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(54) Storage column for food dispensers

(57) Storage column (13) for food dispensers (10), the food dispensers (10) comprising a containing shell (12), a refrigerating chamber (27) with a storage column (13) to temporarily hold the pre-packed foodstuffs (11) and a distribution zone (16) equipped with a reception chamber accessible for the user, with a possible oven (28) to pre-heat the foodstuffs to be distributed, the storage column (13) comprising at least a system with movable blades (25) comprising a plurality of blades (25) distributed along the height of the column (13), each movable blade (25) defining a first condition wherein the cooled pack (11) rests and is preserved and a second condition wherein the cooled pack (11) is discharged into the reception chamber of the distribution zone (16).

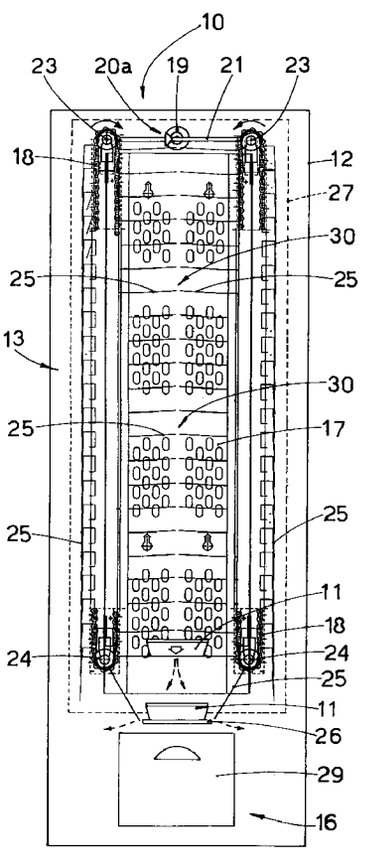

fig.1

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Description

FIELD OF THE INVENTION

[0001] This invention concerns a storage column for food dispensers to dispense food products as set forth in the main claim.

[0002] The invention is applied in the production of equipment or containers to dispense hot or cold food in individual packs which are temporarily stored in a refrigerated structure and then, after selection by the user, they are removed from the refrigerated structure and made available to the user.

BACKGROUND OF THE INVENTION

[0003] The state of the art includes automatic dispensers for pre-packed foods with possible pre-heating of the food before it is removed by the purchaser.

[0004] The European patent EP-B-482.473 describes an automatic dispenser for hot, pre-packed foods comprising a containing shell, a refrigerating chamber for the temporary storage of the pre-packed foodstuffs, an oven located below the refrigerating chamber and equipped with a reception chamber for the individual refrigerated dish, a door which can be opened on command and a movable preparation surface mechanically connected to the oven door.

[0005] The dispenser described in EP'473 also comprises a removal device located on the lower side of the refrigerating chamber and is suitable to remove a dish from the chamber and to arrange it on the preparation surface, and a distribution zone accessible to the user.

[0006] In the automatic dispenser described, inside the refrigerating chamber there is a dispenser consisting of a drum rotating around a vertical axis and comprising a plurality of tubular loaders arranged in a circle, each containing a plurality of refrigerated dishes.

[0007] The refrigerating chamber also cooperates with a movable closing element located below the tubular loaders and above the preparation tray when the tray is in the loading position.

[0008] Documents GB-A-508.143, US-A-2.176.823, US-A-2.488.798, US-A-2.791.889 and US-A-3.075.670 all describe automatic dispensers with a refrigerated chamber equipped with a storage drum rotating around a vertical axis and defining a plurality of compartments for products arranged inside.

[0009] When the user makes a selection, this activates the rotation of the rotary store and the pack of food is delivered first to the heating device and then to the user.

[0010] This embodiment, with the rotary storage drum, has not shown itself to be the best solution in practice from the point of view of construction and functioning, because of the complex movements involved, the power employed, the limited separation between the different packs with a consequent possible contamination of smells and reduced insulation, and also because of the frequent mechanical problems and wear on the component parts.

