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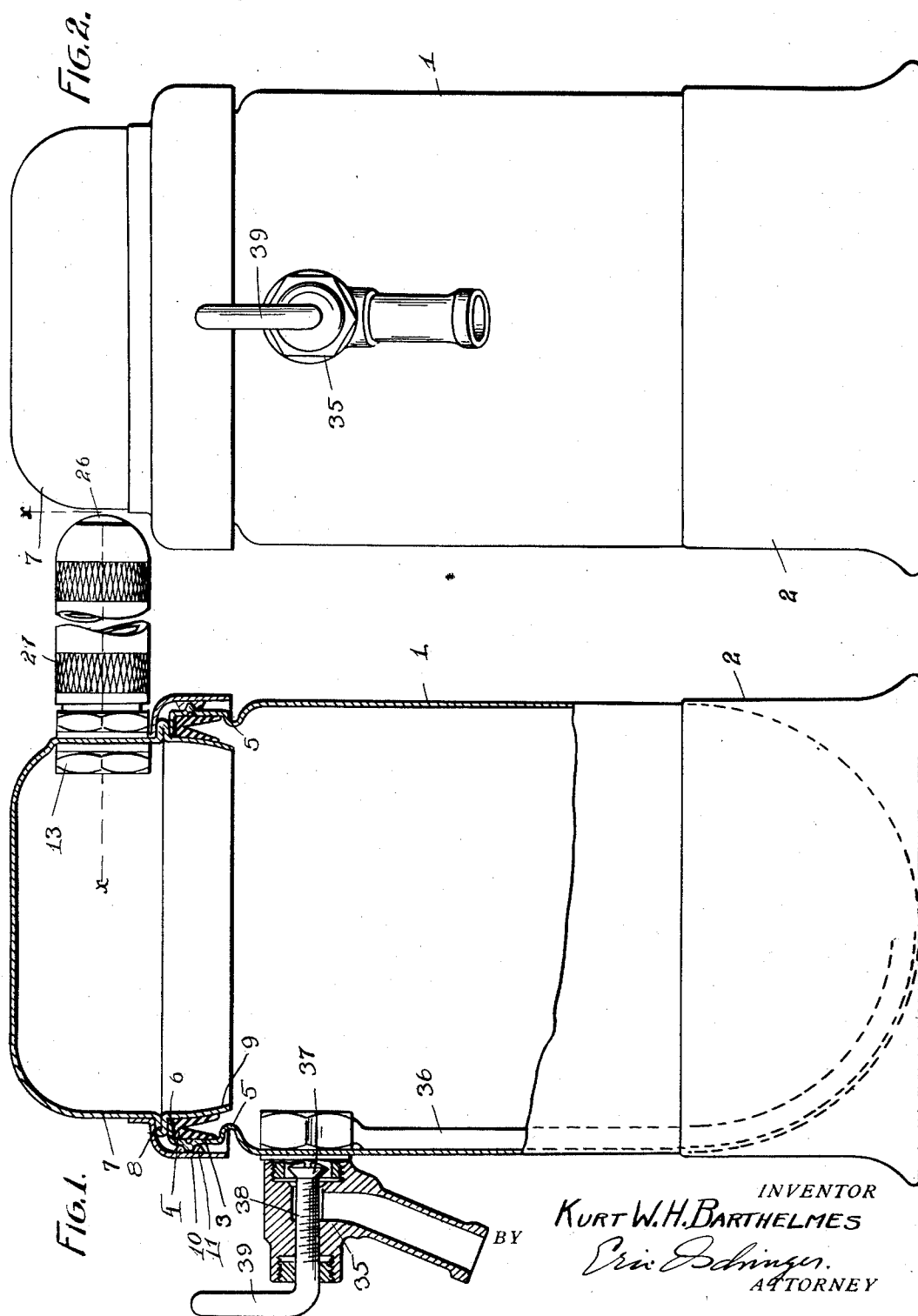
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HIGH PRESSURE METALLIC LIQUID CHARGING CONTAINERS

