May 30, 1939. W. B. THREM 2,160,043

FLUID CHARGING OF FOODS AND BEVERAGES

Filed Dec. 28, 1937 2 Sheets-Sheet 1

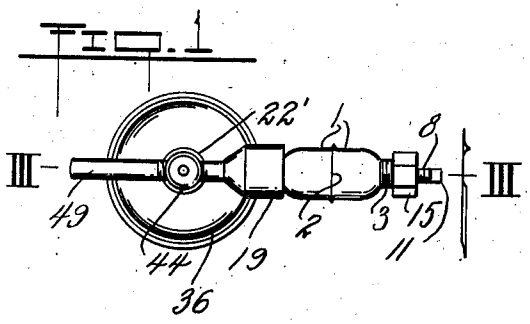


FIG. 1

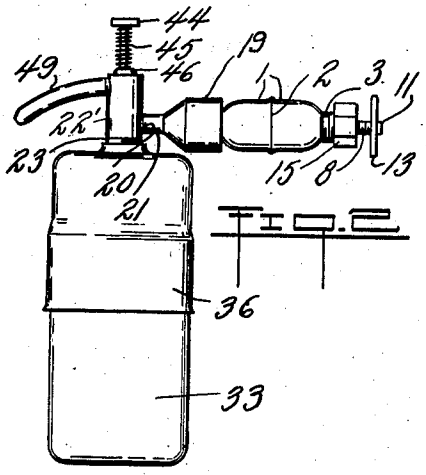


FIG. 2

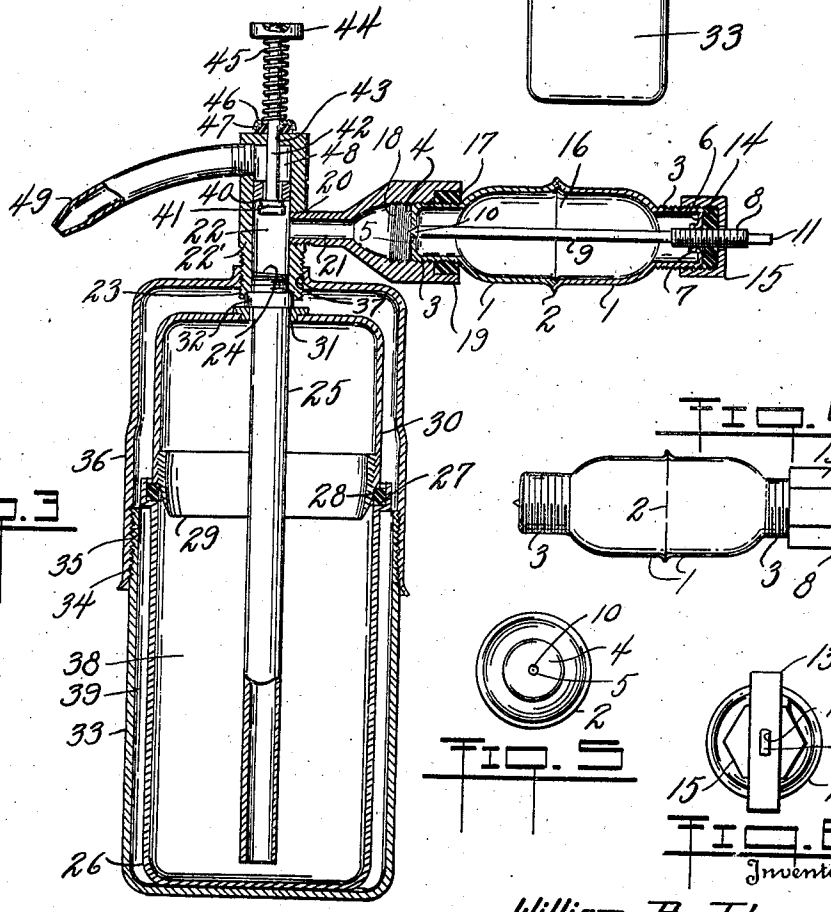


FIG. 3

FIG. 4

FIG. 5

FIG. 6

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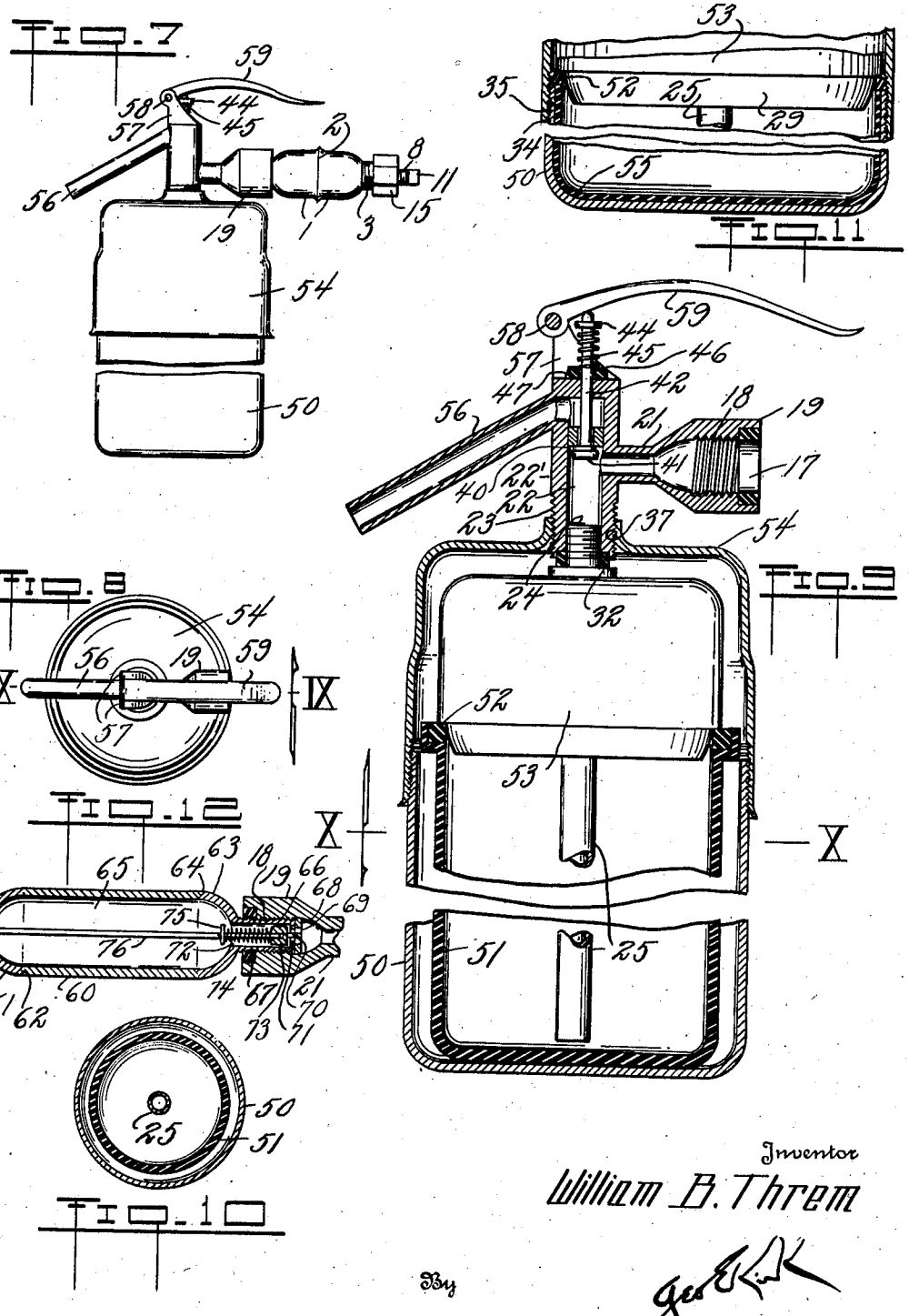
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FLUID CHARGING OF FOODS AND BEVERAGES

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FLUID CHARGING OF FOODS AND BEVERAGES

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5 Claims. (Cl. 221—74)

This invention relates to gas pressure storage and release for so-called aeration or volume expanding of foods and beverages, as well as contributing to the palatability thereof.

This invention has utility when incorporated in primary and secondary or intermediate gas pressure containers or receivers which are manually controlled for extent of aeration and control thereof as desired.

Referring to the drawings:

Fig. 1 is a plan view of an embodiment of the invention comprising an assembly of primary and secondary pressure containers;

Fig. 2 is a side elevation of the assembly of Fig. 1, say as adapted for semi-fluid or liquid, such as cream;

Fig. 3 is a section on the line III—III, Fig. 1, showing the duct communication ways through the assembled containers;

Fig. 4 is a side elevation of the high pressure or primary container;

Fig. 5 is a view from the left or port delivery end of the primary container of Fig. 4;

Fig. 6 is a view from the right or gland end of Fig. 4, with the control wrench in position for operating the needle valve;

Fig. 7 is a side elevation, with parts broken away, of the primary and secondary containers in which the secondary container is provided with a non-metallic receiver for material;

Fig. 8 is a plan view of the trigger valve control for the spout device or delivery of the assembly of Fig. 7;

Fig. 9 is a section on the line IX—IX, Fig. 8, showing the passages therethrough, with omission of the primary or high pressure container;

Fig. 10 is a section on the line X—X, Fig. 9, on a reduced scale;

Fig. 11 is a view of secondary container portions similar to Fig. 9, in which the non-metallic material receiving portion as a synthetic composition is molded directly into the lower or major element of the secondary container; and

Fig. 12 is a section through the primary container and its assembly, with said container having but a single fitting.