[0011] Moreover, systems known to the state of the art with a rotary drum and tubular stores are unsuitable in the case of particular wrappings or packs for foodstuffs, and also in the case of packs with an irregular shape.

[0012] Systems known to the state of the art are also often limited by the height of the pack, and every column can normally house only a single type of product with a fixed height.

[0013] The present applicant has designed and embodied this invention to overcome all these shortcomings with a solution which is extremely practical, flexible, functional, easy to construct and simple to operate.

SUMMARY OF THE INVENTION

[0014] The invention is set forth and characterised in the main claim, while the dependent claims describe variants of the idea of the main embodiment.

[0015] The purpose of the invention is to provide a storage column for individual packs of foodstuffs, to be used in an automatic food dispenser, whether the food be preheated or not; the column according to the invention is more versatile, flexible and functional than those used at resent in the state of the art.

[0016] Another purpose is to reduce the movements required for every sales cycle and therefore also the times required to unload the pack from the refrigerating chamber to the distribution zone.

[0017] A further purpose of the invention is to provide a storage column which is not constrained by the sizes or shapes of the pack of foodstuff stored inside; in fact, a limited range of columns according to the invention can house packs or food products of any shape or wrapping and of different sizes in a very wide range.

[0018] A food dispenser may contain even more than one storage column according to the invention.

[0019] According to the invention, the storage column consists of a rigid outer container and a system of movable blades mounted on relative rotary chains or belts.

[0020] The movable blades have two functions: to maintain the individual packs of food separate from each other in the refrigerating chamber, and to deliver them, once the user has made his/her selection, during every sales cycle.

[0021] In one embodiment, the movable blades are attached to a chain or belt rotating around two wheels or pulleys, respectively upper and lower.

[0022] Each blade defines, together with the blade immediately above and below, the chamber to contain and cool the pack of food.

[0023] At the lower part of the storage column, the rotation of the blade around the lower pulley causes the pack of food to be unloaded into the preparation chamber of the oven.

[0024] According to a variant, there are two chains or belts supporting the blades for every storage column and are arranged one opposite the other.

[0025] The chains or belts rotate in synchrony with each other, since the respective drive means are shared by both, or they are synchronised mechanically or electrically.

[0026] In a defined vertical position of the storage column, advantageously at a high position of the column, the blades associated with one of the chains or belts couple with the blades associated with the other chain or belt so as to define a supporting plane on which the pack of food is housed, prior to being possibly heated and then delivered.

[0027] At the lower part of the storage column, the rotation of the chain or belt after selection has been made by the user causes the coupled blades to open and therefore the pack of food held therein is discharged in correspondence with the delivery zone or the possible oven, which during the unloading step puts itself temporarily in a position to receive the pack.

[0028] The procedure of delivering the heated food may be made in any desired manner.

[0029] Using a storage column with this configuration, as can readily be understood from the above, and as will be made clearer by the detailed description which follows, considerably reduces the complexity of the movements, the stress undergone by the components and the power used, and also reduces to a minimum the operating times of every cycle of distribution.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030] The attached Figures are given as a non-restrictive example and show a preferential embodiment of the invention, as follows:

Fig. 1 is a diagram of a storage column according to the invention associated with a dispenser of food products;
Fig. 2 is a side view of Fig. 1;
Fig. 3 is a view from above of Fig. 1;
Fig. 4 is a diagram, seen from above, of a dispenser of food products using six storage columns according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0031] Figs. 1 and 2 show a diagram of a dispenser 10 for food products 11, in this case, packed in trays, with a box-like structure 12 containing a storage column 13 according to the invention.

[0032] The variant shown in Fig. 4, on the contrary, shows a dispenser 10 containing six storage columns 13; this embodiment is employed particularly in dispensers 10 selling several types of food product 11.

[0033] In this variant, the rear part, or rigid structure 17, of each storage column 13 is associated with a structure 14, in this case hexagonal, which is suitable to rotate around a vertical axis 15.

