



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.12.2010 Bulletin 2010/51

(51) Int Cl.:
F25D 31/00 (2006.01)

(21) Application number: **10164185.0**

(22) Date of filing: **27.05.2010**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
BA ME RS

• **Gemeaz Cusin S.p.a.**
20142 Milano (IT)

(72) Inventor: **Soavi, Alessandro**
41030 Sorbara (MO) (IT)

(74) Representative: **Crugnola, Pietro et al**
Luppi Crugnola & Partners S.r.l.
Viale Corassori 54
41124 Modena (IT)

(30) Priority: **28.05.2009 IT MO20090146**

(71) Applicants:
• **Angelo Po Grandi Cucine-Societa'per Azioni**
41012 Carpi (MO) (IT)

(54) **Apparatus for preserving and dispensing prepacked foodstuffs**

(57) An apparatus (1) for preserving and dispensing prepacked food products comprises a refrigerator compartment (3) into which containers (6) are insertable that contain said prepacked food products, a command and control device (10) operationally associated with a user interface (9) by means of which data can be stored in said command and control device (10) or commands can be sent to said command and control device (10), **characterised in that** said command and control device (10) is suitable for commanding dispensing of said food products according to at least a programmed sequence.

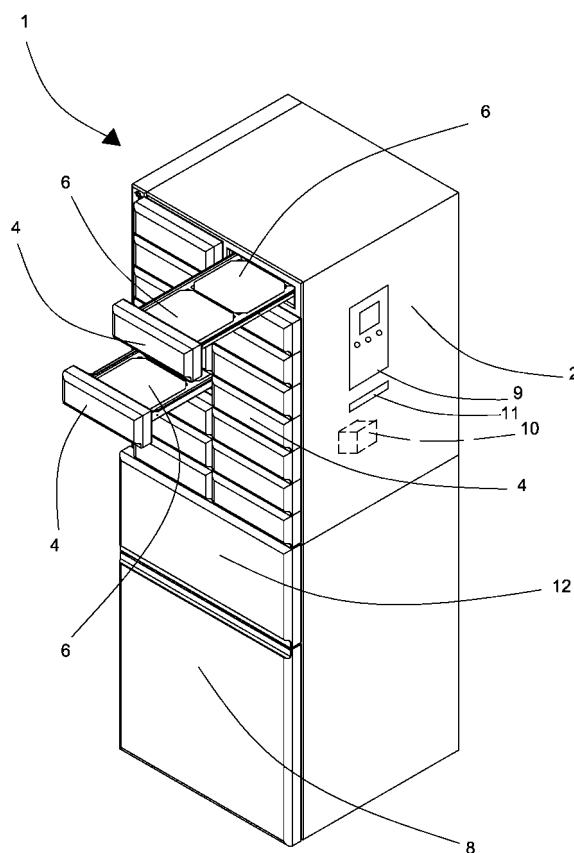


Fig. 1

Description

[0001] The invention relates to an apparatus for preserving and dispensing prepacked foodstuffs, in particular a preserving apparatus that enables prepacked foodstuffs to be dispensed according to the food needs of one or more users. Apparatuses are known, such as, for example, trolleys, for transporting and distributing meals to users who are not able to prepare meals unaided, for example persons in hospital or other places of care.

[0002] Such apparatuses comprise containers into which the food products are introduced which are to be divided or which have possibly already been divided into portions in suitable containers, and heating elements for maintaining the food products at a desired temperature that is suitable for consumption.

[0003] If, to complete a meal, dishes to be eaten cold are provided, for example a dessert, fruit or something else, the aforesaid apparatuses may comprise a zone in which the aforesaid dishes are maintained at the preservation temperature required by the reference standards.

[0004] Usually, the dishes are prepared in kitchens with which hospitals or places of care are provided and are subsequently introduced into the aforesaid apparatuses to be conveyed to the various users.

[0005] Nevertheless, many persons who are not self-sufficient, for example the old or non-hospitalised disabled persons who are not able to prepare meals unaided, need these meals to be delivered to them at home.

[0006] In this case, the dishes are prepared, for example by cooperatives or bodies that manage the aforesaid service, and are introduced already divided into portions in containers that are grouped in trays to facilitate the conveying thereof.

[0007] The containers are preferably thermal containers to enable the different dishes contained therein to be maintained at the desired temperature of use.

[0008] The trays are then conveyed to the various users.

[0009] Usually, the dishes are prepared and then distributed at least once a day to deliver to the users food products that have at least reasonable organoleptic properties.

