Oct. 29, 1968 W. V. TAYLOR 3,407,624

APPARATUS FOR CHILLING VESSELS

Filed Sept. 9, 1965 3 Sheets-Sheet 1

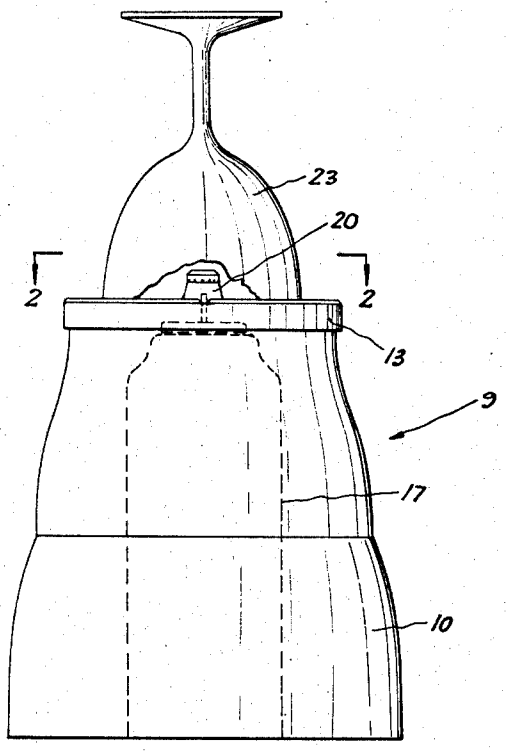


Fig. 1.

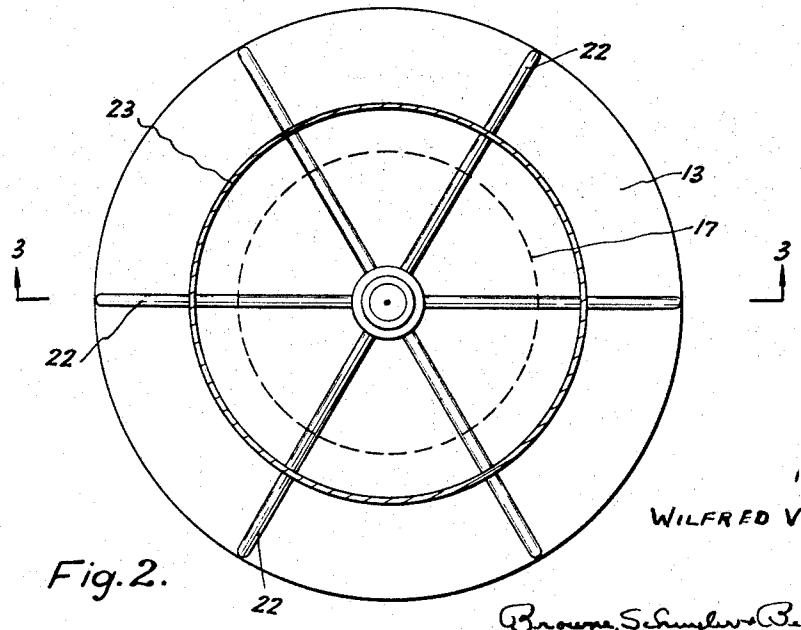


Fig. 2.

INVENTOR:
WILFRED V. TAYLOR

Browne, Schuyler & Burridge
ATTORNEYS

Oct. 29, 1968 W. V. TAYLOR 3,407,624

APPARATUS FOR CHILLING VESSELS

Filed Sept. 9, 1965 3 Sheets-Sheet 2

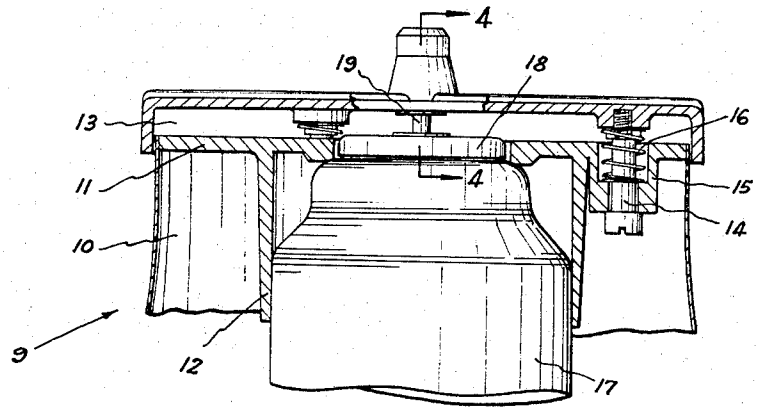


Fig. 3.

