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**Datasheet for the decision  
of 23 November 2023**

**Case Number:** T 1927/20 - 3.2.03

**Application Number:** 11194455.9

**Publication Number:** 2469204

**IPC:** F25D23/06, B29C49/54,  
B29C51/06, B29C51/10

**Language of the proceedings:** EN

**Title of invention:**

A cooling device with a reinforced inner liner and production method for it

**Patent Proprietor:**

BSH Hausgeräte GmbH

**Opponent:**

LOUIS PÖHLAU LOHRENTZ  
Patentanwälte Partnerschaft mbB

**Headword:**

**Relevant legal provisions:**

EPC Art. 100(b), 100(c), 54, 56, 83, 84, 123(2)  
RPBA 2020 Art. 12(4)

**Keyword:**

Grounds for opposition - lack of clarity no ground for  
opposition - insufficiency of disclosure (no) - subject-matter  
extends beyond content of earlier application (no)

Novelty - main request (no)

Inventive step - auxiliary request 6 (yes)

Claims - clarity after amendment (yes)

Amendments - allowable (yes) - intermediate generalisation

Amendment to case - admissibly raised and maintained (yes)

**Decisions cited:**

G 0003/14

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 1927/20 - 3.2.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.03**  
**of 23 November 2023**

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**Decision under appeal:**

**Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
8 September 2020 concerning maintenance of the  
European Patent No. 2469204 in amended form.**

**Composition of the Board:**

**Chairman** C. Herberhold  
**Members:** B. Goers  
D. Prietzel-Funk

## **Summary of Facts and Submissions**

- I. European patent No. 2 469 204 relates to a cooling device comprising a plastic based inner liner with at least two outwardly extending mutual support parts comprising pluralities of spaced ribs provided in the vicinity of a tab in the support parts. It also relates to a production method for such a cooling device.
- II. In its impugned decision, the opposition division concluded that the patent as amended on the basis of auxiliary request 2 then on file complied with the requirements of the EPC.
- III. This decision was appealed by both the patent proprietor and the opponent which are referred to as such hereinafter for the sake of simplicity.
- IV. In oral proceedings before the Board the final requests were as follows.

The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained as granted, or that the patent be maintained in amended form on the basis of one of auxiliary requests 2 to 4 or 6, submitted with the reply dated 6 May 2021 to the opponent's grounds of appeal.

Auxiliary request 5 was withdrawn during the oral proceedings before the Board.

The opponent requested that the decision under appeal be set aside and that the patent be revoked, and that auxiliary request 6 not be admitted into the proceedings.

V. The following evidence is relevant to this decision:

E1: KR 2010 0022742 A  
E1': Translation of E1  
E2: KR 2019 0032111  
E2': Translation of E2  
E3: KR 2001 0060723  
E3': Translation of E3  
E6: FR 68736 E

VI. Features of the claim requests

(a) Claims 1 and 7 of the main request (patent as granted) read (feature numbering added in "[ ]"):

Claim 1:

"[F0] A cooling device comprising  
[F1] an insulation layer (80) which expands and places  
between a plastic based inner liner (20) and an outer  
frame (50) so as to apply pressure;  
[F2] at least two mutual support parts (30) of the  
inner liner (20) which are formed so as to extend  
outwardly in transverse direction (y) and which are in  
shell form;  
[F3] a door (10) which is formed by the forming of an  
inner wall (32) of the support parts (30) facing each  
other and wherein the inner wall (32) comprises at  
least one tab (42),  
characterized by comprising  
[F4] pluralities of spaced ribs (46) which are formed  
by giving a predetermined form to the inner wall (32)  
and which are provided in the vicinity of the tab (42)  
in the support parts (30)."

