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(54) Closing door for a refrigerating or a freezing apparatus

(57) The present invention relates to a closing door for a refrigerating or a freezing apparatus, like for example a refrigerator or a freezer for domestic or professional use, comprising an inner wall (2) formed by a panel (3) provided with first supporting means (4) adapted to removably support one or more containing elements or boxes (5, 17); a rail (9) provided with second supporting means (15) is removably associable to the panel (3), such that containing elements or boxes (5, 17) having different extensions can be supported by the same panel (3).

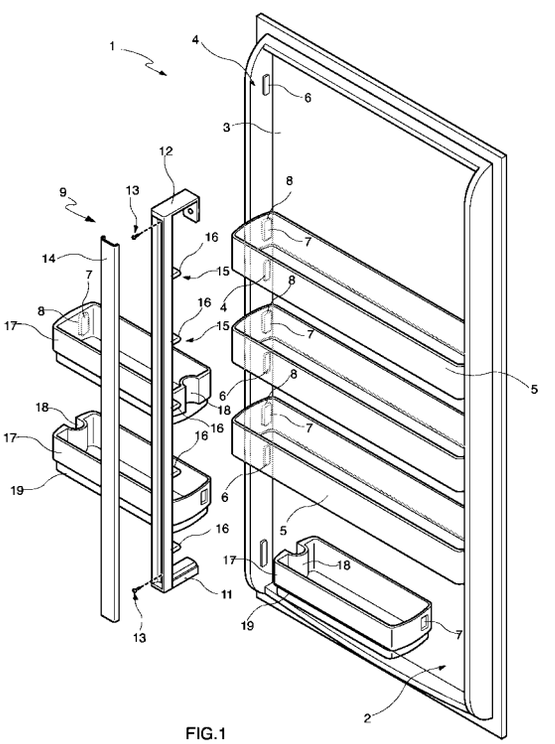

FIG.1

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Description

[0001] The present invention relates to a closing door for a refrigerating or a freezing apparatus, like for example a refrigerator or a freezer for domestic or professional use.

[0002] Closing doors of refrigerators or freezers known in the state of the art comprise an inner wall, formed by a moulded panel facing the refrigerating or freezing compartment, which is generally provided with supporting means adapted to support one or more removable containing elements or boxes for foodstuff, bottles and the like.

[0003] Such supporting means are generally constituted by projections peripherally arranged at intervals on the inner wall and formed in one piece with the panel during the moulding process; the inner wall can also be provided with a central rail extending vertically along the wall and formed also in one piece with the moulded panel; the central rail is provided, at opposite sides, with additional projections facing the projections located at the periphery of the inner wall.

[0004] The containing elements or boxes are provided at the sides with recesses adapted to house the projections, such that they can be easily mounted and removed in order to adjust their position along the height of the inner wall or for cleaning purposes.

[0005] Basically, two different types of supporting arrangements can be provided in a closing door: a first type having an inner wall provided with supporting projections arranged only peripherally, such that the containing elements or boxes removably supported by the projections extend substantially for the whole width of the inner wall, and a second type having, in addition to the peripheral projections, a central rail provided with projections at the sides such that the inner wall is vertically divided into substantially two halves by the rail and the containing elements or boxes, having a length which is less than half the width of the inner wall because of the space occupied by the rail, can be arranged at the sides of the central rail. Combinations of the two supporting arrangements can also be obtained by, for example, reducing the vertical extension of the central rail to only a portion of the height of the inner wall, such that containing elements or boxes having a different extension, substantially corresponding to the whole width or to half-width of the inner wall, can be mounted on the same closing door.

[0006] A disadvantage with this known solution is that a closing door can be provided with only one of the supporting arrangements described above, because of the rigid configuration of the panel and projections obtained by moulding process; hence, to obtain doors having different configurations for the supporting arrangement, a number of different moulds are needed, thus increasing the manufacturing costs and the space needed for the storage of panels having different arrangements. In any case, a door mounted on a specific refrigerating or freezing apparatus can only have a single, predefined, configuration, either of the first type or the second type or a combination of the two, thus making not possible for the final user to achieve a different configuration according to its specific needs.