[0034] This allows each storage column 13 to move sequentially and stop, after the user has made his/her selection, in correspondence with the distribution zone 16.

[0035] The following description concerns the case of a storage column 13 wherein each containing seating is defined by a pair of facing blades 25, each blade 25 of the pair rotating around a respective chain 18 or belt. However, the invention also provides for the case wherein there is a single chain 18 supporting the plurality of blades 25 which define the containing seating for the pack of food.

[0036] Moreover, the description concerns the case wherein there is a dispenser of hot foods with an oven located below the storage column, but the invention may also be applied in the case of a dispenser of unheated foods.

[0037] The storage column 13 according to the invention consists of a rigid structure 17 which supports a pair of rotary chains 18 arranged opposite each other in correspondence with a respective side of the rigid structure 17.

[0038] The chains rotate in synchrony and are driven by an electric motor 19.

[0039] To be more exact, the electric motor 19, as shown in detail in Fig. 3, by means of a gear 33 solid therewith and a key 32, drives a first bevel gear 20a which makes a shaft 21 rotate, the shaft 21 being orthogonal to the exit axis of the motor 19, at the ends of which there are respective bevel gears 20b.

[0040] Each bevel gear 20b makes a respective shaft 22 rotate, orthogonal to the shaft 21, on the outer end of which there is solidly associated a toothed wheel 23 each of which drives the respective chain 18.

[0041] Both the toothed wheels 23 cooperate at the lower part with a respective toothed wheel 24 to return and tension the chain 18.

[0042] According to the invention, each chain 18 carries a plurality of blades 25, in this case associated with the pins of the chains 18, whose function is to keep the individual packs 11 of foodstuffs separate and also to deliver them at every sales cycle.

[0043] In this case, the storage column or columns 13 are contained in a refrigerating chamber 27, shown in the Figures with a line of dashes, and at every sales cycle the blades 25 unload a pack of foodstuff 11 onto a movable tray 26.

[0044] The movable tray 26 is moved from the unloading zone located under the storage column 13 into an oven 28 to heat the foodstuff 11, and subsequently to the distribution zone 16 where there is a removable drawer, or window, 29 accessible to the user.

[0045] According to the invention, the blades 25 are mounted radially on the chains 18 and, in the upper part of the storage column 13, the blades 25 associated with

the right chain 18 are aligned with the blades 25 associated with the left chain 18 so as to define a supporting plane 30 on which the pack of foodstuff 11 is housed prior to heating and distribution.

[0046] In the lower part of the storage column 13, the rotation of the chains 18 causes the aligned blades 25 to open and therefore the pack 11 to be unloaded onto the tray 26.

[0047] In this case, in order to reduce the horizontal space occupied by the storage column 13, each blade 25 is made in two parts, respectively the inner part 25b and the outer part 25a, associated with each other by a hinge 31.

[0048] The hinge 31 is suitable to make the outer part 25a rotate in one direction by about 90° with respect to the inner part 25b and, in the opposite direction, to clamp the outer part 25a in a position aligned with the inner part 25b.

[0049] In this way, as can be seen in Fig. 1, each blade 25, when it passes in the inner part of the storage column 13, bends back substantially in half, thus occupying a minimum space, whereas when it passes through the inner part of the storage column 13 it unfolds, and arranges itself in a substantially horizontal position.

Claims

1. Storage column (13) for food dispensers (10), the food dispensers (10) comprising a containing shell (12), a refrigerating chamber (27) with a storage column (13) to temporarily hold the pre-packed foodstuffs (11) and a distribution zone (16) equipped with a reception chamber accessible for the user, with a possible oven (28) to pre-heat the foodstuffs to be distributed, the storage column (13) being characterised in that it comprises at least a system with movable blades (25) comprising a plurality of blades (25) distributed along the height of the column (13), each movable blade (25) defining a first condition wherein the cooled pack (11) rests and is preserved and a second condition wherein the cooled pack (11) is discharged into the reception chamber of the distribution zone (16).