Claim 7:

"[F10] A cooling device production method  
[F10'] according to any one of the preceding claims,  
comprising the steps of  
[F11] heating a plastic based panel (22) on a  
thermoform mould (70) in opposite form of the inner  
liner (20) and  
[F12] covering said plastic based panel (22) onto the  
thermoform mould (70);  
[F13] forming the rib (46) together with the inner  
liner (20) by means of a projection (74) provided on  
the thermoform mould (70);  
[F14] forming the tab (42) and exiting the tab (42) by  
a movable core (90), which applies pressure to the  
support part (30);  
[F15] pulling and removing the inner liner (20) in the  
transverse direction (y) which is essentially  
orthogonal to the thermoform mould (70)."

(b) Claim 1 of **auxiliary request 1** (patent as  
maintained) is based on claim 7 of the main request  
with amendments to features [F13] and [F15] and  
reads (feature numbering added in "[ ]" and  
amendments in relation to claim 7 combined with the  
features of claim 1 as granted marked as bold and  
strike-through):

"[F10] A cooling device production method for producing  
a cooling device comprising  
[F1] an insulation layer (80) which expands and places  
between a plastic based inner liner (20) and an outer  
frame (50) so as to apply pressure;  
[F2] at least two mutual support parts (30) of the  
inner liner (20) which are formed so as to extend  
outwardly in transverse direction (y) and which are in  
shell form;

[F3] a door (10) which is formed by the forming of an inner wall (32) of the support parts (30) facing each other and wherein the inner wall (32) comprises at least one tab (42), ~~characterized by~~  
[F4] comprising pluralities of spaced ribs (46) which are formed by giving a predetermined form to the inner wall (32) and which are provided in the vicinity of the tab (42) in the support parts (30),  
comprising the steps of  
[F11] heating a plastic based panel (22) on a thermoform mould (70) in opposite form of the inner liner (20) and  
[F12] covering said plastic based panel (22) onto the thermoform mould (70);  
[F13'] forming the ~~rib~~ **plurality of spaced ribs** (46) together with the inner liner (20) by means of ~~a~~ **projections** (74) provided on the thermoform mould (70);  
[F14] forming the tab (42) and exiting the tab (42) by a movable core (90), which applies pressure to the support part (30);  
[F15'] pulling and removing the inner liner (20) in ~~the~~ **a** transverse direction (y) which is essentially orthogonal to the thermoform mould (70)."

- (c) Claim 1 of **auxiliary request 2** corresponds to claim 1 of auxiliary request 1 with feature [F15'] being replaced with the original feature [F15].
- (d) Claim 1 of **auxiliary request 3** corresponds to claim 1 of auxiliary request 2 with feature [F13'] being replaced with the original feature [F13].
- (e) **Auxiliary request 4** corresponds to auxiliary request 3 with dependent claims 2 to 6 deleted.

(f) Claim 1 of **auxiliary request 6** corresponds to auxiliary request 4 with the following additional features in claim 1:

"...[F16] wherein the tab (42) has a planar front edge (41) and a rear edge (44) which is in the opposite direction, wherein the front edge (41) and the rear edge (44) have a distance in between, wherein the rear edge (44) has an undulated contour,  
[F17.1] wherein the rib (46) comprises an embossment form extending in the transverse direction (y),  
[F17.2] wherein the ribs (46) extend between the tab's (42) rear edge (44) facing the inner liner (20), and the panel (22) of the inner liner (20) parallel to the outer frame (50),  
[F17.3] wherein the rear edge (44) contour follows the ribs' (46) line facing the rear edge (44),..."

VII. The patent proprietor's arguments as far as relevant for this decision can be summarised as follows:

(a) Article 100 (c) EPC

The subject-matter of claim 1 of the patent as granted did not extend beyond the content of the application as filed.

(b) Article 100 (b) EPC

The invention was not insufficiently disclosed. All objections raised by the opponent were at most a lack of clarity not objectionable in the case of granted claims.

(c) Main request - novelty

The subject-matter of claim 1 was novel over E3. In particular, E3 did not disclose ribs and the structures allegedly forming ribs were not spaced.