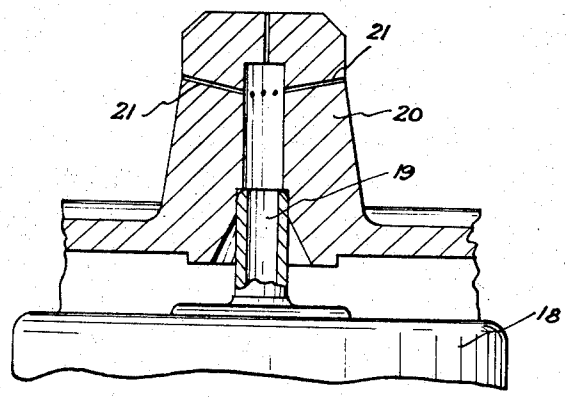


Fig. 4.

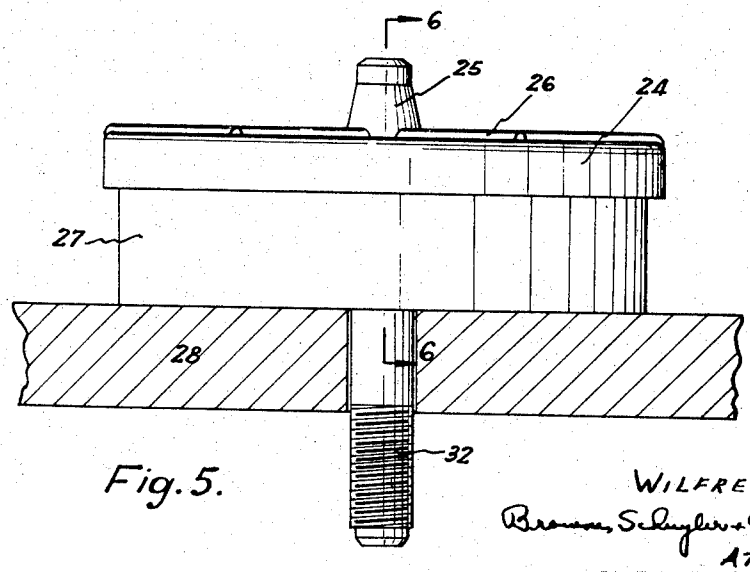


Fig. 5.

