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(54) **Cooler**

(57) This invention relates to a top access cooler having an upper part comprising a cooled space and a lower part comprising operational devices. The upper part comprises a wall system (150), at least two connection means (144, 145), a circumferential bottom seat (122), and a circumferential top seat (126). The wall system has at least two wall sections (152, 153), wherein each wall section comprises an inner wall (165, 166) and an outer wall (163, 164), which extend in parallel and define an air gap

(168) between them. The connection means interconnect the wall sections such that a polygonal tube encompassing at least a substantial portion of the cooled space is formed. The bottom seat sealingly supports bottom edges of the wall sections, and the top seat is sealingly engaged with top edges of the wall sections. The corners of the tube are constituted by bent portions of the wall sections, wherein each connection means is arranged between two adjacent corners.

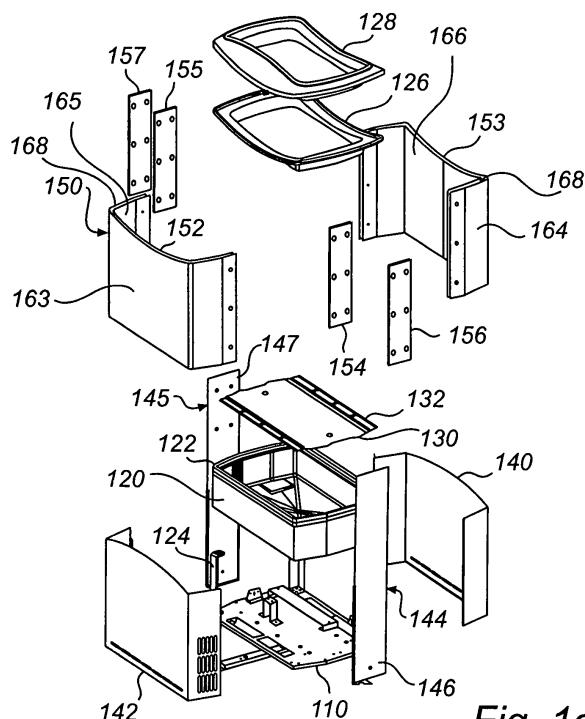


Fig. 1a

Description

Technical field

[0001] This invention relates to a top access cooler having an upper part, comprising a cooled space, and a lower part comprising operational devices, and a wall system for a such a cooler. By top access cooler is meant a cooler providing access to the cooled goods, from the top of the cooler.

Technical background

[0002] For the exposure of cooled easy-to-grab goods in a store often a top access cooler is used. Typically, the goods are associated with a single trademark, and the cooler is labelled, in one way or another, with that trademark. Typical goods are beverages. The top access structure implicates a rather low height on the cooler such that most people, preferably also rather young ones, are able to reach down into the cooled space of the cooler. Today, there exist at least two kinds of such top access coolers. One kind thereof has an open top, i.e. it has no lid on the top, but rather the goods is directly accessible, i.e. reachable, from top of the cooler. Another kind has a transparent lid that has to be opened in order for a person to reach the cooled goods within the cooled space.

[0003] An example of a top access cooler of the open top kind is Jazz 56P from Iarp, and has a rectangular shape. The cooler has a wall system where an upper part of the cooler comprises four wall sections, which are interconnected to define the walls of the cooled space. The wall sections, as in all top accessible coolers comprising a plurality of such interconnected wall sections, are interconnected at the corners of the cooler, by means of vertical elongated connection members, such as corner profiles. There are coolers, such as the mentioned one from Iarp, where the upper part has transparent walls, which comprise separate cassettes of thermal glass joined together at edges thereof, thereby forming the rectangular cooler. While the walls of the cooled space of such a cooler are well insulating they are rather expensive and heavy. In the case of non-transparent walls the wall sections are comprised by outer and inner plates having an insulation material arranged between the plates. While the walls of such a cooler are well insulating, the mounting thereof is time consuming.

Summary of the invention

[0004] The object of this invention is to provide a top access cooler eliminating or substantially decreasing the above-mentioned problems of the prior art top access coolers.

[0005] The object is achieved by the present invention as defined in the independent claims as appended. Embodiments of the invention are defined in the dependent

claims.

