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(54) Apparatus for the storage and usage of feeding-bottles

Vorrichtung zur Lagerung und Verwendung von Saugflaschen

Appareil pour le stockage et l'utilisation de biberons

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Description

Object

[0001] This invention relates to an apparatus for the storage and usage of feeding-bottles, whose characteristics correspond to the precharacterizing part of the main claim.

Application Field

[0002] The application field is substantially therefore directed to the refrigeration of feeding-bottle phials or respective food for children that must be stored for a certain period of time.

State of the art and respective problems

[0003] At the present time, it is well known that very consistent problems arise for use in the environments where a large quantity of ready-to-use feeding bottles must be immediately available, considering, in particular, environments for newly-born babies, day nurseries, etc.
Patent application US 3 042 384 discloses a food serving cart for dispensing food to hospital patients in order to allow serving food to bed-ridden hospital patients who are located remote from
kitchen facilities and in order to allow serving food at the proper temperature and condition so that a high degree of palatability is obtained. The food serving cart is provided with heated and refrigerated chambers to keep hot food and cold food at suitable temperature. The food serving cart is provided with a beverage container in a recess in the top deck thereof so that hot containers are insulated and shielded during-transportation but readily accessible during serving. The food serving cart is provided with electrically actuated heating and refrigerating means as well as control elements for these means.
Patent application DE 36 35 171 discloses a trolley for food and/or crockery, having a container capable of travelling on running rollers, in which the container is mounted on an under frame and in which the container is constructed as a thermo-container.
Patent application US 3 199 579 discloses a heating and cooling food storage cabinet provided with a refrigerator for storing perishable food products in which a thin vertically arranged, self-contained and hermetically sealed refrigeration system unattached to the cabinet is provided so that it is freely slidable into and out of the cabinet through a slot in the front thereof. The cabinet is provided with a plurality of modular units dividing the interior of the cabinet into a plurality of separate food storage compartments and the cabinet is adapted to refrigerate one of the compartments and heat another of the compartments.
Patent application JP 2005 245976 discloses a food service cart suitably miniaturizable while having a hot-reserving function. Shelf poles are fixed to project at both ends of a heater panel on one side surface of an interior wall surface of a hot-reserving compartment in which the heater panel is mounted. The inside of each shelf pole is a vertical groove-shaped duct, and communicates with an intake channel on either end side of a partition board. A plurality of openings are formed on the shelf poles, and the openings communicate with the duct formed inside the shelf poles. Accordingly, air inside the hot-reserving compartment passes through the duct formed inside the shelf poles downward via the plurality of openings on the shelf poles, and flows into the intake channel on both end sides of the partition board.
Patent application JP 2004 286277 discloses a catering cart provided with a box and a cooler refrigerator which is constituted so as to form a flange on the upper edge of a cooling duct. A cooler is installed and unitized on an installing plate formed by extending one side surface of the shroud of a fan. A flange is formed on the lower edge of two side surfaces of the shroud. An overhang part formed on the opening edge of an internal facing plate is projected in an opening part of a ceiling wall of a body. Both flanges of the cooling duct are applied to an under surface of the overhang part, and are fastened by a screw to the lower side port edge of the opening part. A cooling unit is inserted into the opening part from above, and both flanges of the shroud stop insertion by striking on an upper surface of the overhang part. Thereafter, a first duct plate and an end plate of the cooler applied there are fastened and fixed by a screw. In this way a air-tight connection of duct and shroud of the fan is obtained.
Patent application NL 1 002 515 discloses a trolley comprising a frame fixed to a wheeled chassis in which a plate is fitted in one or more of the trolley walls.

[0004] In these cases, at the present time, feeding-bottles are kept in a normal refrigerator, which is not very suitable for this function. Current refrigerators must be opportunely set for said foods as, if too cold or too hot the food is not preserved well.

[0005] Furthermore, traditional refrigerators are shaped for storing a lot of different foods and are not adequately conceived for this specific type of food and in particular for more or less significant quantities.

[0006] Furthermore, the feeding-bottles that must be served to the newborns must at present be taken from the refrigerators and taken elsewhere, to heating ovens or provide for heating in a more or less optimal way.

