

BOTTLE REFRIGERATION DEVICE

TECHNICAL FIELD OF THE INVENTION

5 [0001] The present invention relates to the cooling and refrigeration of beverages in containers, such as bottles.

[0002] The invention will find a preferential, but by no means limiting, application in the refrigeration of beverages in bottle containers, notably ones
10 made of glass or plastic, or metal cans.

[0003] The beverage can be of any type, preferentially wine or spirits, but also beer, juice or soda.

15 STATE OF THE ART

[0004] As is well known, refrigeration involves lowering the temperature by artificial means.

20 [0005] For example, US5261255 relates to a device for fractionating pouches of cryoprecipitable material including a membrane which provides a barrier within the interior the device with the membrane receiving the pouches of cryoprecipitable material therewithin. The interior of the device includes a sump having a heat transfer fluid stored therein and maintained at a temperature which
25 is to be achieved by the cryoprecipitable material as it cycles between freezing and thawing. The pouch of material, after placement within the membrane, is exposed (through the membrane) to hydrostatic forces associated with the heat transfer fluid in the sump collapsing the membrane on the pouch while pulsating jets impinge indirectly upon the pouch through the membrane. In this way, as the
30 contents within the pouch change temperature, circulation of the fluid within the pouch occurs for more rapid realization of the cycling target temperatures for the cryoprecipitable material within the pouch.

[0006] With regard to a bottled beverage, such as wine, refrigeration is performed by storage in a refrigerated enclosure, such as a refrigerator or wine cellar.

- 5 [0007] However, once outside the refrigerated enclosure, the bottle quickly returns to room temperature.

- [0008] To maintain the lowered temperature, the cooled bottle is conventionally placed in a bucket or bag filled with ice and/or cold water, or in a specific tubular
10 receptacle known as a "wine tile", whose material (such as terracotta) enables the bottle's low temperature to be maintained for longer.

- [0009] There are also cooling pouches, in the form of a sleeve made of a flexible material enclosing a gel, which is positioned around the bottle.

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[0010] A major disadvantage of such solutions is that the container becomes wet, due to its immersion, but above all due to the creation of a dew point. The container becomes slippery, especially in the case of a glass bottle, so a cloth is needed in order to wipe it clean or to prevent it from dripping.

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[0011] Furthermore, the labels on the bottle can be damaged by humidity, or even come off, which is detrimental to the proper presentation of the beverage, especially in the case of wine.

- 25 [0012] An alternative solution consists of an electrically powered cooling device with a housing to accommodate a bottle so it can be cooled.

- [0013] This operation can be carried out by a thermoelectric cooling system, such as the Peltier effect, applied to the walls in contact with the container to
30 be cooled, in particular the bottom of the housing. One example is the CLIMADIFF® bottle cooler.

[0014] However, this refrigeration remains limited to contact with said refrigerated wall.

[0015] For example, document US4715195 describes an apparatus for rapid
5 cooling of bottles, cans or other containers of liquid or of solid materials. The
apparatus is comprised of a top-opening cabinet which has a tub for holding liquid
and a refrigeration unit for cooling the liquid in the tub. A plate having an opening
is placed across the tube and a bag is positioned in the opening so that it extends
into the liquid (alcohol). The bag is made of a thin, flexible, water-impervious
10 material (nylon, latex or silicone) and it is sealed across the opening in the plate
so that direct access to the liquid is prevented. The container is placed in the bag
which then substantially conforms to the shape of that part of the container lying
below the surface of the liquid. The container's contents are cooled without the
container ever coming into direct contact with the liquid.

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[0016] Alternatively, a refrigerated liquid bath, such as a glycol-based bath, can
be used to distribute the refrigerated contact zone more evenly over the walls
of the container to be cooled. For this purpose, a tank comprises an internal
volume filled with cooling liquid and is equipped with means for cooling said
20 internal volume, in particular the liquid it contains. This vessel is also provided
with a top opening into a receptacle forming a sleeve for receiving a beverage
container. In order to improve contact between the fluid contained in the tank
and the walls of the container inserted in the receptacle, such a sleeve is
formed from a pouch of flexible material. In this way, fluid pressure is applied
25 to the pouch membrane to envelop the container, optimizing the heat
exchange surface. What is more, as the pouch envelops the container, heat
transmission is by conduction, preventing the creation of a dew point over the
entire surface of the zones in contact.