[0006] Thus, in one aspect thereof, the invention is related to a top access cooler having an upper part comprising a cooled space and a lower part comprising operational devices. The upper part comprises a wall system, at least two connection means, a circumferential bottom seat, and a circumferential top seat. The wall system has at least two wall sections, wherein each wall section comprises an inner wall and an outer wall, which extend in parallel and define an air gap between them. The connection means interconnect the wall sections such that a polygonal tube encompassing at least a substantial portion of the cooled space is formed. The bottom seat sealingly supports bottom edges of the wall sections, and the top seat is sealingly engaged with top edges of the wall sections. The corners of the tube are constituted by bent portions of the wall sections, wherein each connection means is arranged between two adjacent corners.

[0007] In another aspect thereof, the invention relates to a wall system for a top access cooler, comprising at least two wall sections; at least two connection means; a bottom seat; and a top seat. The connection means are arranged to interconnect the wall sections so as to form a polygonal tube. The bottom seat is arranged to sealingly receive bottom edges of the wall sections, wherein the bottom seat is arranged to be circumferential of the tube. The top seat is arranged to sealingly receive top edges of the wall sections, wherein the top seat is arranged to be circumferential of the tube. The corners of the tube are constituted by bent portions of the wall sections. Each connection means is arrangeable between two adjacent corners, and each wall section comprises an inner wall and an outer wall, which extend in parallel and define an air gap between them.

[0008] The definition of the tube means that each wall section has at least one bend forming a corner and two portions extending from the bend and forming side portions of the tube. For example, within the scope of this invention, a rectangularly shaped cooler, thus having a rectangularly shaped tube, can be formed by two wall sections each comprising two corners and being connected at opposite sides of the tube. Or, for example, it can be formed by four wall sections each having one bent portion and two side portions. A five-side tube can be formed by, for example, two wall sections, each having two bent portions and one wall section having one bent portion.

[0009] Due to the structure of the wall system, where at least an inner and an outer wall, in conjunction with the top and bottom seats, enclose an air filled space, a good insulation is combined with a simple mounting and a relatively cheap solution.

[0010] The principle of construction according to this invention is also applicable to a circular cooler. Thus, according to a further aspect of the invention it relates to a top access cooler having an upper part comprising a cooled space and a lower part comprising operational

devices. The upper part comprises a wall system, comprising at least two arc-shaped wall sections, wherein each wall section comprises an inner wall and an outer wall, which extend concentrically and define an air gap between them; at least two connection means, interconnecting the wall sections so as to form a circular tube encompassing at least a substantial portion of the cooled space; a circumferential bottom seat, sealingly supporting bottom edges of the wall sections; and a top seat, sealingly engaged with top edges of the wall sections.

[0011] According to an embodiment of the invention, each connection means comprises an inner plate and an outer plate connected with the inner plate. This embodiment has the advantage of a simple mounting. In addition, in the case where the wall sections are transparent, the plates are advantageously useable for branding, providing a trademark exposure in plural directions, where the full height of the cooler is usable for the trademark exposure. This could be further explained as follows. Since the cooler is not very high, while the goods are well exposed when the wall sections of the upper part of the cooler are transparent, the exposure of the trademark is limited in relation to top access coolers having non-transparent walls. In the latter case, the whole height of the cooler is available for trademark exposure in plural directions, while in the former case the exposure of the goods would be deteriorated by arranging trademark labels across the transparent wall sections. The use of the plates, which per se can be either transparent or non-transparent, provides an advantageous compromise between visibility and trademark exposure. To this end, it is to be noted that the width of the outer plate is optional to a substantial extent.

[0012] According to an embodiment of the invention, the inner and outer walls are individual parts, whereby they are easily mounted side by side on the bottom seat, interconnected with the connection means, and provided with the top seat to form the wall system.

[0013] Further objects and advantages of the present invention will be discussed below by means of exemplary embodiments.

