

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 351 573 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **16.06.93** (51) Int. Cl.⁵: **E05D 3/10, F25D 23/02**

(21) Application number: **89111323.5**

(22) Date of filing: **21.06.89**

(54) **A means for supporting the doors of a cooling apparatus.**

(30) Priority: **14.07.88 IT 4574688**

(43) Date of publication of application:
24.01.90 Bulletin 90/04

(45) Publication of the grant of the patent:
16.06.93 Bulletin 93/24

(84) Designated Contracting States:
DE ES FR GB IT SE

(56) References cited:
DE-B- 1 116 245
GB-A- 2 167 544
US-A- 3 218 111
US-A- 4 151 681

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Description

The present invention relates to a means for supporting the doors of the cooled compartments of cooling apparatus and in particular refrigerators equipped with three separate compartments, one for cooling food, one for freezing food and one for keeping fish and meat at constant temperatures of about 0 °C.

Cooling apparatus of the described species are known comprising one thermally insulated box-shaped cabinet whose cooling, keeping and freezing compartments are disposed one above the other and closed by corresponding thermally insulated doors, hinged vertically on the same side of the cabinet.

In the aforesaid apparatus, the keeping compartment is advantageously realized in a position between the cooling and freezing compartments and has a reduced volume in order to be able to accommodate fish, meat, vegetables and food of various kinds which require constant keeping temperatures of about 0 °C for long periods of time.

This keeping compartment is furthermore provided with lateral guides allowing for insertion and sliding movement of at least one drawer made of plastic material adapted to contain the food to be conserved.

Although the cooling apparatus of this design function in a satisfactory and reliable fashion, they are nevertheless of complicated construction due to the presence of three different pairs of hinges for pivoting the corresponding doors, which necessitates different working steps for mounting the hinges on the apparatus and the doors on the hinges.

Furthermore, the drawer containing the food is not very handy or practical to use, since it must often be completely pulled out of the corresponding keeping compartment of the apparatus in question to allow food to be removed from, or put into, the drawer.

In DE-B-1116245 from which the known features of Claim 1 are derived, there is disclosed a means for supporting the doors of a cooling apparatus comprising a thermally insulated box-shaped cabinet equipped with at least two separate compartments disposed one above the other, each to be closed by a corresponding thermally insulated door, whereby it comprises a first and a second hinge having swiveling axes at right angles to each other and adapted to allow for the respective doors to be swiveled in the horizontal and vertical directions respectively, and wherein it comprises a supporting element connected with the first and second hinges, the first hinge being adapted to allow for the coupling of the corresponding door in the swung out position thereof. This sup-

porting means needs four supporting elements, one for each hinge, and is rather difficult to be mounted at the front of the cooling apparatus.

The present invention is therefore based on the object of overcoming the above-described shortcomings and limits by a means for supporting the doors of the cooled compartments of cooling apparatus of the stated species, said means being shaped in such a way as to allow for the doors to be pivoted with a reduced number of hinges, thereby simplifying the operations of mounting the doors.

This and other objects are achieved according to the invention by a means for supporting the doors according to Claim 1.

The features of the invention will become more evident from the following description, intended solely as a nonrestrictive example, with reference to the adjoined drawings in which

Fig. 1 shows schematically a perspective and partially cut view of the inventive supporting means applied to a cooling apparatus equipped with at least two separate compartments;

Fig. 2 shows a lateral cross-sectional view along line A-A of the supporting means and part of the cooling apparatus of Fig. 1.

Referring to Fig. 1, one can see part of a cooling apparatus 3 of the domestic type, comprising a thermally insulated box-shaped cabinet 4 extending vertically and provided with three separate compartments 5, 6 and 7 disposed one above the other, each to be closed by a corresponding thermally insulated door 8, 9 and 10 and provided for cooling food, for keeping meat, fish, vegetables and the like at virtually constant temperatures of about 0 °C for long periods of time, and for freezing food, respectively.

In particular, while doors 8 and 10 associated with compartments 5 and 7 are pivoted on corresponding hinges on the vertical axis (only hinge 12 is shown in Fig. 1, which will be described in the following), door 9 associated with compartment 6 is pivoted on a corresponding hinge 11 on the horizontal axis, which will also be described in the following.

Since door 8 is not of interest for the purposes of the invention, this constructional detail of the cooling apparatus in question will not be considered in the following description, while the hinging system of the other two doors 9 and 10 of the apparatus will be examined in detail.