30 [0017] In addition, a metal support can be inserted into the sleeve. In the form
of a rod with an orthogonal base, such a support ensures that the container is
held by the bottom, avoiding damage to the lower end of the pouch.

[0018] While this type of sleeve cooling device limits dew formation and the humidification of the container, refrigeration generates frost at the top of the receptacle, around the opening and along the support. This frost can damage the
5 pouch membrane and reduce contact with the container, limiting the exchange surface and increasing dew formation, which in turn generates more ice.

[0019] In addition, the frost may stick to the container and/or the pouch, which is rolled up when the container is removed, which is undesirable and can
10 damage the pouch, particularly when it comes into contact with the base of the holder against which the pouch is torn.

DESCRIPTION OF THE INVENTION

15 [0020] The aim of the invention is to overcome the disadvantages of the current state of the art by providing a cooling device with a cooling tank into which a receptacle in the form of a sleeve is immersed, such a device providing a removable and hermetic fixing of the receptacle, in particular of its sleeve.

20 [0021] For this purpose, the device for cooling beverages in containers comprises

- a cooling tank, provided with an internal volume with at least one opening on the top face and equipped with means for cooling said internal volume,
- at each opening, a receptacle forming a sleeve for receiving a beverage
25 container,
- means for fastening said receptacle through the corresponding opening,
- each sleeve further comprising a pouch of flexible material, dipping from said opening into said tank.

30 [0022] Advantageously, said cooling device is characterized in that

- said fastening means are designed to be removable and ensure hermetic retention of said receptacle with said corresponding opening,

said fastening means comprising for that purpose

- on the one hand, a ring integral with the periphery of said opening,
 - on the other hand, a collar provided with an upper end for snap-fitting with said ring, and a lower end forming a tube for fitting over the upper peripheral
- 5 wall of said pouch.

[0023] In addition, the invention allows the cooling device to be recessed into a kitchen.

- 10 [0024] For this purpose, said top face is advantageously designed to be recessed, and for this purpose comprises a raised section of said at least one opening.

[0025] In this way, the raised section can be inserted into a complementary cut-out in a worktop, particularly in a furnished kitchen.

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[0026] According to additional, non-limiting features, said ring may comprise at least one internal snap-fitting means, while said collar may comprise externally at least one pin shaped to complement said snap-fitting means,

- 20 [0027] said snap-fitting means comprising a vertical slot extended by a horizontal housing, ensuring

- on the one hand, the insertion and extraction of the corresponding pin along said slot in a vertical direction, and

- 25 - on the other hand, the vertical retention of said pin inserted within said housing, as well as the horizontal movement of said pin along said housing, through the rotation of said snap-fitting collar with respect to said ring.

- [0028] In one embodiment, said housing may comprise a stop in opposition to
- 30 said slot, limiting the stroke of horizontal movement of said pin along said housing.

[0029] In one embodiment, the fastening means may comprise a gasket, said collar comprising a groove at the bottom, forming a space for receiving said gasket in hermetic abutment against a complementary wall of said ring.

- 5 [0030] In one embodiment, said cooling device may comprise an annular hoop provided with convex rounded walls, fixedly mounted on said collar.

[0031] In one embodiment, the ring and collar are made of plastic or composite material.

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[0032] In one embodiment, the receptacle may comprise a support extending inside said pouch, said support comprising a base surmounted by at least two rods provided with distal ends for mounting with said ring.

- 15 [0033] In one embodiment, said support can be made of plastic or composite material.

[0034] In this way, this fastening of each receptacle considerably reduces the creation of dew and frost within said receptacle.

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[0035] In addition, the improved removable, hermetically-sealed fastening makes it easier to replace the pouch in each receptacle.

- 25 [0036] In one embodiment, height-adjustable feet are provided on the underside of said tank.