(d) Auxiliary request 1 - inventive step

The subject-matter of claim 1 involved an inventive step. E3 pointed towards injection molding for the inner liner and thus E6 was not relevant. A liner structure as shown in the figures of E3 was not producible by thermoforming. In addition, the moulding assembly in E6 was not suited to producing an inner liner with the structure according to features [F1] to [F4]. Even if the skilled person were to consider E6, demoulding of the inner liner required that the projections on the mould of E6 were retractable which was inconsistent with feature [F13] of claim 1.

(e) Auxiliary request 2 to 4 - inventive step

The subject-matter of claim 1 of auxiliary requests 2 to 4 involved an inventive step for the same reasons as given for auxiliary request 1.

(f) Auxiliary request 6 - admittance

Auxiliary request 6 had to be admitted into the proceedings. It essentially introduced features which had already been subject to a request in opposition proceedings and was *prima facie* allowable.

(g) Auxiliary request 6 - Article 83 EPC

The invention of auxiliary request 6 was sufficiently disclosed for the same reasons as given for the main request.

(h) Auxiliary request 6 - Article 84 EPC

The subject-matter of claim 1 was clear and concise and supported by the description. Both the rear and front edges were clearly defined in claim 1, as was the fact that claim 1 was directed to pluralities of spaced ribs.

(i) Auxiliary request 6 - Article 123(2) EPC

The added feature [F16] did not constitute an unallowable intermediate generalisation from the description of the embodiment of Figure 3.

(j) Auxiliary request 6 - inventive step

The subject-matter of claim 1 involved an inventive step. E1 was the sole document disclosing an undulated rear edge. However, in E1 this feature was only disclosed in combination with an undulated front edge. As the two were disclosed together in E1 as essential to the invention, the skilled person would not deviate from this teaching in the absence of any pointer either in the common general knowledge or in any of E2, E3 and E6.

(k) Auxiliary request 6 - description

The amendments made to the description were allowable since either no inconsistency with the claims was present or amendments were not possible under Rule 80 EPC.

VIII. The opponent's arguments as far as relevant for this decision can be summarised as follows:

(a) Article 100 (c) EPC

The amendments made to features [F3] and [F4] extended the subject-matter of claim 1 of the patent beyond the content of the application as filed.

(b) Article 100 (b) EPC

The invention as defined in claims 1 to 6 was not sufficiently disclosed.

(c) Main request - novelty

The subject-matter of claim 1 was not novel over E3. The uneven structures 38 were pluralities of spaced ribs in accordance with feature [F4].

(d) Auxiliary request 1 - inventive step

The subject-matter of claim 1 did not involve an inventive step in view of E3 as the starting point in combination with the teaching of E6. E3 did not teach away from thermoforming and claim 1 did not require the protrusions to be formed on the static part of the thermoform mould. In addition, the patent taught in paragraph [0020] that demoulding was also possible for ribs extending in the transverse direction without providing the embossment projections therefor on a movable core of the thermoform mould. Respective ribs were also disclosed in E6 in form of the saw tooth profiles shown in Figure 1.

(e) Auxiliary request 2 to 4 - inventive step

The subject-matter of claim 1 of auxiliary requests 2 to 4 did not involve an inventive step for the same reasons as given for auxiliary request 1.

(f) Auxiliary request 6 - admittance

Auxiliary request 6 had not to be admitted as it could and should have been filed already in the opposition proceedings. Furthermore, it was *prima facie* not allowable at least under Articles 84 and 123(2) EPC.

(g) Auxiliary request 6 - Article 83 EPC

The invention of auxiliary request 6 was not sufficiently disclosed for the same reasons as given for the main request.

(h) Auxiliary request 6 - Article 84 EPC

Claim 1 was not clear as to the definition of the front and rear edges and their opposite orientation. Also the inconsistent use of ribs in the singular and plural form gave rise to a clarity objection. The feature "undulated contour" was also unclear.

