



US 20040169448A1

(19) **United States**

(12) **Patent Application Publication**
Malizia

(10) **Pub. No.: US 2004/0169448 A1**

(43) **Pub. Date: Sep. 2, 2004**

(54) **JOINTED SYSTEM FOR DISPLAY CASES AND DISPLAY CASES EQUIPPED WITH THE SAID SYSTEM**

(52) **U.S. Cl. 312/116**

(76) **Inventor: Federico Malizia, Perugia (IT)**

(57) **ABSTRACT**

Correspondence Address:
YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

A system for display cases comprising a star shaped structure (1) and a circular groove (3), the star shaped structure (1) is equipped with a support (4) placed at the end of each of its spokes (2), the said support is constantly maintained in a level position by a pin (6) constrained in the circular groove (3), whose position is such that it creates a jointed parallelogram connection for each support (4); it also comprises a transmission which is suitable to operate the rotation of the star shaped structure (1) with the supports (4) that sustain protruding shelves, trays and dishes, or at least a couple of such star shaped structures (1), facing each other, in which the relative supports (4) are joined to the flat surfaces (9) or other means which are constantly maintained level during their rotation; it finally comprises display cases equipped with said jointed system.

(21) **Appl. No.: 10/787,746**

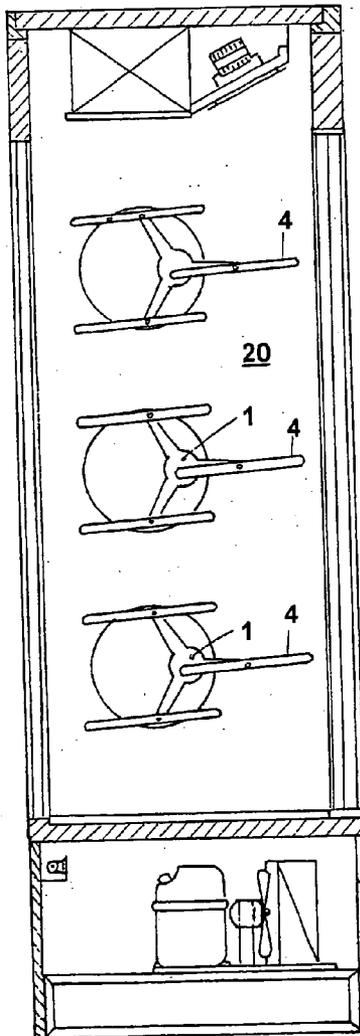
(22) **Filed: Feb. 27, 2004**

(30) **Foreign Application Priority Data**

Feb. 28, 2003 (IT) AR2003A000012

Publication Classification

(51) **Int. Cl.⁷ A47F 3/04**



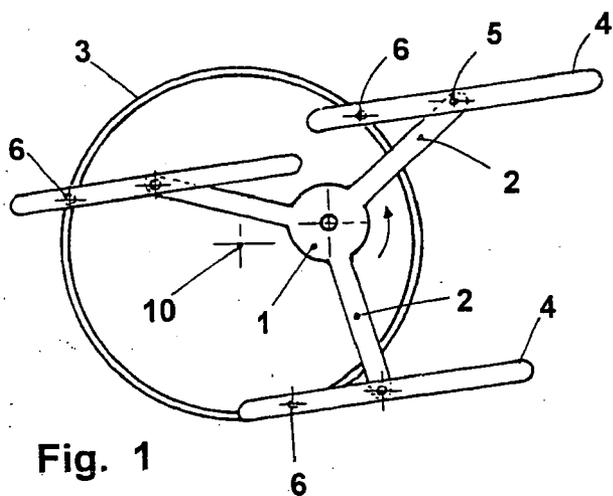


Fig. 1

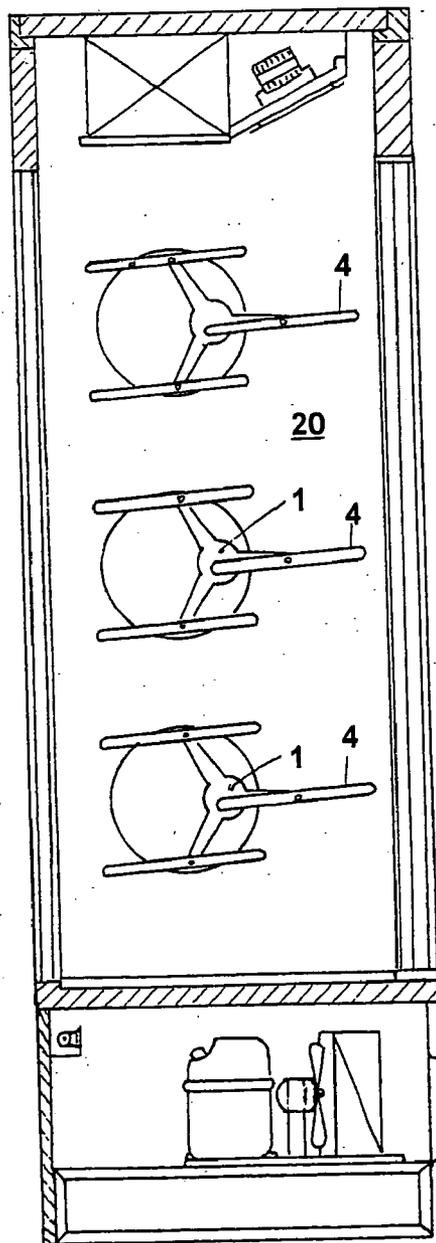


Fig. 3

