

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 847 719 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.06.1998 Bulletin 1998/25

(51) Int Cl.⁶: **A47F 10/06**

(21) Application number: **97830667.8**

(22) Date of filing: **12.12.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Galtieri, Giuseppe**
98100 Messina (IT)

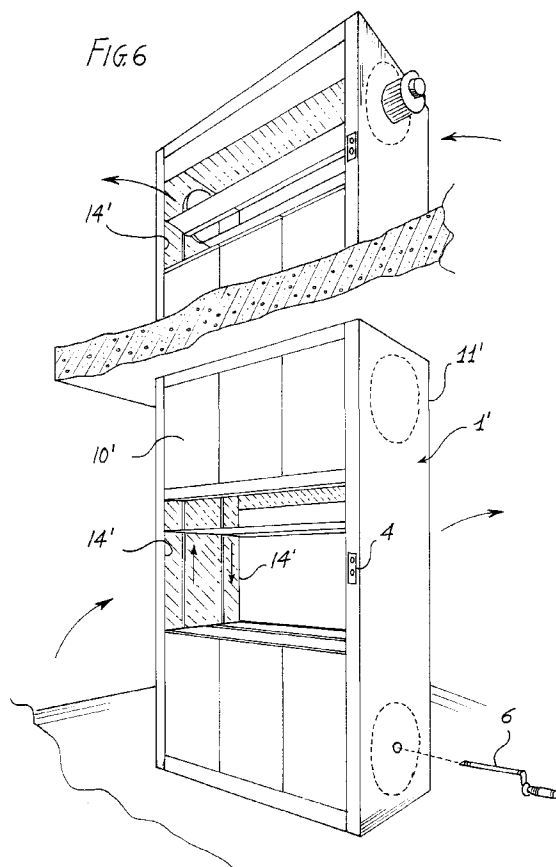
(74) Representative: **Lanzoni, Luciano**
c/o Bugnion S.p.A.
Piazza dei Re di Roma, 21
00183 Roma (IT)

(30) Priority: **13.12.1996 IT RM960863**

(71) Applicant: **Galtieri, Giuseppe**
98100 Messina (IT)

(54) **Temperature controlled multi-purpose food storage pantry usable in the provision of collective meal services and method for preserving ready servings in dishes in said pantry**

(57) The subject of the present invention is a temperature controlled multipurpose food storage pantry usable in the provision of collective meal services. A pantry (1; 1') comprises: a "parrel truck" conveyor (2); heating means (31) and chilling means (32) located inside the pantry (1; 1'); at least one openable wing (15) on the forward and rear face (10, 11; 10', 11') of the pantry (1; 1') to guarantee manual access to the shelves (30), the wing (15) being able to serve also as a counter. The pantry (1') can extend over multiple storeys of a building and be used to transfer dishes with food servings. The invention also relates to a method for preserving ready servings in dishes in said pantry.



EP 0 847 719 A2

Description

The present invention relates to a temperature controlled multi-purpose food storage pantry usable in the provision of collective meal services.

The invention also relates to a method for preserving ready servings in dishes in said pantry.

Companies specialising in the preparation and distribution of complete meals for communities and large groups of people, but especially common restaurants often choose to make the dining room as ample as possible, in order to increase the number of seats, to the detriment of spaces destined for services.

Moreover, in restaurants it often occurs that, in case of wedding banquets, conferences and the like, the dishes are prepared even as long as a few hours before they are served at the tables. This is because the instantaneous preparation, at the moment of distribution, of certain elaborate dishes, such as hors d'oeuvres, fruit compositions and the like, in hundreds of servings, would entail the temporary employment of additional personnel, with an evident increase in operating costs.

Unfortunately, preparing the dishes beforehand, to obviate the lack of personnel, requires an extraordinary enlargement of areas destined for services.

Additionally, if the dining room is located on a different storey from the one where the dishes are prepared, it is also necessary to overcome the problem of the fast transfer, from one storey to the other, of the dishes, avoiding time wastage, the loss of the organoleptic properties of the dishes, etc.

