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(54) Refrigerating apparatus

(57) A refrigerating apparatus comprises at least one tank (2), which is easily accessible to a user and whose volume is such that it can contain a sufficient quantity of cooled fluid in which food products such as receptacles

(3) containing beverages or food can be immersed at least partially. The tank (2) has at least one refrigerating unit (4), designed to subtract heat from the fluid, and at least one device (5) for directly moving the fluid in order to improve heat exchange.

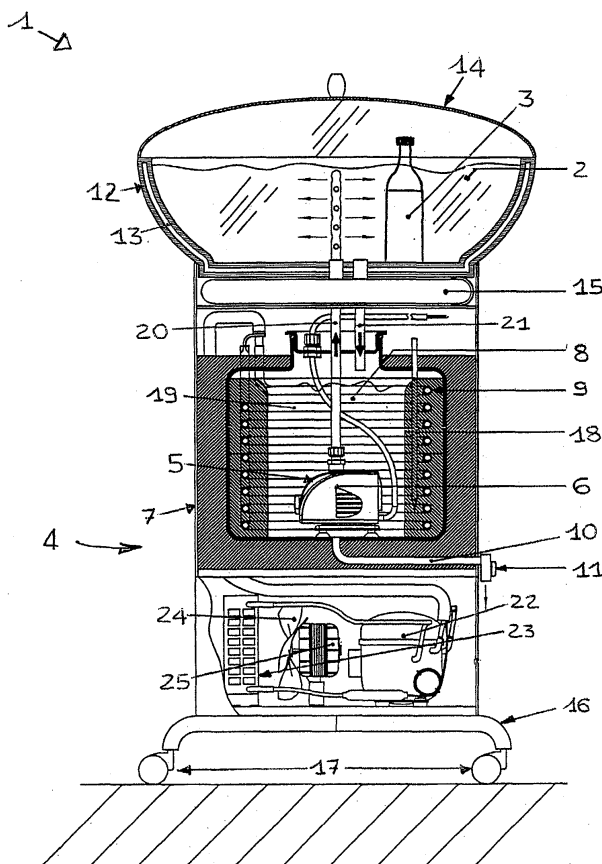


Fig. 1

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Description

[0001] The present invention relates to an apparatus for refrigerating a fluid in which food products are at least partly immersed. Buckets filled with ice for cooling bottles containing beverages such as wine are well known and widely used.

[0002] This simple, traditional piece of equipment is not free of disadvantages, however.

[0003] In particular, ice buckets cannot keep the temperature at the right level for a long time, especially in a hot environment. The cooling effect lasts until the ice melts.

[0004] Moreover, the bottles in the ice bucket are not cooled uniformly since the parts that are in direct contact with the ice are cooled more than the parts that are not.

[0005] The aim of the present invention is to overcome the aforementioned drawbacks by providing an easy-to-transport refrigerating apparatus that optimises heat exchange so that the products inside the apparatus are cooled uniformly. Another aim of the invention is to provide a refrigerating apparatus which, once connected to the power supply, can operate unattended for a long time.

[0006] These and other aims, which will become more apparent in the description which follows, are achieved in accordance with the invention by a refrigerating apparatus having the structural and functional characteristics described in the appended claims.

[0007] The invention will now be described in more detail with reference to the accompanying drawing, which illustrates a non-limiting preferred embodiment of it and in which Figure 1 schematically shows, in its entirety, the refrigerating apparatus according to the invention, with some parts in cross section or cut away in order to better illustrate the internal parts.

[0008] In the drawing, the numeral (1) denotes in its entirety a refrigerating apparatus typically comprising at least one tank (2), which is easily accessible to a user and whose volume is such that it can contain a sufficient quantity of cooled fluid in which food products and receptacles (3) containing beverages or food (in particular, beverage bottles) can be immersed at least partially. The tank (2) has at least one refrigerating unit (4) which is housed in a container (7) supporting the tank (2) and which is designed to subtract heat from the fluid. As shown in Figure 1, the container (7) has a large base (16) designed to confer stability and advantageously equipped with self-aligning coasters (17). The tank (2) also has at least one device (5) for directly moving the fluid in order to improve heat exchange, comprising at least one submersible pump (6) which pumps the fluid from the tank (2) to a refrigerated compartment (8) and back into the tank (2).