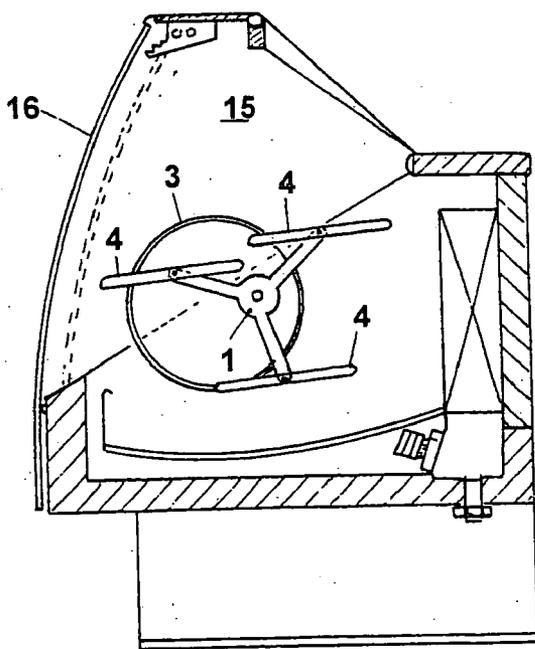


Fig. 2

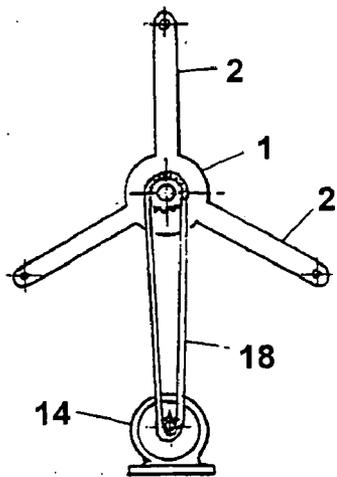


Fig. 4

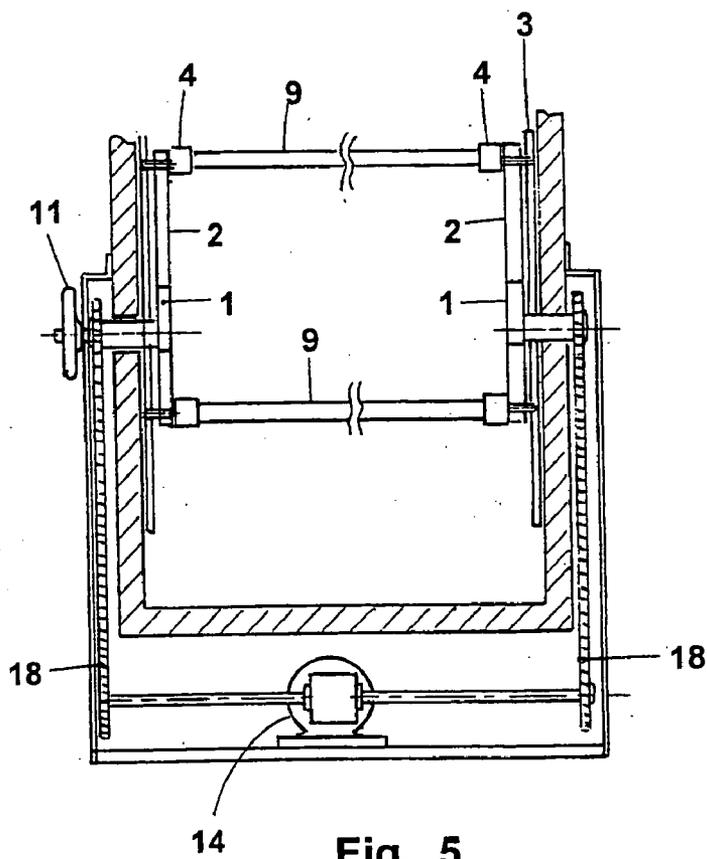


Fig. 5

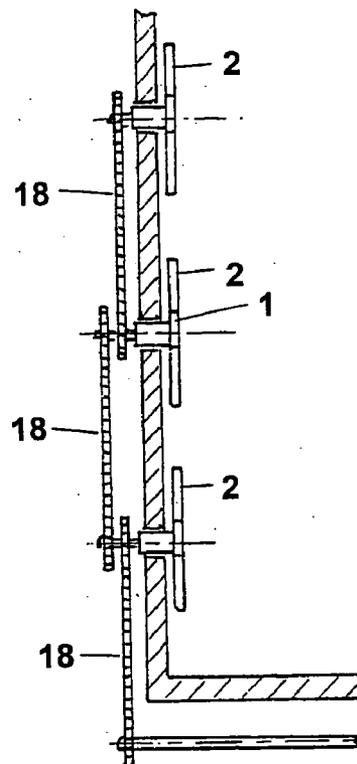


Fig. 6

JOINTED SYSTEM FOR DISPLAY CASES AND DISPLAY CASES EQUIPPED WITH THE SAID SYSTEM

BACKGROUND OF THE INVENTION

[0001] The invention relates to a jointed system for display cases and display cases equipped with the said system, in particular those intended for containing foodstuffs, especially for sweets, cakes and ice cream.

[0002] There are display cases which hold a flat surface onto which the products for sale are placed for display to customers; particularly in cafes and pastry shops, trays of various types containing sweets, cakes and ice cream are placed on the said flat surface.

[0003] In order to create more surface area onto which the products for display can be placed, without increasing the size of the display cases, they are made with several shelves placed at different levels.

[0004] The use of more shelves, while allowing for the display of larger quantities of products, does not improve their visibility in that the ones on the highest shelf make it difficult to see the ones placed at the back of the lower levels, so that the potential customers, standing in front of the display case, will have to bend over to view the products placed on the levels below the first one and those which are the furthest from the front glass of the display case.