[0007] Accordingly, the aim of the present invention is to provide a closing door having an inner wall provided with supporting means for removably supporting one or more containing elements or boxes which offers the possibility to be fitted with different supporting arrangements.

[0008] Within the aim cited above, a purpose of the present invention is to provide a closing door which achieves a great degree of flexibility for the arrangement of the supporting means on the inner wall, thus meeting substantially all the specific needs of the final user.

[0009] Another purpose of the present invention is to provide a closing door having a modular solution for the supporting arrangement, such that the panel constituting the inner wall can be fitted with various configuration of the supporting arrangement.

[0010] A further purpose of the present invention is to provide a closing door having a reduced manufacturing cost and whose components can be stored in a storage facility in a more rational way and requiring less space.

[0011] A further and not less important purpose of the present invention is to provide a closing door capable of being manufactured using generally known and readily available tools, machinery and equipments.

[0012] These aims and purposes are achieved by a closing door for a refrigerating or a freezing apparatus having the features as claimed in claim 1.

[0013] Further features and advantages of the present invention may be readily understood from the following description of a preferred, although not sole, embodiment illustrated by way of a non-limiting example with reference to the accompanying drawings, in which:

- figure 1 is a front view of an inner wall for a closing door according to the present invention showing the different supporting arrangements obtainable;
- figure 2 is a front view of the inner wall fitted with a supporting arrangement;
- figure 3 shows a different setting of the containing elements in the supporting arrangement of figure 2.

[0014] With reference to the above mentioned figures, the reference numeral 1 is used to generally indicate a closing door for a refrigerating or a freezing apparatus, such as a domestic or professional refrigerator or freezer, comprising an inner wall 2 formed by a panel 3, obtainable by moulding.

[0015] The panel 3 is provided, along the sides which, in use, extend upwardly, with first supporting means 4 for removably supporting one or more containing elements or boxes 5 adapted to contain foodstuff, bottles

or the like.

[0016] The first supporting means 4 can be constituted by a plurality of first projections 6, preferably obtained in one piece with the panel 3 during the moulding process, arranged at intervals at two opposite sides of the panel 3 such that a projection on a side faces the respective projection on the other side (projections shown only on one side in figures 1 to 3).

[0017] The containing elements or boxes 5, having an extension substantially corresponding to the width of the panel 3, are provided with first recesses 7 respectively arranged at two opposite sides of each containing element or box 5 (recesses shown only on one side in figures 1 to 3) so as to engage with the corresponding first projections 6; first abutments 8, cooperating with the first projections 7, are provided at the upper side portions of the containing element or box 5 where the first recesses 7 are located in order to removably support the containing element or box 5 on the panel 3 in the selected position, as shown in figure 1.

[0018] A rail 9, formed by a rod 10 provided at the ends with respective arms 11, 12, can be removably mounted to the central region of the panel 3 by means of fastening means 13, such as, for example, screws. To the rod 10 a covering element 14 can be associated for protection and aesthetic purposes.

[0019] The rod 10 is provided with second supporting means 15 formed by, for example, second projections 16 facing, in use, the panel 3 and arranged at intervals along the longitudinal extension of the rod 10.

[0020] When the rail 9 is mounted to the panel 3, containing elements or boxes 17 having a shorter extension than those indicated with the numeral reference 5, and substantially corresponding to half the width of the panel 3 if the rail 9 is mounted in the central region of the panel 3, can be removably supported both by the first supporting means 4 and the second supporting means 15. To this end, the containing elements or boxes 17 are provided, on a side, with a first recess 7 and a first abutment 8 adapted to engage and abut with a corresponding first projection 6, and on the opposite side with a housing 18 adapted to house the rod 10 and a second abutment 19 cooperating with the second projection 16 to removably support the containing element or box 17; figures 2 and 3 show different arrangements of the containing elements or boxes 17 removably supported on an inner wall 2 provided with a rail 9.