[0010] In fact, further deferring preparing the dishes with respect to the consumption thereof would entail a significant deterioration of the features of the dishes.

[0011] A drawback of these systems is that they require the dishes to be prepared and delivered to the various users at least once a day, this entailing significant costs connected to the preparing and delivery service.

[0012] Further, it is very difficult to maintain the dishes at the desired temperatures, even using thermal containers, especially when preparing these dishes is significantly deferred with respect to the delivery and/or consumption of the dishes.

[0013] In this manner the standard is not complied with that does not allow interruptions to the cold or hot chain.

[0014] Further, the user may have difficulties in opening the thermal containers, which, having to ensure the preservation of the temperature, have to be sealed, for example through hermetic snap closures.

[0015] These drawbacks are accentuated by the condition of the users whom this service reaches, who are usually old or disabled and therefore have motor or memory problems or other types of pathologies that make these users non self-sufficient. Further, this system does not enable dishes to be obtained that are optimum from the point of view of preservation and therefore of the health of the user.

[0016] From Italian patent application M02007A000220 an apparatus is known for preserving and refreshing food products comprising a plurality of containing cavities into which said food products are inserted, refrigerating means that is suitable for refrigerating said containing cavities to maintain said food products at a desired preserving temperature, heating means that is suitable for heating said containing cavities to heat said food products, the heating means and the refrigerating means are connected to the containing cavities so as to heat, or refrigerate, a desired fraction of containing cavities, independently from the remaining containing cavities.

[0017] This apparatus enables only food products to be heated that are contained in a desired fraction of the containing cavities that are heatable without altering the conditions of the food products contained in other heatable containing cavities, so as to provide the users with dishes with high organoleptic features that are in an excellent state of preservation. Further, this apparatus enables home delivery of meals to be managed in an economic and efficient manner and eliminates the risks for a user that are connected with the preparation or refreshment of the meals.

[0018] In this apparatus, nevertheless, the user has to select personally the meals to be consumed, a task that may be complex and/or difficult to perform in the case of old or disabled users with motor or memory problems or other types of pathology that makes these users non self-sufficient, and who have to strictly follow predetermined diets.

[0019] An object of the present invention is to provide an apparatus for preserving and distributing foodstuffs, in particular prepacked foodstuffs that makes it particularly simple for a user to select foodstuffs to be consumed, eliminating errors from the user, in particular if the user has to follow a predetermined diet and has motor problems or memory problems or anyway pathologies that make the user not completely self-sufficient.

[0020] The object of the present invention is achieved with an apparatus for preserving and distributing prepacked foodstuffs according to the features of claim 1.

[0021] Owing to the invention it is possible to manage in a simple and effective manner an automatic distribution of meals to one or more users according to predetermined distribution sequences, for example on the basis

of programmes of consumption of foodstuffs based on dietary prescriptions.

[0022] The invention can be better understood and implemented with reference to the attached drawings that illustrate an embodiment thereof by way of non-limiting example, in which:

Figure 1 is a perspective view of an apparatus according to the invention;

Figure 2 is a view from the left of the apparatus in Fig. 1;

Figure 3 is a top view of the apparatus in Figure 1.

[0023] With reference to the figures, an apparatus 1 according to the invention comprises a body 2 having a preferably parallelepipedon shape, in which a refrigerator compartment 3 is provided within which the foodstuffs to be preserved are introduced. The refrigerator compartment 3 is provided with a plurality of sliding containing elements 4, in each of which one or more containing cavities 5 (Figure 3) are obtained that are intended for receiving the foodstuffs to be preserved, packaged in suitable containers 6, the dimensions of which are such as to adapt to the dimensions of the containing cavities 5.

[0024] In order to place said foodstuffs or meals in the refrigerator compartment 3, the containers 6 containing said foodstuffs, the slidable elements 4 are made to slide outwards the body 2 until the containing cavities 5 are made accessible into which the containers 6 are inserted. After the containers 6 have been inserted into the containing cavities 5, the sliding elements 4 are pushed inside the refrigerator compartment 3 until the sliding elements 4 are completely inserted inside the refrigerator compartment 3.

[0025] On each sliding element 4 are positioned containers 6 containing the prepacked foodstuffs that constitute a single meal for a user or a part of a single meal for a user.

[0026] The refrigerator compartment 3 is provided with cooling conduits 7 that extend along the internal walls of the refrigerator compartment 3 and in which a cooling fluid flows that is circulated by a refrigerating apparatus (not shown) that is integrated into the apparatus 1.