(i) Auxiliary request 6 - Article 123(2) EPC

Feature [F16] constituted an unallowable intermediate generalisation as a number of features originally disclosed in combination with and inextricably linked to the added features were omitted.

(j) Auxiliary request 6 - inventive step

The subject-matter of claim 1 did not involve an inventive step starting from any of E1, E2, E3 and E6 as closest prior art. The distinguishing features were not interrelated and related to partial problems. The specific edge forms according to feature [F16] had no technical character. Alternatively these forms were at least an obvious modification, since E1 disclosed a tab having a planar front edge and an undulating rear edge.

(k) Auxiliary request 6 - description

The amendments made to the description were not allowable since they resulted in inconsistencies with the claim wording and in lack of clarity.

## Reasons for the Decision

### 1. Main request - Article 100(c) EPC

The Board agrees with the conclusion in the appealed decision that the subject-matter of claim 1 does not extend beyond the content of the application as filed. The reasons are as follows.

#### 1.1 The opponent argued that the following two amendments extended the subject-matter compared with the application as filed (the amendments relative to the application as filed are highlighted in bold and strike-through):

(a) Feature [F3]: "a door (10) which is formed by the forming of an inner wall (32) of the support parts (30) facing each other and ~~which~~ **wherein the inner wall (32)** comprises at least one tab (42)"

(b) Feature [F4]: "pluralities of spaced ribs (46) which are formed by giving a predetermined form to the inner wall (32) and which are provided in the vicinity of the tab (42) **in the support parts (30)**"

#### 1.2 (a) Feature [F3]: tab(s) at the inner wall(s)

##### 1.2.1 It is true that according to the original wording of feature [F3] the tab was defined to be comprised by the door in general and not by the support parts (see singular form of the term "comprises").

The amendment in feature [F3] additionally specifies that the at least one tab is provided at a specific

part of the door which is the inner wall of the support parts.

1.2.2 As the "inner wall" (in the singular) defined in claim 1 of the main request refers to the "support parts" (in the plural) the claim wording is arguably ambiguous with respect to the number of tabs at least encompassed by it:

- at least just one tab provided at both inner walls of the mutual support parts
- versus
- at least one tab provided at each inner wall of the mutual support parts.

1.2.3 According to the opponent the claim had to be construed in line with the second interpretation wherein claim 1 required at least two tabs, one at each support part. They argued that contrary to this the original claim 1 disclosed no tab at the inner wall(s), and the embodiments in the specification disclosed a single, two, or, as in Figures 1 to 4, six tabs at the inner wall of the support parts. As the wording of claim 1 excluded embodiments with only a single tab at the inner walls this constituted an unallowable intermediate generalisation.

1.2.4 The Board has concluded that claim 1 is to be understood in accordance with the first interpretation, i.e. as comprising at least a single tab at both inner walls, in line with the construction of claim 1 as originally filed which included only a single tab at the door. In view of this interpretation, all relevant numbers of tabs are encompassed by the subject-matter of claim 1.

1.2.5 However, even when considering the opponent's restricted second interpretation, no unallowable intermediate generalisation occurs. Embodiments with one tab at each of the mutual support parts is in line with what was disclosed in the general part of the description, in particular the passage between page 1, line 34 and page 2, line 13. This paragraph is based on similar wording to claim 1 and concludes: "By means of this, for instance, it becomes possible to seat the shelf, which has a predetermined length so as to be assembled to the tabs, onto the tabs between the support parts". The embodiment with two tabs is thus part of the general disclosure. The omission of embodiments with one tab only is at most a restriction of the subject-matter and not an intermediate generalisation. Also, mutual pairs of tabs are provided in the embodiments at the inner walls. This corresponds to the skilled person's understanding, since the support parts with their inner walls are disclosed to hold the shelves in interaction with the tabs (see also page 1, lines 21 to 23: "... the shelves are also engaged to the tabs in the support parts and thereby they are fixed").