Brief description of the drawings

[0014] Exemplifying embodiments of the invention will be described below with reference to the accompanying drawings, in which:

Fig. 1a schematically shows, in an exploded view, an embodiment of the cooler according to the present invention,

Fig. 1b schematically shows the cooler of Fig. 1 as assembled;

Fig. 2a-2c schematically shows an upper part of the cooler of Fig. 1 in different stages of connection means assembly;

Fig. 2d schematically shows, in an enlarged view, a portion of Fig. 2b;

Fig. 3a-3e schematically shows examples of different cooler shapes and how the wall sections of the cooler may be formed;

Fig. 4a and 4b schematically shows an upper part of the same embodiment as shown in Fig. 1, though focusing on air circulation.

[0015] The same numerals denote the same or corresponding parts throughout the figures.

Description of embodiments

[0016] An embodiment of the top access cooler according to the present invention is shown in, inter alia, Figs. 1a and 1b. The cooler is of an open top type. It consists of an upper part 102 and a lower part 104.

[0017] The lower part 104 comprises ordinary operational devices, such as a compressor, a condenser, etc. Since these devices are very common to a person skilled in the art, and for purposes of clarity and simplicity, they are not shown. The operational devices are hidden in the interior of the lower part and covered by walls 140, 142.

[0018] The upper part 102 comprises a wall system 150, which in turn comprises two wall sections 152, 153, two connection means 144, 145, a bottom seat 122, and a top seat 126. The wall sections 152, 153 are connected by means of the connection means 144, 145 to form a tube, i.e. a complete wall extending around the upper part 102 of the cooler 100. The tube is polygonal, and more particularly, in this embodiment, it is basically rectangular, but to be exact it is six-sided since the two end walls thereof are each slightly bent at two places. Thus, each wall section 152, 153 is bent almost by 90° at two corner portions, and additionally bent by a few degrees at two more portions, as just described. Consequently, the vertical ends of the wall portions 152, 153 are paired on opposite sides of the cooler 100 and located somewhere between the corners of the cooler 100, i.e. the corner portions of the wall sections 152, 153. Similarly, each one of the connection means 144, 145 is located between two adjacent corners of the cooler 100, and more particularly between a corner of one of the wall sections and a corner of the other wall section. In this embodiment, preferably, the wall sections 152, 153 are identical, thereby providing a cost efficient manufacture.

[0019] Each wall section 152, 153 comprises an outer wall 163, 164 and an inner wall 165, 166, which extend in parallel and which define an air gap 168 between them, as best seen in Fig. 2d. The width of the air gap 168 is primarily determined and fixed by a bottom rim 170 constituting a portion of the bottom seat 122, as best seen in Figs. 2a-c, and a corresponding top rim 172 constituting a portion of the top seat 126. The inner and outer walls 164, 166 engage with the top and bottom seats 126, 122 at opposite sides of the top and bottom rims 172, 170 respectively, such that the top and bottom rims 172, 170 protrudes a bit into the space between the walls 163, 164, and 165, 166. The space between the inner and

outer walls 165, 166 and 163, 164 is sealed by the seats 122, 126 such that it provides a thermal insulation capacity. The inner and outer walls 163-166 are made of a transparent material, for the purposes of goods exposure as described above. Further, they are made of a plastic, which makes the wall system light weight.

[0020] As implicitly evident from the description above, the inner and outer walls 163-166 are separate parts that are put together when the cooler is being assembled. The assembly will be further explained below. By being separate parts, the manufacture of the cooler is simplified in comparison to an embodiment where the wall sections 152, 153 are separately assembled into some kind of cassettes. The latter embodiment is, however, also within the scope of the invention as presently claimed.

[0021] Each one of the connection means 144, 145 comprises an outer plate 146, 147, an inner plate 154, 155, and a spacer 156, 157. The inner plate 154, 155 is arranged at the inside of, extend along the height of, and cover adjacent end portions of the two adjacent inner walls 165, 166. The spacer 156, 157 is arranged in the space 168 between the inner 165, 166 and outer 163, 164 walls, cover end portions thereof, extends along the height thereof, and, at least at portions thereof, has a thickness that corresponds to the width of the space 168. The outer plate 146, 147 is arranged at the outside of, extend along the height of, and cover adjacent end portions of the two adjacent outer walls 163, 164. However, the outer plates 146, 147 also extend along the height of the walls 140, 142 of the lower part 104 of the cooler 100. The inner and outer plate and the spacer are connected by means of screws 162 extending through aligned holes 160 therein.