[0027] The apparatus 1 is further provided with a heating device 12 for heating said foodstuffs, after they have been drawn from the refrigerator compartment 3, said heating device 12 being preferably a microwave oven, to enable the foodstuffs to be heated rapidly and safely.

[0028] The apparatus 1 can be provided with an opening 8 for collecting waste, suitably separated from the refrigerator compartment 3 and from the heating device 12 so as to avoid contamination of the foodstuffs.

[0029] The apparatus 1 is further provided with a user interface panel 9 that is operationally connected to a command and control device 10. Through the user interface panel, it is possible to send commands to the command and control device 10 and store information therein relating to the foodstuffs inserted into the refrigerator com-

partment (2) and relating to the use thereof.

[0030] For example, in the command and control device 10 information can be entered relating to the diet of a user who is intended to use the apparatus 1, to the features of the foodstuffs that the user has to consume, for example on the basis of a diet that the user has to follow, to a dispensing timing sequence of said foodstuffs, in function of said diet. Further, the command and control device 10 is provided with recognition means for recognising the user enabled to use the apparatus 1, or for recognising an operator enabled to insert the containers 6 of said foodstuffs into the apparatus 1, said recognition means being able to comprise, for example, reading means 11 that is suitable for reading data relating to said user or to said operator, which data are stored on a magnetic, or optical or electronic support.

[0031] When a user has to draw from the apparatus 1 the containers 6 containing the foodstuffs for a meal, the user inserts the magnetic, or optical or electronic support into the reading means 11. The command and control device 10, on the basis of data read by the reading means on the magnetic, or optical or electronic support and on the basis of data on the diet of the user contained in the memory of the command and control device 10, enables one or more of the sliding elements 4 to be extracted, alerting the user, for example by a luminous signalling means, to the sliding elements 4 that have to be extracted to enjoy the meal that is predetermined on the basis of the diet of the user. In this manner, the user does not have to choose amongst the containers 6 to be drawn from the refrigerator compartment 3, with the risk of making the wrong choice, but finds automatically the correct containers 6 on the basis of the diet that the user has to follow. Similarly, when an operator has to insert the containers 6 into the refrigerator compartment 3, the operator inserts its magnetic, or optical or electronic support into the reader 11 and enters, via the user interface 10, a code relating to the user for whom the foodstuffs that are contained in the containers 6 are intended. The command and control device, on the basis of the data read on the magnetic or optical support of the operator and on the basis of the code of the user, enables the sliding elements 4 to be extracted according to a predetermined sequence for correct insertion of the containers 6 into the refrigerator compartment 3. In this manner, correct insertion of the containers 6 is obtained, which is indispensable for correct dispensing thereof above all in the case of particular diets that the user has to strictly follow.

[0032] An operator is significantly facilitated in the operation of inserting containers, as the operator does not need to identify the sliding elements 4 into which to insert the container 6 but only to follow a predetermined insertion sequence that is provided to the operator by the command and control device 10.

[0033] The heating device 12 can be provided with recognising means for recognising the containers 6 inserted therein on the basis of identifying elements associated with each container 6 such as, for example, a barcode

or an RFID identifying device and can start the correct heating sequence for each container 6.

[0034] The apparatus 1 according to the invention can manage the distribution of meals to a plurality of users, being able to recognise every single user on the basis of data stored on a magnetic or optical support with which each user can be provided and on the basis of programmes of distribution of said meals that are associated with each user and are stored in the command and control device.

[0035] The apparatus 1 is thus advantageously usable for the automatic distribution of meals in communities, to a plurality of users according to methods that are customised for each user.

[0036] The containing elements 4 of the refrigerator compartment 3, may consist of a plurality of containing compartment that are separated from one another, each of which is intended to contain the foodstuffs to be dispensed to a single user for a single meal, the compartments being provided with respective doors, the opening of which is enabled by the command and control device 10.

[0037] The heating device 12 can also be separated from the apparatus 1. In this case, the heating device 12 can be operationally connected to the command and control device 10, in order to be able to check, for the purposes of recognition of the containers 6, the identifying data of each container 6 with those stored in the command and control device 10. Alternatively, the heating device 12 can be provided with a memory in which are stored the identifying data of each container 6.

