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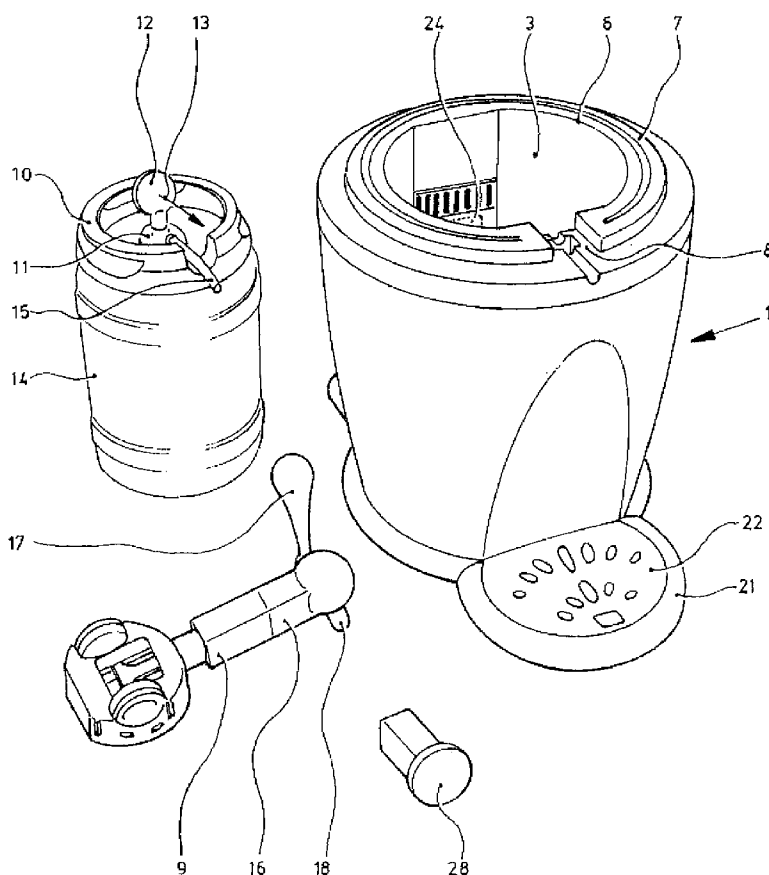
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(54) Title: DEVICE FOR COOLING AND COOLED STORAGE OF PACKAGES WITH DRINK



(57) Abstract: A device for cooled storage of drink comprises: a housing which defines a space; a cooling device for cooling the drink present in the space; which space has a form corresponding to that of a commercially available cask, on the top side of which a tap valve is present which can open and close a first draw-off conduit; and an accessory, which comprises: a second draw-off conduit which connects to the first draw-off conduit and has an end part; and a tap handle which is coupled by transmission means to the valve such that the valve is opened by manually pivoting the handle forward/ and beer is driven outward via the first and the second beer conduit; such that the device can serve both for dispensing cooled beer from a cask in the manner of a beer tap and for cooling and cooled storage of packages with drink.

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DEVICE FOR COOLING AND COOLED STORAGE OF PACKAGES WITH DRINK

The invention lies in the field of bringing and holding in cooled state and dispensing of drink.

Known for instance is a professional beer tap, which is used in cafes and other catering establishments
5 for dispensing beer via a hand-operated tap from a barrel pressurized by carbon dioxide.

The beer can for instance be stored in cooled state in a cellar or be stored in non-cooled state and cooled when tapped by means of a cooling heat exchanger added
10 to the beer conduit.

Small beer casks have further been brought onto the market in recent years by various beer brewers, which have for instance a volume of about 4-6 litres and on the top side of which a spring-loaded valve is present
15 which can be operated manually by a user by means of operating means and which can open and close a draw-off conduit extending in more or less horizontal direction from the inner zone of the cask. Such small beer casks for domestic use are pre-cooled or provided with a
20 jacket which is to at least some extent thermally insulating, whereby within a certain tolerance the beer for tapping can be held at the desired temperature for a time, in practice quite a short time.

A so-called cool box is further generally known.
25 This is a container which is double-walled or manufactured from integral foam and which can be carried by hand, and can be closed by means of a cover manufactured in the same manner, and which is suitable for accommodating a number of packages with drink or
30 other perishable foods.

The invention has for its object to embody a device for cooling and cooled storage of packages of drink such that it combines all the advantages of the described known art.