[0022] The bottom seat 170 constitutes a portion of an intermediate box 120, which constitutes the bottom of the upper part 102 of the cooler 100, and at the same time a top of the lower part 104. The box 120 contains two fans (not shown) for circulating air within the cooler 100. A lid 130 covers the box and defines a bottom of a cooled space, the walls of which are defined by the wall system 150. Air distribution walls 134, 136 are arranged within the respective inner walls 165, 166, at opposite sides of the cooled space, and respectively define a narrow space, or slot, between the distribution wall and the neighbouring inner wall. One of the air distribution walls is an air inlet wall 134 and the other one is an outlet wall 136. A top portion of the inlet wall 134 is a honeycomb plate 135 providing an even distribution of cooled air that is forced into the cooled space. For that purpose the fans located within the box 120 circulates air through holes 123 in a partition wall 121 arranged in the box 120, past a cooling device (not shown), upwards through slits 132 in the lid 130, through the slot between the inlet wall 134 and the neighbouring inner wall 166, through the honeycomb 135, and some other openings 133 of the inlet wall 134, into the cooled space, and downwards through the slot between the outlet wall 136 and the neighbouring inner wall 165, and through slits 132 in the lid 130 back

into the box 120. It is to be noted that this type of system for cooling the air in the cooler 100 is merely a non-limiting example. Many other types are possible within the scope of this invention, as easily recognised by the skilled person.

[0023] In order to describe the complete cooler 100 it is to be mentioned that the lower part 104 of the cooler 100 further comprises a base plate 110 and stanchions 124 attached to the base plate 110. The intermediate box 120 is mounted on the stanchions 124. The height of the space of the lower part 104 of the cooler 100 is, thus, defined by the stanchions 124. The upper part 102 further comprises a topmost cover ring 128, mounted on top of the top seat 126.

[0024] When assembling the wall system 150 according to the above-described embodiment, the inner walls 165, 166 are placed on the bottom seat 122; the outer walls 163, 164 are placed on the bottom seat 122; the spacers 156, 157 are introduced between the walls 163-166 at the connection portions thereof; and the inner and outer plates 154, 155, 146, 145 are put in place and screwed together. Then, after having added the air distribution walls 134, 136, the top seat 126 is placed on top of the walls 163-166 and caused to engage with upper edges thereof. This assembly is easy and time efficient.

[0025] Above an embodiment of the present invention has been described. This should be seen as merely a non-limiting example. Many modifications will be possible within the scope of the invention as defined by the claims. Below a few examples of such modifications will be given.

[0026] Thus, in an alternative embodiment the wall sections are non-transparent. Further, in an alternative embodiment the wall sections extend along both the upper and lower parts. Then, if the wall sections are transparent, they are optionally painted at the lower part. Further, in an alternative embodiment the wall sections are made of glass or, in the non-transparent case, of metal, although plastic is preferable, inter alia from a weight perspective. In an alternative embodiment the cooler comprises a top lid covering the cooled space. However, the open top embodiment is preferred, due to easier access to the goods.

[0027] Further, in alternative embodiments the top access cooler is not polygonal but circular. However, the same construction principle as used for the polygonal variants is also used for the circular cooler. That means, as shown in Fig. 3e, that there are at least two wall sections, which, of course, are arc shaped. In turn, this means that there are no corners. The shape is the only difference in relation to the polygonal constructions described above, and therefore no further explanation of the circular variants is made here.

[0028] Additional embodiments are most schematically indicated in Figs. 3a-3d. For example, in Fig. 3a a rectangular cooler having two wall sections is shown, while a rectangular cooler having four wall sections is shown in Fig. 3b. In Fig. 3d a five-sided cooler having two larger

wall sections, covering two corners each, and one smaller wall section, covering one corner, are shown.