INVENTOR:
WILFRED V. TAYLOR
Brown, Schuyler & Beveridge
ATTORNEYS

Oct. 29, 1968 W. V. TAYLOR 3,407,624

APPARATUS FOR CHILLING VESSELS

Filed Sept. 9, 1965 3 Sheets-Sheet 3

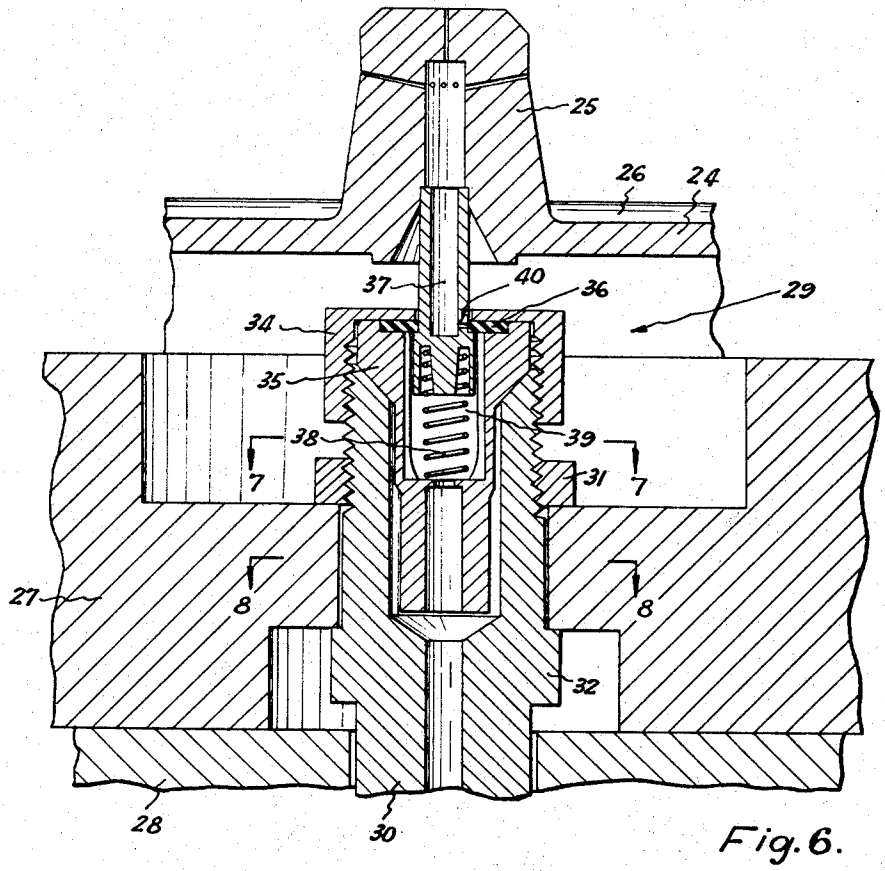


Fig. 6.

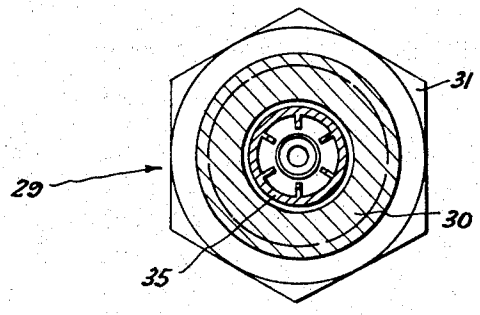


Fig. 7.

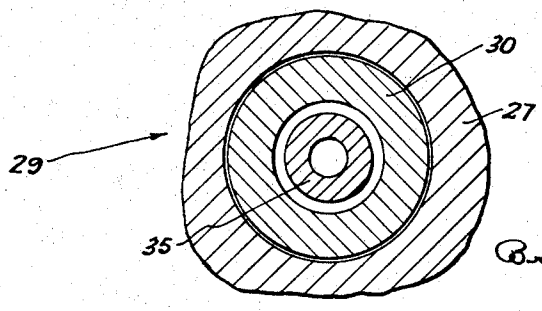


Fig. 8.

INVENTOR:
WILFRED V. TAYLOR
Browne, Schuyler & Burridge
ATTORNEYS

United States Patent Office 3,407,624
Patented Oct. 29, 1968



3,407,624

# APPARATUS FOR CHILLING VESSELS

Wilfred V. Taylor, 3 Warrowa Ave., Pymble, New South Wales, Australia

Filed Sept. 9, 1965, Ser. No. 486,098
Claims priority, application Australia, Sept. 10, 1964, 49,183/64
6 Claims. (Cl. 62—293)

## ABSTRACT OF THE DISCLOSURE

This invention is concerned with a portable device for chilling drinking vessels such as glasses and includes a portable pressurized liquid refrigerant container having a vertically displaceable spray nozzle and a platform mounted relative to the container and nozzle. The platform serves as a support for the vessel to be chilled and when depressed actuates a valve which provides refrigerant to the nozzle thereby chilling the glass.

This invention relates to the chilling of glass tumblers, wine glasses or other drinking vessels immediately prior to the use of those vessels. Such chilling may be effected so as to prevent the vessel warming a chilled drink, to provide an attractively dewed or frosted vessel, or for both those reasons.