Filed March 7, 1930

3 Sheets-Sheet 1



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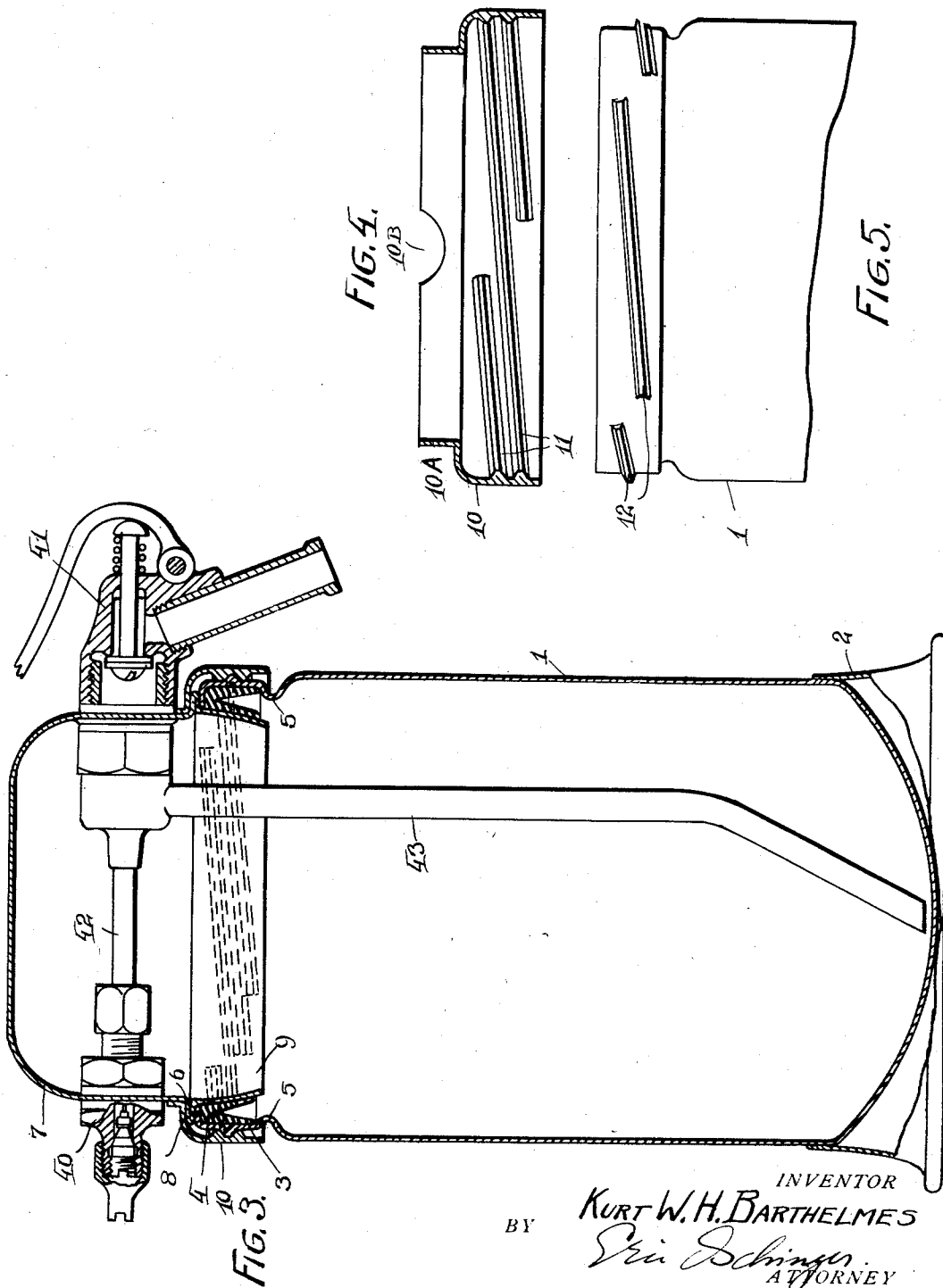