[0005] In the case in which the display case has a single display surface, said surface is normally not sufficient to display the products, even when the display case is spacious, therefore the sales person will display a very limited number of products of each type on it, and as they are sold, will have to refill it, keeping the staff from other chores, particularly when there are several customers.

[0006] Since less voluminous display cases are the most manufactured because they are more suitable for small sized shops, the inconvenience of a frequent replacement of displayed items becomes quite demanding.

SUMMARY OF THE INVENTION

[0007] The aim of the present invention is to create a small sized display case, structured so as to have wide display surfaces to allow the person in the store to replace the displayed products less frequently.

[0008] Another aim of the present invention is to create a display case structured so that all the different products contained inside it are in full view.

[0009] One more aim is to create a structure or system which can render display cases with more shelves, similar to tall cabinets, adequate to satisfy the above said aims.

[0010] Another aim of the present invention is to create display cases having the above mentioned features which can operate at ambient temperature or, equipped with an adequate refrigerating system, to operate at a lower temperature.

[0011] The invention which has allowed the achievement of said results consists of a system for display cases composed of a star shaped structure and a circular groove, with the star shaped structure combined, at the ends of each spoke, with a support which is constantly maintained in a

level position by a pin constrained inside the circular groove and whose position is such as to create, for each support, a jointed parallelogram connection.