1.3 (b) Feature [F4]: in the vicinity of the tab in the support parts

Also the amendment to feature [F4] does not constitute added subject-matter. The amendment in feature [F4] is literally based in the general part of the description as originally filed, see page 2, line 4 to 11 (emphasis added):

*"The subject matter invention comprises pluralities of spaced ribs which are formed by providing a predetermined form to the inner wall and which are*

provided in the vicinity of the tab. In this case, because of the pressure applied to the inner walls during the placement of the insulation layer between the outer frame and the inner liner, the inflation is prevented **by means of the ribs placed in the vicinity of the tab in the support part.**"

2. Main request - Article 100(b) EPC

The opponent raised *inter alia* the following objections of lack of sufficient disclosure:

- (a) Claim 1: the term "shell form" in "two mutual support parts ... in shell form" was undefined in the patent.
- (b) Claim 2: the term "comprises an embossment" instead of an "embossment form" was not defined in the patent.
- (c) Claim 2: the definition of a singular "rib" was inconsistent with claim 1.
- (d) Claim 3: the feature "ribs extend ... parallel to the outer frame" was in contradiction to the disclosure of the figures, in particular to the embodiment of Figure 3.
- (e) Claim 4: the feature "the ribs' line" was undefined in the patent.

Objections on the ground of Article 100 (b) EPC were also raised against claims 5 and 6 as granted. These objections are, however, not relevant to this decision and can be left undecided.

- 2.1 As far as objections (a) to (e) are concerned, the patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person



skilled in the art. The conclusions in the appealed decision that these objections relate at most to clarity deficiencies for which no objection is justifiable in opposition appeal proceedings (see G 3/14, catchword) are agreed with.

#### 2.1.1 Objection (a) - shell form

The term "shell form" specifies the "at least two mutual support parts of the inner liner" in feature [F2].

While there exist homonymic meanings of the term "shell" in the English language (the opponent made e.g. reference to its maritime meaning), a skilled person would, given the technical context of claim 1, not consider such further meanings. In fact, in the context of sufficiency of disclosure, the term "shell" does not have to be construed in the breadth of all its possible homonymic meanings but it is necessary to construe which meaning the claim addresses.

Therefore the term "shell" is to be construed by the skilled person in the context of the further claim features taking due consideration of the whole specification.

Contrary to the opponent's allegations, in the technical context of household appliances the term "shell" usually describes a casing or housing type structure. Such an understanding is also applicable in the case at hand where this shell encases possible shelves held between the support parts. This understanding is supported by Figures 1 and 2 of the patent. Therefore, at most, the term "shell form" is redundant given what is already expressed in claim 1

with respect to the mutual support parts, i.e. the two support parts (in combination) which are "formed so as to extend outwardly in transverse direction". This is, however, an objection under Article 84 EPC which is not applicable in the context of the granted claim wording.

The opponent also referred to the specification "ear-like" in paragraph [0016] and argued that this term cast further doubts as to the meaning of "shell form" since an "ear-like form was not a shell form". However, the term "ear-form" relates to a different aspect of a (single) support part when seen in the side view as in Figure 2. This aspect is not a feature of the claims.

#### 2.2 Objection (b) - embossment form

A rib comprising an "embossment form" is a rib formed (at least partly) by a structure which is the projection of a thermoform mould mentioned in claim 7, i.e. the liner material being outwardly embossed. No issue of insufficient disclosure arises here.

#### 2.3 Objection (c) - rib in singular form

The inconsistency between the definition of "pluralities of spaced ribs" in claim 1 and the reference to these ribs in the singular form in claims 2 and 7 is a clarity issue present already in the claims as granted. For detailed reasoning see point 6.3.1 below.