[0021] As shown in the embodiment of figures 1 to 3, the rail 9 can have a longitudinal extension shorter that the height of the panel 3, such that the portion of the panel 3 free from the rail 9 can removably support containing elements or boxes 5 having an extension substantially corresponding to the width of the panel 3, as previously described; however, as can be easily understood, the longitudinal extension of the rail 9 can be of any size, up to substantially correspond to the height of the panel 3, such that only containing elements or boxes 17 having a shorter extension can be removably mounted on the panel 3.

[0022] From the above description it has been demonstrated how the closing door according to the present invention achieves the aims and purposes mentioned above: in fact, the inner wall of the closing door according to the present invention can be easily and readily fitted with different supporting arrangements by simply adding a rail 9 to a panel 3 which is the same for any supporting arrangement.

[0023] Thanks to such a construction, a great degree of flexibility can be achieved, thus meeting substantially all the specific needs of the final user.

[0024] Another advantage of a closing door according to the present invention is the modularity of the panel 3, which can be adapted to any configuration of the supporting arrangement; in this way, only one mould is needed for production of panels of the same size, and these panels can be fitted afterwards, at the assembly stage, with any supporting arrangement, either with or without a rail 9, which can have different extensions, as well. Thus costs due to obtaining moulds and storage space needed for the panels are dramatically reduced.

[0025] It will be readily appreciated that the closing door described above by mere way of example may be the subject of a number of modifications and different embodiments without departing from the scope of the present invention.

[0026] It should further be noticed that the materials used, as well as the shapes and the size of the individual component parts, may be the most appropriate to fit any specific need or comply with any requirement, without this implying any departure from the scope of the present invention.

Claims

1. Closing door for a refrigerating or a freezing apparatus, comprising an inner wall (2) formed by a panel (3) provided with first supporting means (4) adapted to removably support one or more containing elements or boxes (5, 17), **characterized in that** a rail (9) provided with second supporting means (15) is removably associable to said panel (3), such that a plurality of different supporting arrangements for containing elements or boxes (5, 17) having different extensions can be provided on said closing door (1) by the same panel (3).

2. Closing door as in claim 1, wherein said first supporting means (4) are adapted to removably support containing elements or boxes (5) having an extension substantially corresponding to the width of said panel (3).

3. Closing door as in claim 2, wherein said containing elements or boxes (5) are provided at opposite sides with first recesses (7) and first abutments (8)

adapted to engage and cooperate with said first supporting means (4) so as to removably support said containing elements or boxes (5) on said panel (3) in the selected position.

4. Closing door as in claim 1, wherein containing elements or boxes (17) having an extension shorter than the width of said panel (3) can be removably supported by said first and second supporting means (4, 15) when said rail (9) is mounted to said panel (3).

5. Closing door as in claim 4, wherein said containing elements or boxes (17) are provided, on a side, with a first recess (7) and a first abutment (8) adapted to engage and cooperate with a corresponding first supporting means (4), and on the opposite side with a housing (18) and a second abutment (19) respectively adapted to house said rail (9) and cooperate with said second supporting means (15), so as to removably support said containing elements or boxes (17) on said panel (3) in the selected position.

6. Closing door as in one or more of the preceding claims, wherein the longitudinal extension of said rail (9) corresponds to a portion of the height of said panel (3).

7. Closing door as in claim 1, wherein said first supporting means (4) are formed by a plurality of first projections (6) arranged at intervals at two opposite sides of said panel (3) such that a projection on a side faces the respective projection on the other side.

8. Closing door as in claim 1, wherein said second supporting means (15) are formed by second projections (16) extending from said rail (9) and arranged at intervals along the longitudinal extension of the said rail (9).

9. Closing door as in claims 7 and 8, wherein said rail (9) is removably associable to the central region of said panel (3) such that said second projections (16) are arranged substantially at the same level of said first projections (6) along said panel (3).

