off device, said conduit comprising two tubular portions and a readily yieldable diaphragm connecting said tubular portions.

6. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a draw-off conduit connected with said outlet and with said jacket, said conduit including two tubular portions and a readily yieldable diaphragm connecting said tubular portions, said tubular portions being of different diameters.

7. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a draw-off conduit connected with said outlet and with said jacket, said conduit including rigid end portions and a mid-portion including a readily yieldable diaphragm.

8. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a draw-off conduit connected with said outlet and with said jacket, said conduit including end connecting portions and a mid-portion including a plurality of substantially parallel connected and readily yieldable diaphragms.

9. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a draw-off conduit connected with said outlet and with said jacket, said conduit including rigid end portions and a readily yieldable mid-portion including a U-shaped tube of freely flexible material.

10. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a draw-off conduit connected with said outlet and with said jacket, said conduit connections being angularly displaced a substantial amount from each other, said conduit including rigid end portions and a readily yieldable mid-portion including a tube of freely flexible material extending angularly around said container and connecting said conduit end portions.

11. A heat insulated receptacle including a frangible container having an outlet for a draw-

- off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a metallic draw-off conduit connected with said outlet and with said jacket, said conduit including two tubular portions and a readily yieldable diaphragm connecting said tubular portions, said tubular portions being of different diameters.
- 10 12. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a metallic
- 15 draw-off conduit connected with said outlet and with said jacket, said conduit including rigid end portions and a mid-portion including a readily yieldable diaphragm.
- 20 13. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a metallic
- 25 draw-off conduit connected with said outlet and with said jacket, said conduit including end connecting portions and a mid-portion including a plurality of substantially parallel connected and
- 30 readily yieldable diaphragms.
14. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a metallic
- 35 draw-off conduit connected with said outlet and with said jacket, said conduit including rigid end portions and a readily yieldable mid-portion in-

cluding a U-shaped tube of freely flexible material.

15. A heat insulated receptacle including a frangible container having an outlet for a draw-off conduit, a protective jacket of non-frangible material around and spaced from said container, means between the jacket and the frangible container for insulating purposes, and a metallic draw-off conduit connected with said outlet and with said jacket, said conduit connections being angularly displaced a substantial amount from each other, said conduit including rigid end portions and a readily yieldable mid-portion including a tube of freely flexible material extending angularly around said container and connecting said conduit end portions.

16. A unitary double-walled receptacle including in combination a frangible container, a protective jacket of non-frangible material around and held in spaced relation with said container and heat-insulated therefrom, said jacket and said container each having an opening for connection with a draw-off conduit, and a draw-off conduit connected with said openings, said conduit including between said container and said jacket a freely yieldable, non-frangible and shock-protecting structure.

17. A unitary double-walled receptacle including in combination a frangible container, a protective jacket of non-frangible material around and held in spaced relation with said container and heat-insulated therefrom, said jacket and said container each having an opening for connection with a draw-off conduit, and a metallic draw-off conduit connected with said openings, said conduit including between said container and said jacket a freely yieldable, non-frangible and shock-protecting structure.

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