35 The invention also has for its object to provide a device of this type which is highly attractive to the

consumer, not only because of its technical
functionality and great versatility, but also due to its
simplicity and relatively low price, optionally in
combination with an attractive design, which does not
5 itself form part of the present invention.

With a view to the above, the invention provides a
device as specified in claim 1.

The measures of claim 2 are highly suitable for
realizing a very good thermal insulation.

10 The very inexpensive and easily embodied variant
according to claim 3 can be applied for this particular
purpose. The housing can hereby be manufactured in one
injection moulding operation, without specific assembly
steps. It is noted here for the sake of completeness
15 that the housing is defined as a more or less cup-like
container having on its upper side a mouth opening, in
combination with a cover which is modelled such that it
can be placed in stable manner on the mouth rim and can
thus close the mouth opening.

20 Claim 4 provides the option of making use of a per
se known cooling element based on the transmission of
electric current. The cooling device can hereby have
very small dimensions and entail a relatively low energy
consumption.

25 The cooling device according to the invention, and
that according to claim 4 in particular, can derive
benefit from the embodiment according to claim 5.
Although a fridge or freezer, which generally makes use
of a compressor, has a moderate efficiency, it is
30 however switched on permanently in most households,
whereby a low-temperature environment is always
available. If a Peltier element is placed temporarily
therein, the cooling of the drinks already begins at an
advantageous reduced temperature. The user can of course
35 also pre-cool the drink for cooling to at least some
extent in an available fridge or freezer, after which it
is placed in the device according to the invention.

In the case of use as a beer tap, the measures
according to claim 6 are highly suitable for avoiding
40 leakage of the final drops of tapped beer onto a surface
such as a tablecloth or the like. The magnetic means

serve to hold the cover plate coupled firmly but releasably to the carrier when the device is being put into or taken out of use, transported and the like. A very simple embodiment is that in which the carrier
5 plate is for instance ferromagnetic and two magnets are for instance situated on either side in the carrier.

In per se known manner the carrier can have a separate tray which is accommodated therein and which can be emptied and cleaned at regular intervals.

10 A specific possible dimensioning of the device according to the invention is specified in claim 7. It is noted here that the invention is not limited thereto, and that other dimensions may also be possible and practical.

15 Claim 8 provides the option of use in a house in which a mains voltage connection is present.

Application outside the home, for instance in a caravan, can be envisaged as an alternative. The measures according to claim 9 are suitable for this
20 purpose.

There is also the possibility of the device being provided with a converter from for instance the relatively high alternating voltage from a mains connection to a relatively low voltage on which the
25 cooling device of the device according to the invention can operate. The universal applicability of the device according to the invention can be ensured in this way.

According to claim 10 use is made of a bung. This bung has the advantage that the effective thermal
30 insulation of the space in the housing is improved in that a direct connection to the outside environment is closed. For this reason the bung can preferably be manufactured from a thermally insulating material. The bung further serves the aesthetic purpose of covering
35 the passage.

For the purpose of a good thermal insulation, for instance when expanded polystyrene or polyurethane is used as insulating material, the device can advantageously be embodied in accordance with claim 11.
40 Excellent results are found to be achieved with a wall thickness of about 30 mm. Without further provisions,

drink which has been cooled to a consumption temperature will only warm up very slowly in the housing, whereby the drink remains at an acceptably low consumption temperature for a long time.

5 The embodiment according to claim 12 has the advantage that is very easy to place the integral, single draw-off conduit, while with the above described embodiment with two draw-off conduits an additional operation is required to mutually couple the two conduit
10 parts.

For the purpose of an improved heat transfer between the cooled air in the space enclosed by the housing and the drink to be cooled thereby, the device can be embodied in accordance with claim 13.

15 Claim 14 specifies yet another embodiment, in which the dissipated heat is discharged effectively to the environment on the warm side of the cooling device.

The invention will now be elucidated with reference to the accompanying drawings of any exemplary
20 embodiment, to which the invention is not limited.

In the drawings:

figure 1 shows a perspective view of a device according to the invention with removed cover, an accessory, a bung and a commercially available cask of
25 beer;

figure 1A shows an alternative integral beer conduit;

figure 2 shows a perspective view which makes clear the manner in which the accessory is coupled to the
30 cask;

figure 3 shows a perspective view of the situation in which the cask with the accessory is received in the space in the housing and the cover can be arranged;

figure 4 shows a perspective, transparent view of
35 the device according to the invention adapted as beer tap;

figure 5 shows a perspective view which shows that a number of cans of beer can be accommodated in the space;

figure 6 shows a view corresponding with figure 5 of the situation in which a number of bottles of beer are accommodated in the space.