10. Refrigerating or freezing apparatus comprising a closing door as in claim 1.

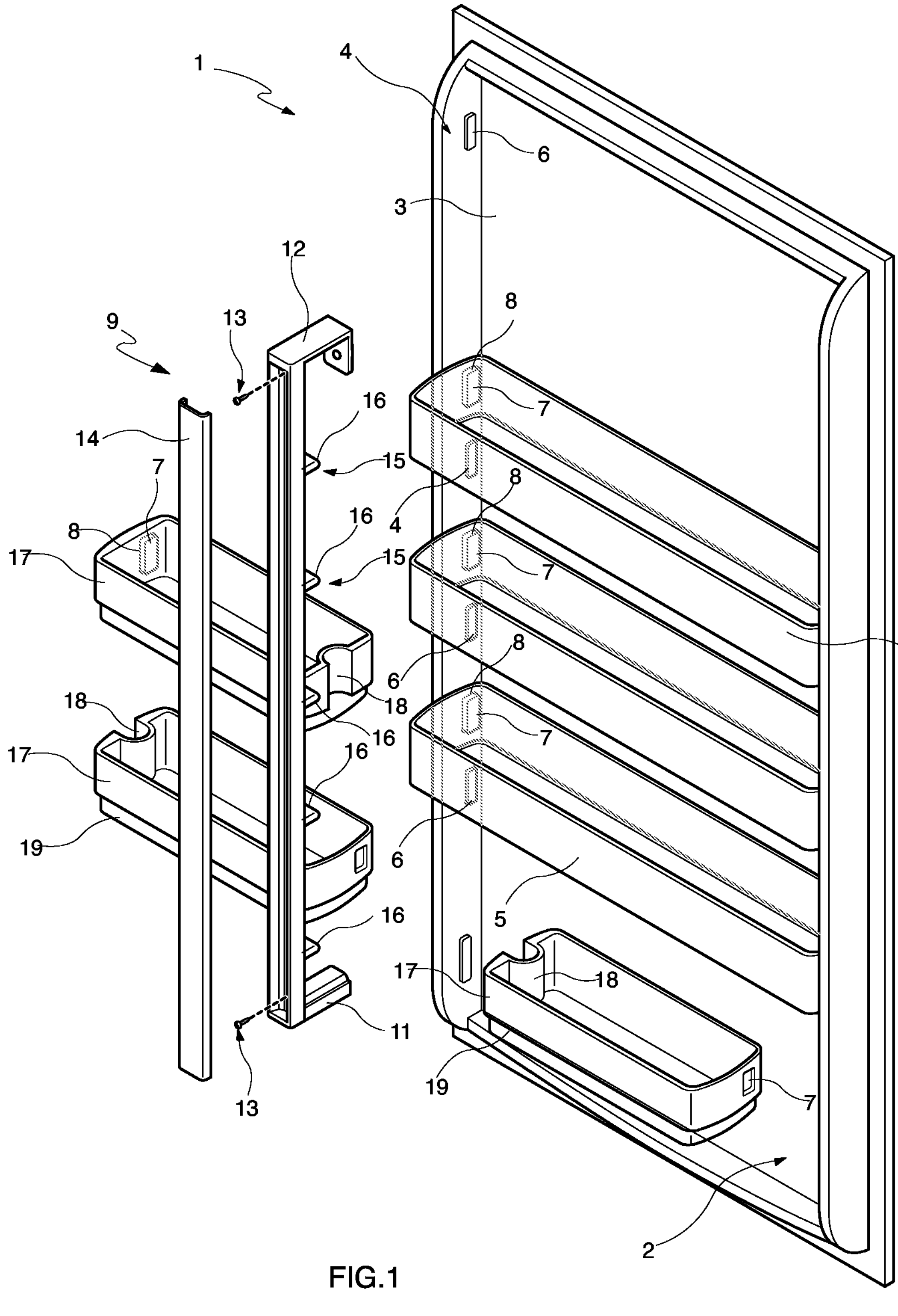
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FIG.1

