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(71) Applicant: **De Blasi, Franco**
61032 Fano (PU) (IT)

(72) Inventor: **De Blasi, Franco**
61032 Fano (PU) (IT)

(74) Representative: **Negrini, Elena**
Agazzani & Associati S.r.l.
Via dell'Angelo Custode 11/6
40141 Bologna (IT)

(54) Refrigerator

(57) Refrigerator ice cream showcase with reduced energetic consumption and with increased protection of the contained products, is provided with two thermo-insulating transparent panels (7) and (8) placed above basins (4) and (5), to which may be extended in order to cover the whole refrigerated place or superimposed towards the external edge to free the basins internal row and in this position, if required, can be raised by rotation, to keep accessible all the basins.

The movements can be manually impressed or by motor means or actuators means.

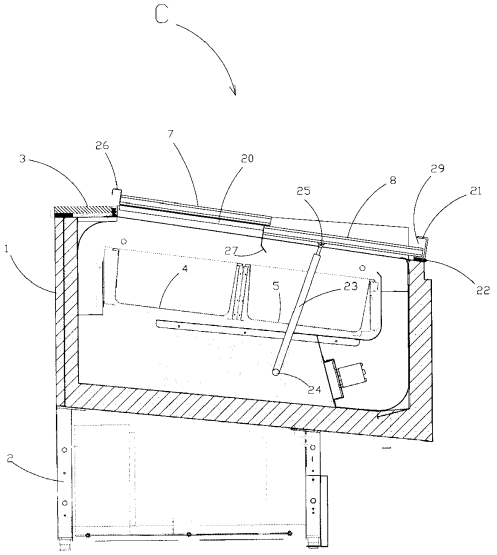

FIG.1

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Description

[0001] The present invention refers to refrigerator showcases for loose ice-cream and similar and in particular it refers to a refrigerator ice cream showcase with reduced energetic consumption and with increased protection of the contained products.

[0002] The whisked ice-cream of industrial or artisan type is sold in suitable refrigerated showcases, equipped with basins containing different ice-cream types. Such showcases have an open side, to allow the operator to take the product with suitable spatula spoons.

[0003] The main disadvantage of the current showcases is the thermal dispersions through the duty opening.

[0004] Another disadvantage of the known showcases is the possibility of pollution or ice-cream contamination due to powders, bacteria or virus passing through the opening.

[0005] An additional disadvantage is the frequent defrosting need, because of the high humidity quantity contained in the air that settles in ice form on the pipes and on the heat exchanger thin plate. The defrosting needs to heat the entire cold zone: this operation involves considerable power consumption and causes damages to the exposed ice-cream.

[0006] The objects of the invention are to reduce the thermal dispersions, to ensure a greater integrity of the exposed and preserved products and to limit the defrosting operations.

[0007] The characteristics of the invention are evidenced in the following, with particular reference to the joined drawing tables, in which:

- figure 1 shows a transversal section of the showcase, with the space completely refrigerated closed by cover panels;
- figure 2 shows a transversal section of the showcase, with the panels superimposed in order to free a row of basins;
- figure 3 shows a transversal section of the showcase, with the superimposed cover panels and rotated in order to make accessible all the basins;
- figure 4 shows a plan view of the showcase;
- figure 5 shows a transversal section of the showcase with the superimposed cover panels and rotated by a motor.

[0008] Referring to figures 1 - 4, numeral 1 indicates the body of the refrigerator showcase, supported by a base 2. Numeral 3 indicates a duty plane. Numerals 4 and 5 indicate two rows of basins containing ice-cream or similar products. Numerals 7 and 8 indicate respectively a first and a second thermo insulating transparent panel placed above the rows 4 and 5 of the ice-cream basins, as far as not to limit their retaining ability and not to block the cold air flow that licks the same basins.

[0009] The first panel 7 slides on guides 20 fixed to the opposite lower sides of the refrigerated space and placed at a height corresponding to that of the upper surface of the panel 8, in such a way to allow the overlap of the two panels, as shown in figure 2 in correspondence with an intermediate condition I.

[0010] When the two panels 7 and 8 are placed in superimposed position, namely in the intermediate condition I, theirs lower external edges are inserted in a groove 29 of a longitudinal bar 21 engaged to the lower external edge of the refrigerated space by hinge means 22, essentially made up by a hinge.