Figure 1 shows a cup-shaped housing 1, wherein
5 cover 2 (see figures 3 and 4) is not drawn. The housing takes a thermally insulating form. Defined in the housing is a space 3 in which a cask 14 with beer or other packages with drink can be accommodated as desired. Reference is made in this respect to figure 5,
10 which shows a situation in which a number of cans 4 with beer are placed in space 3, and to figure 6, in which a number of bottles 5 with beer are accommodated in space 3. On mouth rim 6 is situated a peripheral elevation 7 which has a recess 8 which contributes toward fitting
15 accommodation of a part of the accessory 9 to be described hereinbelow.

The known cask of beer 14, which is shown particularly clearly in figures 1 and 2, has a peripheral carrying bracket 10 on its top side. Situated
20 in the centre of the top side of cask 14 is a valve 11 with an operating member 12 for displacing operating member 12 forward (arrow 13) counter to the action of spring pressure as according to figure 1. Valve 11 is thereby opened and beer flows out of first beer conduit
25 15 under the influence of the pressure of carbon dioxide in cask 14.

By making use of carrying bracket 10 an accessory 9 can be mounted firmly on cask 14. As shown in figures 1 and 2, the accessory has an operating part 16 on its
30 front side which has the outward appearance of a tap of known type, partly due to the presence of an operating handle 17 situated above a tap nozzle 18.

Extending inside accessory 9 is a second beer conduit (not visible in the drawings) which, after
35 positioning of the accessory on cask 14 in the manner shown in figure 2, connects to first beer conduit 15 and debouches in tap nozzle 18.

Figure 1A shows an integral, alternative beer conduit which can be coupled to the cask instead of the
40 beer conduit 15 usually supplied therewith.

Figure 2 shows the manner in which the conduit is placed and can be placed relative to operating part 16.

Not shown in the drawings is a mechanical transmission whereby, in the ready-to-use situation shown in figure 3, operating handle 17, when displaced forward as according to arrow 19, displaces operating member 12 forward as according to arrow 13, whereby the beer is dispensed from the cask via first beer conduit 15, flows further through the second beer conduit (not drawn), and leaves device 20 (see figure 4) via tap nozzle 18.

Situated under tap nozzle 18 is a carrier 21 which can be coupled releasably to housing 1, for instance by magnetic means 32, and which also fulfills the function of drip-tray. This drip-tray 21 is covered by a perforated cover plate 22 of ferromagnetic material. Magnetic means are embedded in the plastic carrier such that the cover plate can hereby remain releasably but firmly positioned on carrier 21. A glass can be placed on cover plate 22 and in the situation shown in figure 4 can be filled with beer by moving tap handle 17 forward and downward as according to arrow 19. It will be apparent that the cover plate can also be of other suitable material, for instance plastic. The plate can also be placed separately on a support edge so that it is firmly positioned but can be removed easily.

Figure 4 shows that a cooling unit 23 is situated on the rear side of device 20. This unit is adapted to supply power to a Peltier element 24 (see figure 1) in per se known manner by electrical means, for instance from the mains or a car battery. The cooling side of this Peltier element is situated on the inner wall of space 3 and effectively provides for cooling of the air in contact therewith in space 3, and thereby of the drinks and possible other products present therein. For the purpose of the most efficient possible heat transfer from the drink present in space 3, a fan can be added to Peltier element 24, which ensures that cooled air circulates around the containers for this drink in space 3. Drawn in figure 1 is a grid which is placed above

Peltier element 24 and which forms part of this circuit of cooled air (not shown).

As is known, a Peltier element is powered by electrical energy. It hereby develops a so-called cold side and a warm side. According to the invention the cold side serves to cool the air in space 3 and the warm side is preferably cooled by means of a second fan (not shown) in casing 23, in which ventilation openings are situated for this purpose.

With reference to figures 1, 2, 3, 4 will be apparent the manner in which accessory 9 is coupled to cask 14 and cask 14 is placed with accessory 9 in space 3 of housing 1, wherein the elongate horizontal part 25 of accessory 9 extends through recess 8 in elevation 7 and cover 2 can then be placed such that a good seal, and thereby thermal insulation, is realized. With reference to figures 5 and 6 it is also noted that situated in the wall of housing 1 below recess 8 is a second profiled recess 26 through which the relevant parts of the first and the second beer conduits, and the integral beer conduit 30, can respectively extend.