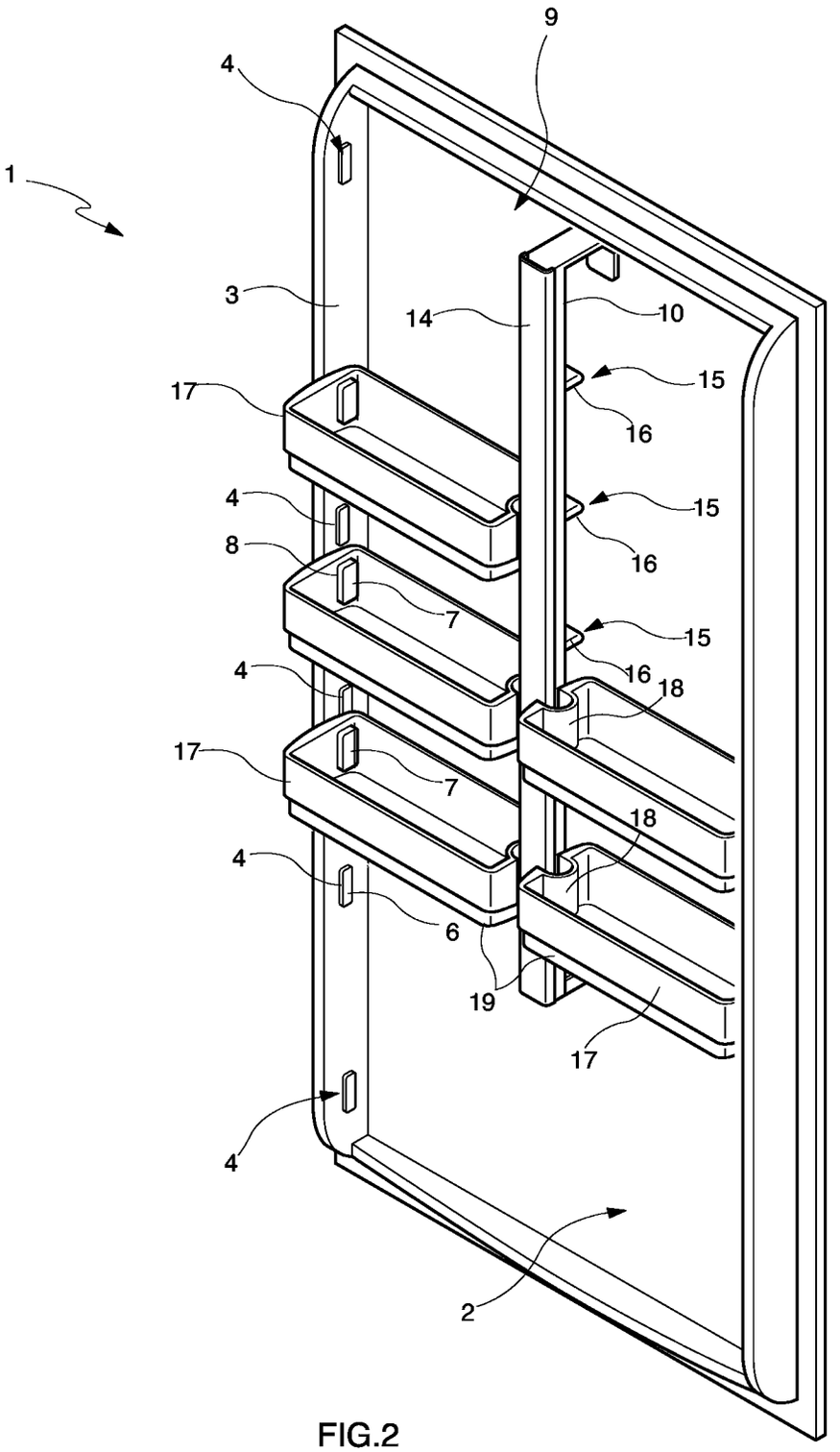

FIG.2

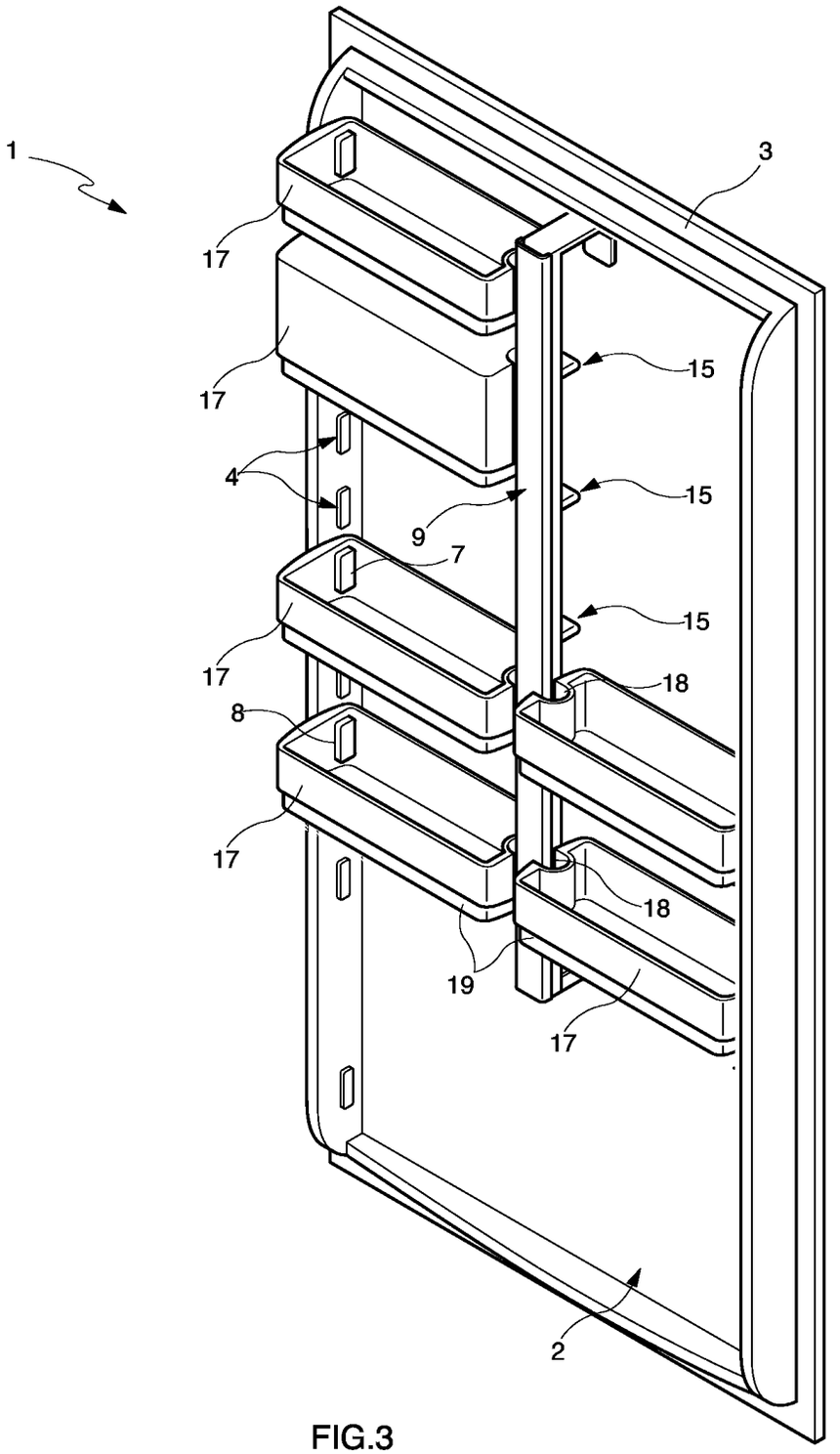

FIG.3

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EUROPEAN SEARCH REPORT

Application Number
EP 04 10 0071

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2 728 623 A (FOERSTNER GEORGE C) 27 December 1955 (1955-12-27) * figures 1-3 * * column 2, line 3 - line 47 * ---	1-10	F25D23/04
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F25D
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 June 2004	Yousufi, S

CATEGORY OF CITED DOCUMENTS

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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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