[0011] A couple of gas pistons 23 are interposed between the refrigerated space showcase and the second panel 8 presenting an end hinged in the point 24 to the body 1 of the showcase and the other end in the point 25 to the second panel 8, thus facilitating the lifting by rotation of the two superimposed panels, compensating their weight.

[0012] To facilitate the sliding of the first panel 7 over the second panel 8 in addition to the guides 20 there is the upper handle 26 protruding upwardly from the first panel 7, while for lifting the two superimposed panels 7, 8 there is the lower handle 27, protruding downwardly from the edge of the second panel 8.

[0013] The thermo insulating panels 7, 8 are preferably made up by couples of plate glass with internal chambers and are transparent.

[0014] The refrigerated showcase is furthermore provided with a traditional transparent cover, over the thermo insulating panels 7, 8, opened towards the duty side that is known and not shown.

[0015] In the preferred embodiment shown in the figures from 1 to 4, the operation of the refrigerated showcase provides the passage by a closing condition C in which the first heat-insulating panel 7 and the second heat-insulating panel 8 are placed above rows 4, 5 to the intermediate condition I in which the panels 7, 8 are superimposed thanks to the sliding, manually operated using the upper handle 26, of the first panel 7 over the second 8 in such a way to free the internal row 4 of basins and both panels are blocked in the groove 29 of the longitudinal bar 21.

[0016] Always manually and using the lower handle 27, the operator carries out the passage from the intermediate condition I to an opening condition A in which the superimposed panels 7, 8 are raised by rotation means of the longitudinal bar 21 around the pin means 22. In the opening condition A all the basin rows 4, 5 contained in the refrigerated space are accessible and the panels are almost vertical working as barrier facing the ice-cream buyers also working as hygienic protection of the latter product.

[0017] In the figure 5 is shown a variant of the refrigerator showcase in which the two superimposed panels 7, 8 lifting is obtained by a motor mean 30, for example a ratio-motor or actuator contained in the hinge means 28 which are tubular shaped.

[0018] The refrigerator showcase includes a sensor 31, for example placed at the groove 29, that is destined

to allow the motor mean 30 activation at the panels overlap 7, 8 or the closure at the incorrect overlap of the same panels.

[0019] The main advantage of the present invention is to supply a refrigerator showcase with two openable panels placed in position so as not to block the cold air flow of the cooling system and to differentiate more the temperature of the room containing the products from that of the external environment, so reducing the energetic use and preventing the product contamination through the duty opening.

[0020] Other advantage consists in the lower air volume contained in the refrigerated place and its lower thermal exchange with the outside so reducing the ice formations and therefore the need to frequent defrosting of the refrigerated place.

Claims

1. Refrigerator ice cream showcase with reduced energetic consumption and with increased protection of the contained products, essentially comprising a cooling system and a refrigerated space with at least an internal (4) and external (5) row of basins containing the products, said showcase being **characterized in that** at least comprises a first thermal-insulation panel (7) and a second thermal-insulation panel (8) placed over the rows (4, 5) and sliding one above the other from a closing condition (C), in which panels (7, 8) are extended and cover the refrigerated space, to an intermediate condition (I), in which the first panel (7) is overlapped to the second panel (8) thus freeing at least the inner row (4) of the basins and both are blocked in correspondence of the external inferior edge of the refrigerated space by means of a longitudinal bar (21), to an opening condition (A) in which the overlapping panels (7, 8) are raised by rotating the longitudinal bar (21) around hinge means (22, 28) interposed between this latter and the inferior external edge of the refrigerated space, thus allowing accessible all basin rows (7, 8) contained in the refrigerated space.

2. Showcase according to claim 1 **characterized in that** at least the first thermal-insulation panel (7) slides on guides (20) fixed to opposite sides of the cooled space at the height corresponding to the upper surface of the second panel (8), so allowing the overlapping of the two panels (7, 8).

3. Showcase according to any of the preceding claims **characterized in that**, when the first (7) and second (8) panels are overlapped, the relative inferior external edges are inserted into a groove (29) of the longitudinal bar (21).

4. Showcase according to any of the preceding claims **characterized in that** to comprise gas pistons (23) interposed between the cooled space of the showcase and the second panel (8) fit to facilitate the raising by rotating the two overlapping panels (7) and (8), so compensating the weight.