For the purpose of the best possible sealing additional sealing means can be used, for instance a flexible sealing profile 27 (see figures 5 and 6).

In the case of use without beer tap, device 1 according to the invention can serve as cooling device and as cooling housing for drinks and other products.

In such a use, wherein accessory 9 is temporarily out of use, the passage consisting of recess 8 and a corresponding recess 31 in the edge of cover 2 can be sealed by the bung 28, drawn separately in figure 1 and drawn in position in figures 5 and 6.

It will be apparent from the above that the device according to the invention is very much universally applicable. The dimensioning will however have to be chosen on the basis of a specific cask of beer as marketed by a determined manufacturer.

CLAIMS

- 5 1. Device for cooling and cooled storage of
packages with food products, for instance drink such as
beer, wine, soft drinks, fruit juice, mineral water and
the like, which device comprises:
- a thermally insulating housing and a removable
10 cover fitting thereon;
 which housing defines a space in which one or more
packages with drink can be accommodated;
 a cooling device for cooling the drink present in
the space;
- 15 which space has a generally cylindrical form
corresponding to the specific form of a chosen cask of
beer commercially available from a determined beer
brewer, on the top side of which cask a spring-loaded
valve is present which can be manually operated by a
20 user by means of operating means and which can open and
close a first draw-off conduit extending from the
central zone of the cask at least more or less in
horizontal direction; and
 a separate accessory, which comprises:
- 25 a second draw-off conduit which, in operating
position, connects to the first draw-off conduit,
extends at least more or less horizontally and has a
downward oriented end part; and
 a pivotable tap handle which at rest occupies
30 a more or less vertical position, and in position of use
is coupled by mechanical transmission means to the
operating means such that the valve is opened by a user
manually pivoting the handle forward and downward
counter to the spring force of the valve and, under the
35 influence of pressure prevailing in the cask from carbon
dioxide present therein, beer is driven outward via the
first and the second beer conduit and is dispensed by
the end part;
- such that the device can serve both for dispensing
40 cooled beer from a cask in the manner of a beer tap and
for cooling and cooled storage of packages with drink.

2. Device as claimed in claim 1, wherein the housing takes a double-walled form and has a core of thermally insulating foam, for instance expanded polystyrene or polyurethane.

3. Device as claimed in claim 2, wherein the housing consists of integral foam comprising a non-porous outer layer, a non-porous inner layer and a core of foam, for instance expanded polystyrene or polyurethane, present between these two layers, the housing being manufactured by injection moulding of a plastic which is foamed in the mould cavity of an injection mould and which is injected into the injection mould in a quantity such that dense, non-porous layers are formed on the walls of the mould cavity and the core consists of foam such that the moulded article is a monolithic, integral unit.

4. Device as claimed in any of the foregoing claims, wherein the cooling device comprises a Peltier element.

5. Device as claimed in any of the foregoing claims, wherein at least a part of the cooling device is releasable and can thus be cooled in a freezer, a refrigerator or the like prior to use.

6. Device as claimed in any of the foregoing claims, wherein an outward extending carrier extends on the underside of the housing and defines a shallow tray, which tray can carry a releasable perforated cover plate, on which plate can be placed a glass to be filled with beer, which carrier is situated in the area below said end part, which cover plate can be coupled to the carrier by means of magnetic means.

7. Device as claimed in any of the foregoing claims, wherein the space is dimensioned such that either a beer cask with a volume of about five litres, or four bottles of wine, or twelve cans of beer, soft

drink or the like, or six bottles of beer, soft drink or the like can be accommodated.

8. Device as claimed in any of the foregoing
5 claims, wherein the cooling device is adapted for electric power supply from a mains connection, for instance with a relatively high alternating voltage of 115 or 230 V, 50 or 60 Hz.

10 9. Device as claimed in any of the claims 1-7, wherein the cooling device is adapted for power supply from a car battery, for instance with a relatively low direct voltage of 6, 12 or 24 V.

15 10. Device as claimed in any of the foregoing claims, comprising a separate bung for covering the passage for the accessory defined by the housing and the cover in the case where the accessory is not in use.

20 11. Device as claimed in claim 2 or 3, wherein the wall of the housing has a thickness of (30 ± 10) mm.