[0007] Other problems can moreover arise without suitable temperature control on the bottles, because, as known, they are made of plastic material, and plastic material above certain low temperatures becomes fragile and at certain high temperatures emits substances which are toxic, not to say lethal, for newborns.

[0008] One of the greater problems is to ensure all feeding-bottles have a uniform temperature, otherwise one could be too cold and one too hot with all the resulting consequences, which commonly occur in normal refrigerators, which on the contrary present different temperatures in each zone of the same.

Scope of the invention

[0009] The scope of the invention is to solve the above-mentioned problems and drawbacks realizing a specific apparatus which is particularly functional and suitable for said function.

Solution of the problem and identification of the invention's features

[0010] The problem is solved with the characteristics of the main claim. The sub-claims represent advantageous preferential solutions that supply better efficiency.

Advantages

[0011] In this way, the advantage is being able to store the feeding-bottles in a rational and adequately refrigerated environment and at the moment of use have them directly in the required place promptly and have at the exact desired temperature the whole desired quantity of feeding-bottles ready-to-use and therefore without needing separate preparation and with the absolute certainty not only of the required temperature, but also of a homogeneous temperature throughout the whole food.

Description of the preferential solution

[0012] For a better understanding the invention is described in its preferential solution with the help of attached figures, wherein:

- Fig. 1. is the front sectional view of the storage apparatus on rotating wheels with three upper ready-to-use heaters for heating the feeding-bottles taken from the lower refrigerating compartment, for immediate use in loco;
- Fig. 2. is the side view;
- Fig. 3. is the plan view;
- Fig. 5. is the front view as Fig. 1;
- Fig. 4. is the vertical cross sectional view according to plan A-A of Fig. 5;
- Fig. 6. is the schematic sectional view of the interior of the storage room refrigerated with air circulation flow;
- Fig. 7. is the horizontal cross sectional view according to plan B-B of Fig. 5 where the central heat exchange separator section for the safe and uniform refrigeration of all the feeding-bottles can be seen.

Detailed description of the invention in relation to the figures

[0013] According to the figures one can observe that the invention refers to a feeding-bottle storage apparatus (1) on rotating wheels (121) and with upper surface for supporting feeding-bottle heating means (11) with downwards openable flap door forming a plane (111) for extract heated feeding-bottles by means of a trolley.

[0014] The feeding-bottles could be bottles e.g. with milk or other for children and/or new born babies and/or etc.

[0015] The container has two opposite access doors (122) and a double internal compartment divided by a refrigerated air exchanging wall (124) in an intermediate structure (21) comprising of respective finned heat-exchanger (22) to let the air pass, said air being circulated by an upper ventilation unit (124) in the dividing compartment.

The heat-exchanger (evaporator) (2) is operated by a lower compressor (C).

[0016] In the lower part of the dividing wall there are air suction slits (123) and on the upper part air delivery slits (123).

[0017] The airflow as claimed is a circulatory vortex in opposition starting from the dividing wall moving away upwards, downwards to the sides and descending, then re-flowing from the bottom upwards to the centre, realizing an anti-clockwise and clockwise circulation from and towards the centre.

[0018] Conveniently, the wheels have a braking system.

The apparatus is predisposed to conveniently operate between +4 and -2°C.

[0019] As said the compressor zone is below the conservation compartment.

In this way, the apparatus' complete mobility is guaranteed, as is a uniform and constant temperature, an easy, quick removal, heating and use for all the stored containers thanks also to the upper heating equipments.

[0020] Such a storage system can contain for example up to two hundred and fifty 240 cc feeding-bottles at a uniform temperature of 4°C for all feeding-bottles that will conveniently be stored in sliding grids with standing rows spaced in order to let the air pass between of them.

[0021] Around the upper-zone a handrail or bumper is provided and it acts as a handle, avoiding damages to the structure.

[0022] The two frontal doors fold open substantially with rotation up to 270°.

[0023] Advantageously, both the control and adjustment (temperature/thermostat) means and the internal temperature indicator with use of said thermometer/thermostat are provided externally on the front.

