A shelf for a cabinet, for a refrigerator or the like, includes a glass plate for holding items which is supported along its side edges by track or rail type brackets suitable for fastening or mounting in said cabinet and aligned with a support structure formed or held by said cabinet. The brackets are joined by at least one crosspiece and with said crosspiece(s) form a cradle to hold said plate that is suitable for supporting the mechanical strength of the shelf.
SHELF FOR REFRIGERATION UNITS

REFERENCE TO PRIOR APPLICATIONS

[0001] This application claims priority to French patent application 08 55260, filed Jul. 30, 2008, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] I. Field of the Invention

[0003] This invention relates to a shelf or rack for holding items, configured to be fastened or mounted advantageously in a removable manner in the frame of a cabinet. In particular, it relates to a shelf suitable for use in refrigerated compartments, such as reach-in coolers, refrigeration units, and refrigerators, for holding items, especially food items, and it may more particularly relate to a shelf with a curved shape, especially at its edges, for example, a drip pan shape.

[0004] II. Description of Related Art

[0005] A similar shelf of the prior art includes an essentially transparent panel with a curved shape, usually made of glass, which is supported along its side edges by brackets or tracks or rails suitable for being fastened or mounted on a support structure, such as a racking bar, inside a refrigerator. The lower side of the panel is glued to said brackets or tracks or rails on the sloped part of the brackets and the panel, respectively.

[0006] A major disadvantage of this type of shelf is that it is solely the glue on the brackets or tracks or rails of the curved glass panel which bears all the load applied to the shelf, including the weight of the glass panel and the objects it holds, ultimately destroying the glue with the risk of the glass panel breaking, allowing the objects the shelf holds to fall, and damaging the shelves located below.

[0007] Thus, in particular the tracks, which support the glass plate and are fastened to the refrigeration unit by rear rack bars or are supported by ribs in the side walls of the unit, do not form a solid structure. Their connection to the glass panel is even more problematic when the panel is not flat.

BRIEF SUMMARY OF THE INVENTION

[0008] The object of this invention is to resolve these problems. In this connection, it is proposed according to the invention that the two side brackets or tracks or the like, which in the past were independent of each other, be joined by at least one crosspiece, thus forming a mechanically strong carrier or cradle, without the need for glass and glue to support that strength.

[0009] Therefore, the first object of this invention is a shelf for a cabinet, in particular a refrigerator or the like, comprising a glass panel or plate for holding items which is supported along its side edges by track or rail type brackets suitable for fastening or mounting in said cabinet and working together for this purpose with a support structure formed or held by said cabinet, wherein the track or rail type brackets are joined by at least one crosspiece and form with said crosspiece(s) a cradle to hold said plate for holding items that is suitable for supporting the mechanical strength of the shelf, in particular without applying loads to said track or rail type brackets or to their connections with the panel or plate for holding items.

[0010] The plate for holding items advantageously has a general curved shape, of a drip pan or basin type, with the crosspiece(s) having a shape that is correspondingly curved.

[0011] According to a first variant, the track or rail type brackets are joined by a central crosspiece.

[0012] According to a second variant, the track or rail type brackets are joined by crosspieces arranged under the front transverse edge and/or under the rear transverse edge of the plate for holding items if considering the shelf when oriented in its usage position.

[0013] The cradle may advantageously comprise means for guiding the plate for holding items at the time it is installed in said cradle. It may also advantageously comprise means for centering in its cradle the plate for holding items.

[0014] In addition, the plate for holding items may be mounted so as to be removable from its cradle, the crosspieces of this cradle having means for maintaining said plate in its cradle in the usage position, said means including, for example, of anti-slide stops associated with holes formed in the crosspieces(s) and having means of a dowel type or a spherical or semi-spherical head type suitable for fitting into said holes.

[0015] Thus, the means may, for example, include anti-slide stops set in holes formed in the crosspiece(s) and having, for this purpose, adhesive or non-adhesive blocks suitable for softly and silently being pressed against the outer wall of said plate, and also having means of a dowel type or a spherical or semi-spherical head type designed to fit into holes in the crosspieces.

[0016] The crosspiece(s) may also comprise means for being joined to the plate for holding items, said means including, for example, of spots of adhesive.