[0009] In particular, a first tubular element (20) connects the delivery end of the submersible pump (6) directly to the tank (2), while a second tubular element (21) allows the fluid in the tank (2) to flow back into the refrigerated compartment (8) by gravity. Both the refrigerated

compartment (8) and the tank (2) are connected to an external tap (11) through a conduit (10) so that the fluid can be emptied out whenever necessary. This facilitates maintenance and movement of the refrigerating apparatus (1) because it reduces the weight of the apparatus and allows access to the refrigerated compartment (8) for inspection purposes.

[0010] The refrigerated compartment (8) has insulated walls and an evaporator (9). It may contain plain water and, when this is the case, comprises and forms an ice bank (18).

[0011] Alternatively, the compartment (8) may contain a fluid, such as glycol, for example, whose melting point is less than the melting point of water so that the refrigerated fluid in the tank (2) can, if necessary, remain at a temperature below zero, depending on the type of product to be kept in the apparatus. In this case, an attractive iced surface may be formed on the outside of the tank (2). The evaporator (9), on the other hand, simply and preferably consists of at least one coil (19) connected to the other elements making up the refrigerating unit (4).

[0012] The refrigerating unit (4) also comprises a customary compressor (22) and a condenser (23). The heat made available by the condenser (23) is dispersed to the environment by a fan (24) driven by an electric motor (25).

[0013] The tank (2) is made of a transparent material and may, if necessary, be equipped with a lighting unit (15) for functional and ornamental purposes. Tank (2) insulation is accomplished by a double outer wall (12) with an air-filled interspace (13). The removable lid (14) is also made of a transparent material and may be insulated in the same way.

[0014] The invention achieves important advantages. Firstly, it improves heat exchange and temperature uniformity within the tank while at the same minimising heat exchange with the outside environment and guaranteeing continuous operation. Secondly, the apparatus is easy to transport and maintain. Last but not least, the apparatus not only meets the functional requirements described above but also has an attractive design that serves decorative purposes.

[0015] Thus, for example, the fluid in the refrigerated compartment (8), whether it is water or glycol, may be coloured so as to produce an attractive effect through the transparent tank (2) and/or lid (14).

[0016] It will be understood that the invention can be adapted and modified in several ways without thereby departing from the scope of the inventive concept that characterise it.

[0017] Moreover, all of the details of the invention may be substituted by technically equivalent elements. In practice, the embodiments of the invention may be made from any material, and in any size, depending on requirements.

Claims

1. A refrigerating apparatus (1), **characterised in that** it comprises at least one tank (2), which is easily accessible to a user, and whose volume is such that it can contain a sufficient quantity of cooled fluid in which food products (3) can be immersed at least partially, the tank (2) having at least one refrigerating unit (4), designed to subtract heat from the fluid, and at least one device (5) for directly moving the fluid in order to improve heat exchange. 5
2. The refrigerating apparatus according to claim 1, **characterised in that** the refrigerating unit (4) is housed in a container (7) that supports the tank (2). 10
3. The refrigerating apparatus according to claim 2, **characterised in that** the container (7) has a large base (16) designed to confer stability. 15
4. The refrigerating apparatus according to claim 2 or 3, **characterised in that** the container (7) is equipped with self-aligning coasters (17). 20
5. The refrigerating apparatus according to any of the foregoing claims, **characterised in that** the device (5) for directly moving the fluid comprises at least one submersible pump (6) which pumps the fluid from the tank (2) to a refrigerated compartment (8) and recirculates it. 25 30
6. The apparatus for refrigerating products immersed in a fluid according to claim 5, **characterised in that** the fluid in the refrigerated compartment (8) is water that comprises and forms an ice bank (18). 35
7. The refrigerating apparatus according to claim 6, **characterised in that** the fluid in the refrigerated compartment (8) is glycol. 40
8. The refrigerating apparatus according to any of the foregoing claims from 5 to 7, **characterised in that** it comprises a conduit (10) that connects the refrigerated compartment (8) and the tank (2) to an external tap (11) through which the fluid can be emptied out. 45
9. The refrigerating apparatus according to any of the foregoing claims, **characterised in that** the tank (2) is insulated. 50
10. The refrigerating apparatus according to claim 9, **characterised in that** the tank (2) comprises a double outer wall (12) with an interposed, air-filled inter-space (13). 55
11. The refrigerating apparatus according to any of the foregoing claims, **characterised in that** the tank (2) comprises a removable lid (14).
12. The refrigerating apparatus according to claim 11, **characterised in that** the lid (14) is insulated.
13. The refrigerating apparatus according to claim 11 or 12, **characterised in that** the lid (14) is made of a transparent material.
14. The refrigerating apparatus according to any of the foregoing claims, **characterised in that** the tank (2) is made of a transparent material.
15. The refrigerating apparatus according to claim 13 or 14, **characterised in that** the fluid in the refrigerated compartment (8) is coloured.
16. The refrigerating apparatus according to any of the foregoing claims, **characterised in that** it comprises a lighting unit (15) for illuminating the tank (2).