[0037] In one embodiment, said cooling device comprises a cover mounted so as to be rotatably articulated with respect to said raised section.

- 30 [0038] In this way, the cooling device can be adapted to any type of kitchen, fitting neatly into the worktop.

PRESENTATION OF THE DRAWINGS

[0039] Other features and advantages of the invention will become apparent from the following detailed description of non-limiting embodiments of the invention, with reference to the appended figures, wherein:

Figure 1 schematically shows a perspective view of an embodiment of a cooling device.

Figure 2 schematically shows a perspective view of a tank of a cooling device, provided with three openings, showing in particular one of the openings equipped with a receptacle and a receptacle in the form of a sleeve to be inserted into one of the other openings.

Figure 3 schematically shows a perspective view of a single receptacle, showing in particular the assembly of the upper part of a pouch on the sleeve of the ring, to form a receptacle.

Figure 4 schematically shows a perspective exploded view of a receptacle, showing in particular assembly by inserting the support within said receptacle and covering it with a hoop.

Figure 5 schematically shows a perspective view of the ring attached to an opening, showing in particular an example of a means of snap-fitting said ring to the fastening means.

Figure 6 schematically shows a vertical section view of the means of fastening a receptacle at an opening, with the ring in the snapped-on position and a hoop fastened over the upper ends of a support to hold them in place, zooming in on the fastening means provided with a seal.

Figure 7 schematically shows a perspective view of an embodiment of the cooling device when installed under a worktop, showing in particular the raised section on the top face, which allows the openings to pass through and be flush with the surface of the worktop.

Figure 8 schematically shows a perspective view of an embodiment the cooling device, once it has been installed with the raised section passing through the worktop cut-out, showing in particular a hood in the open position.

DETAILED DESCRIPTION

[0040] The present invention relates to a device 1 for cooling (or refrigerating) beverages in containers.

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[0041] Such a container can be of any type, such as a bottle, particularly one made of glass or plastic, or a metal can.

[0042] The beverage contained in said container can be of any type,
10 preferentially wine or spirits, but also beer, juice or soda.

[0043] According to the invention, the cooling device 1 comprises a cooling tank 2. Such a tank 2 is provided with an internal volume 20. In this way, the tank 2 is closed at the bottom by a base, laterally by peripheral walls and at the top by a
15 top face 21 forming a fixed ceiling, or even covered by a removable or hinged lid.

[0044] Preferentially, the tank 2 is made of metal or composite material.

[0045] In addition, said tank 2 is equipped with means for cooling said internal
20 volume 20.

[0046] Such cooling means can be of any type.

[0047] In a preferred embodiment, the cooling means comprise a coolant or
25 refrigerant liquid, such as a liquid mixed with ethylene glycol or propylene glycol, partly filling said internal volume 20 of the tank 2, for example with a capacity of around 20 L (Liters) or 17 L for the built-in version of the cooling device 1 when it is recessed. For example, the mixture may be a ratio of 45% glycol to 55% water, enabling the freezing point to be lowered to -40°C (degrees Celsius).

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[0048] In one embodiment, the tank 2 can include a drain hole at the bottom, in particular through the bottom of the tank 2, for maintenance purposes when replacing the refrigerant liquid.

- 5 [0049] The cooling means further comprise a heat exchanger for said refrigerant liquid, said heat exchanger penetrating inside said tank 2. This heat exchanger ensures, on the one hand, the cooling of the refrigerant liquid within said tank 2 by absorption of its calories and, on the other hand, the dissipation of said calories to the outside, notably by means of a heat sink such as a
10 radiator in contact with atmospheric air, with or without a ventilation system.

- [0050] In addition, the device 1 may comprise means for regulating the cooling temperature. In particular, this control is configured at the factory during manufacture and assembly of the device 1. Preferably, the target cooling
15 temperature is configured to the nearest degree between -30°C and -40°C, preferably at -35°C, or at -30°C when the cooling device 1 is built-in.