5. Showcase according to any of the preceding claims **characterized in that** the passage of two thermal-insulation panels (7, 8) from the closing condition (C) to the intermediate condition (I) to the opening condition (A) and vice versa is made manually.

6. Showcase according to any of the preceding claims **characterized in that** the first panel (7) is supplied with an upper handle (26) destined to facilitate the sliding of the first panel (7) onto the second panel (8), and this latter is provided with an inferior handle (27) fit to facilitate the raising of the two overlapped panels.

7. Showcase according to any of the claims 1-4 **characterized in that** the hinge means (28) comprises motor means (30) designed to move the two thermal-insulation panels (7, 8) from the intermediate condition (I) to the opening condition (A) and vice versa.

8. Showcase according to claim 7 **characterized in that** comprises a sensor (31) fit for enabling the activation of the motor means (30) in correspondence of the overlapping of the panels (7, 8).

9. Showcase according to any of the preceding claims, **characterized in that** the thermal-insulation panels, first (7) and second (8), are constituted of glass room.

10. Showcase according to any of the preceding claims **characterized in that** the thermal-insulation panels, first (7) and second (8), are transparent.

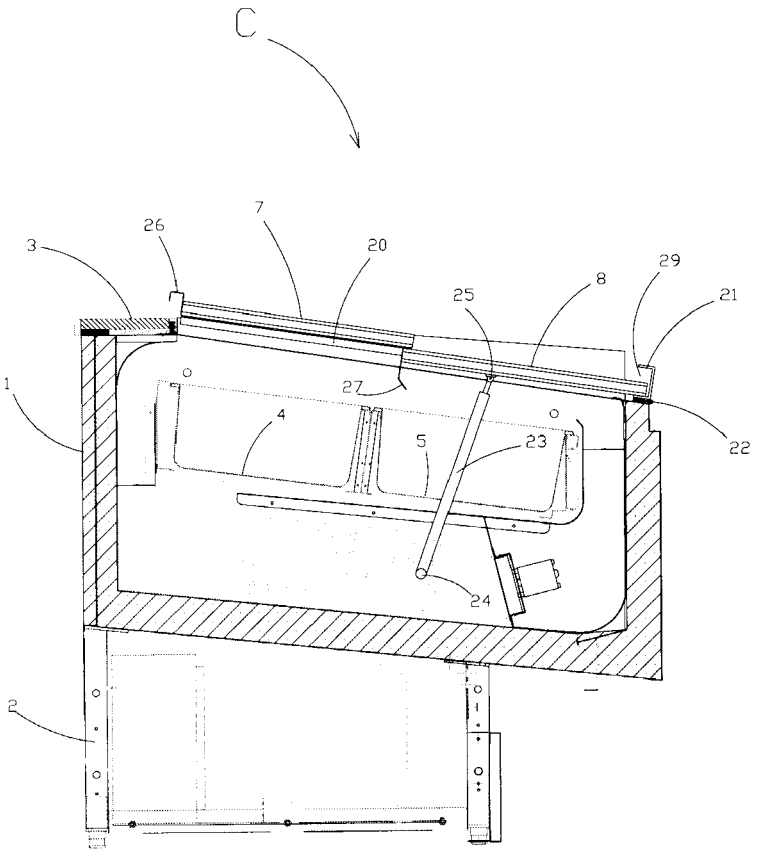

FIG.1

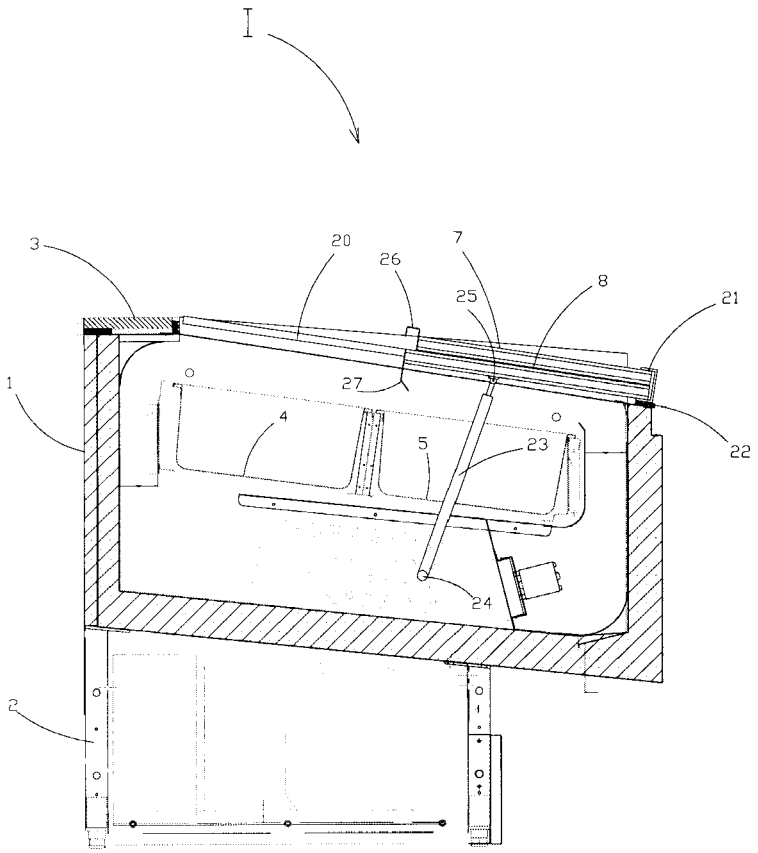

FIG.2

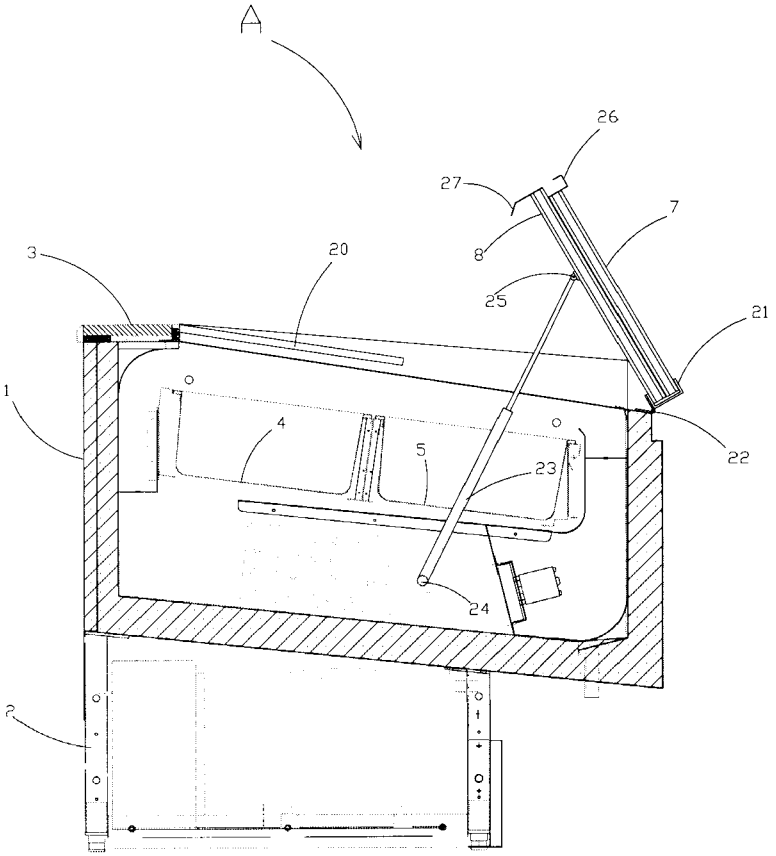

FIG.3

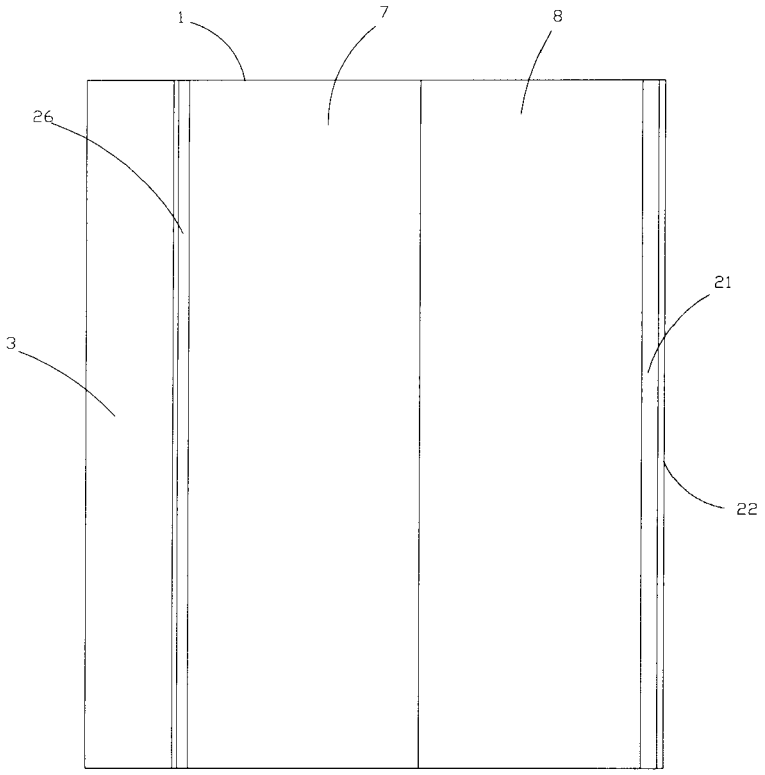

FIG.4

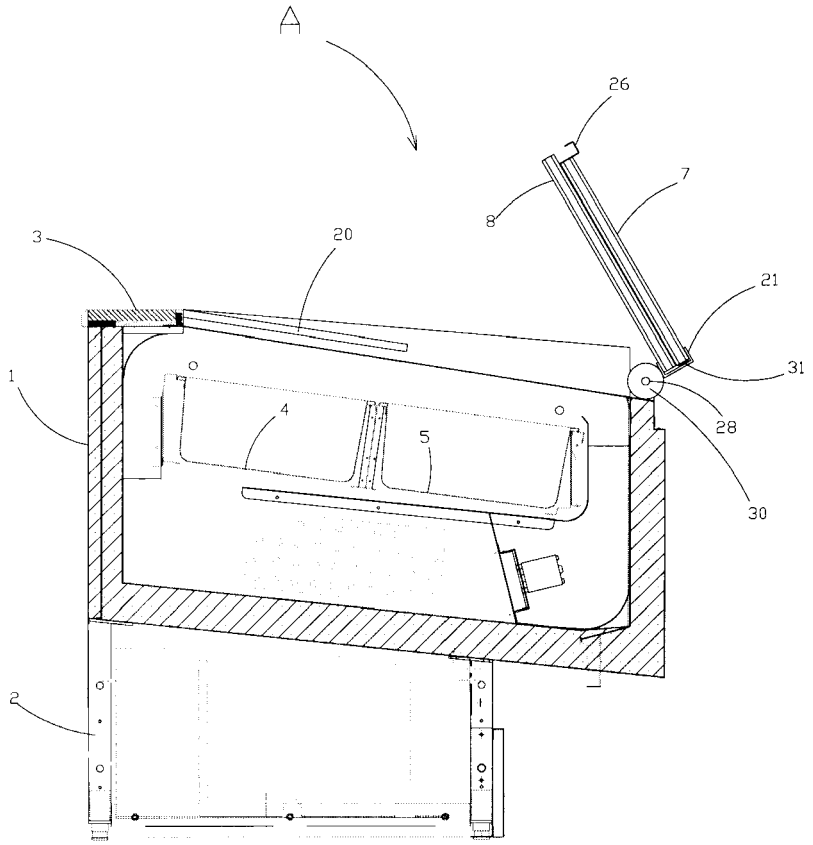

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 10 19 4387

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2008/028785 A1 (KIM BRIAN S [US]) 7 February 2008 (2008-02-07) * the whole document *	1-10	INV. A47F3/00 A47F3/04
A	WO 2004/100727 A1 (N E M NORD EST MECCANICA S N C [IT]; CIANETTI ALESSANDRO [IT]) 25 November 2004 (2004-11-25) * the whole document *	1-10	
A	US 3 360 316 A (SWANSON RICHARD H) 26 December 1967 (1967-12-26) * the whole document *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 March 2011	Cardan, Cosmin

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 19 4387

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
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03-03-2011

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82