The hinging of doors 9 and 10 is effected by the inventive supporting means comprising above-described hinges 11 and 12 connected with a supporting element 13 in the shape of a flat rectangular plate, equipped with holes 14 to allow passage of corresponding screws 15 for the removable application of the supporting element in question

against the front part of dividing wall 16 separating the two compartments 6 and 7, in a lateral position relative to the wall.

Hinges 11 and 12 and supporting element 13 may advantageously be realized integrally in pressed plastic material or in special metal alloys.

In particular, hinge 11 is provided with an elastic projection 17 extending in the horizontal direction on the front and in the middle of supporting element 13 and bent so as to form two straight vertical portions 18 and 19 virtually parallel to each other, portion 19 being penetrated by a horizontal through hole 20 in correspondence with its end joined to remaining portion 18.

The purpose of hinge 11 is to both to allow for the pivoting of corresponding pin 21 of door 9 and to prevent the door from swinging out completely when it is swiveled horizontally about hinge 11 and moved into the horizontal position.

In its turn, hinge 12 is provided with a short vertical pin 22 adapted to be inserted into a corresponding vertical hole 23 formed in the upper and lateral part of door 10, thereby allowing the door to pivot about a vertical axis, said pin protruding downwardly at right angles from a flat parallel-epiped tongue 24 connected at right angles with supporting element 13 and protruding in front of the latter.

To ensure the mounting of doors 9 and 10 for closing corresponding compartments 6 and 7, one uses not only the inventive supporting means, which is applied on the right and left sides of above-described dividing wall 16 and can permit the hinging of door 10 therebelow to the right or to the left of the apparatus, but also two further hinges which are applied on the remaining side of dividing wall 16 of the apparatus, said hinges being identical and symmetrical to hinges 11 and 12 described above.

Furthermore, one also uses a further hinge 25 of the conventional type equipped with a vertical pin 26 turned toward the top, said hinge being applied at the front bottom part of the apparatus.

The doors of the cooling apparatus are then pivoted in the hinges thus disposed, i.e. door 9 on the horizontal axis, said door being provided with two lateral pins 21 to be inserted into corresponding through holes 20 in hinges 11, and door 10 on the vertical axis, this door being provided with two vertical holes 23 to be inserted into corresponding pins 22 and 26 of respective hinges 12 and 25.

Looking now at Fig. 2, one can see the constructional detail of door 9 mounted on hinges 11 and applied on the front of compartment 6.

The door consists specifically of a molded inner door 27 having expanded polyurethane 28 foamed therein to constitute the thermal insulation, said inner door being equipped with a hollow outer

edge 29 for insertion of magnetic gasket 30 directly against corresponding outer edge 31 of the opening of compartment 6, the door furthermore comprising a front 32 that is adaptable and capable of being snapped onto the front of the unit consisting of inner door 27 and thermal insulation 28.

Due to the particular profile of lower edge 33 of door 9 and of elastic projection 17 on hinge 11, it is thus possible to move the door into its swung out position until it is completely swung out toward the outside of compartment 6, passing into a horizontal position (shown by broken lines).

In this state, lower edge 33 thus comes to stop against vertical portion 19 of projection 17 and therefore prevents door 9 from swinging out further toward the outside of compartment 6.

The door thus swung out, that is aligned with the bottom wall of compartment 6, can therefore serve as a support for drawer 34 containing meat, fish, vegetables and the like, after it has been pulled out of compartment 6 into which it had previously been inserted.

The advantages of the inventive supporting means are thus evident.

Firstly, the fact that this means is provided with two perpendicular hinges 11 and 12 allows for its use for pivoting two doors in the described manner, which makes it possible to dispense with the individual hinges previously used and thus to simplify the operations of mounting the supporting means and of the doors on their respective pins.

Furthermore, the possibility of opening door 9 about a horizontal axis, instead of about a vertical axis as previously, allows for better handling and practicality of use with respect to drawer 34, which can thus be easily pulled out of, and reinserted into, compartment 6 and also rested directly on the surface of the door, in the swung out position thereof.