Electricity is supplied by means of a spiroidal cable.

Claims

1. Apparatus for the storage and usage of feeding-bottles and/or milk for children and/or newborn and/or premature babies having at least a containing refrigerated zone for feeding-bottles with front access for storage and removal, in which the apparatus is provided with movement wheels (121),in which the refrigerated containing zone is divided by a vertical di-

viding heat exchanging wall (21), which forms two opposite containing compartments frontally accessible through opposite folding doors (122);
characterised in that

a) said opposite containing compartments, which are divided by said vertical dividing wall (21), are provided with refrigerated air circulation respectively in anti-clockwise and clockwise direction (F), the circulation being a circulatory vortex in opposition starting from upper air delivery slits (123) located in the upper part of the dividing wall so that air moves away upwards, then moving downwards to the sides and descending, then re-flowing from the bottom upwards to the centre to lower air suction slits (123) located in the lower part of the dividing wall, realizing said anti-clockwise and clockwise circulation from and towards the centre;
and **in that**
b) an evaporator (2) in said dividing wall (21) is placed in operative circulation by a compressor system (C) in rear and/or lower compartment;
and **in that**
c) it is provided with sliding grids with standing rows spaced in order to let the air pass between feeding-bottles;
d) it is provided with feeding-bottle heating means (11) and an upper surface for positioning the feeding-bottle heating means (11).

2. Apparatus according to the previous claim, **characterised in that** said wheels (121) are pivoting.

3. Apparatus according to any of the previous claims, **characterised in that** at least one of said wheels (121) has braking means for locking.

4. Apparatus according to any of the previous claims, **characterised in that** the feeding-bottle heating means (11) are provided with flap door (111) and heated feeding-bottle extraction on extractable trolley.

5. Apparatus according to any of the previous claims, **characterised in that** the upper surface is configured for supporting at least three feeding-bottle heating equipments (11).

Patentansprüche

1. Vorrichtung zur Lagerung und Verwendung von Saugflaschen und/oder Milch für Kinder und/oder Neugeborene und/oder Frühchen mit mindestens einem gekühlten Lagerbereich für Saugflaschen mit Vorderseitenzugang zur Lagerung und Entfernung, wobei die Vorrichtung Bewegungsräder (121) aufweist und der gekühlte Lagerbereich durch eine senkrechte wärmetauschende Trennwand (21) unterteilt ist, die zwei gegenüberliegende Fächer bildet, die durch gegenüberliegende Flügeltüren (122) frontal zugänglich ist;
gekennzeichnet dadurch, dass

a) die gegenüberliegenden Fächer, die durch die senkrechte Trennwand (21) unterteilt sind, sind mit gekühlter Umluft im bzw. gegen den Uhrzeigersinn (F) ausgestattet, wobei der Umlauf ein zirkulierender Wirbel in Gegenüberstellung ist, ausgehend von oberen Belüftungsschlitzen (123) im oberen Teil der Trennwand, so dass Luft sich nach oben entfernt, dann nach unten zu den Seiten sinkt, dann zurück vom Boden nach oben zur Mitte strömt, hin zu unteren Luftansaugschlitzen (123) im unteren Teil der Trennwand, so dass sich der Umlauf im und gegen den Uhrzeigersinn von und zu der Mitte ergibt;
sowie dadurch, dass
b) ein Verdampfer (2) in der Trennwand (21) von einem Kompressorsystem (C) in einem rückwärtigem und/oder unteren Fach in Umlauf gebracht wird;
sowie dadurch, dass
c) es Schiebegitter mit Stehreihen aufweist, die beabstandet sind, damit die Luft zwischen die Saugflaschen strömen kann;
d) es Saugflaschenheizmittel (11) und eine Oberfläche zum Platzieren der Saugflaschenheizmittel (11) aufweist.

2. Vorrichtung nach dem vorherigen Anspruch, **gekennzeichnet dadurch, dass** besagte Räder (121) Schwenkräder sind.

3. Vorrichtung nach einem beliebigen der vorherigen Patentansprüche, **gekennzeichnet dadurch, dass** mindestens eines der Räder (121) Bremsmittel zum Blockieren hat.