From the above considerations pertaining to situations that can easily be encountered in the field of meal services, the need is evident to find spaces suitable to "lay out" a quantity of dishes with related servings, where they can be preserved in the optimal manner. The current use of trolleys or of service rooms destined to this purpose does not satisfy restaurateurs, on one hand because it requires the inefficient and forced occupation of spaces which could be used in a more rewarding fashion, and on the other hand because it forces restaurateurs to provide temperature control to large spaces to prevent the deterioration of the servings stored therein, or at least to a loss of their organoleptic properties. Moreover, the use of current lifts for transporting the servings and for removing the dirty dishes to the washing area is certainly not satisfactory due to the small capacity and to the transport which often leads to wasting a great amount of time, based as it is on back and forth runs, i.e. on a non continuous route.

The object of the present invention is therefore to provide a solution to the aforementioned problems, in the first place by providing the capability to use in an optimal manner the space which can be destined to storing the dishes, and without entailing any damage to the profitability of the food service operation, in the second place by preserving the various servings in the optimal manner so they do not lose their organoleptic properties,

in the third place by allowing for a rapid transport of the servings and a return of the used dishes to the service area, in particular to the washing area.

In its first aspect, the invention, as it is characterised by the claims that follow, solves the problem of providing a temperature controlled multi-purpose food storage pantry usable in the provision of collective meal services, which from a general point of view is characterised in that it comprises:

a "parrel truck" conveyor, positioned in the thermally insulated internal space of said pantry and including at least one driving shaft and one driven shaft with axes that are mutually parallel and perpendicular to the sides of said pantry, shafts having, splined onto their respective ends, pulleys whereon are engaged related transmission organs; shelves being irremovably held, at their ends, by said transmission organs; means for heating the interior of said pantry; means for chilling the interior of said pantry; at least one wing, openable on the front and rear face of said pantry, for manual access to said shelves.

Advantageously, said at least one wing is a revolving wing serving, within said pantry, as a counter supported horizontally by diagonal holding rods.

Moreover, if required, the pantry can extend in height over multiple storeys of the building wherein it is installed, passing through at least one floor thereof.

In its second aspect, the invention accomplishes a method for preserving ready servings in dishes which employs the food storage pantry according to the present invention, wherein serving dishes are placed on the shelves of said "parrel truck" conveyor in the internal space of the pantry and the conveyor is in continuous motion in the internal space, so that the dishes periodically pass through thermal gradient fields created by the heating means or by the chilling means.

The advantages obtained by means of the present invention shall be inferred from the considerations that follow.

The pantry with its movable shelves contains a large number of dishes, thanks to the exploitation of space vertically, rather than horizontally.

It allows even a single operator to place a good quantity of servings in dishes, using idle times for preparation, even four to eight hours before serving. Once this "dishing" work is complete, the pantry will be closed, thus obtaining a high level of hygiene, and temperature control will be switched on at the desired temperature thanks to the heating and chilling means.

While temperature control is applied, to prevent large temperature swings due to the localisation in certain positions of the heating or chilling means, the continuous motion of the conveyor periodically moves the dishes closer and farther away from said means, thus preventing temperature differences between the various dishes, dangerous both for their handling and for the adequate preservation of the servings.

A consequent advantage of the pantry is that of al-

ways allowing an excellent service, since servings prepared some time in advance can be served rapidly to a great number of customers or guests, without hitches or delays.

Additional characteristics and advantages of the present invention shall be made more evident in the detailed description that follows, of preferred embodiments shown purely by way of non limiting example in the enclosed drawings, in which:

- Figure 1 shows the prospective view of a first embodiment of a food storage pantry according to the present invention, in an open position;
- Figure 2 shows in axonometric view a "parrel truck" conveyor mounted inside the food storage pantry according to the present invention;
- Figure 3 shows in enlarged prospective view an end detail of a shelf of the conveyor as per Figure 2;
- Figure 4 shows schematically in a section according to a vertical plane, the food storage pantry as per Figure 1;
- Figure 5 shows schematically in partial section according to a vertical plane, the food storage pantry as per Figure 1, in a position with counter;
- Figure 6 shows in prospective view a second embodiment of a food storage pantry according to the present invention.

In accordance with the present invention, in the figures the numbers 1, 1' indicate food storage pantries and the number 2 indicates a "parrel truck" conveyor, positioned in the thermally insulated internal space of the pantry 1, 1'.