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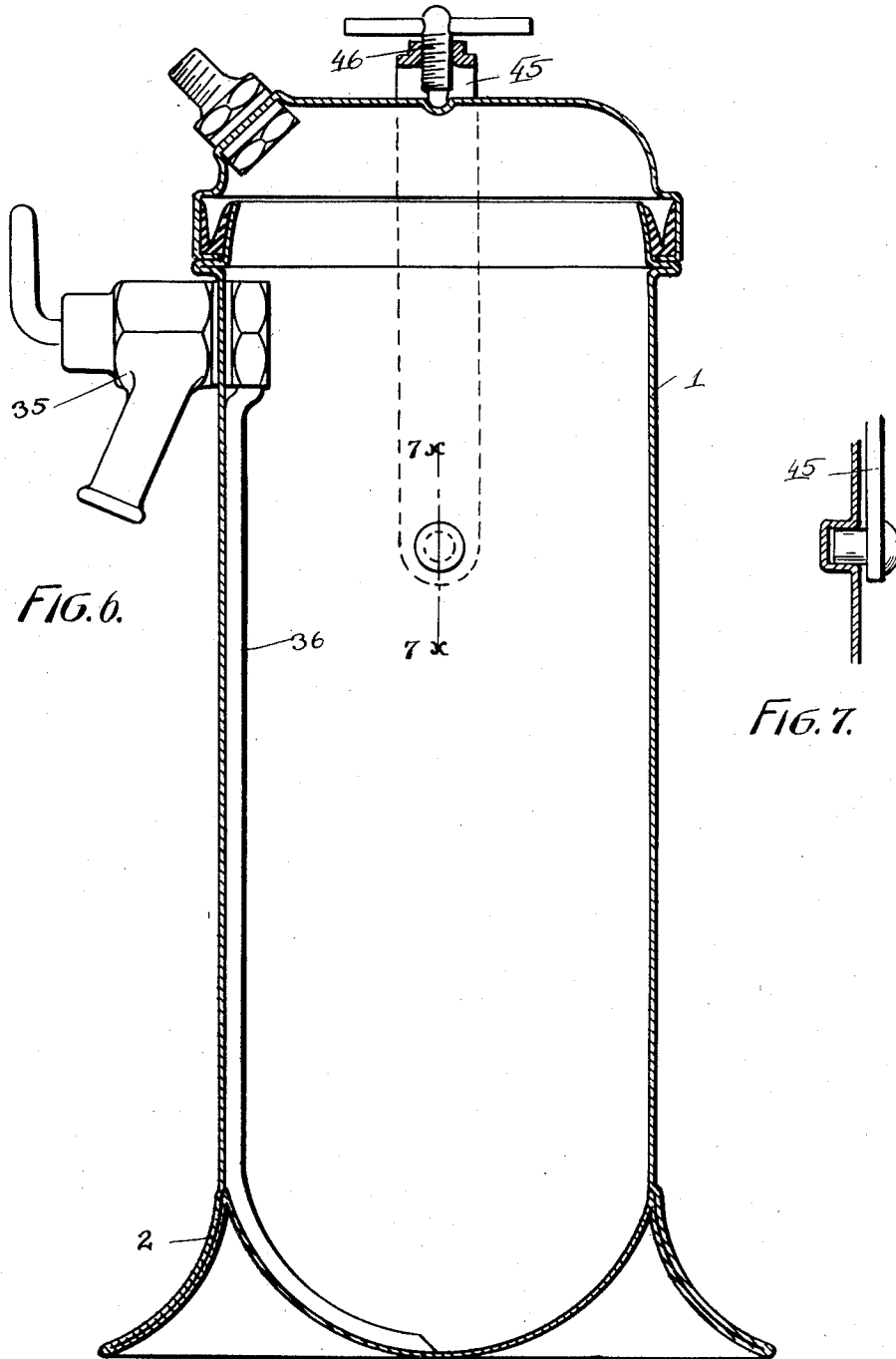


FIG. 6.