4. Vorrichtung nach einem beliebigen der vorherigen Patentansprüche, **gekennzeichnet dadurch, dass** die Saugflaschenheizmittel (11) mit Klapptür (111) ausgestattet sind und Entnahme der erhitzten Saugflaschen auf herausziehbarem Wagen.

5. Vorrichtung nach einem beliebigen der vorherigen Patentansprüche, **gekennzeichnet dadurch, dass** die Oberfläche konfiguriert ist, um mindestens drei Saugflaschenheizausrüstungen (11) zu tragen.

Revendications

1. Appareil pour le stockage et l'utilisation de biberons

et/ou lait pour enfants et/ou nouveau-nés et/ou bébés prématurés ayant au moins une zone contenante réfrigérée pour des biberons avec un accès frontal pour le stockage et l'enlèvement, où l'appareil est pourvu de roues de mouvement (121), où la zone contenante réfrigérée est divisée par une paroi d'échange de chaleur verticale de séparation (21), qui forme deux compartiments contenants opposés accessibles frontalement à travers des portes à battant opposées (122);
caractérisé en ce que

a) lesdits compartiments contenants opposés, qui sont divisés par ladite paroi verticale de séparation (21), sont pourvus d'une circulation d'air réfrigéré respectivement dans le sens des aiguilles d'une montre et dans le sens inverse des aiguilles d'une montre (F), la circulation étant un tourbillon circulatoire en opposition commençant des fentes supérieures de distribution d'air (123) situées sur la partie supérieure de la paroi de séparation de façon que l'air s'éloigne en se déplaçant vers le haut, ensuite se déplaçant vers le bas aux côtés et descendant, ensuite recoulant du fond vers le haut vers le centre jusqu'à des fentes inférieures d'aspiration d'air (123) situées sur la partie basse de la paroi de séparation, réalisant ladite circulation dans le sens des aiguilles d'une montre et dans le sens inverse des aiguilles d'une montre depuis et vers le centre;
et **en ce que**
b) un évaporateur (2) sur ladite paroi de séparation (21) est mis en circulation active par un système de compresseur (C) dans un compartiment postérieur et/ou inférieur;
et **en ce que**
c) il est pourvu de grilles coulissantes avec des rangées espacées afin de laisser passer l'air entre les biberons;
d) il est pourvu de moyens de chauffage de biberon (11) et d'une surface supérieure pour positionner le moyen de chauffage de biberon (11).

2. Appareil selon la revendication précédente, **caractérisé en ce que** lesdites roues (121) sont pivotantes.

3. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**au moins l'une desdites roues (121) a des moyens de freinage pour le blocage.

4. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens de chauffage de biberon (11) sont pourvus d'une porte à abattant (111) et d'extraction de biberon chauffé sur un chariot extractible..

5. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la surface supérieure est configurée pour supporter au moins trois équipements de chauffage de biberon (11).