- [0051] In addition, the cooling device 1 may comprise control means, with an interface in the form of a control panel 101 enabling the user to set multiple
20 parameters, such as the cooling time, in particular by means of a timer with an audible alarm at the end of the elapsed time, or a cooling acceleration mode forcing the cooling means, in particular the heat exchanger, to start up in order to lower the temperature of said refrigerant liquid.

- 25 [0052] To this end, the cooling device 1 may comprise an enclosure 100, with a casing, inside which are placed its various components, such as the cooling means and the tank 2. Said control panel 101 can be placed at the top face of such an enclosure 100.

- 30 [0053] The tank 2 is further provided with at least one upper opening 3 on the upper side 21. In other words, each opening 3 is made through the ceiling or lid of the tank 2.

[0054] In the preferential embodiment shown in Figure 1, the tank 2 comprises three upper openings 3. In other words, the openings 3 form holes at the top of the enclosure 100, ensuring communication between the outside and inside of the tank 2.

[0055] The openings 3 can be of any shape, preferentially circular or ovoid. The openings 3 may have identical dimensions, that is equal or equivalent diameters, or different dimensions, in particular one diameter of an opening 3 is compatible with a standard 75 centiliter (cl) capacity bottle, while another opening 3 may have a smaller diameter compatible with a smaller container, such as a can or a 33 cl capacity bottle, or a larger diameter, for a larger capacity bottle, such as a magnum (1.5 L).

[0056] In addition, the tank 2 has a shape that complements the number of openings 3. In the case of three openings 3, the tank 2 may have the shape of a parallelepiped prism with a triangular base, while in the case of two or four openings 3, the tank 2 may have the shape of a rectangular parallelepiped.

[0057] In addition, the shape of the tank 2 ensures that the internal volume extends downwards around the openings 3, leaving a space around what is inserted through said openings 3.

[0058] To this end, the cooling device 1 comprises, at each opening 3, a receptacle 4 forming a sleeve for receiving a beverage container, such as a bottle.

[0059] In other words, to receive such a container, in particular a bottle, such a receptacle 4 has a complementary shape, preferentially elongated hollow, tubular or generally cylindrical.

[0060] In addition, this receptacle 4 forms a blind hole, open at the top and closed at the bottom. Thus, by inserting a container inside, from the open top, said container ends up surrounded by said receptacle 4.

5 [0061] Advantageously, in order to optimize heat exchange between the refrigerant liquid, each sleeve further comprises a pouch 40 made of flexible material, dipping from said opening 3 into said tank 2. Such a pouch 40 can be made of any type of material, in film form, preferentially plastic or composite material, such as polyethylene (PE), low-density polyethylene (LDPE), high-
10 density polyethylene (HDPE), or polycarbonate (PC).

[0062] Thus, once inserted into the receptacle, a container ends up surrounded by the pouch 40, whose flexible material is pressed against the peripheral walls of said container by the force of the refrigerant liquid contained in the tank 2.
15 This contact all around the container increases the heat exchange surface and ensures a peripheral contact zone that limits dew formation on the container.

[0063] Further, in order to secure the receptacle 4 to the tank 2, the cooling device 1 includes means for fastening the receptacle 4 through the
20 corresponding opening 3.

[0064] Due to the flexible nature of the pouch 40, it is attached to the upper part of the tank 2, to rigid elements and walls.

25 [0065] Advantageously, said fastening means are designed to be removable and ensure hermetic retention of said receptacle 4 with said corresponding opening 3. In this way, when a receptacle 4 is inserted into an opening 3, the fastening means prevent refrigerant from leaving the tank 2 or entering the pouch 40. They also ensure that no gaseous emissions escape from tank 2.

30 [0066] For this purpose, said fastening means comprise complementary elements designed to be assembled together.

[0067] On the one hand, they comprise a ring 5 integral with the periphery of said opening 3. Such a ring 5 is therefore attached to the upper part of the tank 2, that is, at the level of its ceiling or lid. In this way, the tank 2 is fitted with the
5 ring 5 of the fastening means.

[0068] On the other hand, a collar 6 is provided with an upper end 60 for snap-fitting with said ring 5.