FIG. 7.

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HIGH PRESSURE METALLIC LIQUID CHARGING CONTAINERS

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Application March 7, 1930. Serial No. 434,112

5 Claims. (Cl. 220—46)

This invention relates to high pressure metallic liquid containers adapted for use in charging or carbonating beverages in the home and the invention has for its various objects:

5 To provide a high pressure metallic container having a large opening which can be opened and closed with a removable cover to permit the insertion of ice cubes into the beverage when filling the container in order to simultaneously
10 mix and cool the beverage before it is being charged.

To provide a high pressure metallic container having a removable cover combined with suitable locking and sealing means whereby the cover
15 is quickly attached to or detached from the container, and the joint between the cover and container instantaneously sealed to withstand high pressures on the attachment of the cover to the container.

20 To provide the high pressure metallic container with a charging valve which permits the charging of the beverage within the container with either a hose connection leading from a gas supply tank or with an individual charge
25 containing cartridges provided for this purpose.

All these and other objects of this invention will be apparent from the drawings, the specification and the appended claims forming a part thereof.

30 In the accompanying drawings:

Figure 1 is a partial side elevation and sectional view of the high pressure metallic mixing, cooling and charging container.

35 Figure 2 is a front elevation of the high pressure mixing, cooling and charging container.

Figure 3 is a longitudinal sectional view of a modified form of the high pressure metallic mixing, cooling and charging container.

40 Figure 4 is a detail sectional view of the locking ring for locking the cover to the high pressure container.

45 Figure 5 is a detail side elevation of the upper portion of the high pressure container illustrating the spiral locking flanges or mutilated thread provided on the container with which the locking ring interlocks to lock the cover to the container.

50 Figure 6 is a longitudinal sectional view of another modified form of the mixing, cooling and high pressure charging container.

55 Figure 7 is a detail sectional view of the high pressure container illustrated in Figure 6, the section being taken on the line 7x—7x of Figure 6.

In the several figures of the drawings like reference numerals indicate like parts.

The high pressure metallic mixing, cooling and charging container forming the subject matter
60 of my present invention is especially adapted for home use to permit the charging or carbonating of beverages by anyone. Water is densest at a temperature of 39.1 degrees Fahrenheit and at this temperature water can therefore be
65 charged quickly with its maximum amount of gas. To charge water or a mixture of water and syrup or other liquids it is therefore desirable to reduce the temperature of it to bring the mixture to its point of greatest density before the liquid is charged or carbonated. Here-
70 tofore glass bottles have been exclusively used in the home in charging liquids such as seltzer water etc. and in order to cool these bottles and their contents they have to be packed in ice or
75 placed in the refrigerator for a considerable length of time before the temperature of the liquid contents of the bottle is at the point where it can be efficiently charged at not too high a pressure. In the use of my container the temperature of the liquid can be quickly reduced to
80 the proper point by simply placing a sufficient quantity of ice into the container with the liquid to be charged. This is made possible by providing the container with a large open end which is quickly opened and closed to permit pieces of
85 ice or ice cubes to be placed into the container and the liquid contained therein. The cover also serves as the expansion chamber and is locked in place on the container by means of a locking ring. The joint between the cover and contain-
90 er is formed to provide a seal which hermetically seals the container and prevents leakage even under extremely high pressures.

