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3,476,295

LIQUID DISPENSING APPARATUS HAVING A DISPENSING TOP CLOSURE

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FIG. 1.

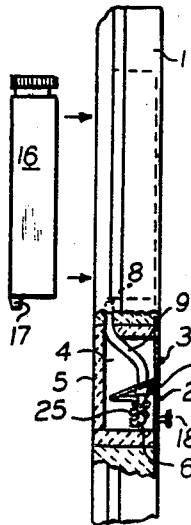


FIG. 2.

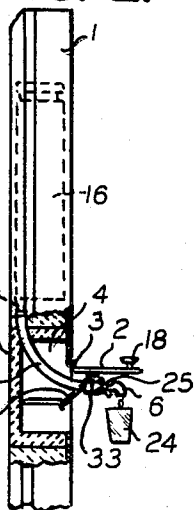


FIG. 3.

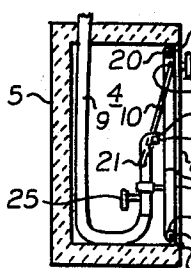


FIG. 4.

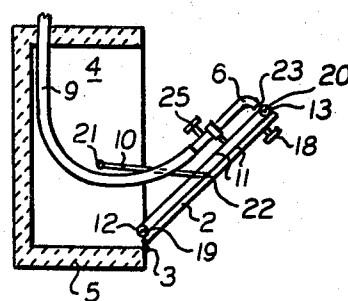


FIG. 5.

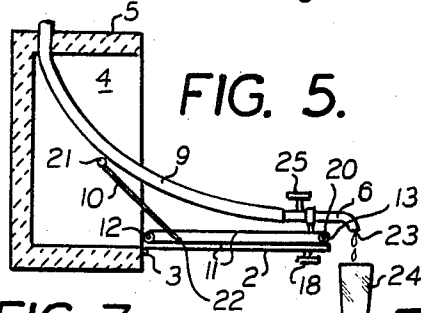


FIG. 6a.

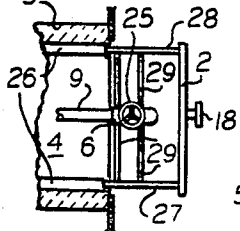


FIG. 6b.

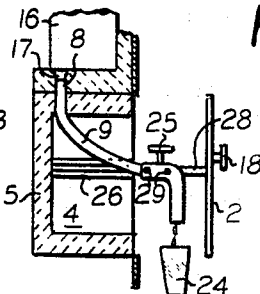


FIG. 7a.

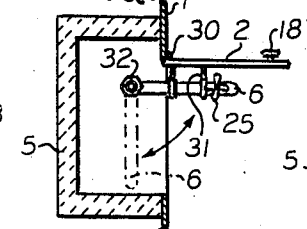


FIG. 7b.

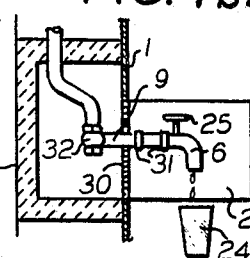


FIG. 9a.

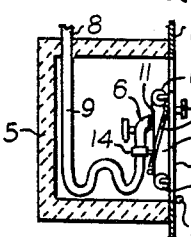


FIG. 8.

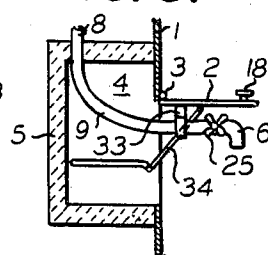


FIG. 10.