The flat sheet metal blanks or tubular sections as approximately similar units are conformed into chambers 1 (Fig. 3) having weld assembly 2 therebetween and externally threaded stems 3 upon opposite ends therefrom. One of the stems 3 at the delivery end has an inwardly directed flange 4 terminating in a port 5. The remote end has an inwardly directed flange 6 with internally threaded sleeve 7 to coact with externally threaded portion 8 of needle valve stem 9 having needle valve tip 10 cooperating with the port 5 at the flange 4. Remote from the needle valve tip 10, this stem 9 has flattened projection 11, with which may fit opening 12 of wrench 13 for rotating this valve or plunger stem 9 to effect reciprocation toward or away from the port 5. Adjacent this threaded portion 8 of the needle valve stem 9, there is provision of gland having compressible packing 14 to be acted upon by cup or cap 15, thereby effecting the sealing tight at high pressure so that cartridge chamber 16 may be loaded, say from a compression cylinder, with gas as nitrous oxid, carbon dioxid, or oxygen at a pressure of say thirty or more atmospheres.

As thus charged and sealed, this unit may have its externally threaded portion 3 adjacent the port 5 thrust along compressible gasket 17 to have the threaded portion 3 engaged with the internally threaded portion 18 of fitting 19, thereby to crowd this gasket 17 upon the enlargement 1 in effecting a high pressure sealing with this fitting of the primary container as charged. This fitting 19 has threaded connection 20 for its duct 21 to communicate with the chamber 22 in closure 22'. This closure 22' has external thread portion 23 and internal thread portion 24. The internal thread portion 24 is in assembly with tubular stem 25, shown as extending adjacent the bottom of cup 26, herein shown as of metal.

The upper portion of this cup is provided with seat 27 for compressible gasket 28 in which may ride flange 29 as weld or sweat assembled with cap 30. This cap 30 has opening 31, through which the tube 25 passes, which opening about the tube is sealed by compressible gasket 32 as thrust thereagainst. Enveloping this cup 26 is housing chamber 33 desirably of metal having external threading 34 to coact with internal threading 35 of complementary housing member 36 with threading 37 to register with the threading 23 on the head or closure 22'. Accordingly, with the assembly of the housing members 33, 36, effected at the threaded portion 34, 35, thrusting of the tube 25 into the cup 26 with cooperation between the threads 23, 37, is effective through the gasket 32 not only to seal the tube assembly with the cap 30 but to effect sealing between the cap 30 and the cup 26 at the seal 28. There is, accordingly, an effective sealing of chamber 38 which has a jacket chamber 39 thereabout as a resistance to temperature change.

The head 22' has therein seat 40 against which may rest plunger 41 having stem 42 extending through opening 43 to cap 44 as threaded on the

stem 43 and thereby engaging compression spring 45 to hold such against flange 46 at packing 47. Accordingly, this valve is effective to isolate the chamber 22 from chamber 48 in the head. From this chamber 48 delivery spout 49 may be effective to spill the charge as directed in operating the device wherein the operator may grip the primary vessel or container as a handle and use the thumb to depress the cap 44 to lift compressible head of plunger 41 off seat 40.

In practice, say with this cup 26 charged with coffee cream, not necessarily whipping cream, and with the gas nitrous oxid and the pressure upward of 400 pounds per square inch, a half pint of this cream may be sufficient for as many as forty services at a soda fountain as for beverages, or at a lunch counter as for portions upon cake, pie, fruits, or other services. There is, accordingly, economy in this set-up for efficient magnification of the liquid or semi-liquid in charging such with gas, thereby to contribute materially to its appetizing value and have such available for continuous or intermittent service, even over delayed periods of time, for the combined containers may be stored in a chilled region, as a mechanical refrigerator, at a desired temperature.

In assembly initially the high pressure gas may be kept in a primary container or may be discharged into the secondary container 38 either until pressure is equalized therebetween or for fractional amount from the container chamber 16. As the desired extent of charge is effected, it is desirable to operate the wrench 13 to close the container 16 to keep it out of communication with the chamber 38 during the operation of the valve from the handle 44 for discharge at the spout 49. However, as the effective discharge may be slowed up, say due to the pressure in the chamber 38 being around 40 or 50 pounds, there may be a re-opening of the chamber 16 which with its residue from such second or drop in pressure may equalize and thereby provide a second building up of pressure in the chamber 38 for further effective discharge in economic functioning of the equipment herein.

This secondary container is one which is for milk or dairy products, hot tin coated as to its elements forming the chamber 38 and the delivery ways therefrom, thereby assuring that the article is sanitary equipment and susceptible of ready cleansing, and the charging may be with so-called heavy cream or coffee cream, not necessarily whipping cream, even though such be the desired purpose for use. The high pressure unit may be returned or otherwise located for recharging with a high pressure gas, say nitrous oxid for whipping cream or even carbon dioxid. In the event carbon dioxid be used, say for carbonating waters, the chamber 38 may be the receiver for such water in lieu of the cream.