[0017] The components that laterally support the plate for holding items may, for example, include brackets or rails designed to work together with rack bars supported by the walls of the cabinet and/or by brackets designed to slide in rails fastened to the back of the cabinet.

[0018] The components that laterally support the plate for holding items may therefore, for example, include brackets such as tracks, rails designed to work together with rack bars supported by the side walls or the back of the cabinet and hooking onto these rack bars or to work with projecting ribs or rods on the side walls of the cabinet.

[0019] Another object of the invention is a cabinet, such as a reach-in freezer, refrigeration unit, or refrigerator, comprising at least a shelf as defined above.

[0020] To better illustrate the shelf according to this invention, several particular embodiments are described below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] FIG. 1 is a perspective view of a refrigerator shelf according to a first embodiment of this invention, showing the upper side of the shelf in its usage position.

[0022] FIG. 2 is a partial cutaway view on a larger scale of II-II of FIG. 1.

[0023] FIG. 3 is a view similar to FIG. 1 of a refrigerator shelf according to a second embodiment of the invention.

[0024] FIG. 4 is a view similar to FIG. 1 of refrigerator shelf according to a third embodiment of the invention.

[0025] FIG. 5 is a partial cutaway view on a larger scale of the shelf in FIG. 3 in the areas of an anti-slide block and a spot of adhesive, respectively, between the glass plate and a crosspiece joining the two side brackets of the shelf.

[0026] FIG. 6 is a partial cutaway view on a larger scale of the shelf in FIG. 4 in the areas of an anti-slide block and a spot...
of adhesive, respectively, between the glass plate and a cross-piece joining the two side brackets of the shelf.

[0027] FIG. 7 is a view similar to FIG. 1 of a refrigerator shelf according to a fourth embodiment of this invention.

[0028] FIG. 8 is a partial cutaway view on a larger scale of VIII-VIII of FIG. 7.

[0029] FIG. 9 is a partial perspective view of a refrigerator shelf according to a fifth embodiment of this invention, showing the upper side of the shelf in its usage position, with said shelf represented in its mid-course position during its placement on side brackets forming tracks designed to hook to the back of the refrigerator cabinet.

DETAILED DESCRIPTION OF THE INVENTION

[0030] In the following description of the shelves according to the invention, the terms “front” and “back,” “left” and “right”, “vertical” and “horizontal,” and the equivalent expressions, will be used in reference to their position in a refrigerator with the user facing the shelf in question.

[0031] FIGS. 1 and 2 show a shelf assembly 1 for a refrigerator, including a plate 2 for holding food items and a cradle 3 for holding the plate 2.

[0032] The plate 2 includes a solid rectangular or square plate having four edges raised to form an indentation, for example, similar to a drip pan. The indentation makes it possible to store food items that can spill or slide, interfering with the proper use of the refrigerator. In accordance with the variants of the plate 2, the plate 2 could have a conventional flat shape or it could be a plate in which the part for holding food items has a curved basin-like shape.

[0033] The plate 2 is made of mineral or organic glass such as polycarbonate or methyl methacrylate, which can be solid or laminated, and transparent, translucent, or opaque.

[0034] The cradle 3 holding the plate 2 includes two side brackets 4 designed to hook at the back to rack bars or to fit between projecting ribs or rods each supported or formed on an internal side wall of the refrigerator cabinet. Each bracket 4 includes a formed part with a general L-shape having a vertical arm 5 and an arm 6 that extends in a generally horizontal manner while sloping toward the inside so as to follow the curvature of the corresponding side edge of the plate 2.

[0035] The vertical arm 5 presses against the corresponding rack bar in an assembled position and includes, for example, a smaller portion at the back forming a hook 7 designed, in the assembled position, to fit into a corresponding hole in the area of the back end of the rack bar in order to hook the shelf 1 into its cabinet.

[0036] The two horizontal arms 6 that hold the plate 2 are joined by a central crosspiece 8 including a flat strip of material, of which the two edges are raised to form a concavity, making it possible to follow the curve of the glass plate 2.

[0037] Furthermore, vertical cuts 9 are made starting from the lower edges of each of the vertical arms 5 in the area of the crosspiece 8, making it possible to cut out a tongue 10 folded upward and projecting over the glass plate 2 in the assembled position.