As shown in Figure 1, in a first embodiment the pantry 1 presents a front side or face 10, a rear side or face 11, a right side 12 and a left side 13. At least one side, the front face 10 in Figure 1, presents an opening 14 preferably in an intermediate area with respect to the height of the cabinet and over the entire length of the pantry 1. The front face 10 is closed with panelling 15, whilst the opening 14 is closed with a revolving wing 15, as shall be better shown in Figure 4. It is in any case evident that other forms of opening and of closing door, different from the revolving wing, can be provided for.

As shown in Figures 2, 4 and 5, perpendicularly to the sides 11 and 12 are rotationally supported a driving shaft 20, driven by a motor 21, and a driven shaft 22, mutually parallel. As shown in Figures 2 and 3, the shafts 20, 22 have, splined onto the respective ends, pulleys 23, 23a, 24, 24a and at least another idle pulley 25, 25a (in the embodiment in Figure 6). On the pulleys 23, 23a, 24, 24a, 25, 25a are engaged related transmission organs 26, 26a. In the embodiment shown the aforesaid pulleys are gear wheels, whilst the transmission organs are chains, but obviously transmissions of different kinds can be adopted.

As is better shown in Figures 2 and 3, the links 260 of the transmission 26 bear at regular intervals support

pivots 27. Each pivot 27 receives an arm 28 of a support structure 29, for instance a trellis structure, for a support plane 29a, to constitute overall an extended shelf 30, free to oscillate on pivots 27 at each of its ends. Each shelf 30 is destined to serve as a support for dishes (not shown in the figures). Therefore, the multiple dish-bearing shelves 30 are held irremovably, at their ends, by the transmission organs 26, 26a. On each support plane 29a of each shelf 30 can be provided anti-skid strips (not shown) to prevent dishes from falling as a result of possible rocking motions of the shelves in their movement.

In the interior space of the pantry 1 are provided heating means and chilling means, shown schematically respectively as 31 and 32. The heating means 31 are constituted by electrical resistors set low in the interior space of the pantry 1, 1', or possibly by other heat sources. The chilling means 32 are constituted by a refrigeration apparatus whose evaporation coils are set high in the internal space of the pantry 1, 1'.

It is thus possible to realise a method for preserving ready servings in dishes in a pantry as described above. According to this method, the servings are placed on the shelves of the "parrel truck" conveyor and the latter is in continuous motion in the internal space of the pantry, so that the dishes periodically pass through temperature gradient fields created by the heating means 31 or by the chilling means 32, made operational, in mutually exclusive fashion, according to the servings and to the related preservation requirements. A temperature control is created, which would be difficult to accomplish with other means, characterised by a uniform temperature of the various dishes inside a particularly large space, which as is evident presents different temperatures from point to point, given the localised concentration of the heating and chilling sources.

As shown in Figure 4, the revolving wing 15 is hinged around an axis X-X, and the opening 14 is shut by making the wing 15 revolve upwards, i.e. counter-clockwise, until it reaches its newly vertical position (shown with dashed and dotted lines), held by latching means 16. As shown in Figure 5, the revolving wing 15, after the removal of a certain number of dish-bearing shelves (shown with dashed lines in Figure 5), can revolve by an additional 90° angle counter-clockwise, bearing down on two coplanar shelves 29b, 29b, to serve as a counter. For additional safety, in this position, the swivelling wing 15 is held by at least a pair of diagonal rods 18.

Therefore, in the absence of a large workload, the pantry 1 can be transformed into a work counter, with the lower space having sliding wings and related heated shelves.

The pantry as described can serve as a container for ready servings in a temperature-controlled environment, but, in its second embodiment designated as 1' and shown in Figure 6, it can also serve as a conveyor, passing through one or more floors of the building wherein it is installed. In this case the pantry 1' can also

be employed to transfer servings from one storey to another, possibly also to non consecutive ones. The pantry 1', at each floor can present openings 14', both in the front face 10' and in the rear face 11'. This is particularly useful, to exploit the structural opportunities of a hotel, of a restaurant or of other kinds of spaces. For instance, the servings can be loaded, on one floor, from one face of the pantry and they can be off-loaded, on another floor, from the same face or from the opposite one. The same goes for the opposite route of the used dishes to be sent to the washing area. The arrows indicate a possible movement route. Communication system can be adopted, to be used by the staff to regulate the aforementioned movement.

