The present invention relates to a chilled beverage storage device constituted by a cold area and a hot area; the cold area comprises a first structure (2) arranged towards at least one cold generating module (4, 5) and provided with at least one holding arrangement (1) adapted to hold, in direct contact, one or more beverage containers to be kept chilled; one or more reservoirs (7) containing a phase change material in thermal exchange with the cold generating module (4, 5) are arranged around the holding arrangement (1).
CHILLED BEVERAGE STORAGE DEVICE

TECHNICAL FIELD

[0001] The present invention relates to a device for storing chilled beverages contained in bottles or cans.

BACKGROUND

[0002] Beverages contained in bottles or cans are often stored in a refrigerating appliance which cools down and maintains the beverage at a temperature well below ambient temperature. Normally refrigerators in domestic use are located in a kitchen room, which could be far from the place where the chilled beverage has to be served or consumed. It would be therefore advisable to have a portable small container capable of storing chilled cans or bottles keeping them at the temperature previously reached in the refrigerator.

[0003] Accordingly, the aim of the present invention is to provide a chilled beverage storage device which is capable of storing and maintaining chilled beverages at the temperature reached in the refrigerator.

[0004] Within the aim cited above, a purpose of the present invention is to provide a chilled beverage storage device having small dimensions such that it can be easily installed and operated in the place where the beverage is served or consumed.

[0005] A further purpose of the present invention is to provide a chilled beverage storage device capable of being manufactured at competitive costs by using generally known and readily available tools, machinery and equipments.

SUMMARY OF THE INVENTION

[0006] These aims and purposes are achieved by a modular refrigeration unit as defined in claim 1.

DESCRIPTION OF THE DRAWINGS

[0007] Further features and advantages of the present invention may be readily understood from the following description of a preferred embodiment illustrated by way of a non-limiting example with reference to the accompanying drawings, in which:

[0008] FIG. 1 shows a schematic view of a device according to the present invention.

[0009] FIG. 2 shows a front view of an appliance using the device according to the present invention.

[0010] FIG. 3 shows a front perspective view of the appliance according to FIG. 2.

[0011] FIG. 4 shows a back perspective view of the appliance according to FIG. 2.

DESCRIPTION OF AN ILLUSTRATIVE EMBODIMENTS

[0012] With reference to FIG. 1, a chilled beverage storage device according to the present invention is constituted by a cold area 13 and a hot area 14; the cold area comprises a first aluminium structure 2 having a first plate 3 arranged towards a pair of thermo-electrical modules 4, 5 and, opposite to said modules, at least one holding arrangement 1 adapted to hold one or more beverage containers, such as cans or bottles, to be kept chilled; the holding arrangement 1 is formed by aluminium tubes 6, advantageously obtained in one piece with the plate 3.

[0013] One or more reservoirs 7 containing a phase change material are arranged around the tubes 6 forming the holding arrangement 1. Preferably the reservoirs 7 can be made in the form of pouches to be inserted around each holding arrangement 1.

[0014] The hot area 14, arranged facing the cold area 13, comprises a second aluminium structure 8 having a second plate 12 provided with supports 10, 11 for the respective thermo-electrical modules 4, 5; the second aluminium structure 8 is adapted to transfer the heat from the thermo-electrical modules 4, 5 to the ambient air through a fan 9.

[0015] The functioning of the thermo-electrical modules 4, 5 is based on the Peltier effect to create a difference of temperature when the modules 4, 5 are electrically connected to a power supply.

[0016] Advantageously the second plate 12 can be made in one piece with the supports 10, 11, and can also integrate a fan holder for the fan 9, as well as inlet and outlet ducts (not shown in the drawing) for the air.

[0017] The cold and hot areas 13, 14 are formed in an insulated casing, preferably obtained by foaming of polyurethane.

[0018] In the device described above the beverage container to be kept chilled is thus in direct contact, by means of the tubes 6 forming the holding arrangement 1 for the container, with the first aluminium structure 2 which is cooled by the thermo-electrical modules 4, 5 so as to obtain heat transfer by direct conduction in the cold area 13; conversely, the heat transfer in the hot area 14 is obtained by conduction plus convection through the fan 9.

[0019] The functioning of the device is as follows: when the device is connected to the power supply, the thermo-electrical modules 4, 5 start to cool down the phase change material such that a decrease in the temperature is achieved in the holding arrangement 1 formed by the aluminium tubes 6 of the first aluminium structure 2; when a beverage container is introduced in the holder arrangement 1, the coldness stored in the phase change material and in the aluminium tubes 6 is directly transferred to the container. The device continues to cool down the container until an equilibrium temperature is reached between the cold area 13 and the container.

[0020] The chilled beverage storage device according to the present invention achieves the aims and purposes mentioned above: in fact, it has been obtained a compact device having small dimensions which is capable to store and maintain chilled beverages at the temperature reached in the refrigerator using heat transfer by direct conduction in the cold area 13. Furthermore it can be easily installed and operated in any place where beverages are served or consumed, provided a plug for power supply is available in the near surroundings; for example it can be hanged on a wall or located in the living room near a divan or an arm-chair.

[0021] An appliance having the structure of the present invention is shown in FIG. 2-4. In FIG. 2 an appliance with nine holding arrangements 1 is shown, each one having an aluminium tube 6 and a reservoir 7. Such an appliance is convenient to place on the wall. In FIGS. 3 and 4 the backside, the hot area 14 can also be seen with the second aluminium structure 8. The first aluminium structure 2 is shown in the figures, but in some cases it may be convenient to cover it by a cover in plastics or similar for design purposes.

[0022] It is understood that the materials used, as well as the shapes and the size of the individual component parts, may be the most appropriate to fit any specific need or comply with any requirement, without this implying any departure from
the scope of the present invention. For instance the aluminium structures proposed (for instance for the tubes) 6 can be replaced by a structures made in another heat conductive material, such as another metal. Moreover, the number of Peltier thermoelectrical modules 4, 5 used is not restricted to a pair of two.

1. Chilled beverage storage device constituted by a cold area (13) and a hot area (14), said cold area (13) comprises a first structure (2) provided with at least one holding arrangement (1) adapted to hold one or more beverage containers to be kept chilled, characterized in that said first structure (2) is arranged towards at least one cold generating module (4, 5), at least one reservoir (7) containing a phase change material in thermal exchange with said module (4, 5) being arranged around said holding arrangement (1), said beverage container being in direct contact with said holding arrangement.

2. Device as in claim 1 characterized in that said first structure (1) comprises a first plate (3) facing towards the cold generative module (4, 5).

3. Device as in claim 1 characterized in that said holding arrangement (1) is formed by tubes (6).

4. Device as in claims 2 and 3 characterized in that said tubes (6) are obtained in one piece with said plate (3).

5. Device as in claim 1 characterized in that said reservoirs (7) are made in the form of pouches to be inserted around said holding arrangement (1).

6. Device as in claim 1 characterized in that said hot area (14) is positioned facing said cold area (13) and comprises a second structure (8) having a second plate (12) provided with supports (10, 11) for said cold generating module (4, 5), said second structure (8) being adapted to transfer heat from said module (4, 5) to the ambient air through a fan (9).

7. Device as in claim 6 characterized in that said second plate (12) is made in one piece with said supports (10, 11).

8. Device as in claim 6 characterized in that a fan holder for said fan (9) and air inlet and outlet ducts are integrated in said second plate (12).

9. Device according to claim 6 characterized in that said cold generating module (4, 5) consist in a Peltier thermoelectrical module.