[0038] The cradle 3 can be made of a metal, such as aluminium or steel, and/or a plastic material. The crosspiece 8 has been shown in FIG. 1 as being all of one piece with the side brackets. However, the crosspiece 8 could be in the form of an independent piece fastened to the brackets 4 as soon as a cradle 3 for holding the glass plate 2 is constructed, making it possible to avoid having the strength of the unit dependent on only one connection by gluing the glass onto the upper sloped part of the brackets 4.

[0039] In addition, in the assembled position, spots of adhesive 11 join the plate 2 and the cradle 3 at the crosspiece 8.

[0040] To assemble the shelf 1, the glass plate 2 is slid onto the cradle 3, the curved tabs 10 acting as a guide, and when the plate 2 is in its final position, it rests on the crosspiece 8 to which the spots of adhesive 11 were applied. These spots of adhesive then ensure that the bottom part of the plate 2 is joined to the cradle 3, keeping the plate 2 centered on the cradle 3.

[0041] It therefore can be seen that the cradle 3 provides a mechanically strong support on which the glass plate 2 rests and which alone supports the strength of the shelf 1. This strength is therefore not based on an adhesive connection of the side edges of the glass plate 2 to the brackets or tracks 4.

[0042] With reference now to FIGS. 3, 4, 7, and 9, a shelf 101, 201, 301, 401 is shown, according to the second through fifth embodiments, respectively, with parts that are identical or similar to those of the shelf 1 being designated by reference numbers greater by 100, 200, 300, and 400, respectively, than those used to describe the shelf 1. In the following, therefore, only the differences with respect to the shelf 1 will be described.

[0043] The shelf 101 of the second embodiment does not include the central crosspiece 8 as the shelf 1 does, but rather two crosspieces 108 arranged under each of the front and back edges, respectively, of the glass plate 2. The cradle 103 includes a frame of which the L-shaped side arms form the brackets 104 with their hooks 107 and the transverse arms are formed by a single L-shaped piece of which the horizontal parts form the crosspieces 208 and of which the vertical arms are folded upward to form folds 112 that project over the glass plate 102. Spots of adhesive 111 are placed in the same manner as previously on the two crosspieces 108.

[0044] The second embodiment is assembled in the same manner as the first embodiment, with the glass plate fitting laterally onto the cradle 103, the folds 112 acting as a guide during this fitting, then as a safety device, preventing the glass plate 102 from sliding when the shelf 101 is removed from its cabinet for cleaning, for example, and when it is put back in.

[0045] The shelf 201 of the third embodiment does not include the central crosspiece 8 of the shelf 1, but rather two crosspieces 208 which intersect at the center of the cradle 203. Tabs 210 similar to the tabs 10 of the shelf 1 are formed by cuts 213 in the part 206 of each bracket 204 starting from the inner edge, making it possible to cut out a band of material that is lifted and curved inward. Spots of adhesive 211 are placed near each end of the crosspieces 208.

[0046] The shelf 201 of the third embodiment is assembled in the same manner as the shelf 1.

[0047] Spots of adhesive 111, 211 are shown in FIG. 6, but as can be seen in FIG. 5, a hole 114, 214 can instead be provided in a crosspiece 108, 208 for the passage of a plastic stop including a central body 115a, 215a having a hemispherical head 115b, 215b on one side and a block 115c, 215c on the other side. Such a stop is placed in each hole by insertion from below, such that its block protrudes from the inner surface of the crosspiece 108, 208. The blocks 115c, 215c prevent the glass plate from sliding out of the cradle 103, 203 and also reduce noise. In addition, the blocks 115c, 215c could be coated with an adhesive on their flat upper face if a complete adherence of the glass plate 102, 202 to its cradle
103, 203 is desired. These stops can also be formed from the block 115c, 215c equipped with a dowel on the lower side suitable for fitting into a hole 114, 214 in the crosspiece 108, 208 or in a component of the carrier. The upper face of the block 115c, 215c may possibly be glued under the glass plate 102, 202. If there is no such gluing, the glass plate 102, 202 can be removed from its cradle 103, 203, for example for complete cleaning of the shelf 101, 201.