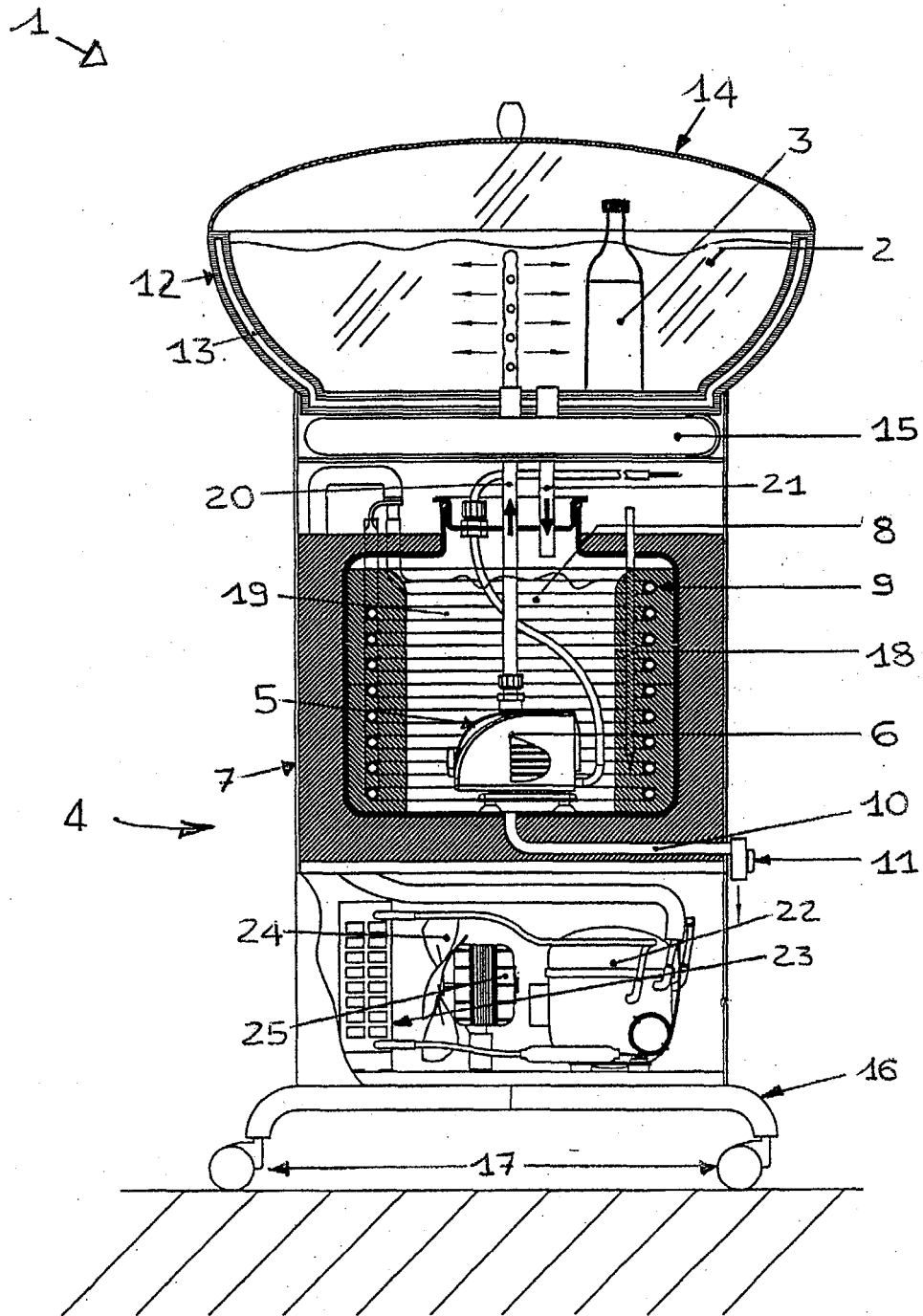


Fig. 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5803

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 January 2005	Examiner Zanotti, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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