10 [0069] In this way, the collar 6 can be inserted and fastened within said ring 5, and conversely removed.

[0070] In addition, said collar 6 comprises a lower end 61 forming a tube for press-fitting over the upper peripheral wall of said pouch 40. In particular, the
15 external dimensions of said press-fitting tube are equivalent to the internal dimensions of the pouch 40, ensuring the insertion of said tube of the collar 6 inside the pouch 40, the wall of which is then pressed against said tube, by close fit or by plastic deformation of the flexible material of said pouch 40.

20 [0071] In one embodiment, the tube at the lower end 61 of collar 6 is frustoconical, flaring upwards from the bottom, to make it easier to press-fit the pouch 40 onto said collar 6.

[0072] In one embodiment, the pouch 40 is held in position by retaining means
25 press-fitted on the tube of the collar 6. Such retaining means can be of any type, in particular in mechanical form, by means of an additional ring, or preferentially in adhesive form, such as glue applied to said external wall of the tube and/or an adhesive tape applied to cover the wall portion of the pouch 40 press-fitted onto said tube.

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[0073] Such a press-fitting of the pouch 40 onto the lower end of the collar 6 can be seen in Figure 3.

[0074] As a result, the pouch 40 mounted on the collar 6 of the fastening means forms the receptacle 4, the latter comprising said collar 6.

5 [0075] In this way, the collar 6 is hermetically sealed to said pouch 40. This assembly can then be inserted into one of the openings 3 and hermetically and removably fastened to the ring 5 of said opening 3.

[0076] In one embodiment, said ring 5 internally comprises at least one internal
10 snap-fitting means 50. In complementary fashion, said collar 6 externally comprises at least one pin 62 shaped to complement said snap-fitting means 50.

[0077] In this way, when the receptacle 4 is inserted through an opening 3 and the ring 5, the pouch 40 is immersed in the refrigerant until the collar 6 is level
15 with said ring 5. The pin 62 then engages with the snap-fitting means 50, providing a mechanical link between these two elements.

[0078] Preferentially, there may be three or four snap-fitting means 50 and pin 62, evenly distributed around opening 3, to ensure that the elements are
20 correctly positioned, particularly horizontally.

[0079] In a preferred embodiment, as can be seen in Figures 4 and 5, said snap-fitting means 50 comprises a vertical slot 51 extended by a horizontal housing 52. The snap-fitting means 50 then has a hollow L (or inverted L) shape.
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[0080] In particular, the said housing 52 is formed by internal projections with respect to the inner wall of the ring 5, the slot 51 then being created between the projections.

30 [0081] In this way, the shape of latching means 50 ensures, on the one hand, the insertion and extraction of the corresponding pin 62 along said slot 51 in a vertical direction.

[0082] On the other hand, it ensures the vertical retention of said pin 62 inserted within said housing 52, as well as the horizontal movement of said pin 62 along said housing 52, through the rotation of said snap-fitting collar 6 with respect to
5 said ring 5. In this way, the housing 52 limits the vertical freedom of movement of said pin 62, allowing only horizontal freedom of movement in rotation.

[0083] In addition, depending on the direction of the housing 52, the pin 62 can be locked in a clockwise or anti-clockwise direction, and unlocked in the
10 opposite direction. In the embodiment shown in Figure 4, locking is clockwise.

[0084] In one embodiment, said housing 52 may comprise a stop 53 in opposition to said slot 51, limiting the stroke of horizontal movement of said pin 62 along said housing 52.

15 [0085] In one embodiment, in order to improve the tightness of the fastening means, in particular of ring 5 with collar 6 in the snap-fitting position, the fastening means comprise a gasket 7. This gasket 7 is then pressed between the surface of the ring 5 and the underside of the collar 6.

20 [0086] Such a gasket 7 can be of any type, preferentially toroidal, resisting the rotation of the collar 6 with the ring 5 during snap-fitting.

[0087] Preferentially, said collar 6 comprises a groove 63 at the bottom, forming a space for receiving said gasket 7 in hermetic abutment against a
25 complementary wall 54 of said ring 5. In short, the gasket 7 is positioned inside the groove 63 and pressed against the complementary wall 54, forming an overhang around the central space of said ring 5.