[0048] The shelf 301 of the fourth embodiment includes, instead of the bracket 4 of the shelf 1, a hollow lateral bar 304 including a section formed of a band of material (metal, for example) folded to form an inner vertical wall 316, a lower horizontal wall 317, an outer vertical wall 305, and a sloped upper wall 306 following the curve of the glass plate 302. The lateral bar 304 is designed to be fastened with the rear hook formed on the wall 305 in order to act as a bracket against the back of the refrigerator cabinet. The two sloped upper walls are joined by a central crosspiece 308 equivalent to the crosspiece 8 of the shelf 1 and having spots of adhesive 311 to join it to the glass plate 302.

[0049] The shelf 401 of the fifth embodiment differs from the shelf 301 by the fact that the bar 404 does not include the hook 407. That hook 407 is on the bar 418, and allows fastening the bar 418 to the back of the refrigerator cabinet to form the supporting bracket. The hollow bar 404 forms a track suitable for accepting the bar-bracket 418. The hollow bar 404 is shorter than the side edge of the plate 402, leaving room in the back to provide the space required for the hook 407 when the shelf 401 is completely pushed in, i.e., in the usage position. Tracks of another type may also be provided, in particular of another shape and/or equipped with ball bearing sliding systems.

[0050] It is clearly understood that the embodiments just described were given as illustrations and are not exhaustive and that modifications may be made without departing from the scope of this invention.

1. A shelf for a cabinet, comprising:
   a glass plate for holding items supported along its side edges by brackets of a track or rail type and configured for attachment or mounting in said cabinet and aligned with a support structure formed or held by said cabinet, wherein the brackets are joined by at least one crosspiece and include with said at least one crosspiece a cradle for holding said plate, the cradle configured to support a mechanical strength of the shelf.

2. The shelf as claimed in claim 1, wherein the plate for holding items has a curved shape of a drip pan or basin type, with the at least one crosspiece having a corresponding curved shape.

3. The shelf as claimed in either of claim 1, wherein the track or rail type brackets are joined by a central crosspiece.

4. The shelf as claimed in either of claim 1, wherein the brackets are joined by crosspieces arranged under a front transverse edge or under a rear transverse edge of the plate when the shelf is in a usage position.

5. The shelf as claimed in claim 1, wherein the cradle includes a means for guiding the plate during installation of the plate in said cradle.

6. The shelf as claimed in claim 1, wherein the cradle includes a means for centering the plate on the cradle.

7. The shelf as claimed in claim 1, wherein the plate is mounted to be removable from the cradle, and the at least one crosspiece of the cradle includes a means for maintaining said plate in the cradle in a usage position, said means for maintaining comprising:
   - anti-slide stops associated with holes formed in the at least one crosspiece, and
   - a means for fitting into said holes of a dowel type, a spherical, or a semi-spherical head type.

8. The shelf as claimed in claim 1, wherein at least one of the crosspieces includes a means for joining the at least one of the crosspieces to the plate, said means for joining including an adhesive.

9. The shelf as claimed in claim 1, wherein components configured to laterally support the plate include brackets or rails configured to align with rack bars supported by the walls of the cabinet or include brackets configured to slide on rails fastened to a back of the cabinet.

10. A cabinet comprising at least one shelf as claimed in claim 1.

11. The shelf as claimed in claim 1, wherein the shelf is made of polycarbonate or methyl polymethacrylate glass.

12. The shelf as claimed in claim 1, wherein the shelf is transparent, translucent, or opaque.

13. The cabinet as claimed in claim 10, wherein the cabinet is a reach-in freezer, refrigeration unit, or refrigerator.

14. The shelf as claimed in either of claim 1, wherein the brackets are joined by crosspieces arranged under a front transverse edge and under a rear transverse edge of the plate when the shelf is in a usage position.

15. The shelf as claimed in claim 1, wherein the shelf comprises two crosspieces which intersect at a center of the cradle.

16. The shelf as claimed in claim 14, wherein the plate is mounted to be removable from the cradle, and the two crosspieces include a means for maintaining said plate in the cradle in a usage position, said means for maintaining comprising:
   - anti-slide stops associated with holes formed in the at least one crosspiece, and
   - a means for fitting into said holes of a dowel type, a spherical, or a semi-spherical head type.

17. The shelf as claimed in claim 15, wherein the plate is mounted to be removable from the cradle, and the two crosspieces include a means for maintaining said plate in the cradle in a usage position, said means for maintaining comprising:
   - anti-slide stops associated with holes formed in the at least one crosspiece, and
   - a means for fitting into said holes of a dowel type, a spherical, or a semi-spherical head type.

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