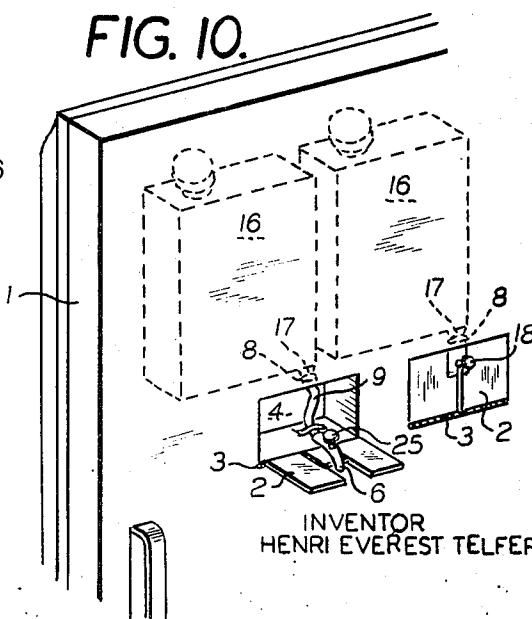
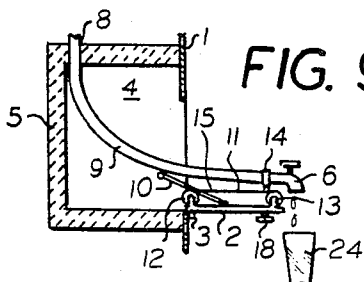


FIG. 9b.



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**LIQUID DISPENSING APPARATUS HAVING A
DISPENSING TOP CLOSURE**

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3 Claims

ABSTRACT OF THE DISCLOSURE

This specification describes a dispenser for liquids, ice cubes and the like in combination with a refrigerator or freezer door which is adapted to be used without the necessity of opening the door. This apparatus comprises a refrigerator or freezer door of the type adapted to contain shelves therein. A container adapted to hold the liquid to be dispensed or the ice cubes, etc. is positioned inside the door, suitably on or in place of a shelf. A small hinged door or panel is provided in the outside front face of the refrigerator door which panel when opened permits communication through the refrigerator door. Where liquid is to be dispensed, a tap is provided inside the hinged panel which communicates with the container. The tap is hingedly or slidably mounted in the door and operatively associated with the small panel so that when the panel is opened the tap moves out of its recess in the door to extend out therefrom and permit operation thereof to drain a part or all of the contents of the container.

Modern refrigerators, freezers and freezer or ice cube compartments of refrigerators are well known and common appliances which are in almost every home. These appliances operate in a well known manner; that is the food, liquid, ice cubes, etc. are stored therein and each time an item is required, it is necessary to open the door, take out the desired item and close the door. Where the item required is not fully used up upon its removal from the refrigerator or freezer, the same process is repeated in returning it to storage. With some everyday items, such as, for example, milk, water, soda, beer, ice cubes, it is uncommon to take the item out of the refrigerator or freezer without having to return the partially emptied container therefor. Thus it will be apparent that this mode of operation is not only wasteful of the energy of the user but is inefficient with respect to the operation of the cooling unit since each time the door thereof is opened, warmer ambient temperature air enters the refrigerator or freezer thereby requiring the cooling unit to operate at a higher capacity to maintain the internal temperature than absolutely necessary.

Thus in the case of items generally stored in a container in a refrigerator or freezer and drawn from the container on an intermittent, partial use basis, it will be appreciated that improvement in the operational use thereof would be greatly desirable.

It is an object of this invention to provide a novel refrigerator or freezer door construction containing a container and a tap therefor accessible from outside the door when the door is closed.

It is another object of this invention to provide a means of dispensing cold drinks from the inside of a refrigerator without having to open the door.

It is a further object of this invention to provide a means of dispensing ice cubes from inside a freezer or ice cube compartment of a refrigerator without the necessity of opening the door thereof.

Other and additional objects of this invention will become apparent from a consideration of this entire specification including the drawing and the claims thereof.

In accord with and fulfilling these objects, one aspect of this invention resides in a novel construction and combination of a refrigerator or freezer door, preferably of the type adapted to have shelves hung therein but not necessarily of such type. According to this invention, a container for the item to be dispensed is provided positioned on the inside of the door, side or other readily accessible face of a refrigerator or freezer. In the case of shelf containing doors, this container may simply rest on an appropriate shelf. A small openable panel is provided in the door or other face which is openable from outside of the appliance. A tap or other metering device is provided operably associated with this openable small panel and connected to the container by a conduit means adapted to carry the item being dispensed. By opening the panel, the tap or other metering device is moved, from its recess in the door, out to a position actually outside the door or other panel. The tap or other metering device can then be operated to dispense the desired item from the container inside the refrigerator to a suitable container such as a drinking glass, outside the refrigerator without the necessity of opening the entire refrigerator door.