30 [0088] In one embodiment, the cooling device 1 comprises an annular hoop 8 with rounded convex walls. This hoop 8 forms a flange, with a rounded funnel shape to protect the ring 5 and the collar 6, as well as the perimeter of the

opening 3, against possible impacts during the insertion and extraction of a container. Said hoop 8 is also aesthetically pleasing, visually concealing the above-mentioned elements.

- 5 [0089] In one embodiment, said hoop 8 is made of metal, preferentially aluminum, whose thermal and physical properties are compatible with low-temperature use. In particular, aluminum helps to limit the formation of frost, even though it is made of metal.
- 10 [0090] In addition, said hoop 8 is fastened to said collar 6. In particular, this fastening is carried out by screwing from the underside of the collar 6 and through holes formed through the thickness of said collar 6, to cooperate within complementary interior threads formed on the underside of said hoop 8.
- 15 [0091] This type of screwing can be carried out at three or preferentially four fastening points, ensuring that the hoop fits snug and flat into the collar 6.

[0092] Such fastening by screwing is in particular visible in Figure 4.

- 20 [0093] In one embodiment, ring 5 and collar 6 are made of a plastic or composite material, preferentially a plastic material such as polycarbonate (PC) or acrylonitrile butadiene styrene (ABS). While resistance to impact and cold is more limited (than for metal, for example), such a plastic material limits the formation of dew point and, above all, frost at the opening 3.

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[0094] In one embodiment, the receptacle 4 comprises a support 9 extending inside said pouch 40. Such a support 9 helps to maintain the elongated shape of the flexible pouch 40 when it is inserted into and removed from the refrigerant-filled tank 2, as well as when it is removed from a container. Indeed,

30 the pressure of the refrigerated liquid in the tank 2 would tend to stick the wall of the pouch 40 against the perimeter of the container, which would roll up said

pouch 40 during extraction from said container. The support 9 thus keeps pouch 40 in the tank 2.

[0095] For this purpose, said support 9 comprises a base 90 topped by at least two rods 91 provided with distal ends 92 for mounting with said collar 6. Such a support 9 is generally U-shaped. In this way, the base 90 forms a bottom to receive a container in upper support, which is surrounded on either side by each of the two rods 91. The spacing of the rods 91, diametrically opposed to said base 90, enables the wall of the flexible pouch 40 to press against the container inserted in the receptacle 4, ensuring its cooling, while limiting the formation of dew.

[0096] In one embodiment, the support 9 is block-mounted by insertion between the collar 6 and the hoop 8. To achieve this, the distal end 92 of each rod 91 has an outward offset 93, forming a laterally projecting lug that interlockingly bears against the top of the collar 6 from below, while the hoop 8 bears internally against the top of said offset 93. In this way, by fastening the ring 8 to the collar 6, the support 9 is made integral with this assembly.

[0097] Such an assembly is in particular visible in Figure 6.

[0098] In an embodiment, under the offset 93, the distal end 92 of each rod 91 comprises a groove 94, with a height complementary to the thickness of the collar 6, in particular at the level of its tube located below, in order to ensure that said support 9 is clipped onto said collar 6.

[0099] Such an assembly is in particular visible in Figure 6.

[0100] In one embodiment, to further limit dew formation, said support 9 is made of plastic or composite material.

[0101] Thus, the cooling device 1 with its specific fastening of its receptacle 4, with a seal ensured by the gasket 7 between the collar 6 snap-fitted with the ring 5, facilitates the replacement of a pouch 40, while limiting thermal exchanges, in particular thermal bridges between the tank 2 filled with refrigerant liquid and said receptacle 4. In this way, dew formation is considerably reduced, preventing the formation of frost, particularly in the upper part around the opening 3, which has the largest surface area in contact with the atmosphere.

[0102] Advantageously, the invention provides for the cooling device 1 to be recessed, that is, it can be inserted into a reserved space between furniture or cabinets, covered by a worktop 10, or similar. In particular, the shape and dimensions of the cooling device 1 are such that it can be inserted under said worktop 10, but also such that said at least one opening 3 is accessible from above, through a cut-out 12 in the thickness of said worktop 10.