[0012] It also consists of a transmission suitable for rotating rotate the star shaped structure with the supports which sustain protruding shelves, trays or dishes, or at least a couple of such star shaped structures, placed facing each other, whose supports are joined to the shelves, trays or dishes that are constantly maintained level while rotating.

[0013] It also consists of display cases equipped with said system originating a star shaped structure with display shelves and/or of tower display cases, equipped with several such systems placed at different levels.

[0014] This invention is particularly advantageous in that it allows a small sized display case to have a large overall display surface.

[0015] Another advantage of the present invention derives from the fact that during its slow rotation, each shelf of a star shaped structure comes very close to the surface through which the customers can see the items, which therefore are very visible, and from the fact that the movement of each shelf attracts the potential buyer.

[0016] One more advantage is also due to the fact that when the said jointed system is used in tower display cases, the items placed at different levels are all equally visible, from the lower level to the higher one, and the items placed on each shelf are visible for an interval of the cycle during which the complete rotation of the single display shelf takes place.

[0017] Another advantage lies also in the fact that during the rotation of the jointed system the displayed items advance near the customer side and then near the shop assistant side, allowing the former to see the items clearly and the latter to easily remove the ones chosen by the customer without having to lean inside the display case.

[0018] The rotation of each display shelf makes it easy to pull out the chosen items, refill the containers and, not least, to clean the display case itself.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Other advantages will appear evident, especially to experts of this field, from the detailed description which follows and the exemplifying drawings in the enclosed tables, in which:

[0020] **FIG. 1** represents the front view of the system formed by the star shaped structure, the guiding groove and the supports connected with the ends of the star spokes and maintained constantly level by the guiding groove;

[0021] **FIG. 2** is the side elevation view, sectioned along a middle plane, of a refrigerated display case having inside a jointed system with three display shelves;

[0022] **FIG. 3** is the side elevation view, sectioned along a middle plane, of a refrigerated display case containing a plurality of jointed systems placed on three levels;

[0023] **FIG. 4** is the view of the star shaped rotating structure connected to a motor unit which will rotate it;

[0024] **FIG. 5** is the schematic reproduction of the transmission by means of which the jointed system with the display shelves is made to rotate;

[0025] FIG. 6 is the schematic reproduction of the transmission which moves the jointed systems in a tall cabinet structured display case;

[0026] It is understood that the drawings are exclusively exemplifying and their only aim is to help in understanding the invention, without in any way limiting it.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] In substance, the invention consists in a jointed system suitable for holding more than one display surface constantly level, as well as in a transmission which makes the display shelves rotate, so that in sequence they will all reach a position in which the displayed products will be quite visible from the viewer's position.

[0028] The invention also consists in a display case which, in one case, is combined with said jointed system inside it, and in another case, when it has the shape of a tall cabinet or tower case, it is combined with several of the said jointed systems inside it, placed at different levels.

[0029] The jointed system as represented in FIG. 1, consists in a star shaped structure 1, normally with three spokes 2, in a circular guiding groove 3, and in supports 4, which rotate on the spokes of the star shaped structure 1, on points 5 near their ends. It also is provided with pins 6, combined with supports 4, which are made to slide in the guiding groove 3. The position of the rotating center 10 of the guiding groove 3 is such that each spoke 2 together with the relative support 4 and the groove 3 form a jointed parallelogram. Thus each support 4 is constrained into a level position which is appropriate to show the products displayed on the shelf, or other equivalent means 9, held by the same support 4.

[0030] The star shaped structure 1 can therefore rotate around its axis and carries at least two spokes 2, but it has usually three spokes, as exemplified in the enclosed drawings.

[0031] Said structure 1 is combined with means 11, normally consisting in a hand wheel, with which said structure 1 is rotated manually in order to lead the chosen shelf 9 in the position as needed by the customer or the dealer.

[0032] The said structure is also connected to a mechanic transmission, normally a chain drive type 18, activated by a motor unit 14, through which it is made to rotate continuously to make it possible for all the displayed products to reach the position in which they are in full view for a fraction of the rotation time. Each support 4 is joined to the corresponding spoke 2 of the star shaped structure 1 by a rotating pin 5 and it is also joined to a guiding pin 6 which is constrained into the circular groove 3, combined to the said star shaped structure 1.