#### 2.4 Objection (d) - "in parallel to the outer frame"

Contrary to the opponent's view, the term "parallel to the outer frame" in claim 3 refers to the panel of the inner liner and not to the ribs as also shown in

Figure 3. Insofar as the opponent argues that it was ambiguous which of the two interpretations to apply, this is at most a clarity issue and not a question of sufficiency of disclosure. Taking the whole disclosure into account, the skilled person has no problem establishing that the inner liner is addressed here. In the patent, support is only found for embodiments in which the ribs extend in the transverse direction, i.e. between the rear edge and the panel, while ribs extending normal thereto (i.e. parallel to the outer frame) are not mentioned anywhere.

2.5 Objection (e) - ribs' line

The term "ribs' line" defined in claim 4 follows according to paragraph [0007] along the contour formed by the ribs and facing the rear edge of the tab. The Board's understanding of this feature is that the rear edge of the tab should extend along a line formed by the ends of the pluralities of ribs as shown in Figure 3. This is in line with claim 3 which defines that the ribs "extend between the tab's rear edge and a panel".

3. Main request - novelty

Contrary to the decision under appeal, the Board concludes that E3 anticipates the subject-matter of claim 1 with respect to novelty.

3.1 It is undisputed that E3 discloses a cooling device with a door comprising an insulation layer which expands and places between a plastic based inner liner (see E3', page 3, paragraph 5) and an outer frame. It is further common ground that the door has mutual

support parts with inner walls facing each other and that the inner walls comprise support tabs.

- 3.2 The Board agrees with the conclusion in the appealed decision that the wording "expands ... so as to apply a pressure" of feature [F1] is a product-by-process feature describing that the door inner space is filled with a material which is foamed *in situ* (see also paragraphs [0002] and [0004] of the patent (emphasis added): "pressure applied to the inner walls **during the placement** of the [expanding] insulation layer"). Once the foam material is cured, the liner is not subjected to any further expansion force but rather possibly to local tension if demoulded during the expansion of the insulation layer. The "pressure" mentioned in feature [F1] - apart from neither being qualified as to its location nor quantified - is thus not a characteristic which is suitable for distinguishing the claimed product from any other foam-filled door structure.

E3 discloses manufacturing steps wherein the door is filled with an expanding insulation layer (D3', page 4, last paragraph: "foaming agent injected to the door") and therefore also anticipates the entire feature group [F1].

- 3.3 The patent proprietor argued that E3 did not disclose "pluralities of spaced ribs" according to feature group [F4]. The structures 38 shown in Figures 4 to 6 of E3 did not constitute ribs and these structures were not spaced either.

This is not persuasive.

- 3.3.1 In the figures of E3, a structure 38 is provided at the side walls of the mutual support parts in the vicinity

of the tabs ("supporting protrusion 36"). This structure is referred to in E3' as "uneven structure" having a "concavo-convex structure having the regular gap in the lengthwise" (see E3', page 5, second paragraph). It is not contested that at least a part of this structure is protruding from the inner walls of the support parts (see Figures 4 and 6).

The patent does not provide a closed definition of the term "ribs" and none for the term "spaced ribs" either.

- 3.3.2 As is apparent from the dictionary excerpt referred to by the patent proprietor, the term rib has different homonymic meanings. Also the cited passage "a part or piece similar to a rib and serving to shape or support" gives no further insight. Therefore, in the case at hand the term has to be construed in the context of the whole patent specification when compared to the disclosure of D3.
- 3.3.3 In certain embodiments of the patent the **ribs** are embodied as "bar-like" (paragraphs [0008] and [0020]), a term also used to describe the ribs in the embodiment of Figure 3 (see paragraph [0017]). According to other embodiments the ribs' cross-section may be of semi-circular form. In still another embodiment "the rib [sic] comprises an embossment form extending in the transverse direction" (see paragraph [0005] and claim 2). While it can be derived from this information that the ribs in the patent are elongate structures protruding from a surface, the term does not imply any restriction as to the cross-sectional shape of the ribs.

