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(54) **Refrigerator shelf, and refrigerator equipped with such a shelf**

(57) A shelf (1) defined by a flat supporting body (7) having a through opening (7a) sized to permit passage of the neck and/or main body of a bottle (8) positioned perpendicularly to the plane of the flat supporting body (7); and by a collar (9) fitted firmly inside the through

opening (7a) and having a number of flat, flexible projecting tabs (10) projecting from the collar (9) towards the centre of the through opening (7a) while remaining locally substantially coplanar with or at any rate parallel to the plane of the flat supporting body (7).

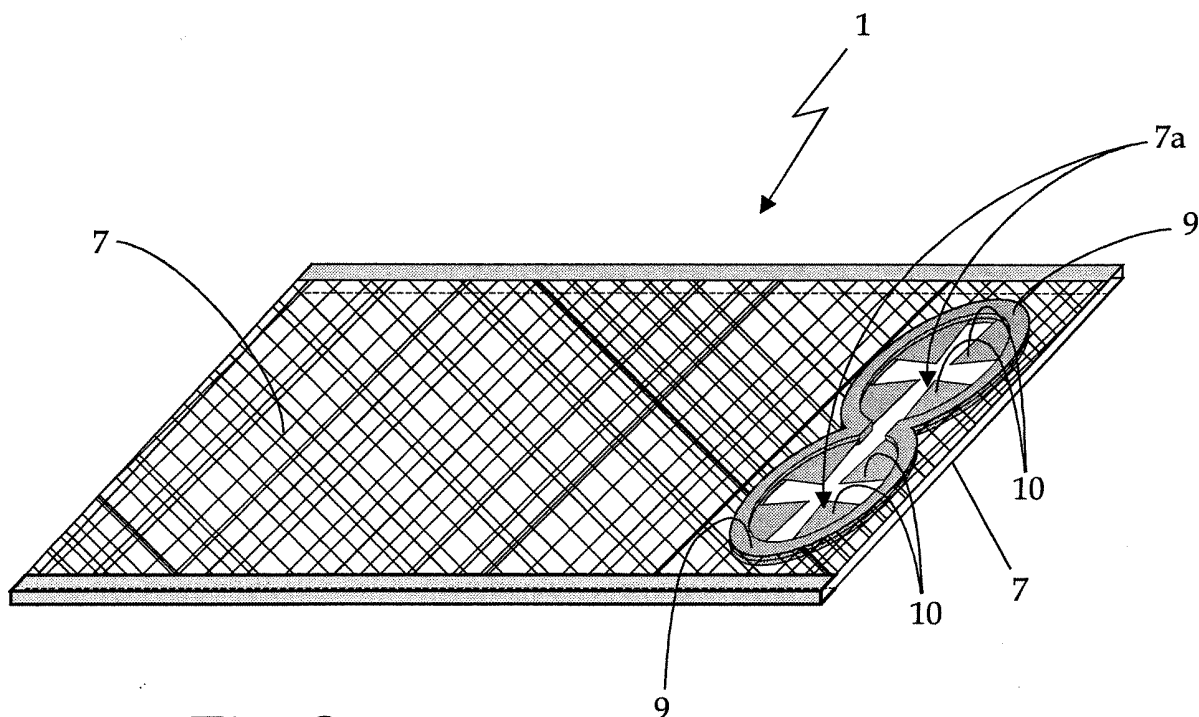


Fig. 2

Description

[0001] The present invention relates to a refrigerator shelf, and to a refrigerator equipped with such a shelf.

[0002] More specifically, the present invention relates to a refrigerator shelf designed to receive upright bottles, to which application the following description refers purely by way of example.

[0003] As is known, though adjustable, the distance between the shelves in a home refrigerator is normally less than the height of a litre bottle, so that a litre bottle cannot be stood on any of the shelves in a perfectly upright position, as required in the case of an open or poorly sealed bottle.

[0004] Various solutions have been devised over the years to eliminate this drawback: British Patent GB-773215, for example, describes and illustrates a shelf defined by a rigid, rectangular grill, which has a through opening sized to receive the neck of at least one large upright bottle resting on the shelf underneath.

[0005] The shelf described in British Patent GB-773215 is clearly not very versatile, by only being usable, in the absence of the bottle/s, to support containers and/or foodstuffs large enough not to fall through the opening.