For primary use with other than dairy products, there may be different or larger capacity outer housing 50 in which is located vitreous, plastic, or synthetic cup 51 (Fig. 9) having gasket 52 under compression from complementary vessel member 53 as a cap housed by companion member 54 to the member 50. The housing 50 may have therein synthetic or composition cup 55 (Fig. 11) molded directly against the inner wall of this housing member 50. Accordingly, the metal wall 50 itself is a reinforcement here as is the metal wall 26 a reinforcement for the milk or dairy product charge therein.

In this set-up, the primary container may be charged with say carbon dioxid, and in lieu of curved spout 49 there may be straight spout 56, and instead of thumb pressure at the disk 44, arms 57 may extend up to mount fulcrum 58 for lever 59 to be operated in opening the valve against the action of the spring 45 in effecting discharge of material therefrom.

In lieu of the gland in addition to the port fitting, the primary container (Fig. 12) may embody medial cylindrical portion 60 having hemispherical end 61 with weld connection 62 assembling such with the major tubular portion. Remote therefrom hemispherical section 63 may have weld assembly 64 with this tubular section, thereby to complete chamber 65. The hemispherical section 63 is shown provided with externally threaded tubular portion or fitting 66, about which may be placed compressible gasket 67 as this device is inserted in fitting 19 toward spider 68 having opening 69 therethrough and central projecting stem or plunger 70. This plunger 70, as this fitting 66 is threaded into the internally threaded portion 18 of this fitting 19, brings terminal port 71 about this stem 70. This tubular extension 66 of the fitting, in its extent from the chamber 65 toward the port 71, has tubular portion 72 in which is located valve seat 73, normally as thrust by compressible helical spring 74, closing this port 71. This helical spring 74 is held in compression as abutting collar 75 fixed on the stem 76 extending through the chamber 65 and as to which this valve seat 73 is guided for its movement in response to the stem 70.

As this primary chamber is charged, the gas under pressure therein normally tends to seat this valve 73 at the port 71. The spring insures against casual shifting therefrom. However, as this fitting is brought into position to have the stem 70 through the port 71 unseat the valve 73, the pressure in this container 65 is released to flow through the duct 21 into the secondary container. This fitting is subject to ready recharging as exhausted from its assembly relation with the secondary container. In such assembly condition it has its cooperative relation as a grip or handle.

What is claimed and it is desired to secure by Letters Patent is:

1. A primary high pressure fluid container including a valve fully operative therewith for opening and closing as desired, a secondary receiver for material to be pressure expelled therefrom, said secondary receiver including a cup, a cap for the cup, a tube, a closure mounting the tube to extend through the cap into the cup for pressure applying the cap into sealing relation with the cup, there being a fitting on the closure for the primary container to deliver fluid into the tube, a delivery spout from the closure, and a valve controlling flow from the cup through the tube for discharge by the spout.

2. A primary high pressure fluid container including a valve fully operative therewith for opening and closing as desired, a secondary receiver for material to be pressure expelled therefrom, said secondary receiver including a cup, a cap for the cup, a tube, a closure assembled in the tube and cap and coacting with the cup to apply pressure between the cap and cup, there being a fitting radially from the closure locating the primary container as a handle fitting and for delivering fluid from the primary container into the cup, a delivery spout from the closure oppo-

site the handle fitting, and a valve controlling the flow from the closure by way of the spout.

3. A primary high pressure fluid container including a valve fully operative therewith for opening and closing as desired, a secondary receiver for material to be pressure expelled therefrom, said secondary receiver including a cup, a cap for the cup, a tube, a closure assembled in the tube and cap and coacting with the cup to apply pressure between the cap and cup, there being a fitting radially from the closure locating the primary container as a handle fitting and for delivering fluid from the primary container into the cup, a delivery spout from the closure opposite the handle fitting, and a valve controlling the flow from the closure by way of the spout, there being a lever for operating the valve, said lever extending adjacent the handle fitting.

4. A fluid charging primary container having a manual control for releasing for different pressures in desired fractions thereof, said primary container comprising a pair of sheet metal drawn sections medially welded into a reinforcing sealing seam about said combined sections as a tube, and terminally at one end providing a gas delivery port and at the opposite end a gland.

5. A fluid charger embodying a primary relatively high pressure fluid container of tubular cartridge form having reduced diameter exteriorly threaded cylindrical ends, there being a normally closed needle valve port in one end, a cap for the other end providing a gland, and a stem through the container providing a needle valve at the port and having threaded cooperation with the end of the container at the gland and protruding through the gland.

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