Various types of apparatus have been devised for chilling vessels as aforesaid. One such apparatus has consisted of a plurality of metal heat absorbers in the form of mounds corresponding to the inner shape of a vessel to be chilled, so that a vessel when inverted and placed over a suitable one of said heat absorbers is substantially chilled thereby. The absorbers are themselves chilled by a refrigerant circulating and expanding in pipes within the absorbers or otherwise in thermally conductive relationship therewith.

Known apparatus of the kind described above has not been satisfactory. Firstly, because of the need for the heat absorbers to be shaped to correspond with the drinking vessel to be chilled (so requiring the replacement of the heat absorbers whenever a change in shape of the drinking vessel occurred) and secondly, because of the time taken to chill the vessel due to inefficient heat transfer from the vessel to the heat absorber.

The object of the present invention is to provide apparatus for chilling drinking vessels which overcomes the above mentioned disadvantages.

Another object of the invention is to provide an apparatus and method for chilling or frosting glasses by contacting said glasses with a liquid refrigerant.

The above and other objects will be apparent from the description which follows.

The invention achieves these objects by the provision of apparatus for chilling drinking vessels which sprays a non-toxic liquid-refrigerant onto the surface of the vessel. The refrigerant on the vessel's surface is then exposed to the atmosphere and almost immediately boils away and chills the vessel.

The invention also consists of a method of chilling drinking vessels comprising the steps of spraying a non-toxic, tasteless and odorless liquid refrigerant onto the surface of the vessel and then exposing the vessel to room conditions to cause rapid evaporation of said refrigerant.

The invention also extends to apparatus for performing the above described method comprising a spray head, a reservoir adapted to hold a charge of liquid refrigerant under pressure, a duct extending from the reservoir to the spray head for the supply of refrigerant thereto and valve devices to control the flow of refrigerant along said duct to the spray head. According to preferred embodiments of the apparatus of the invention, the spray head protrudes from a depressible platform and the valve devices operate in response to movement of the platform.



Such preferred embodiments of the invention may be used by inverting the vessel to be chilled upon the platform so that it encloses the spray head and then pushing downwardly on the base of the vessel to depress the platform.

By way of example, two embodiments of apparatus according to the invention are described hereinafter with reference to the accompanying drawings.

FIG. 1 is a side elevation of one embodiment of apparatus according to the invention;

FIG. 2 is a plan view of the apparatus of FIG. 1 but drawn to a larger scale;

FIG. 3 is a sectional view of an upper portion of the apparatus of FIG. 2 taken on line 3—3 of that figure;

FIG. 4 is a sectional view taken on line 4—4 of FIG. 3;

FIG. 5 is a side elevation of a portion of another embodiment of the invention;

FIG. 6 is a sectional view taken on line 6—6 of FIG. 5, but drawn to a larger scale;

FIG. 7 is a sectional view taken on line 7—7 of FIG. 6; and

FIG. 8 is a sectional view taken on line 8—8 of FIG. 6.

The embodiment of the invention illustrated by FIGS. 1 to 4 is one wherein the refrigerant reservoir is a conventional so-called "aerosol" container which may be purchased, filled with refrigerant and then discarded when empty.

The apparatus includes a base structure **9** comprising an outer, metal, or plastic bell-shaped skirt **10** and a top plate **11** with an integral skirt **12** extending downwardly therefrom.

The base structure **9** supports a depressible platform **13** by means of three holding screws **14** extending slideably through corresponding glands **15** in the top plate **11**. The platform **13** is urged upwardly by springs **16** sleeved upon the respective screws **14** and therefore may be depressed by downward loads sufficient to overcome the effect of those springs.

The skirt **12** is adapted frictionally to grip a standard aerosol container **17** so that the top cap **18** of the container protrudes through a centrally placed hole in the top plate **11**. The container **17** has an upwardly directed outlet spout or nozzle **19** constituting a duct through which pressurized refrigerant within the container **17** may flow when the spout **19** is depressed so as to open a dispensing valve within the container **17**. The container **17**, its outlet spout **19** and the dispensing valve operable thereby is perfectly conventional and contains a charge of a non-toxic, odorless refrigerant such as for example dichlorodifluoromethane.