[0006] To eliminate this drawback, Japanese Patent Application JP-2002/228352 describes and illustrates a shelf comprising a rigid, rectangular, flat sheet with a through opening sized to receive the neck of a large upright bottle resting on the shelf underneath; and a book-like foldable shutter fitted to the flat sheet, at the through opening in the sheet, to move between a flat configuration completely covering the opening, and a folded configuration uncovering the opening to permit insertion of the neck of the bottle inside the opening.

[0007] Unfortunately, with daily use, the shutter of the shelf described in Japanese Patent Application JP-2002/228352 has shown a tendency to break at the hinges, thus causing inconvenience to the user.

[0008] It is an object of the present invention to provide a refrigerator shelf designed to provide the same degree of versatility but with none of the aforementioned drawbacks.

[0009] According to the present invention, there is provided a refrigerator shelf as claimed in Claim 1 and preferably, though not necessarily, in any one of the Claims depending directly or indirectly on Claim 1.

[0010] According to the present invention, there is also provided a refrigerator as claimed in Claim 8.

[0011] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a front view of a home refrigerator comprising at least one shelves in accordance with the teachings of the present invention;

Figure 2 shows a larger-scale view in perspective of a shelf of the Figure 1 refrigerator.

[0012] With reference to Figures 1 and 2, number 1 indicates as a whole a shelf, which may be used to particular advantage in a home refrigerator 2 to divide the storage compartment of the refrigerator, either singly or in combination with other conventional shelves.

[0013] Refrigerator 2 comprises a preferably, though not necessarily, parallelepiped-shaped outer casing 3 with at least one hermetically sealed, thermally insulated, inner storage compartment or chamber 4; and a number of shelves fixed one over the other inside storage compartment 4 to divide storage compartment 4 vertically into a number of compartments.

[0014] More specifically, in the example shown, refrigerator 2 substantially comprises a parallelepiped-shaped box body 5 having one thermally insulated storage compartment 4 and with the access opening to storage compartment 4 formed in one of the four vertical lateral walls of box body 5; a door 6 hinged to box body 5 to rotate, about a substantially vertical hinge axis V, to and from a closed position resting against the vertical lateral wall of box body 5 to seal the access opening to storage compartment 4 off from the outside environment; and a refrigeration circuit (not shown) designed, on command, to cool and maintain the contents of storage compartment 4 stably at a predetermined reference temperature of preferably, though not necessarily, less than 8°C.

[0015] With reference to Figure 2, shelf 1 substantially comprises a flat, preferably, though not necessarily, rectangular supporting body 7, which is sized to fit horizontally inside storage compartment 4, with one or more lateral edges resting on the inner surfaces of outer casing 3 defining storage compartment 4, and which has a through opening 7a sized to permit passage of the neck or main body of a bottle 8 positioned perpendicularly to the plane of flat supporting body 7 and resting on the shelf underneath shelf 1; and an annular rim or collar 9 fitted firmly inside through opening 7a in flat supporting body 7, and having a number of flexible projecting tabs or fins 10 projecting from annular collar 9 towards the centre of through opening 7a in a direction which is locally substantially perpendicular to the lateral edge of through opening 7a.

[0016] In addition, projecting tabs or fins 10 are preferably, though not necessarily, flat, and project from annular collar 9 while remaining locally substantially coplanar with or at any rate parallel to the plane of flat supporting body 7.

[0017] In the example shown, flat supporting body 7 comprises a rectangular, suitably thick sheet of glass, Plexiglas or other plastic material, and through opening 7a is in the form of two circular through holes of equal diameter, joined to and partly intersecting each other.

[0018] In an other embodiment, flat supporting body 7 may comprise a rigid rectangular flat grill.

[0019] With reference to Figure 2, in the example shown, annular collar 9 is made of rubber, silicone or other flexible plastic material, is substantially in the form of a figure eight, and has a set of eight substantially tri-

angular projecting tabs or fins 10 formed preferably, though not necessarily, in one piece with annular collar 9 and appropriately distributed inside the two circular through holes defining through opening 7a.

[0020] Operation of shelf 1 will be clear from the foregoing description with no further explanation required, except to state that projecting tabs or fins 10 are designed to firmly support any small items placed on through opening 7a, and to flex upwards or downwards when bottle 8 is inserted strongly by the user inside through opening 7a.