12. Device as claimed in any of the foregoing
25 claims, wherein the first draw-off conduit and the second draw-off conduit are integrated to form a single draw-off conduit.

13. Device as claimed in any of the claims 4, 8 or
30 9, comprising a first fan for causing circulation in the space of air cooled by the cooling device.

14. Device as claimed in any of the claims 4, 8, 9
or 13, comprising a second fan for discharging to the outside environment heat produced by the cooling device.

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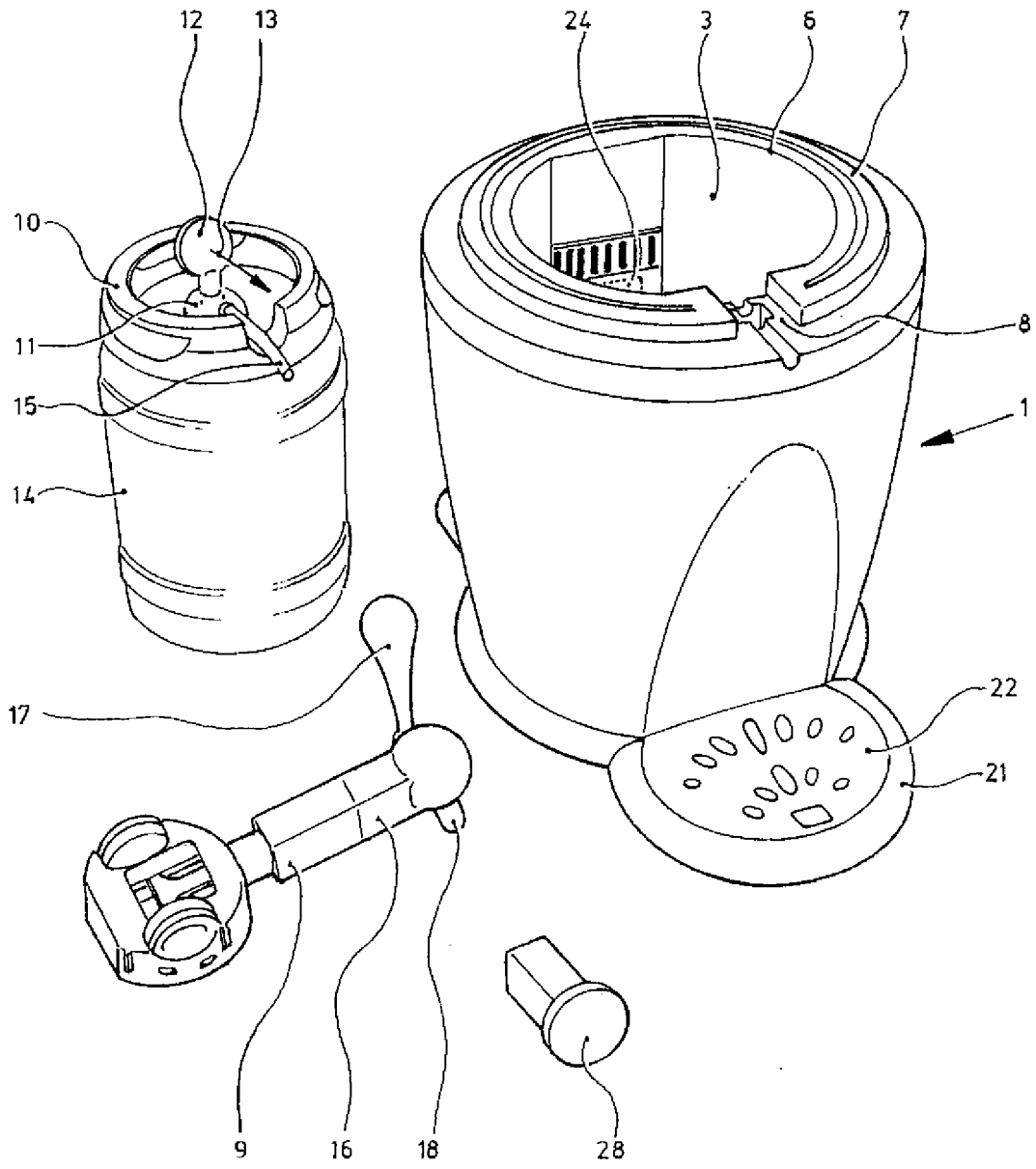