The container 1 is drawn from sheet metal which is preferably noncorrosive or which can
95 be later on readily enameled or glass lined. The bottom of the container is formed convex to withstand a high pressure without bulging, and surrounding the convex bottom is a flange 2 which is suitably fastened to the container or formed integral with it to provide a flat base therefor. The
100 open end of the container is encircled by a horizontal annular groove 3 in which is seated the expansion washer 4. The annular groove 3 is formed by the inwardly projecting ridge 5 at the
105 bottom thereof and the inwardly projecting flange 6 at the top thereof. The inwardly projecting flange 6 also provides the seat on which the cover 7 is supported. This cover is also drawn from sheet metal with a convex top to withstand
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the pressure of the gas with which the liquid is to be charged. In the side of the cover is formed an outwardly projecting annular flange 8 which is adapted to rest on the inwardly projecting flange of the container to support the cover thereon. The cover is provided at the bottom with an inwardly curved extension 9 which telescopes into the open end of the container and the expansion washer 4 located therein. A locking ring 10 is attached to the cover and surrounds the inwardly curved flange 9. On the inside of this locking ring is provided the mutilated female thread 11 which is adapted to interlock with the correspondingly mutilated male thread 12 formed on the outside of the top of the container. When therefore the cover 7 is placed on the container, a short turn of the locking ring interlocks the mutilated female thread of the locking ring with the mutilated male thread of the container and firmly locks the cover to the container. The expansion washer 4 seals the joint between the cover and the container. This washer is made up of rubber or other flexible or pliable material and has an inverted V shaped channel formed in the middle of it in order to provide a pair of individual flexible flanges on each side of the inverted channel shaped washer. The expansion washer is placed into the annular groove and the pressure of the gas with which the liquid is charged expands the inverted channel shaped washer and forces the flexible and pliable sides thereof outwardly against the inner wall of the annular groove 3 on one side and against the outer wall of the cover extension 9 on the other side. The expansion of the washer thus serves to seal the joint between the container proper and its cover.

The inside of the cover forms a dome over the container and this dome provides the expansion chamber in which some of the gas is held in a compressed state ready to expand when the discharge valve is opened to permit the liquid to be forced out of the container. The gas with which the liquid is to be charged is admitted thru the valve 13 mounted in the wall of the cover 7.

After the liquid contents of the container have been charged they can be discharged therefrom in their charged condition thru the discharge valve 35. This discharge valve is attached to the side of the body of the container and is provided with suitable fastening means which are mounted in a hole in the wall of the container. To the portion of this fastening means located within the container is attached tube 36 which extends on the inside of the container down to the bottom thereof where is provided the inlet thru which the charged liquid is forced out to the discharge valve 35. The discharge valve is controlled by the valve 37 proper which is seated or unseated on the rotation of the valve stem 38 by the handle 39. When opened the liquid passes thru the valve and out thru the angular nozzle into a glass or cup which may be located under it.

In Figure 3 I have illustrated a slightly modified form of the container in which the charging valve 40 consists simply of a check valve such as is in use in bicycle or automobile tires to admit air therinto but prevent air from escaping therefrom. The discharge valve 41 in this modified form is located in the cover of the container at a point diametrically opposite to the charging valve and both of the valves are connected with a connecting tube 42. Leading from the connection between the two valves is the tube 43 which extends down into the container to the bottom of it. The gas admitted thru the charging valve

is thus forced into the liquid from the bottom of it and the charged liquid leaves the container thru the same tube when it is discharged thru the valve 41.

In Figures 6 and 7 I have illustrated another modified form of the container which differs from the containers illustrated in Figures 1, 2 and 3 in that the expansion washer which forms the seal between the cover and the container is located in the cover instead of the container and the parts related thereto are correspondingly reversed to permit this change in the construction. The cover instead of being held in place by a locking ring is in this modified construction held in place by a yoke or bale 45 which is pivoted in the sides of the container as illustrated in Figure 7. The yoke or bale 45 is provided with a clamping screw 46 which can be threaded up or down to release or fasten the cover in place on the container.

It has been found in the use of the container that when the expansion washer does not form a perfect seal immediately after the admission of the gas under pressure, a slight turn of the cap which turns the flange 9 within the washer will quickly stop the leak. This is due to the fact that the flexible flanges of the expansion washer may not at first lay perfectly flat against the sides of the cover flange that makes contact with it but when the cover is slightly turned this unevenness is smoothened out and the flexible flange seats itself perfectly to stop the leak. It is therefore desirable to give the cover a slight turn when it is placed on the container in order to obviate the necessity of turning it later on. To do this the locking ring 10 is provided with an upwardly projecting flange 10A. This flange is cut away at 10B at the point where the charging valve projects from the cover. The engagement of this charging valve with the flange 10A thus locks this flange against turning on the cover so that when the locking ring 10 is turned to interlock with the top of the container the cover is turned with it to provide the necessary movement for the flange 9 within the expansion washer that will insure a perfect seal between them.