Further, it is an especially desirable aspect of this invention to provide the recess which houses the tap or other metering device well insulated from the remainder of the refrigerator, freezer or other appliance. By utilizing this type of construction, it will be appreciated that the tap is in reality outside the cooling zone of the appliance and therefore its use in no way interferes with or reduces the cooling efficiency of the appliance.

It is of course within the scope of this invention to provide a single cooling appliance construction as described herein with one or a multiplicity of containers and associated metering device for each. As noted above, some of the more common items adapted to be dispensed in the manner described herein include milk, water, beer, soda, juice, punch, ice cubes. This list is intended to be illustrative and by no means limiting.

In the apparatus described herein the container is suitably equipped with a downwardly directed spout means through which the material being dispensed flows. This spout means may simply be the neck of a bottle or other container. Alternatively, the container may be attached to a siphon tube adapted to withdraw material therefrom. Still further, the container may be under pressure in which case the elevation of the withdrawal spout is immaterial to the operation of this apparatus.

The withdrawal spout is suitably connected by conduit means to a metering device which is itself operably associated with an openable panel in an outside face of the cooling appliance. The conduit means may be rigid, flexible or partially each. Thus in one embodiment of this invention the conduit means is composed of individually rigid members which are pivotally and/or slidably connected together to allow a degree of freedom of movement of the metering device with respect to the container withdrawal spout. In another embodiment of this invention, the conduit means may be totally flexible tubing or the like. In a further embodiment of this invention, the conduit means may be of accordion pleated type and thus capable of movement in at least one direction.

The tap or other valve means or metering device is suitably mounted on the openable panel for ease of operation. In the alternative, the tap, etc. may be movably mounted within the recess and adapted to be positioned outside the recess upon opening of the small panel. Since the panel merely serves a recess function, it may be very small indeed. In fact, it need not be significantly larger than the tap, etc. including the mounting therefor.

Materials of construction for the container, conduit,

tap, etc., openable panel, insulation and the various mounting and connecting means will readily suggest themselves to those skilled in the art. For example, the container may be glass, metal, plastic, etc., as the case may be. It is considered preferable if the container is removable from its mountings inside the cooling zone so as to facilitate cleaning. It is certainly within the purview of this invention to utilize as the containers commercially available with the material being dispensed, e.g. milk bottle, beer bottle or keg, etc. It is also within the scope of this invention to provide containers especially sized, designed and adapted to properly fit into pre-designed and proportioned positions on the inside of the cooling zone walls, i.e. refrigerator door.

The conduit means may be made of any of the known materials which are considered safe for use in contact with consumables. Thus polyethylene, copper, brass, pewter, galvanized iron, plastic coated metals such as tin or aluminum, polyvinyl chloride, styrene-acrylonitrile-butadiene polymers, etc., are exemplary of these materials. No limit is intended by this listing since the specific materials of construction do not per se constitute a portion of this invention. The conduit means should be sized to accommodate the item being dispensed at a reasonable flow rate. Thus, it will be realized that an ice cube dispenser will probably have a larger cross-section than a juice dispenser.

Similarly, the metering device chosen should be adapted to the material being dispensed. Thus for dispensing fluids, conventional valve means are suitable which may have appropriately decorated exterior finishing. Further, a nozzle may be associated with the valve means if desired. The valve means will most likely be metal or metallized plastic material in most cases since this type has ready commercial acceptability. Plastic valve means may be used if desired.

The openable panel may be slidably or hingedly connected to the outside of the appliance face and may be made of the same or different material of construction as this outside face. This panel may be constructed so as to be slidable on side mounted runners, similar to a drawer without a bottom, with the valve or tap means joined thereto in such manner that when the panel is pulled out the valve is operable and the spigot is readily accessible to a glass or other means into which the material is being dispensed. In this construction a flexible accordion pleated, or telescoping conduit means may be used.

The openable panel may be hinged along the side thereof with the tap means secured thereto so as to be exposed to operation with an accessible spigot upon the opening of the panel. In this construction a flexible or pivotally connected rigid conduit means construction can be used.

In both the drawer-pull and the side hinge type of panel opening the valve is preferably top mounted in such a manner that the valve means is operable from a top position.