Claims

1. Apparatus (1) for preserving and dispensing pre-packed food products comprising a refrigerator compartment (3) into which containers (6) are insertable containing said prepacked food products, a command and control device (10) operationally associated with a user interface (9) by means of which data can be stored in said command and control device (10) or commands can be sent to said command and control device (10), said command and control device (10) being suitable for commanding dispensing of said food products according to at least a programmed sequence, **characterised in that** said at least a programmed sequence is associated with at least a user and with food products that said at least a user is intended to consume on the basis of at least a predetermined consumption programme.
2. Apparatus (1) according to claim 1, wherein said at least a programmed sequence comprises a plurality of sequences, each of which is associated with a respective user and with a respective predetermined consumption programme.

3. Apparatus (1) according to any preceding claim, wherein said refrigerator compartment (3) comprises a plurality of containing elements (4) each of which is provided with containing cavities (5) into which said containers (6) are insertable.
4. Apparatus (1) according to claim 3, wherein said containing elements comprise slidable elements (4).
5. Apparatus (1) according to claim 3, wherein said containing elements comprise containing compartments that are separated from one another.
6. Apparatus (1) according to any preceding claim, wherein in said refrigerator compartment (3) there are provided conduits (7) for circulating a refrigerating fluid.
7. Apparatus (1) according to any preceding claim, further comprising heating means (12) suitable for heating said foodstuffs and operationally associated with said command and control device (10).
8. Apparatus (1) according to claim 7, wherein said heating means comprises a microwave oven.
9. Apparatus (1) according to claim 7 or 8, wherein said heating means is provided with recognition means, suitable for recognising said containers (6) on the basis of identifying elements associated with each container (6).
10. Apparatus (1) according to any preceding claim, further comprising reading means (11) suitable for reading data stored on a magnetic, or optical or electronic support, said reading means (11) being operationally associated with said command and control device.
11. Apparatus (1) according to any preceding claim, wherein said command and control device (10) is suitable for indicating to an operator a predetermined sequence of insertion of said containers (6) into said containing elements (4).
12. Apparatus (1) according to any preceding claim, further comprising an opening (8) for collecting waste.