Claims

1. A top access cooler having an upper part comprising a cooled space and a lower part comprising operational devices, wherein the upper part comprises a wall system, comprising at least two wall sections, wherein each wall section comprises an inner wall and an outer wall, which extend in parallel and define an air gap between them; at least two connection means, interconnecting the wall sections so as to form a polygonal tube encompassing at least a substantial portion of the cooled space; a circumferential bottom seat, sealingly supporting bottom edges of the wall sections; and a top seat, sealingly engaged with top edges of the wall sections, wherein the corners of the tube are constituted by bent portions of the wall sections, wherein each connection means is arranged between two adjacent corners.
2. A top access cooler according to claim 1, wherein the cooler is an open top cooler.
3. A top access cooler according to claim 1 or 2, wherein the wall sections are transparent.
4. A top access cooler according to any one of claims 1-3, wherein each connection means comprises an inner plate and an outer plate, connected with the inner plate.
5. A top access cooler according to claim 4, wherein each connection means further comprises spacer means arranged between the inner and outer plates.
6. A top access cooler according to claim 4 or 5, wherein each outer plate extends along the upper part as well as the lower part.
7. A top access cooler according to any one of claims 1-6, wherein the inner and outer walls are individual parts.
8. A wall system for a top access cooler, comprising at least two wall sections; at least two connection means, for interconnecting the wall sections so as to form a polygonal tube, a bottom seat for sealingly receiving bottom edges of the wall sections, which bottom seat is arranged to be circumferential of the tube, and a top seat for sealingly receiving top edges of the wall sections, which top seat is arranged to be circumferential of the tube, wherein the corners of the tube are constituted by bent portions of the wall sections; wherein each connection means is arrangeable between two adjacent corners, and

wherein each wall section comprises an inner wall and an outer wall, which extend in parallel and define an air gap between them.

9. A wall system according to claim 8, wherein each connection means comprises an inner plate and an outer plate, connected with the inner plate.
10. A wall system according to claim 9, wherein each connection means further comprises spacer means arranged between the inner and outer plates.
11. A wall system according to any one of claims 8-10, wherein the wall sections are transparent.
12. A top access cooler according to any one of claims 8-11, wherein the inner and outer walls are individual parts.
13. A top access cooler having an upper part comprising a cooled space and a lower part comprising operational devices, wherein the upper part comprises a wall system, comprising at least two arc-shaped wall sections, wherein each wall section comprises an inner wall and an outer wall, which extend concentrically and define an air gap between them; at least two connection means, interconnecting the wall sections so as to form a circular tube encompassing at least a substantial portion of the cooled space; a circumferential bottom seat, sealingly supporting bottom edges of the wall sections; and a top seat, sealingly engaged with top edges of the wall sections.