[0021] Shelf 1 has numerous obvious advantages : while comprising a system of closing through opening 7a for receiving large bottles, shelf 1 has no moving parts and is therefore intrinsically more reliable than known shelves.

[0022] Shelf 1 is also much cheaper to produce than the shelf described in Japanese Patent Application JP-2002/228352, with all the advantages this entails.

[0023] Clearly, changes may be made to shelf 1 and refrigerator 2 as described herein without, however, departing from the scope of the present invention.

7. A shelf as claimed in any one of the foregoing Claims, **characterized in that** said flat supporting body (7) comprises a rigid flat grill, or a sheet of glass, Plexiglas or other plastic material.

8. A refrigerator (2), **characterized by** comprising at least one shelf as claimed in any one of Claims 1 to 7.

Claims

1. A shelf (1) comprising a flat supporting body (7) having a through opening (7a) sized to permit passage of the neck and/or main body of a bottle (8) positioned perpendicularly to the plane of said flat supporting body (7); said shelf (1) being **characterized by** also comprising a collar (9) fitted firmly inside said through opening (7a) and having a number of flexible projecting tabs (10) projecting from the collar (9) towards the centre of the through opening (7a).
2. A shelf as claimed in Claim 1, **characterized in that** said projecting tabs (10) project from said collar (9) in a direction which is locally substantially perpendicular to the lateral edge of the through opening (7a).
3. A shelf as claimed in Claim 2, **characterized in that** said projecting tabs (10) project from said collar (9) while remaining locally substantially parallel to the plane of said flat supporting body (7).
4. A shelf as claimed in any one of the foregoing Claims, **characterized in that** said projecting tabs (10) are substantially flat.
5. A shelf as claimed in any one of the foregoing Claims, **characterized in that** said collar (9) is made of rubber, silicone or other flexible material.
6. A shelf as claimed in Claim 5, **characterized in that** said projecting tabs (10) are formed in one piece with said collar (9).