The openable panel may be hinged along the top with the tap means secured thereto so as to be exposed to operation upon opening of the panel. In this construction the valve means is suitably side mounted so as to be accessible without interference with the panel. The conduit means in this embodiment may be flexible or pivotally connected rigid members. With the top hinged panel, it is preferred to provide support means therefor. This support means may for example be side bars slidably mounted on either the panel or the appliance face which are pivotally mounted on the other (either the appliance face or the panel) member. In this regard, one or two such side bars may be employed depending upon the size and weight of the panel and the valve means attached thereto.

In another embodiment of this invention, the openable panel may be hinged along the bottom thereof with

the tap means mounted thereon. In this embodiment care must be exercised in the mounting of the tap means so as to provide that such will extend beyond the edges of the open panel whereby to permit access to the nozzle or spout means thereof with a suitably sized container, e.g. a glass. In this embodiment the tap means may be mounted on the panel spaced a significant distance therefrom so as to permit a suitable container, e.g. a glass to be interposed between the tap and the panel.

In the alternative, the tap may be slidably mounted in its recess and so linked to the panel that when such is opened, the tap slides out to beyond the edge of the panel. In this arrangement, it is preferred that the panel be hinged so as to be pivotable through about 180° whereby the tap need protrude out of the recess only a small amount to permit access to the spigot.

In another alternative construction, the tap means may be slidably mounted on the panel in such manner that as the panel is opened, the tap means and spigot thereof move outwardly to an extent sufficient to permit access to the spigot beyond the panel edges. In this alternative embodiment, the valve means is suitably top mounted or may be side mounted as desired. The conduit means is preferably fully flexible. Side bar supports may be used in this embodiment. Where such are employed, they may exert the motor power for slidably moving the tap means into operative position.

In still another form of construction, the panel may be mounted in slide runners so that it can be raised or lowered or moved sideways thereby to expose the tap means.

Understanding of this invention will be facilitated by reference to the accompanying drawing wherein:

FIG. 1 is a side elevation with parts broken away of one embodiment of this invention showing a storage container being positioned;

FIG. 2 is similar to FIG. 1 showing the storage container in place;

FIGS. 3 and 4 are enlarged side elevations showing the operation of a bottom hinged panel with an associated slidable tap means mounted thereon;

FIG. 5 is similar to FIGS. 3 and 4 and additionally shows a view in fully open position;

FIGS. 6a and 6b are an enlarged side elevation and plan view of a drawer type of panel-tap means mounting;

FIGS. 7a and 7b are an enlarged plan view and side view of one type of side hinged panel having a tap means secured thereto;

FIG. 8 is an enlarged side elevation of a top hinged panel having a side valved tap means secured thereto;

FIGS. 9a and 9b are an enlarged plan view and side view of one type of bottom hinged panel having a tap means attached thereto; and

FIG. 10 is an isometric view of a dispenser according to this invention having a panel and tap construction.

Referring now to this drawing and particularly to FIGS. 1 and 2 thereof, a cooling appliance outside wall 1, such as a refrigerator door for example, is shown having a panel 2 in the outside face thereof which is hingedly connected 3 thereto. A recess 4 is provided in the wall 1 insulated 5 from the remainder of the wall. A tap means 6 is slidably mounted on the panel 2 through an endless pulley means 7. A spout receiving means 8 is shown mounted on and in fixed relation to the appliance wall 1 passing through the insulated recess walls 5. A flexible tubing or other conduit means 9 connects the tap means 6 to the spout receiving means 8. Pivotable, slidable side bars 10 are provided extending from a pivotal mount on the recess side wall to a slidable mount on the openable panel 2. The slidable mount is suitably affixed to a pulley 7 which may be an endless belt or chain 11 wrapped around two rollers 12 and 13. The tap means 6 is attached 14 to an opposite portion 15 of this belt or chain 11. A container 16, which is preferably removable is provided with a spout means 17. After the con-

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tainer is filled with the material sought to be cooled and dispensed, it is placed in position on the inside of the appliance wall 1, suitably by resting it on a shelf (not shown) or held by hooks, bands or other conventional devices (not shown). As shown in FIG. 2, the spout means 17 is mated with the spout receiving means 8 in a tight fit so as to prevent escape of the contents of the container through this mating junction. If desired, a valve (not shown) may be provided operative with the spout means 17 so as to facilitate insertion thereof into the spout receiving means. A handle 18 may be provided.