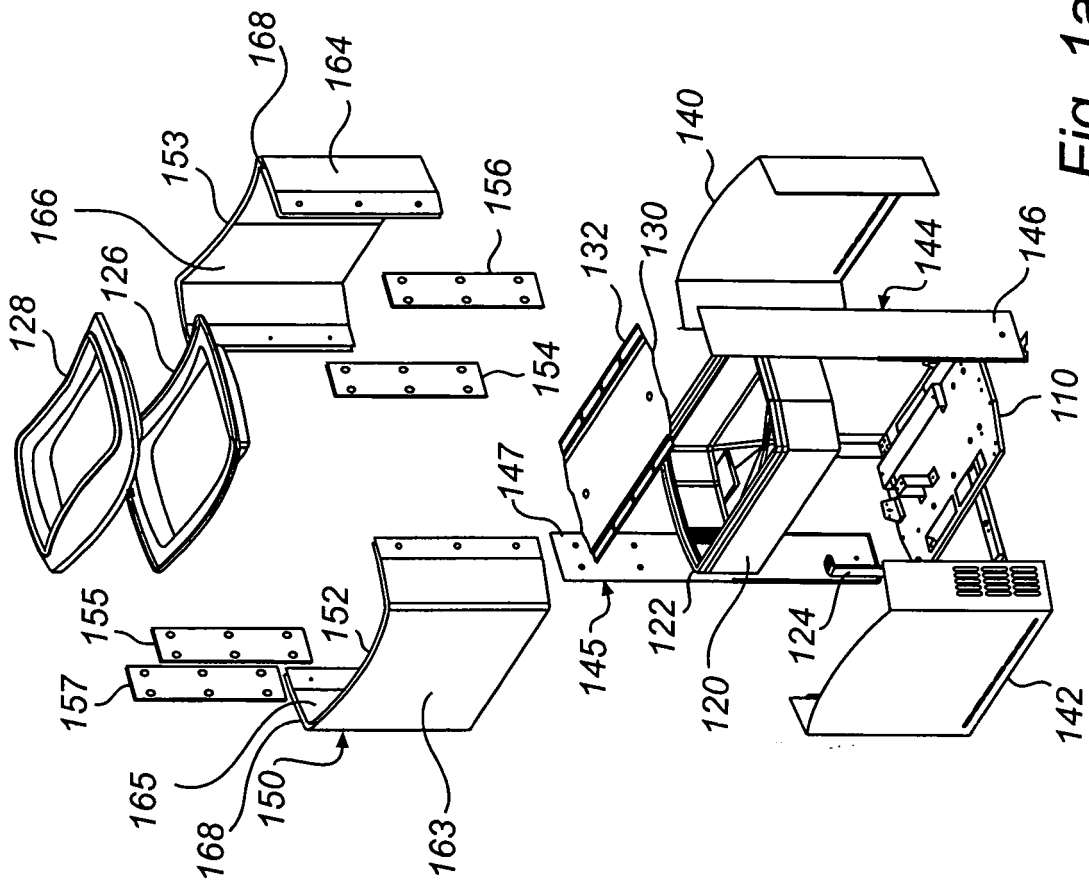


Fig. 1a

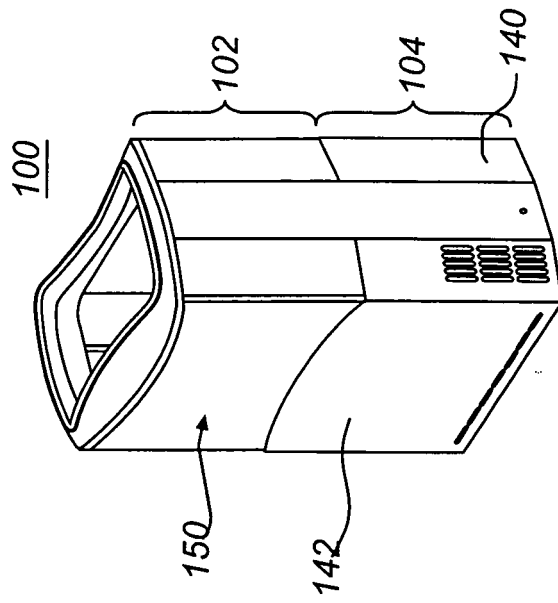


Fig. 1b

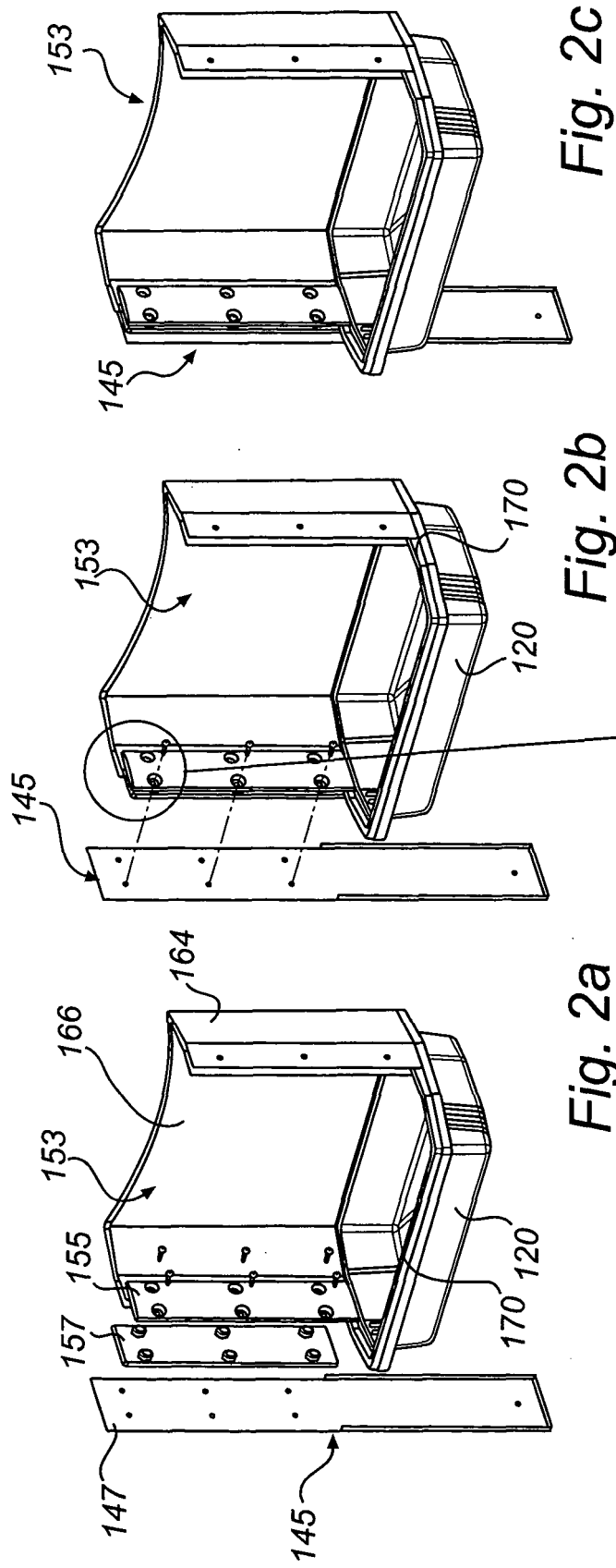


Fig. 2c

Fig. 2b

Fig. 2a

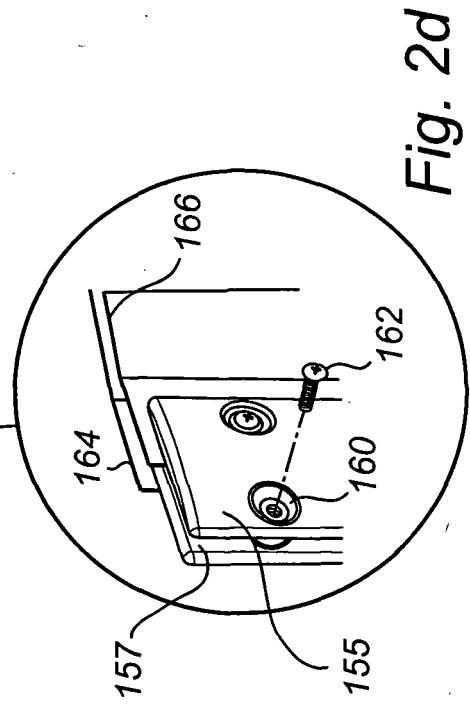


Fig. 2d

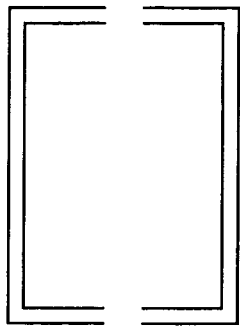


Fig. 3a