As shown in Figures 1 and 6, the numbers 4 and 5 indicate selection and control means, for instance for driving the "parrel truck" conveyor, for the purpose of stopping the conveyor in correspondence with the desired wing and of regulating the temperature within the pantry. If the pantry is inoperative, for example, due to an electrical power outage, it can easily be manoeuvred with the crank 8.

The invention thus conceived can be subject to numerous modifications and variations, without thereby departing from the scope of the inventive concept. Moreover, all components may be replaced with technically equivalent elements.

In practice, modifications and/or improvements are obviously possible without thereby departing from the scope of the following claims.

Claims

1. Temperature controlled multi-purpose food storage pantry usable in the provision of collective meal services, characterised in that it comprises:
 - a "parrel truck" conveyor (2), positioned in the thermally insulated internal space of said pantry (1;1') and including at least one driving shaft (20) and one driven shaft (22) with axes that are mutually parallel and perpendicular to sides (12, 13) of said pantry, shafts (20, 22) having splined onto the respective ends, pulleys (23, 23a, 24, 24a) whereon are engaged related transmission organs (26, 26a); shelves (30) being irremovably held, at their ends, by said transmission organs (26, 26a);
 - means (31) for heating the interior of said pantry (1;1');
 - means (32) for chilling the interior of said pantry (1;1');
 - at least one wing, openable on at least one front or rear face (10,11;10', 11') of said pantry (1;1'), for manual access to said shelves (30).
2. Pantry according to claim 1, characterised in that

said pulleys (23, 23a, 24, 24a) are gear wheels and said transmission organs (26, 26a) are chains with rollers bearing equidistant horizontal pivots (27) for supporting end arms (28) integral with said shelves (30).

3. Pantry according to claim 1, characterised in that said heating means (31) comprise electrical resistors set low in the internal space of the pantry (1,1').
4. Pantry according to claim 1, characterised in that said chilling means (32) comprise a refrigeration apparatus whose evaporator coils are set high in the internal space of the pantry (1,1').
5. Pantry according to claim 1, characterised in that said at least one wing is a revolving wing (15) serving, when flipped over within said pantry, as a support surface held up horizontally by diagonal holding rods (18).
6. Pantry according to claim 1, characterised in that on the front and rear face (10,11) of said pantry (1) two wings are provided.
7. Pantry according to claim 6, characterised in that said two wings are obtained correspondingly on the front and rear faces (10, 11) of said pantry (1).
8. Pantry according to claim 1, characterised in that it extends for multiple storeys of the building wherein it is installed, passing through at least one floor thereof.
9. Pantry according to claim 1, characterised in that on the front and rear face (10', 11') of said pantry (1') four wings are provided.
10. Pantry according to claim 9, characterised in that said four wings are realised two by two corresponding on the front and rear faces (10', 11') of said pantry (1').
11. Pantry according to claim 1, characterised in that selection and control means (4, 5) are provided for stopping said shelves (30) in correspondence with said wings.
12. Method for preserving ready servings in dishes employing a food storage pantry, characterised in that said pantry comprises a "parrel truck" conveyor (2), positioned in the thermally insulated internal space of said pantry (1;1') and including at least one driving shaft (20) and one driven shaft (22) with axes that are mutually parallel and perpendicular to sides (12, 13) of said pantry, shafts (20, 22) having, splined onto the respective ends, pulleys (23, 23a, 24, 24a) whereon are engaged related transmission

organs (26, 26a); shelves (30) being held irremovably, at their ends, by said transmission organs (26, 26a); means for heating (31) the interior of said pantry (1; 1'); means for chilling (32) the interior of said pantry (1; 1'); at least one wing, openable on at least one front or rear face (10, 11; 10', 11') of said pantry (1; 1'), for manual access to said shelves (30); selection and control means for stopping said shelves (30) in correspondence with said at least one wing; and that serving dishes are placed on the shelves of said "parrel truck" conveyor (2) in continuous motion inside said internal space, so that said dishes periodically pass through thermal gradient fields.

13. Method according to claim 12, characterised in that said thermal gradient fields are created by said heating means (31).
14. Method according to claim 10, characterised in that said thermal gradient fields are created by said chilling means (31).

25

30

35

40

45

50

55