Referring now to FIGS. 3, 4 and 5, the operation of the openable panel and associated tap means is shown in enlarged view. An openable panel 2 is connected to an appliance wall insulated recess 5 through a hinge 3 along the bottom edge thereof. An endless chain means 11 is provided about rollers 12 and 13 which rollers are on axles 19 and 20 which axles are mounted on and fixed to the inside of the openable panel 2. Side bars 10 are provided which are pivotally mounted 21 on the inside of the recess and pivotally mounted 22 onto one side of the endless chain means 11. By so mounting the side bars 10, as the openable panel 2 is opened, the side bars 10 are caused to pivot about their recess mountings 21 and to pull the endless chain means 11 in a clockwise direction (as seen in the drawing). As the panel 2 is closed, the side bars 10 again pivot about their recess mountings 21 but in the opposite direction thus causing the endless chain means 11 to move in a counter clockwise direction.

The tap means 6 is affixed to the endless chain means 11 at a point thereon opposite the side bar and is thus movable with the endless chain means. It will be seen that as the panel 2 is pulled down the side bar 10 causes the endless chain to move clockwise thus causing the tap means 6 to move toward the right and protrude past the end of the panel 2 thereby permitting ready access to the spigot 23 with a glass 24 or other container. Suitably a top or side mounted valve 25 is provided.

Referring now to FIG. 6, there is shown an embodiment of this invention where the openable panel is operable in the manner of a drawer. In this embodiment the operable panel 2 is slidably mounted as at 26 on the sides of the insulated recess 5. The tap means 6 is affixed to the side slides 27 and 28 through one or more struts 29 so as to be movable with the openable panel 2. As the panel 2 is pulled out, the tap means 6 becomes exposed for operability of the valve means 25 and accessibility of the spigot to a glass 24 or other container. A top mounted valve means is utilized in this embodiment.

Referring now to FIG. 7 there is shown another embodiment of this invention where the openable panel 2 is hingedly connected to an appliance face 1 along one or the other side of the panel, as at 30. This embodiment operates similarly to the bottom hinged embodiment described with reference to FIGS. 3, 4 and 5 except that it is not necessary to provide means for moving the tap means 6 past the panel 2 since the panel, being side hinged does not present an obstacle to accessibility of the spigot to a glass 24 or other receptacle. In this em-

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bodiment the conduit 9 may be flexible in which case the tap means 6 may be mounted on and in fixed relation to the panel 2, such as by struts 31. It is possible however to provide for pivotal, non-flexible conduit means in this embodiment jointed at 32 and provide the tap means 6 secured to the panel 2 through a pivotal slidable mounting (not shown). The valve means 25 may be side or top mounted as desired.

Referring now to FIG. 8 there is shown a still further embodiment of this invention wherein the operable panel 2 is hinged 3 along the top edge thereof. A side mounted valve means 25 is provided on the tap means 6 with the tap means attached to the panel, suitably through a strut 33. Side bars 34 are pivotally attached to the recess sides and slidably attached to the panel in a conventional manner. A friction or other type of side bar locking means of the conventional variety may be used to insure that the panel will remain open or closed as desired. The conduit may be flexible in this embodiment.

In any of the embodiments described herein or variations thereof, it is intended that the operable panel constitutes a very minor proportion of the total area of the appliance face into which it is set. For example, this panel may be about 2 x 3 inches in a face which may be about 24 x 60 inches. It will be appreciated that the dimensions given are for illustrative purposes only and are in no way limiting on this invention.

I claim:

1. An apparatus for dispensing liquids comprising a casing, said casing provided with a compartment in the upper portion thereof, a removable container within said compartment; a recessed portion in the casing positioned beneath the compartment, a door pivoted to the casing for exposing and closing the recessed portion, flexible tubing attached to the outlet of the container, a tap attached to the free end of the tubing, means to attach the tap to the inner surface of the door, and a slidable hinge means connecting the door with a wall of the recessed portion.

2. The apparatus as defined in claim 1, wherein, the casing is a door of a cooling apparatus.

3. The combination claimed in claim 1 wherein said material is selected from the group consisting of water, milk, beer, soda, ice, juice and punch.

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U.S. Cl. X.R.

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