The platform **13** has a spray head **20** integral with it. The spray head **20** is hollow and provides a plurality of spray orifices **21** through which jets of refrigerant, fed to the interior of the spray head **20** through the container outlet nozzle **19**, may emerge.

The upper surface of the platform **13** preferably has a plurality of ribs **22** projecting from it such that a drinking vessel **23** may be inverted on the platform **13** so as to cover the spray head **20** but without forming a substantially closed space within the vessel **23**. Downward pressure on the vessel **23** may then be applied to depress the platform **13** which in turn depresses the container nozzle **19** so releasing refrigerant which is sprayed onto the inner surface of the vessel **23**.

The embodiment of the invention illustrated by FIGS. 5–8 differs from that of FIGS. 1–4 primarily in that the valve devices are not within an expendable "aerosol" container but rather are of a more permanent nature and are positioned outside the refrigerant reservoir. This enables

the reservoir to be connected to the remainder of the apparatus by a flexible or other pipe so that if desired one large reservoir may be pipe connected to a plurality of spray heads, each of which may be operable independently of the others.

The embodiment of the invention now being described includes a depressible platform **24** complete with a spray head **25** and ribs **26** the same as the corresponding components of the first described embodiment of the invention. The depressible platform **24** is resiliently supported upon a cylindrical base structure **27** adapted to rest upon a table or bar top **28**.

Valve devices **29** are housed within the base structure **27** and comprise a valve body **30** extending through a clearance hole in the base structure **27** and secured to the base structure **27** by a clamping nut **31** and a co-acting flange **32** on the valve body.

The valve body **30** is hollow and at its lower end extends below the base structure **27** as an externally threaded tube **33** adapted to receive a conventional pipe connector and thereby enabling the interior of the valve body **30** to be put into communication with an external refrigerant reservoir.

The upper end of the valve body **30** has an internally threaded cap **34** applied to it which serves to secure a generally tubular valve insert **35** and at the same time retains a resilient valve seat **36** in position in an annular recess in the top of the insert **35**.

A tubular hollow valve stem **37** is urged upwardly by a leading spring **38** so that a peripheral shoulder on the stem **37** seats against the resilient seat **36** to seal off refrigerant in the space **39**. However, when the platform **24** is depressed it shifts the valve stem **37** downwardly so that a small valve orifice **40** extending through the wall of the stem **37** is shifted below the seat **36** so enabling refrigerant to flow through the stem **37** into the spray head **25** and thence onto the inner surface of a drinking vessel.

It will be noted that the presence of ribs **22** in the embodiment of FIGS. 1–4 and ribs **26** in the embodiment of FIGS. 5–8 has the salutary effect of permitting the volatile refrigerant gas, which forms when the liquid refrigerant comes in contact with the vessel being chilled, to readily escape and not to be trapped within the chamber formed by the vessel and the platform **13** (or **24**) so as to give rise to an objectionable gaseous pressure.

It will be appreciated that apparatus according to the invention may take many forms. For example manually operable valve devices of any conventional kind may be provided. Also rotary or other spray heads may be provided. In still other examples of the invention the refrigerant is sprayed upon the outer surface of the vessel to be chilled instead of, or as well as, the inner surface. In other examples of the invention, means may be provided to wet the drinking vessel prior to it being sprayed with the refrigerant.

Various other modifications will be apparent to those familiar with the art and are also contemplated provided they are within the spirit and scope of the present invention as represented by the appended claims when construed in the light of the above disclosure.

I claim:

**1.** A portable apparatus for chilling a drinking vessel comprising a spray head adapted to discharge liquid refrigerant onto the surface of the vessel to be chilled, a reservoir containing a charge of liquid refrigerant under pressure, a duct extending from the reservoir to the spray head for the supply of refrigerant thereto, valve means within said reservoir controlling the flow of refrigerant along said duct to the spray head, a depressible platform supporting said spray head and wherein said valve means operates in response to depression of said platform, and a body member beneath said platform which engages the reservoir and maintains said reservoir in a fixed position relative to the spray head and the platform.