In view of this, the peaks of the undulated structures 38 in E3 fall under the broad term "pluralities of ribs" of claim 1.

3.3.4 The patent proprietor further argued that the ribs in E3 were not **spaced**, as the cross-section of the structure 38 in E3 formed a continuous wave form according to Figures 4 and 6, wherein the individual waves were not separated. Such a structure could not be considered as "spaced ribs".

However, this is not convincing either.

3.3.5 The patent does not distinguish between spaced ribs and non-spaced ribs. The term "spaced" is rather considered as inherently fulfilled for any "pluralities of ribs", since each rib has to form an individual protrusion spaced with respect to the adjacent one. The patent does not include a more restrictive definition of the ribs. In particular, no requirement is defined in the patent that an individual rib has to be formed from a flat surface in a discontinuous manner and at a distance from a further discontinuity in this surface defining another rib.

3.3.6 This understanding is also supported by the embodiment of Figure 3 of the patent. According to paragraph [0017], there is a distance between the ribs and the rear edge (44). However, from Figure 3 it is apparent that the ribs and the rear edge at least partially overlap at the part closest to the inner wall. Here too, the concept of "distance" relates to the overall structures and not the bases thereof.

3.3.7 Since the individual peaks of the undulated structure 38 in E3 are considered to form a plurality of ribs,

the individual ribs in this plurality of ribs are thus also considered to be spaced.

3.3.8 The patent proprietor additionally argued that the uneven structure 38 in E3 served a different purpose (reinforcement of the inner liner during foaming, see E3', page 5, first paragraph). However, this is not relevant, since no specific function and corresponding features are explicitly or implicitly defined in the subject-matter of claim 1. It is also noted that the uneven structure in E3 is further disclosed to assist in securing and carrying a shelf ("door basket") under heavy loading (E3', page 5, second paragraph). Both purposes are also mentioned in the patent (see paragraphs [0002] and [0003]).

3.4 To conclude, the subject-matter of claim 1 is not novel over the disclosure of E3.

4. Auxiliary request 1 - inventive step

The subject-matter of claim 1 of auxiliary request 1 does not at least involve an inventive step.

Therefore, the further objections against auxiliary request 1 under Rule 80, Article 123(2) and Article 123 (3) EPC can be left undecided.

4.1 E3 as the starting point

Claim 1 is now directed to a manufacturing method. E3 discloses a door with an inner liner structure according to features [F1] to [F4] (see point 3. above), but without providing detailed information as to its manufacturing method. Nevertheless, E3 is a

suitable starting point for the assessment of inventive step, since according to the patent the specific structure of the inner liner and the method steps and the design of the thermoform mould to manufacture this liner of specific structure are closely interrelated (see in particular patent column 2, lines 35 to 50). With the door structure of E3 in mind, the skilled person would seek a suitable production method therefor. For this reason, E3 is a valid starting point for assessing inventive step of the method for producing such a structure as defined in claim 1.

#### 4.2 Distinguishing features and technical problem

Starting from this disclosure of E3 the method steps [F11] to [F15] are undisputedly the distinguishing features.

The technical problem related to the distinguishing features is that of selecting a suitable method for forming the plastic based inner liner of the device disclosed in document E3 (having the structural features [F1] to [F4]).

#### 4.3 Combination with E6

The skilled person starting from E3 would consider the teaching of E6 in order to solve the technical problem. E3 is not limited to a manufacturing method for the specific inner liner disclosed therein.

##### 4.3.1 E6 provides method steps suitable for forming a liner of plastic based material in general (see page 1, left column, lines 1 to 4: "La présente invention se rapporte aux articles moulés en matière plastique et, plus particulièrement, aux appareils et à la méthode



servant à la formation de tels articles." [The present invention relates to moulded articles of plastics and, more particularly, to the apparatuses and method serving to form such articles]). The main embodiment in E6 are refrigerator doors and shelf supports forming an integral part of these doors (see page 1, left column, lines 12 and 13), in particular for forming plastic based liner sheets ("feuilles de matière plastique", see page 1, left column, lines 22-24). E6 further emphasises that it is advantageous to form precise sharp-edged protrusions and depressions as these are also necessary for the formation of the features of the inner liner of E3 (E6, page 1, right column, lines 22 to 24).