[0033] Said system can therefore confer a slow rotation to several supports 4 to which shelves, trays or other containers can be anchored.

[0034] Otherwise, two jointed systems are adopted and placed to face each other, with supports 4 joined two by two by shelves, trays, dishes or other supporting means 9, on which the products for display will be placed.

[0035] In addition to the above described jointed system and the transmission means which confer to it a slow

rotation, the invention also relates to display cases which are combined with the described jointed system.

[0036] In particular FIG. 2 shows the display case in which the display area 15 is equipped with a display unit. In this case the said display unit will be obtained by two star shaped structures 1, by two circular grooves 3 facing each other and by pairs of supports 4, each couple combined with means 9, such as shelves, to hold the products on display, in which said means 9 rotate and for a portion of the circular movement they are on the displaying side 16 of the display case through which the products on sale will be in full view for the customers.

[0037] In the chosen solution, shown in FIG. 3, the display case has a tall cabinet or tower shaped display area 20 provided with several pairs of star shaped structures and circular guides; the couples are placed at different levels, each couple is combined with means 9 which carry the products to be displayed. The movements of the star shaped structures 1 of said couples can be independent or connected.

[0038] The solution exemplified in FIG. 6 shows the jointed system at different levels operated by chain transmissions 18 controlled by the same motor unit 14, therefore their movements are connected.

[0039] Display cases structured as described above can be combined with refrigerating means and systems, as exemplified in a schematic way in FIGS. 2 and 3; they can also be structured as the display cases with display areas 15 and 20 at ambient temperature.

[0040] The jointed system at the basis of this invention and the transmission means operating the movements can be subject to changes, even involving their structure, which in any case embrace the area protected by the following claims.

1. A jointed system for display cases, characterized by a star shaped structure (1) and a circular groove (3) with each end of the spokes (2) of the star shaped structure (1) combined with a support (4), maintained in a constantly level position by means of a pin (6) constrained in the circular groove (3), said circular groove characterized by the fact that its rotating center (10) is positioned so as to create, with each spoke (2) of the star (1) and the support (4) sustained by said spoke (2), a jointed parallelogram connection, with said supports (4) combined with shelves (9), or with other equivalent supporting means, protruding therefrom or said shelves (9) supported by couples of similar systems placed facing each other.

2. The system, as claimed in claim 1, characterized by the fact that the star shaped structure (1) rotates around its axis.

3. The system, as claimed in claim 1, characterized by the fact that the star shaped structure (1) has several spokes (2), usually there are three.

4. The system, as claimed in claim 1, characterized by the fact that the star shaped structure (1) is combined with means (11) through which it can be made to rotate manually.

5. The system, as claimed in claim 1, characterized by the fact that the star shaped structure (1) is combined with a mechanical transmission (18) activated by a motor unit (14) through which it is made to rotate continuously.

6. The system, as claimed in claim 1, characterized by the fact that each support (4) is joined with a rotating pin (5) to the corresponding spoke (2) of the star shaped structure (1) and it is combined, by means of a guiding pin (6), with the circular groove (3) connected to the said star shaped structure (1).

7. A display case, combined with the system as claimed in claim 1, having a display area (15) characterized by a display unit realized by two star shaped structures (1) and by two circular grooves (3) which face each other, with the corresponding couples of supports (4) combined with the means (9) to hold the products to be displayed, and with said means (9) rotating in a circular way a section of the way being exposed to the displaying side (16) through which the products on sale are in view for the customers.

8. A display case, combined with several systems as claimed in claim 1, having a display area (20) shaped like a tall cabinet or tower, characterized by several couples of star shaped structures (1) and by circular grooves (3) and in

which the said couples are placed at different levels and combined with the means (9) which are made to hold the products to be displayed.

9. The display case, as claimed in claim 8, characterized by the fact that each group of means (9), made to hold the product to be displayed, has a movement which is independent from the other groups.

10. The display case, as claimed in claim 8, characterized by the fact that the groups of means (9), adequate to hold the products to be displayed, are all connected in movement.

11. The display case, as claimed in claim 7, characterized by the fact that it is combined with refrigeration means and units.

12. The display case, as claimed in claim 8, characterized by the fact that it is combined with refrigeration means and units.

* * * * *