fig.1

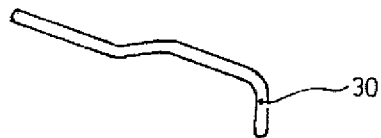


fig. 1A

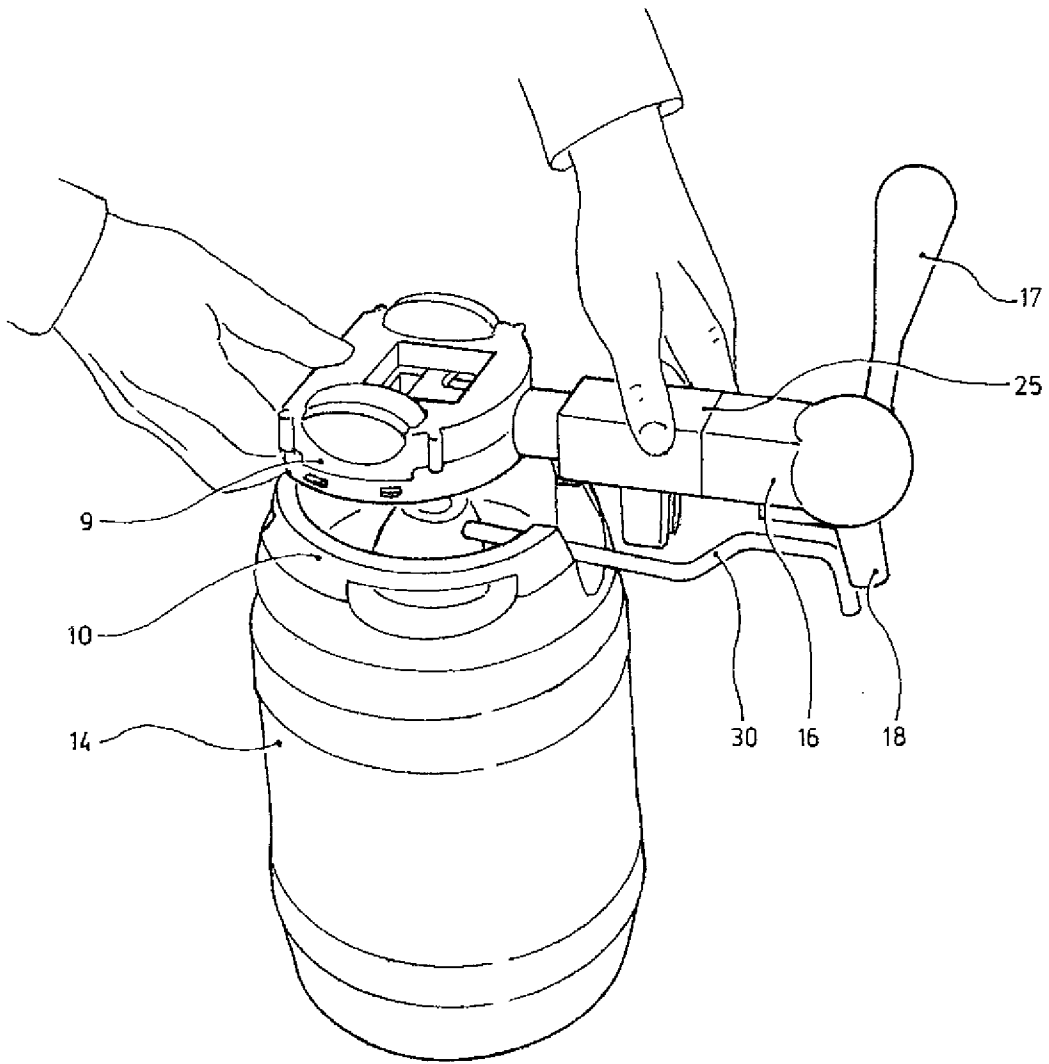