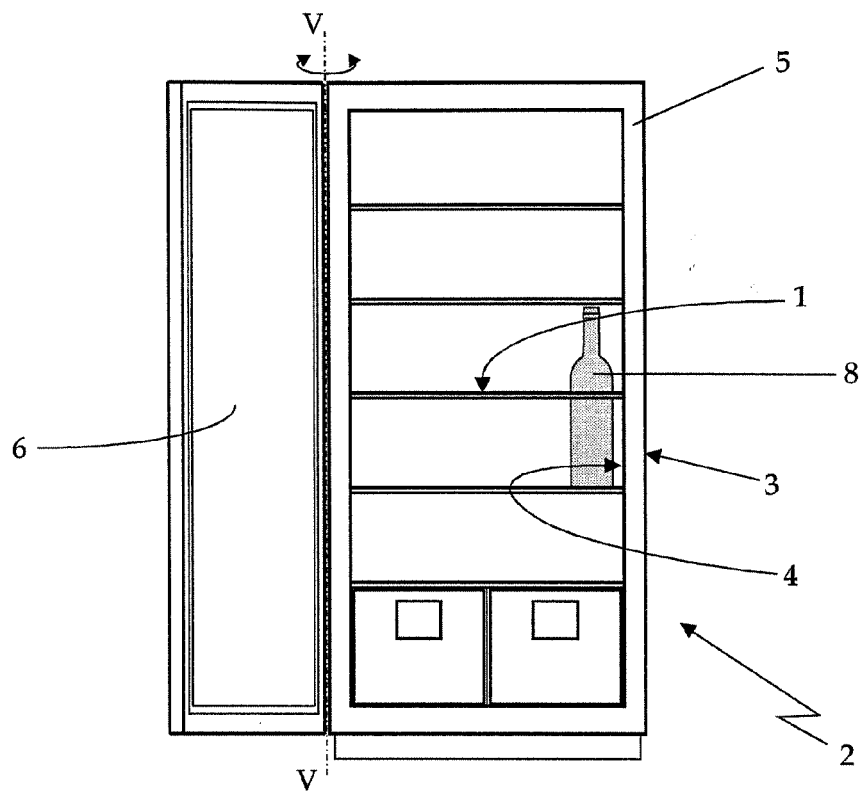


Fig. 1

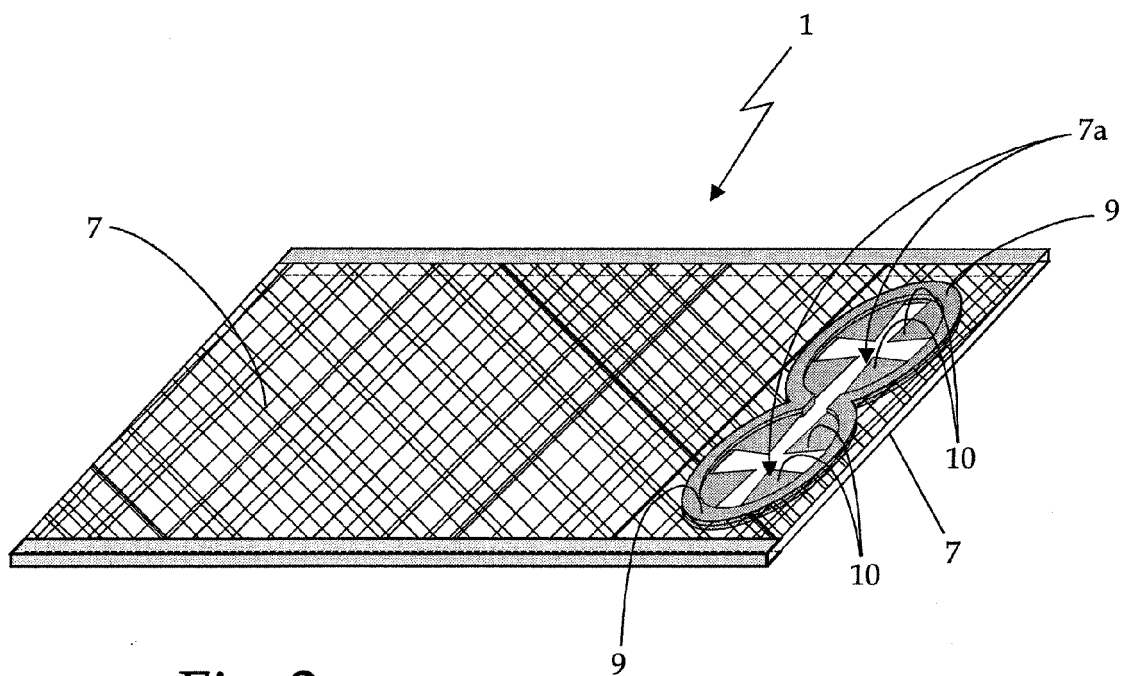


Fig. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 12 2717

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	JP 2002 228352 A (TOKYO SHIBAURA ELECTRIC CO) 14 August 2002 (2002-08-14) * abstract; figures 1-4 *	1	INV. F25D25/02
A	US 4 870 837 A (WEINS JANINE J [US]) 3 October 1989 (1989-10-03) * abstract; figure 1 *	1	
A	EP 0 325 217 A (LICENTIA GMBH [DE]) 26 July 1989 (1989-07-26) * the whole document *	1	
A	GB 1 191 596 A (PHILIPS NV [NL]) 13 May 1970 (1970-05-13) * the whole document *	1	
A	US 6 116 045 A (HODOSH MARC A [US] ET AL) 12 September 2000 (2000-09-12) * figure 16b *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25D A47B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		19 June 2007	Jessen, Flemming
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			

2

EPO FORM 1503 03.82 (P04C01)

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

EP 06 12 2717

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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19-06-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2002228352	A	14-08-2002	NONE	
US 4870837	A	03-10-1989	NONE	
EP 0325217	A	26-07-1989	DE 8800594 U1	18-05-1989
GB 1191596	A	13-05-1970	CH 477661 A	31-08-1969
			DE 1751425 A1	08-07-1971
			ES 153038 Y	16-10-1970
			FR 1580543 A	05-09-1969
			NL 6710226 A	28-01-1969
			SE 332644 B	15-02-1971
US 6116045	A	12-09-2000	CA 2264990 A1	09-09-1999
			US 5924303 A	20-07-1999
			US 6067816 A	30-05-2000

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 773215 A [0004] [0005]
- JP 2002228352 A [0006] [0007] [0022]