[0103] To this end, the top face 21 of the device 1 is designed to be recessed, and for this purpose comprises a raised section 22 of said at least one opening 3. Preferentially, the top face 21 comprises a raised section of each of the openings 3.

[0104] In other words, the openings 3 protrude from the top face 21 via said raised section 22. In short, the latter raises the openings 3 past the top face 21.

[0105] In one embodiment, the height of the raised 22 corresponds to the standard thicknesses of the worktop 10, for example a height of at least 10, 12, 14 or 16 mm (millimeters), or 21, 29 or 38 mm, or even 40, 48 or 58 mm.

[0106] In this case, it should be noted that the raised section 22 can be chosen at the time of manufacture and assembly of the cooling device 1, to match the thickness of said worktop 10.

[0107] In addition, this raised section 22 can be designed to be removable from the top face 21 of the cooling device 1, enabling it to be quickly and easily dismantled and changed to suit the thickness of the worktop 10.

- 5 [0108] Thus sized, the cooling device 1 can be introduced and placed within a reserved space 11, under said worktop 10, for example between two boxes serving as support and/or furniture for said worktop 10. Once in place, the raised section 22 allows the openings 3 to pass through the worktop 10, through a complementary cut-out 12 in the latter.

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[0109] In this respect, the length and width of cut-out 12 correspond to the length and width of said raised section 22, with the necessary clearance to allow its insertion and extraction through said cut-out 12.

- 15 [0110] So, with a complementary height, length and width, the raised section 22 can be positioned perfectly flush with the surface of the worktop 10, giving it an integrated aesthetic character, as with some household appliances.

- 20 [0111] In one embodiment, during installation of the cooling device 1, means may be provided to ensure a seal between the upper and lower faces 21 of the worktop 10. Such sealing means are preferably arranged all around the raised section 22, on the upper 21 face.

- 25 [0112] These sealing means can be of any type, particularly in the form of a strip or seal made of a compressible material, such as foam, or an elastic material, such as synthetic or natural rubber.

- 30 [0113] Sealing can also be achieved by an additional seal, particularly silicone-based or similar, between the edges of cut-out 12 and the perimeter of raised section 22.

[0114] In one embodiment, when the openings 3 are not positioned flush, the cooling device 1 may comprise a cover 24 rotatably hinged with respect to said raised section 22.

- 5 [0115] In an alternative embodiment, said cover 24 can be rotatably hinged directly to the worktop 10.

[0116] In either case, in the closed position, said cover 24 is flush with the surface of said worktop 10.

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[0117] In one embodiment, the said cover 24 can rest on the raised section 22, or within a groove formed in the surface of said worktop 10.

- 15 [0118] In this way, the openings 3 can be closed, increasing cooling and preventing temperature loss, but allowing the device 1 to be closed and access to it restricted.

- 20 [0119] In one embodiment, in order to ensure that the cooling device 1 remains in place once it has been installed, as well as its stability and even the adjustment of the position of the openings 3, whether flush or not, the said cooling device 1 comprises height-adjustable feet 23 on the underside of the said tank 2.

- 25 [0120] Preferentially, these feet 23 are three in number, forming a support triangle in a single plane, to facilitate the positioning of said cooling device 1.

[0121] In addition, these height-adjustable feet 23 allow the cooling device 1 to be inserted into the reserved space 11, then mounted to insert the raised section 22 into the cut-out 12.

- 30 [0122] In addition, the height adjustment of the feet 23 allows the sealing means, such as the foam strip or gasket, to be compressed, ensuring a perfect joint with the underside of the worktop 10.

[0123] It should be noted that, according to a specific layout configuration, a groove or rabbet can be formed around the cut-out 12, on the underside of the worktop 10, in order to receive the sealing means and improve the hermetic nature between the device 1 and the worktop 10. In addition, this groove or rabbet reduces the thickness of the worktop 10 to be traversed and, consequently, the required height of the raised section 22.