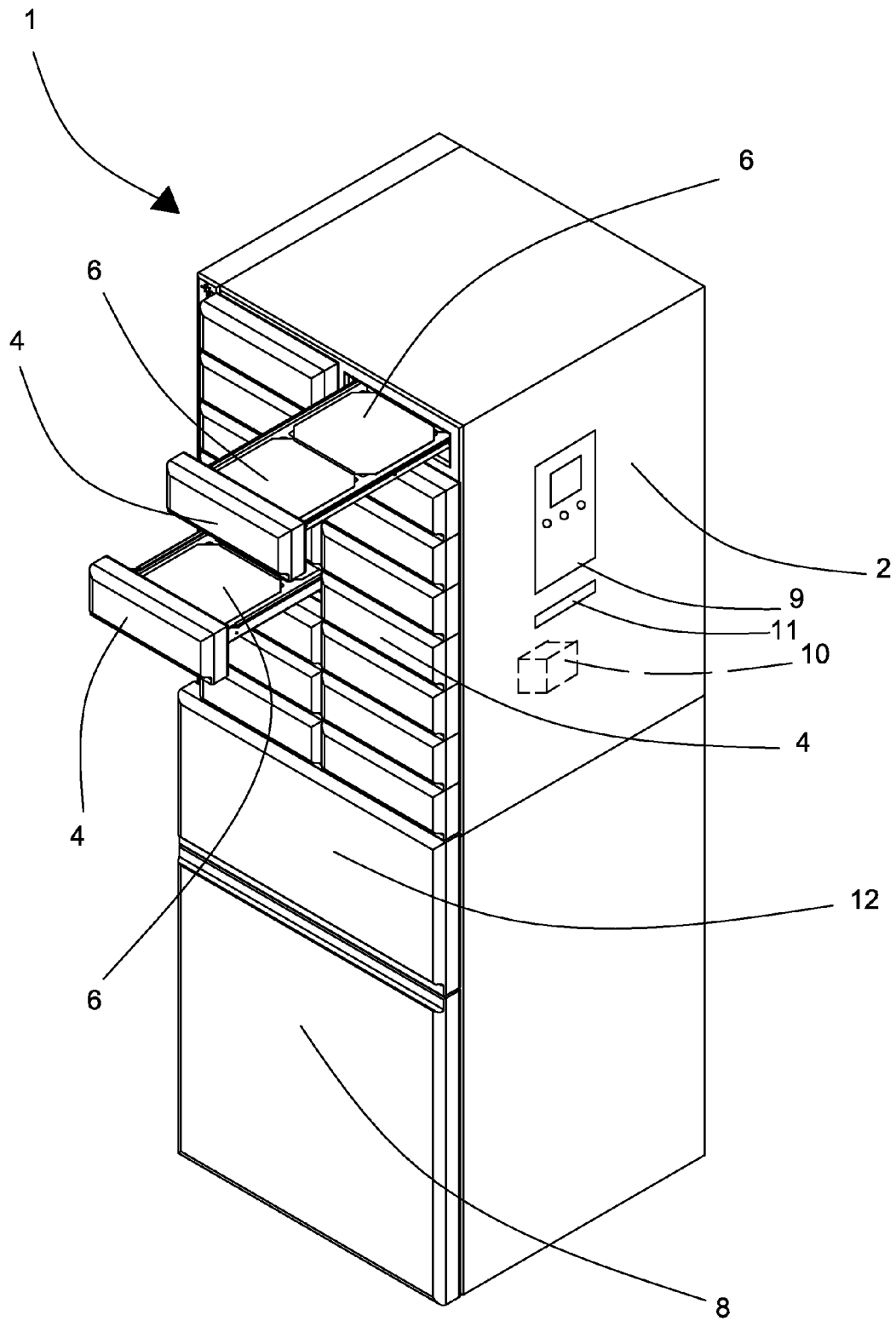


Fig. 1

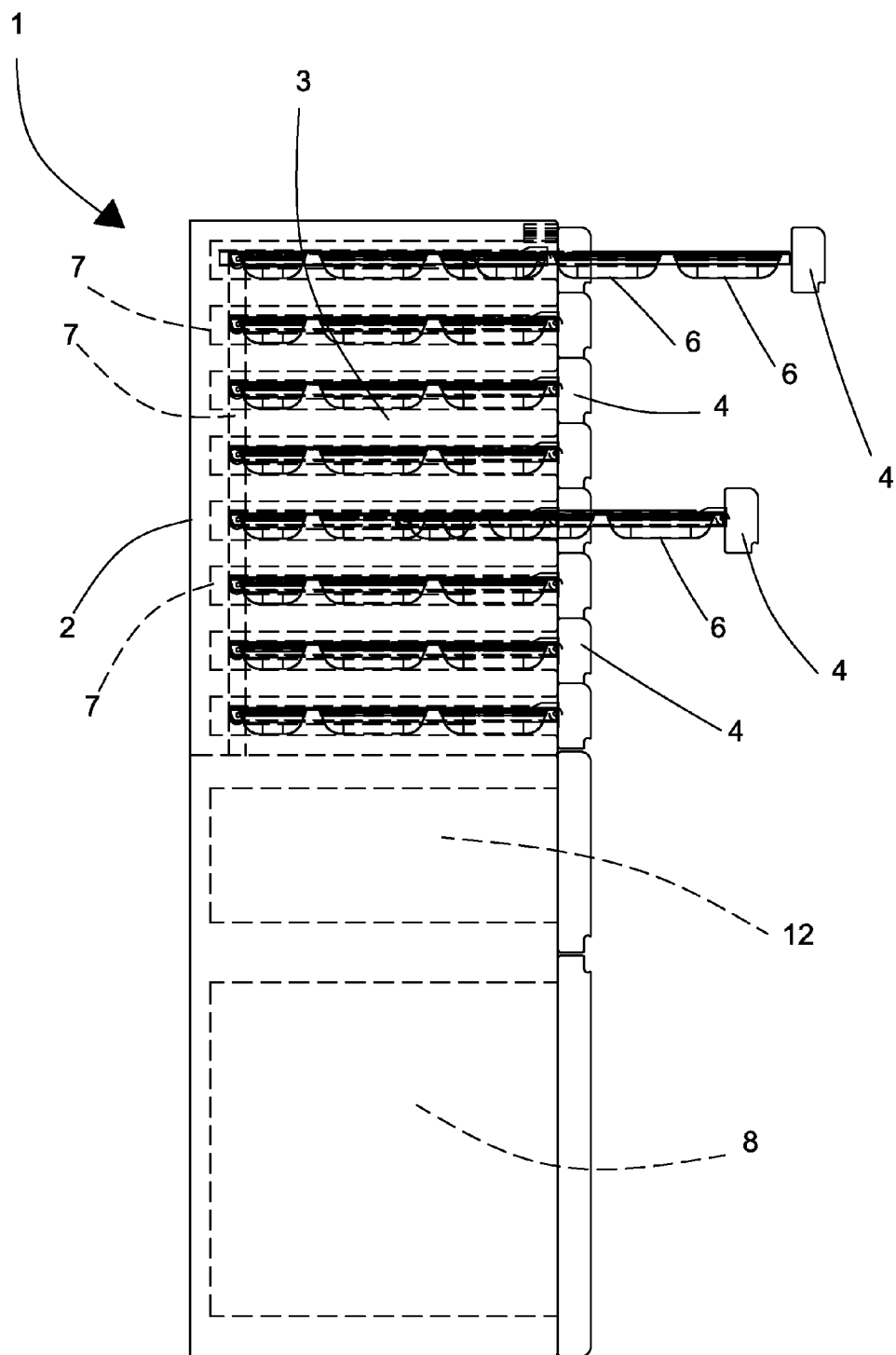


Fig. 2

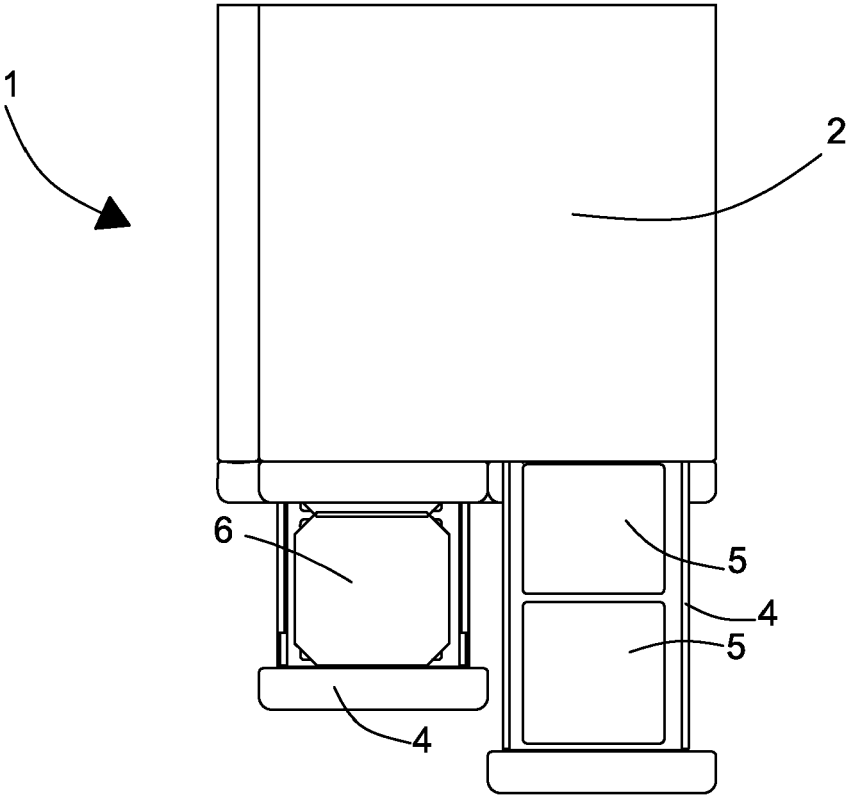


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 10 16 4185

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	EP 2 008 557 A2 (GRANDI ANGELO CUCINE SPA [IT]) 31 December 2008 (2008-12-31) * paragraph [0133] - paragraph [0142] * * paragraph [0131] - paragraph [0132] * * paragraph [0128] - paragraph [0130] * * paragraph [0021] * * paragraph [0037] * * paragraph [0053] * * paragraph [0090] - paragraph [0093] * * paragraph [0094] - paragraph [0096] * -----	1-12	INV. F25D31/00
A	WO 03/085333 A1 (A LA CART INC [US]) 16 October 2003 (2003-10-16) * paragraph [0022] * * paragraph [0024] - paragraph [0025] * * paragraph [0018] * -----	1-12	
A	US 5 771 959 A (WESTBROOKS JR JOHN WALTER [US] ET AL) 30 June 1998 (1998-06-30) * column 3 - column 5; claims 1-3; figures 1-4 * -----	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 August 2010	Examiner Amous, Moez
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			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 16 4185

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-08-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 2008557	A2	31-12-2008	NONE	

WO 03085333	A1	16-10-2003	AU 2003216415 A1	20-10-2003
			US 2003226657 A1	11-12-2003

US 5771959	A	30-06-1998	US 5454427 A	03-10-1995
			US 5868195 A	09-02-1999

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT M02007000220 A [0016]