The cover 7 with its extension flange 9 operates as a piston when it is placed on the container because as heretofore pointed out the extension of the cover telescopes into the expansion washer 4 located in the end of the container proper. When therefore the cover is put in place on the container the air within it is slightly compressed and this slightly expands the expansion washer against the cover extension while the cover is being seated on the container. A preliminary seal is thus immediately formed between the container and the cover as soon as the cover is placed on the container. When the high pressure gas is then admitted into the expansion chamber to charge the liquid in the container the washer is already expanded against the cover extension so that no gas can escape past the washer while the action of the pressure of the gas on the washer tightens the seal provided thereby.

I claim:

1. A metallic high pressure container comprising a body portion having an open top, a dome shaped cover detachably mounted over the open end of said container, a horizontal annular groove formed in said container and surrounding the open top thereof, an annular channel shaped washer seated in said annular groove with the channel exposed to the inside of the container, an extension formed on said cover and telescoping

into said annular washer to have one side of this washer make contact with said cover extension and the other side thereof with said container so as to form a seal between said cover and said container on the expansion of the sides by the pressure of the gas admitted into said container and supporting means between said cover and said body portion independent of said annular washer and the seal formed thereby.

2. A high pressure sheet metal container comprising a body portion having an open top, a cover forming an expansion dome over the top of said container, seating and supporting means provided between said body portion and said cover, locking means for locking said seating and supporting means together, an expansion member having oppositely expanding sides between said body portion and said cover to simultaneously expand against opposing sides of said cover and said body portion adjacent to said seating and supporting means to form a seal between them and the seating and supporting means independent of the engagement between said seating and supporting means.

3. A high pressure sheet metal container comprising a body portion having an open top surrounded by an inwardly projecting flange, a cover forming an expansion dome over the open top of said container, an annular flange surrounding said cover and adapted to rest on said flange of said body portion, locking means for locking said flanges together, an extension formed on said cover and projecting below said annular flange thereof into said flange of said body portion, said extension forming an annular sealing chamber with said body portion and said inwardly projecting flange thereof, and pressure expanding sealing means located in said sealing chamber and adapted to be forced against said inwardly projecting flange and expanded against said cover extension and said body portion to form a seal between said cover and said body

portion independent of the engagement between them.

4. A high pressure sheet metal container comprising a body portion having an open top surrounded by a metallic supporting seat, an expansion dome forming a cover adapted to telescope into the open top of said body portion, a metallic seat surrounding said cover and adapted to seat itself on said seat of said body portion to form an inverted U shaped sealing chamber between said cover and said body portion, fastening means for fastening said metallic seats together to provide a strong metallic joint between them, a sealing member located in said sealing chamber, said sealing member being channel shaped and having outwardly flexing sides so that the pressure of the medium inserted into the container will force the bottom of the channel shaped sealing member against said flange of said container and the sides of said sealing member against opposing sides of the cover and container body in said sealing chamber.

5. In a high pressure sheet metal container the combination of a container body having an open end, an inwardly projecting annular flange surrounding said open end and forming a supporting seat thereon, an inwardly projecting annular ridge in said container body and forming a horizontal annular channel with said inwardly projecting flange, an inverted U shaped annular expansion member located within said horizontal channel with the inside thereof projecting beyond said annular ridge to keep said U shaped expansion member open to the inside of said container body, an expansion dome adapted to telescope into said expansion member, an annular flange surrounding said dome and adapted to rest on said supporting seat of said container body to rigidly support said dome on said container body with said dome in contact with said expansion member and fastening means for fastening said expansion dome to said container body.

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