Claims

1. A means for supporting the doors of a cooling apparatus, comprising a thermally insulated box-shaped cabinet (14) equipped with at least two separate compartments (6, 7) disposed one above the other, each to be closed by a corresponding thermally insulated door (9, 10), comprising a first and a second hinge (11, 12), having swiveling axes at right angles to each other and adapted to allow for the respective doors (11, 12) to be swiveled preferably in the horizontal and vertical directions, respectively, and also comprising a supporting element (13) connected with the first and second hinges (11, 12), the first hinge (11) being adapted to allow for coupling of the corresponding door (9) in the swung out position thereof,

characterized in that

the supporting element (13) is preferably formed integrally with the first and second hinges (11, 12) and is applied removably against the front part of the cabinet (4) in a position between the two compartments (6, 7), that the first hinge (11) is provided with an elastic projection (17) extending in the horizontal direction at the front and in the middle of the supporting element (13), the projection (17) being so bent as to form two vertical straight portions (18, 19) virtually parallel to each other, the portion (19) being penetrated by a horizontal through hole (20) for insertion of the corresponding pin (21) of the door (9), the straight portion (19) constituting a stop face for the lower edge (33) of the door (9) in the swung out position thereof,

and that the second hinge (12) is provided with a short vertical pin (22), projecting downward at right angles from a flat tongue (24) connected at right angles with the supporting element (13) and projecting in front thereof, the pin (22) being adapted to be inserted into a corresponding hole (23) in the door (10).

Patentansprüche

1. Vorrichtung zur Befestigung von Türen eines Kühlgerätes, das ein kälteisoliertes kastenförmiges Gehäuse (4) enthält, das mit wenigstens zwei übereinander angeordneten getrennten Abteilen (6, 7) ausgestattet ist, die jeweils mit einer entsprechenden kälteisolierten Tür (9, 10) verschlossen sind, wobei sie ein ersten und ein zweites Scharnier (11, 12) mit rechtwinklig zueinander stehenden Schwingachsen, die es der jeweiligen Tür (9, 10) ermöglichen, vorzugsweise in waagerechter bzw. senkrechter Richtung geschwungen zu werden und ein Stützelement (13) umfaßt, das mit den beiden Scharnieren (11, 12) verbunden ist, wobei das erste Scharnier (11) derart gestaltet ist, daß es das Einrasten der entsprechenden Tür (9) in deren aufgeschwungener Position erlaubt, **dadurch gekennzeichnet**, daß das Stützelement (13) vorzugsweise einteilig mit dem ersten und zweiten Scharnier (11, 12) geformt und lösbar an der Vorderseite des Gehäuses (4) an einer Stelle zwischen den zwei Abteilen (6, 7) befestigt ist, daß das erste Scharnier (11) mit einem elastischen Vorsprung (17) versehen ist, der in der Mitte des Stützelementes (13) an dessen Vorderseite waagerecht nach vorn zeigt, dieser Vorsprung (17) derart gebogen ist, daß er zwei parallel zueinander stehende gerade senkrechte Teile (18, 19) bildet, wobei der Teil (19) eine waagerechte Durchgangs-

bohrung (20) zur Aufnahme des entsprechenden Stifts (21) der Tür (9) enthält, der gerade Teil (19) eine Haltefläche für die Unterkante (33) der Tür (9) in deren aufgeschwungener Position bildet und daß das zweite Scharnier (12) mit einem kurzen senkrechten Stift (22) versehen ist, der von einer flachen Zunge (24) rechtwinklig nach unten ragt, die ihrerseits mit dem Stützelement (13) rechtwinklig verbunden ist und von dessen Vorderseite nach vorn ragt, wobei der Stift (22) derart gestaltet ist, daß er in eine entsprechende Öffnung (23) der Tür (10) eingesetzt werden kann.

Revendications

1. Moyen de support pour les portes d'un réfrigérateur, comprenant une enceinte en forme de boîtier (14) isolée thermiquement, pourvue d'au moins deux compartiments séparés (6, 7) disposés l'un au-dessus de l'autre, chacun étant destiné à être fermé par une porte isolée thermiquement (9, 10) correspondante, comprenant une première et une seconde articulation (11, 12) présentant des axes de pivotement perpendiculaires entre eux et adaptés pour permettre aux portes (11, 12) respectives de pivoter respectivement de préférence dans les directions horizontale et verticale et comprenant également un élément de support (13) relié aux première et seconde articulations (11, 12), la première articulation (11) étant adaptée pour permettre le maintien de la porte (9) correspondante dans sa position écartée résultant du pivotement,

caractérisé en ce que:

l'élément de support (13) est de préférence réalisé d'un seul tenant avec les première et seconde articulations (11, 12) et est monté de manière amovible sur la partie avant de l'enceinte (4), dans une position située entre les deux compartiments (6, 7),