fig. 2

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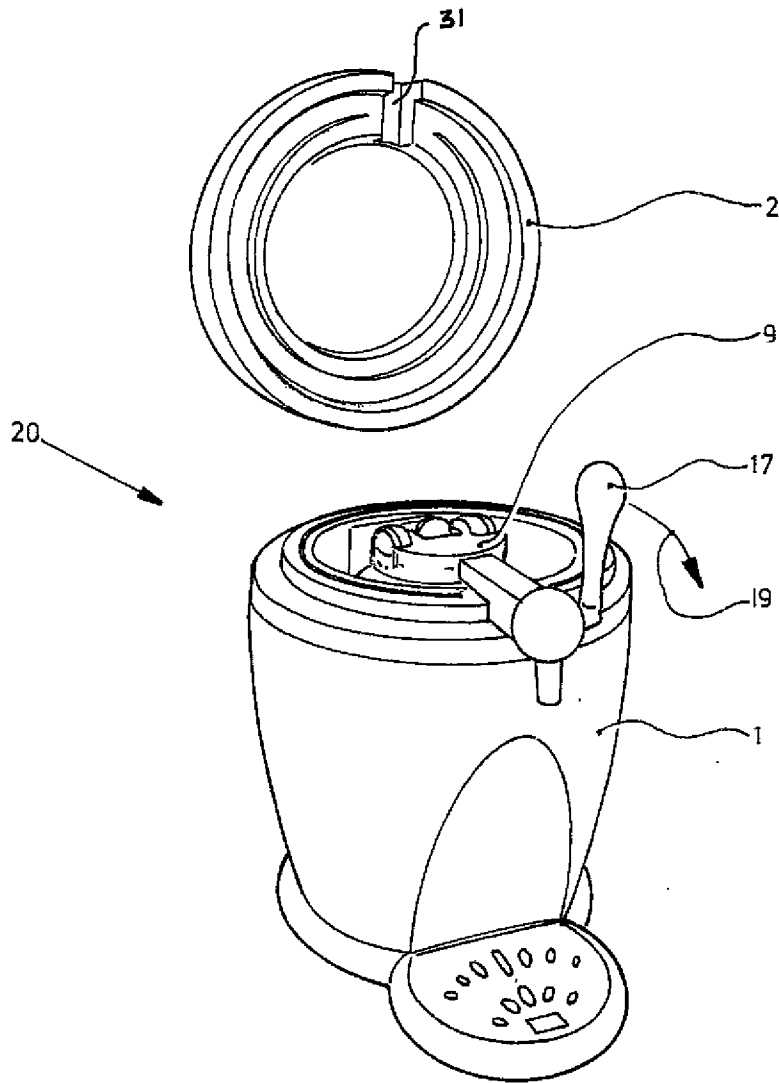