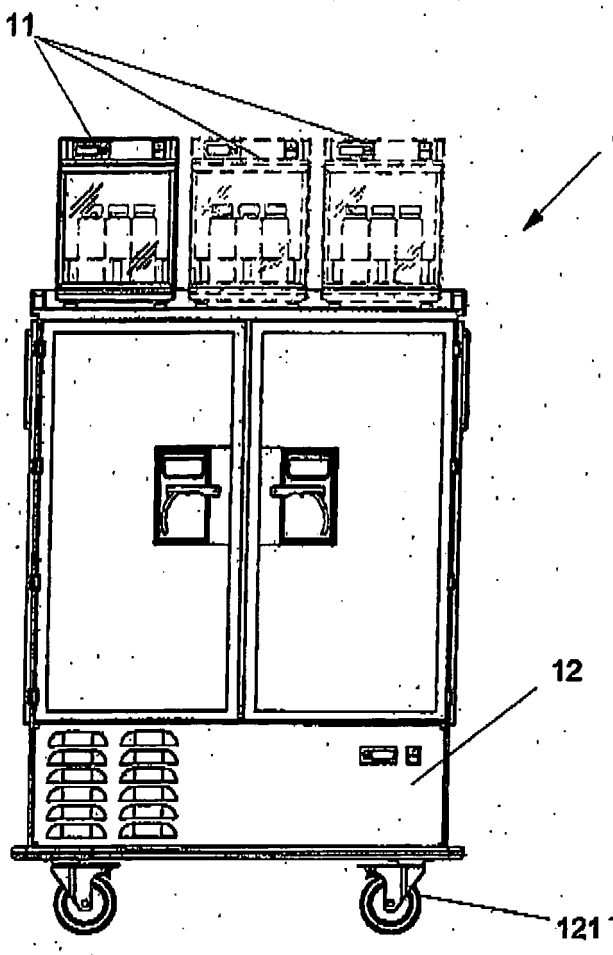

Fig. 1

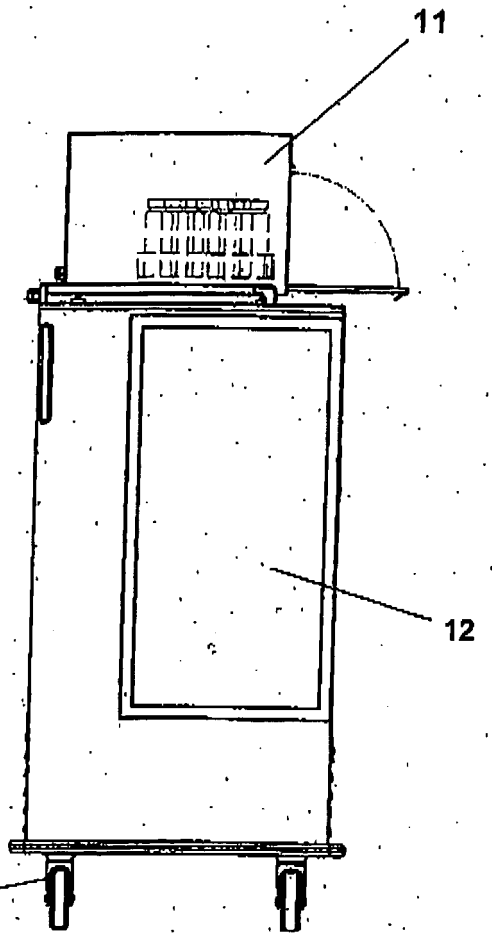

Fig. 2

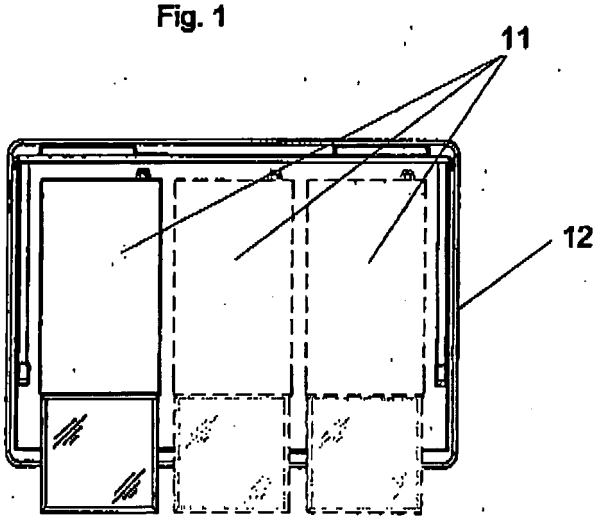

Fig. 3

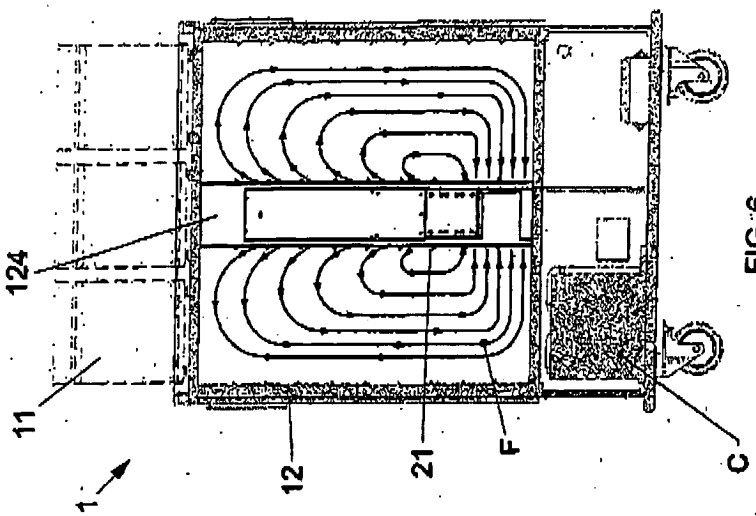

FIG.6
SEC. C-C

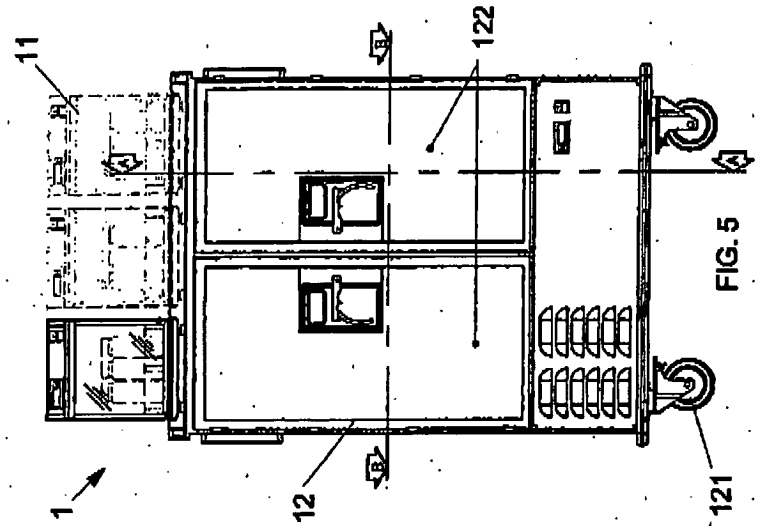