[0124] In this way, the cooling device 1 can be recessed, like a household electrical appliance, in particular in a fitted kitchen, a bar or any other space with a worktop 10, indoors or outdoors.

[0125] Depending on the configuration of the reserved space 11, in particular between two kitchen furniture units, it is possible to add a front closure, such as a door. In this configuration, the cooling device 1 can provide the control means accessible on the upper side 21, in particular the interface in the form of the control panel 101 enabling the user to set the operating parameters of the cooling device 1.

[0126] Similarly, in the case of installation within a fitted kitchen, the cooling device 1 can have standard dimensions, corresponding to the dimensions of the cabinet boxes, in particular the width of the front or front face, as well as the depth of said cooling device 1. For example, said device 1 can have a width of 44 cm or less, for a depth of less than 60 cm, preferably a depth of around 55 cm.

Claims

1. A device (1) for cooling beverages in containers, comprising
- a cooling tank (2), provided with an internal volume (20) with at least one opening (3) on the top face (21) and equipped with means for cooling said internal volume (20),
 - at each opening (3), a receptacle (4) forming a sleeve for receiving a beverage container,
 - means for fastening said receptacle (4) through the corresponding opening (3),
 - each sleeve further comprising a pouch (40) of flexible material, dipping from said opening (3) into said tank (2), characterized in that
 - advantageously, said fastening means are designed to be removable and ensure hermetic retention of said receptacle (4) with said corresponding opening (3), said fastening means comprising for that purpose
 - on the one hand, a ring (5) integral with the periphery of said opening (3),
 - on the other hand, a collar (6) provided with an upper end (60) for snap-fitting with said ring (5), and a lower end (61) forming a tube for fitting over the upper peripheral wall of said pouch (40).
2. The cooling device (1) according to the preceding claim, characterized in that
- said top face (21) is designed to be recessed and, to this end, comprises a raised section (22) of the said at least one opening (3).
3. The cooling device (1) according to claim 1 or 2, characterized in that
- said ring (5) comprises at least one internal snap-fitting means (50),
 - said collar (6) externally comprises at least one pin (62) shaped to complement said snap-fitting means (50),
 - said snap-fitting means (50) comprising a vertical slot (51) extended by a horizontal housing (52),

ensuring

- on the one hand, the insertion and extraction of the corresponding pin (62) along said slot (51) in a vertical direction, and

5 - on the other hand, it ensures the vertical retention of said pin (62) inserted within said housing (52), as well as the horizontal movement of said pin (62) along said housing (52), through the rotation of said snap-fitting collar (6) with respect to said ring (5).

10 4. The cooling device (1) according to the preceding claim, characterized in that said housing (52) comprises a stop (53) opposite said slot (51), limiting the stroke of the horizontal movement of said pin (62) along said housing (52).

15 5. The cooling device (1) according to any one of the preceding claims, characterized in that the fastening means comprise

 - a gasket (7),
 - said collar (6) comprising a groove (63) at the bottom, forming a space for receiving said gasket (7) in hermetic abutment against a complementary wall of said ring (5).

20 6. The cooling device (1) according to any of the preceding claims, characterized in that it comprises an annular hoop (8) provided with convex rounded walls, mounted in a fixed manner on said collar (6).

25 7. The cooling device (1) according to any of the preceding claims, characterized in that the ring (5) and the collar (6) are made of plastic or composite material.

30 8. The cooling device (1) according to any one of the preceding claims, characterized in that the receptacle (4) comprises

 - a support (9) extending inside said pouch (40),
 - said support (9) comprising a base (90) topped by at least two rods (91) provided with distal ends (92) for mounting with said collar (6).

9. The cooling device (1) according to the preceding claim, characterized in that

- said support (9) is made of plastic or composite material.

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10. The cooling device (1) according to any one of the preceding claims, characterized in that it comprises

- on the underside of said tank (2), height-adjustable feet (23).

10 11. The cooling device (1) according to any one of the preceding claims, characterized in that it comprises

- a cover (24) hinged in rotation with respect to said raised section (22).