fig. 3

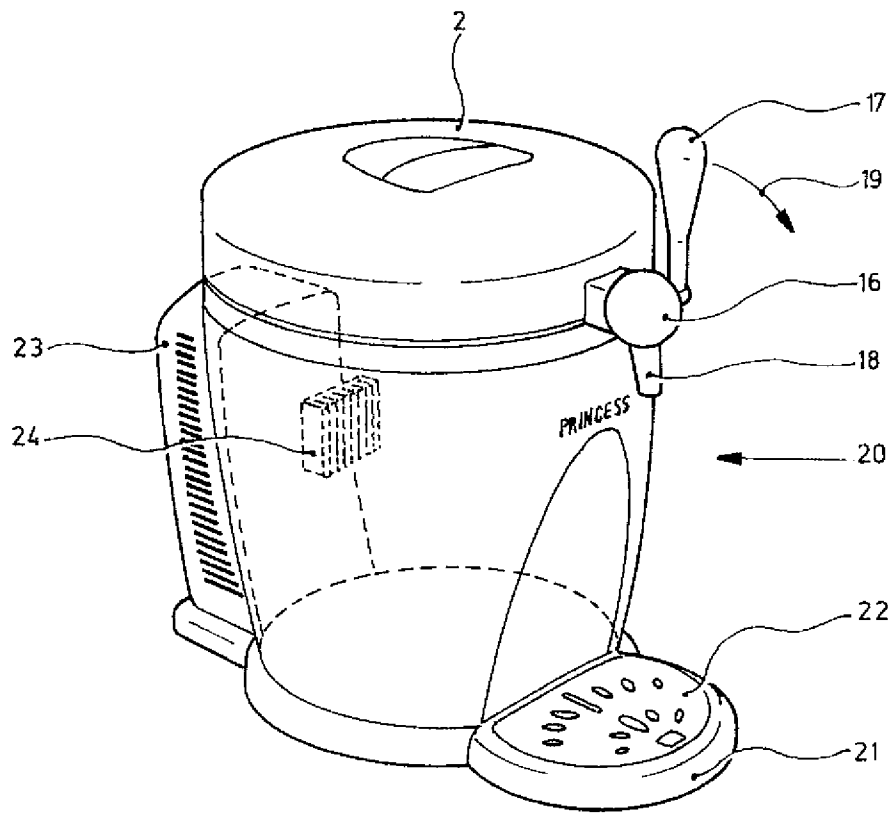


fig. 4

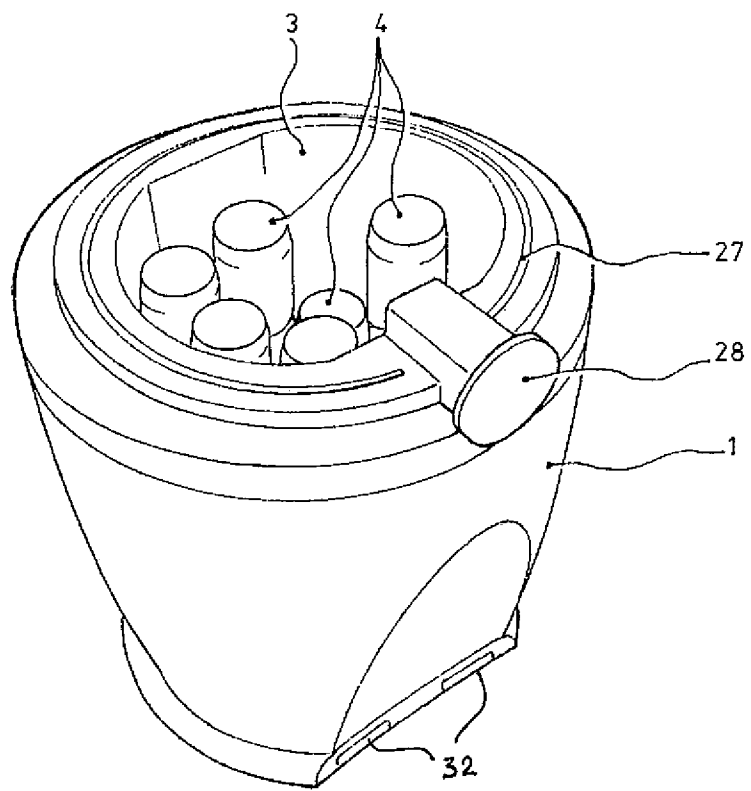


fig. 5

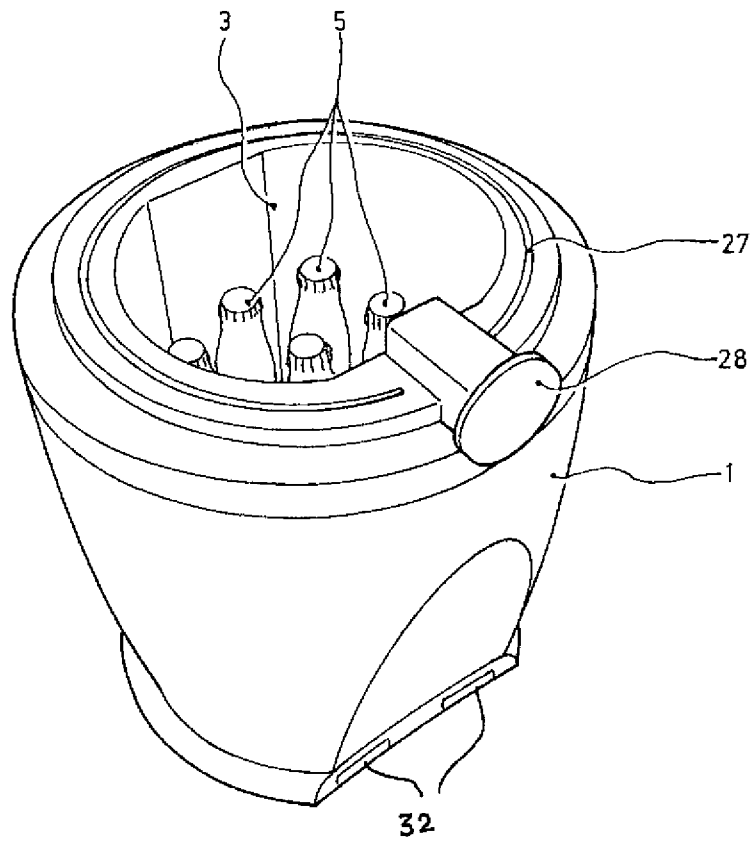


fig. 6