2. Storage column as in Claim 1, characterised in that the system with movable blades (25) comprises a plurality of pairs of facing blades (25) defining a first aligned condition wherein the pack (11) is supported and preserved and a second open condition wherein the pack (11) is discharged.

3. Storage column as in Claim 1 or 2, characterised in that the movable blades (25) are associated with respective movement means (18) arranged inside the containing shell (17).

4. Storage column as in Claim 2, characterised in that the movement means (18) of each blade (25) of the pair of blades (25) face each other and are synchronised.

5. Storage column as in any claim hereinbefore, characterised in that the movement means (18) are chains.

6. Storage column as in any claim hereinbefore, characterised in that in the first condition wherein the pack (11) is supported and preserved, the movable blades (25) keep the individual packs (11) separate.

7. Storage column as in any claim hereinbefore, characterised in that the second condition, wherein the cooled pack (11) is unloaded, is functionally governed by the opening or rotation of the blades (25) in correspondence with the reception chamber of the oven (28).

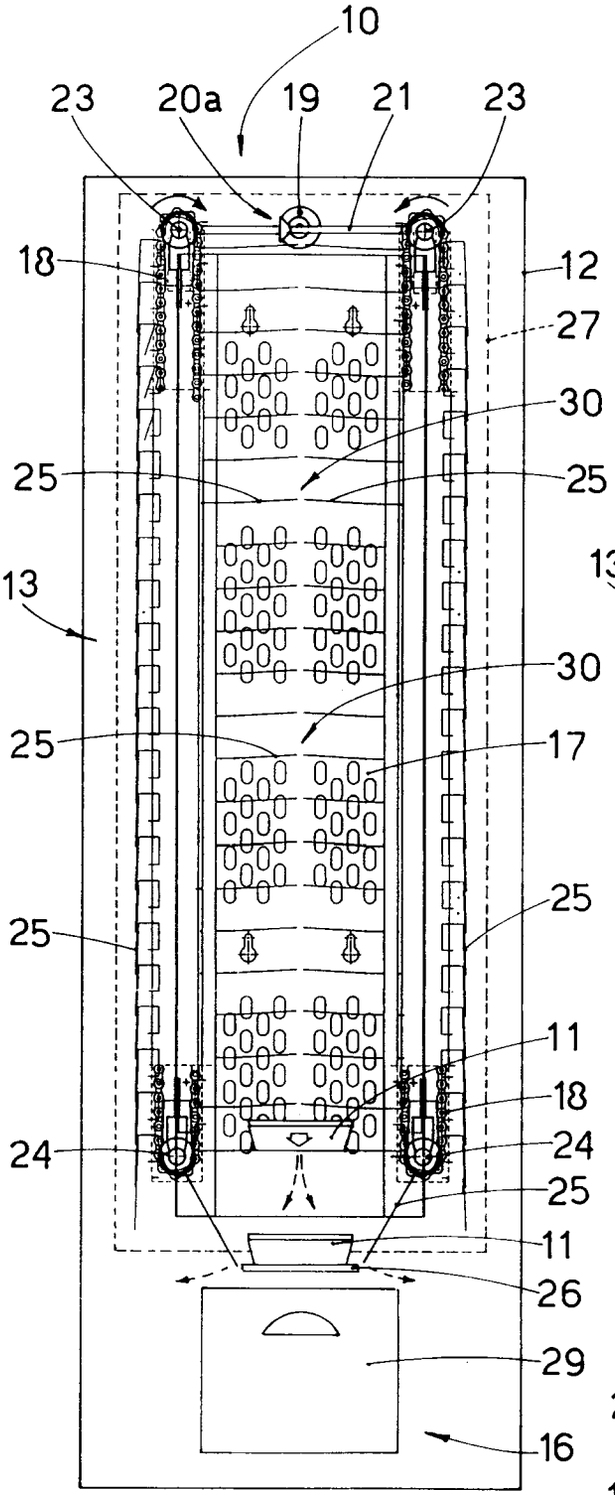
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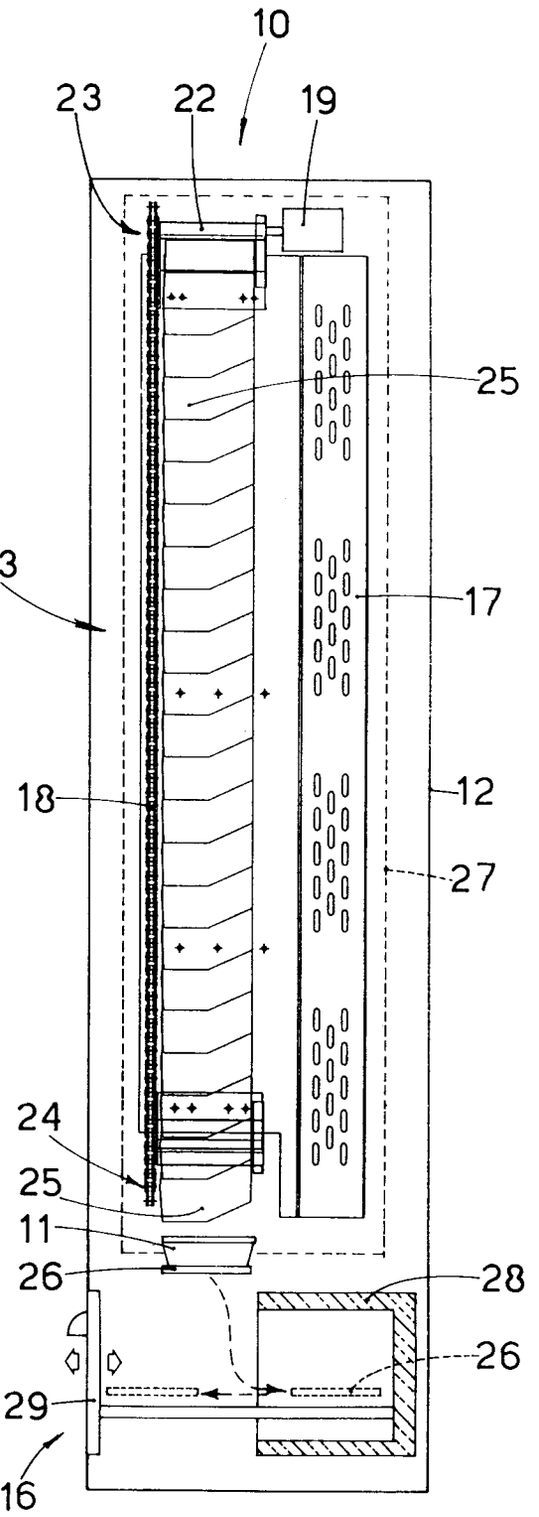
fig.1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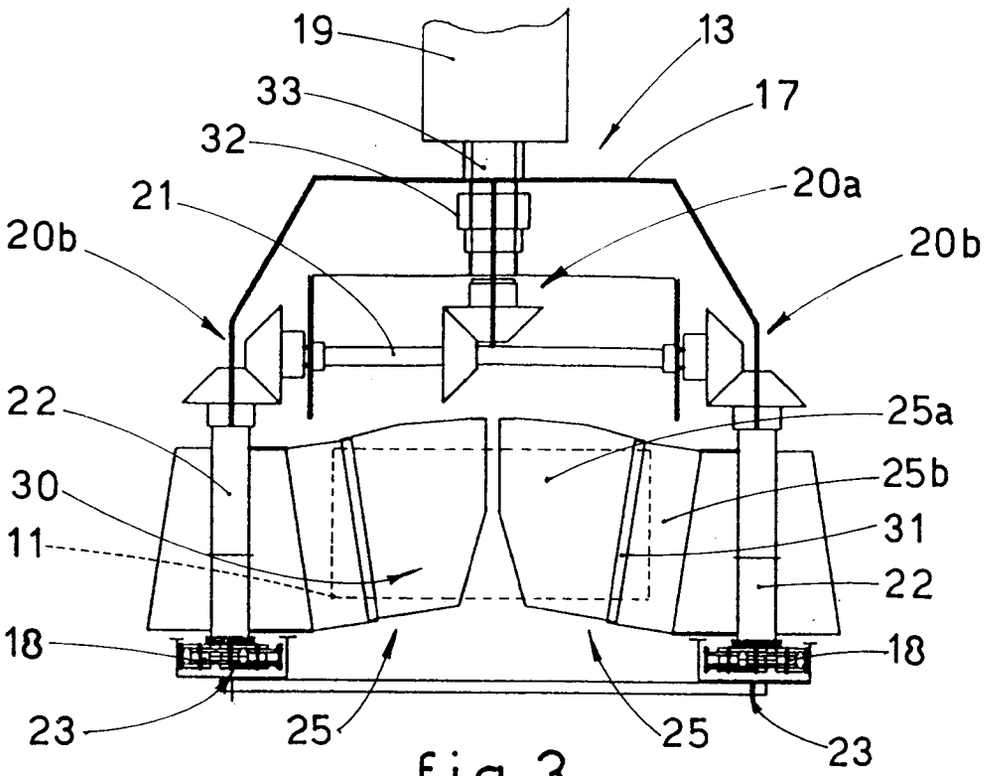
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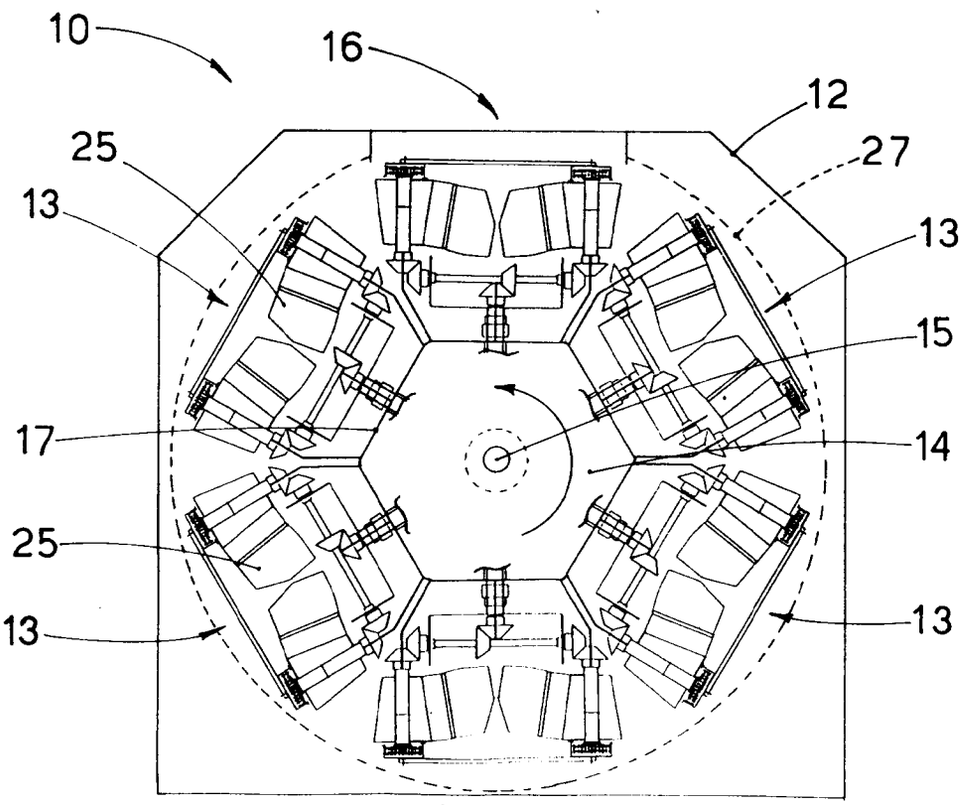
fig.3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