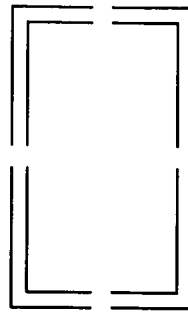


Fig. 3b

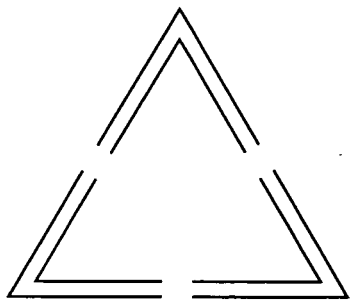


Fig. 3c

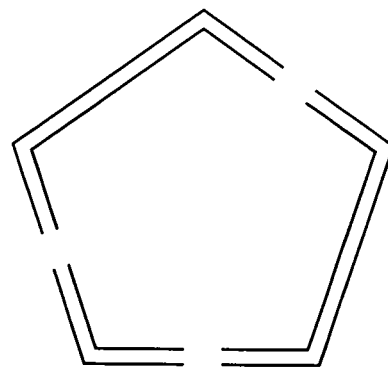


Fig. 3d

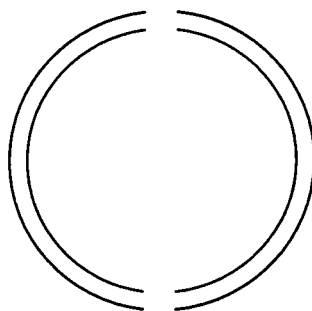


Fig. 3e

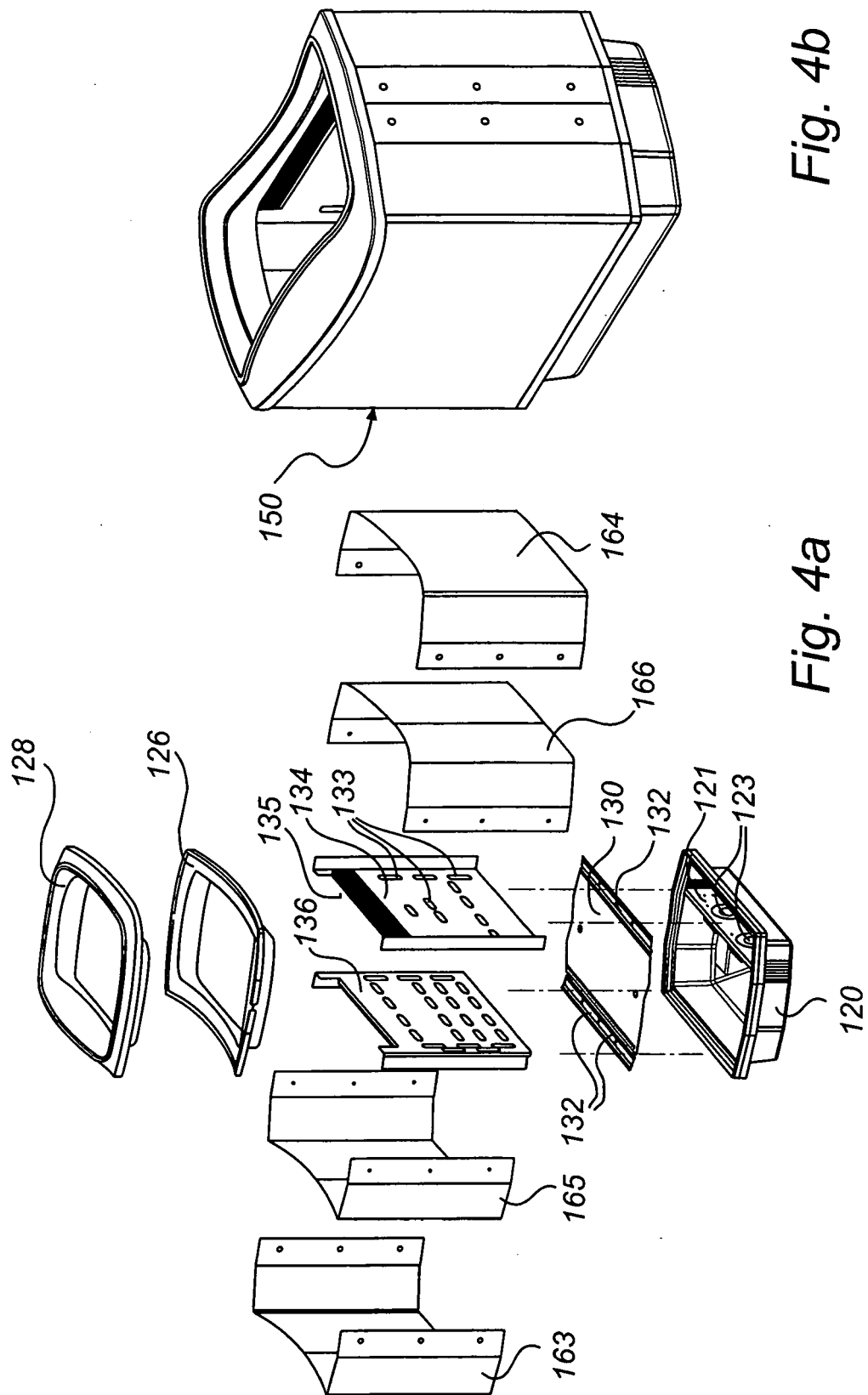


Fig. 4b

Fig. 4a



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 01 6207

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Place of search The Hague		Date of completion of the search 9 December 2004	Examiner CORREIA DOS REIS, I
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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