FIG.5

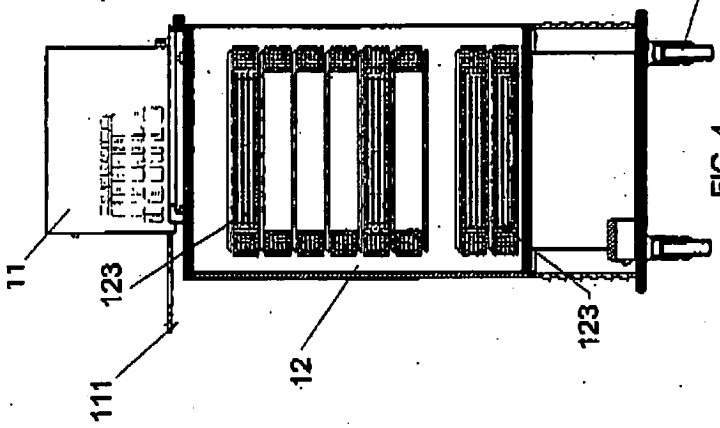

FIG.4
SEC;A-A

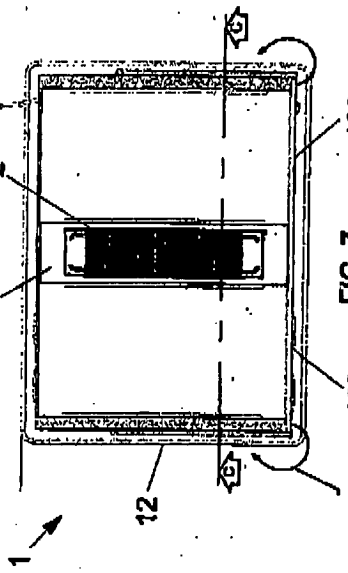

FIG.7
SEC. B-B

REFERENCES CITED IN THE DESCRIPTION

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