**2.** The apparatus of claim **1** wherein the upper surface of said platform is ribbed so that a drinking vessel inverted on the platform over said spray head does not define a sealed space but permits the ready inflow and outflow of the refrigerant.

**3.** Apparatus for chilling drinking vessels comprising in combination; a spray head adapted to discharge liquid refrigerant onto the surface of a vessel to be chilled, a reservoir containing a charge of liquid dichlorodifluoromethane refrigerant under pressure, a duct extending from the reservoir to the spray head for conveying refrigerant to the spray head, valve means controlling the flow of refrigerant through the duct to the spray head, a depressible platform supporting said spray head and dimensioned to support an inverted vessel with the spray head received in the vessel, and means responsive to the depression of said platform for operating said valve means to permit flow of the refrigerant to the spray head, venting means in the platform permitting free escape of the liquid refrigerant from the confines of a drinking vessel inverted on the platform for chilling to permit the refrigerant to expand and thereby chill the vessel, and a body member beneath the platform and frictionally engaging the periphery of the reservoir to maintain the reservoir in fixed position below the platform.

**4.** Apparatus for chilling drinking vessels comprising in combination; a spray head adapted to discharge liquid refrigerant onto the surface of a vessel to be chilled, a reservoir containing a charge of liquid dichlorodifluoromethane refrigerant under pressure, a duct extending from the reservoir to the spray head for conveying refrigerant to the spray head, valve means controlling the flow of refrigerant through the duct to the spray head, a depressible platform supporting said spray head and dimensioned to support an inverted vessel with the spray head received in the vessel, means responsive to depression of said platform for operating said valve means to permit flow of the refrigerant to the spray head, venting means in the platform permitting free escape of the liquid refrigerant from the confines of a drinking vessel inverted on the platform for chilling to permit the refrigerant to expand and thereby chill the vessel, said venting means being formed by a plurality of upstanding ribs including radially extending portions on the platform for engaging the rim of the inverted drinking vessel to space the rim from the platform to allow free escape of liquid refrigerant from the confines of the vessel outwardly of the rim.

**5.** A portable apparatus for chilling a drinking vessel comprising a spray head adapted to discharge liquid refrigerant onto the surface of the vessel to be chilled, a reservoir containing a charge of liquid refrigerant under pressure, a duct extending from the reservoir to the spray head for the supply of refrigerant thereto, valve means within said reservoir controlling the flow of refrigerant along said duct means to the spray head, said valve means being operated by movement of said duct means, an annular depressible platform coaxial with said duct means and extending over said reservoir, and means causing the duct to be depressed when the platform is depressed wherein said valve means operates in response to depression of said platform, and a body member beneath said platform which engages the reservoir and maintains said reservoir in a fixed position.

**6.** A portable apparatus for chilling a drinking vessel comprising a spray head adapted to discharge liquid refrigerant onto the surface of the vessel to be chilled, a reservoir containing a charge of liquid refrigerant under pressure, a duct extending from the reservoir to the spray head for the supply of refrigerant thereto, valve means within said reservoir controlling the flow of refrigerant along said duct means to the spray head, said valve means being operated by movement of said duct means, an annular depressible platform coaxial with said duct means and extending over said reservoir, and means causing the duct to be depressed when the platform is de-

pressed wherein said valve means operates in response to depression of said platform, and a body member beneath said platform and means between the reservoir and the body member which locates the body member coaxial with the reservoir.

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 2,587,075 | 2/1952 | Tice | 62—62 |
| 2,749,715 | 6/1956 | Tice | 62—62 |
| 3,000,195 | 9/1961 | Federighi | 62—64 X |
| 3,257,821 | 6/1966 | Warner | 62—457 X |

FOREIGN PATENTS

| | | |
|---|---|---|
| 174,392 | 1/1922 | Great Britain. |



ROBERT A. O'LEARY, *Primary Examiner.*

W. E. WAYNER, *Assistant Examiner.*