en ce que la première articulation (11) est pourvue d'une saillie élastique (17) s'étendant dans la direction horizontale, à l'avant et au milieu de l'élément de support (13), la saillie (17) étant incurvée de manière à former deux parties rectilignes verticales (18, 19) virtuellement parallèles entre elles, la partie (19) étant pénétrée par un trou traversant horizontal (20) pour permettre l'insertion de la tige (21) correspondante de la porte (9), la partie rectiligne (19) constituant une face de butée pour le bord inférieur (33) de la porte (9) lorsqu'elle se trouve dans sa position d'écartement,

et en ce que la seconde articulation (12) est pourvue d'une courte tige verticale (22), faisant saillie vers le bas, depuis une languette

plane (24) située à angle droit, reliée à angle droit à l'élément de support (13) et faisant saillie depuis sa face avant, la tige (22) étant adaptée pour être insérée dans un trou (23) correspondant ménagé dans la porte (10).

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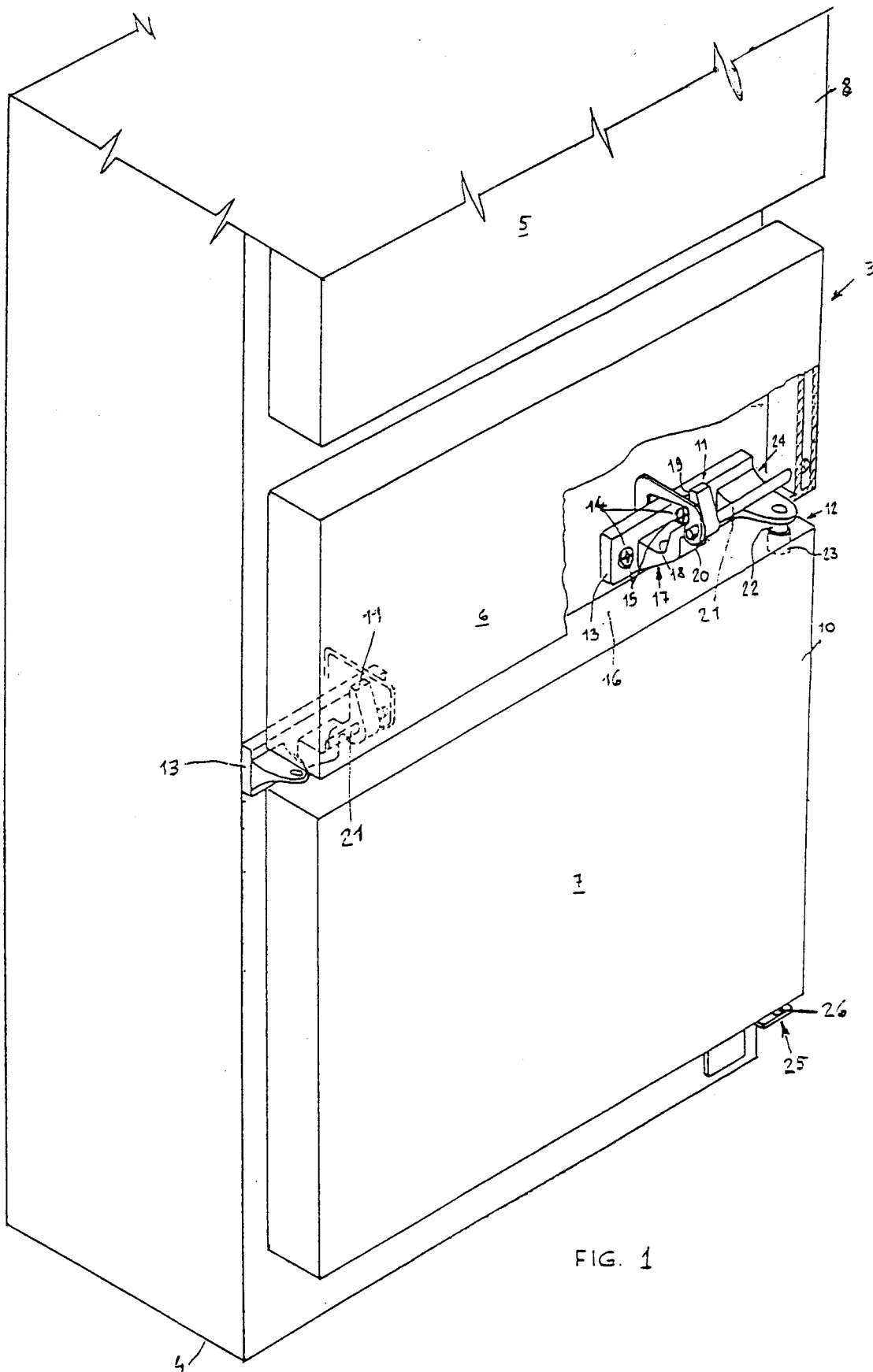
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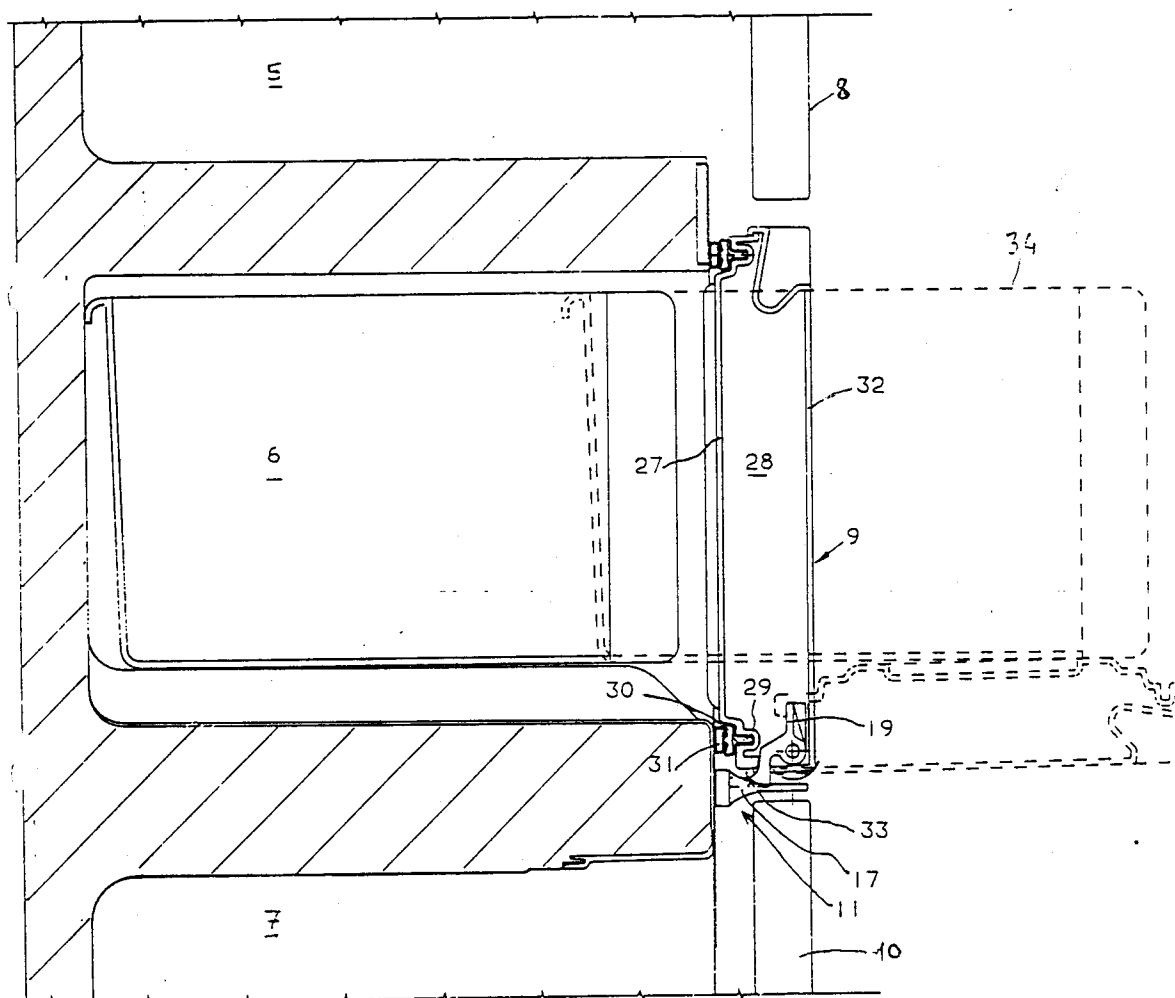


FIG. 2