- 4.3.2 The patent proprietor's argument that E3 implied that the inner liner had to be produced by injection moulding rather than by thermoforming and therefore led away from the method disclosed in E6 is not persuasive. While in the translation E3' the term "molded" is used, this term, in the absence of further information, is understood to be equivalent to "formed".
- 4.3.3 The patent proprietor also argued that Figure 4 of E3 showed a shelf-like structure extending between the two support parts in close vicinity below the tabs and the uneven structure formed an integral part thereof. Such a structure could not be produced by thermoforming. Due to the inherent stability imparted to the liner by this shelf-like structure to the liner, it would not be possible to "demould" the liner.

However, no further information about this element and about its connection with the side walls is derivable from E3. In the description in E3' this element is not mentioned. As explicitly disclosed for other "door

baskets" it could well be releasably fixed to the support parts. Moreover, E6 discloses the use of "movable cores" for "demoulding" (see point 6.3 below). Therefore this element does not teach away from considering the thermoforming disclosed in E6 with regard to manufacture of the inner liner of E3.

4.4 The distinguishing features are obvious

4.4.1 Contrary to the conclusion in the appealed decision, it is not relevant whether E6 discloses a thermoform mould producing exactly the device with features [F1] to [F4] (this rather being a novelty argument). Instead, the relevant question is whether - when taking into account the teaching of E6 - the person skilled in the art would be prompted to apply the method steps taught in E6 to produce the product disclosed in E3 and would - by using routine modifications and common general knowledge - be able to adapt the design of the thermoform mould of E6 appropriately to produce a device with features [F1] to [F4].

This is the case.

4.4.2 As to the specific features necessary for "*forming the plurality of spaced ribs together with the inner liner by means of projections provided on the thermoform mould; forming the tab and exiting the tab by a movable core, which applies pressure to the support part*" (features [F.13'] and [F14]) this is all addressed by corresponding functional elements of the thermoform mould disclosed in E6.

In particular, the method described in E6 uses projections to form elements out of the plane of the liner (see Figure 3) as well as movable core elements

("saillies 21" [projections 21]) forming tab-like structures. E6 teaches that for structures which can be "demoulded" directly or with minor elastic deformation of the liner, projections on the mould body can be used, whereas for structures in which such direct demoulding is not possible, the projections are to be provided on a movable core. Adapting the mould to a particular liner (such as the one of E3 with features [F1] to [F4]) is a matter of routine adaptation which is within the capabilities of the person skilled in the art.

- 4.4.3 The patent proprietor argued that feature [F13'] required the ribs to be formed by the "thermoform mould" and not by the movable core. Since the ribs would extend normal to the drawing (in claim 1: "pulling") and removing direction (the transverse direction) during demoulding, the projections for forming an inner liner according to E3 needed to be on the movable core. This was however not in line with claim 1.

This argument does not take into consideration the fact that claim feature [F13'] merely requires the projections to be provided on the thermoform mould (70) in general. It is not required that the projections be provided on the thermoform mould **body** (71).

In the patent, the term "thermoform mould body (71)" alone covers merely the static parts of the mould. As disclosed in the patent, the term "thermoform mould" encompasses both the static parts and the movable core parts (see patent, paragraph [0018] and Figure 4). Therefore, projections can also be provided on a movable core without falling outside the scope of claim 1.

Moreover, the method disclosed in the patent does not necessarily require the projections forming the ribs to be provided on a movable core in order to enable the demoulding step (see paragraph [0009], last sentence and the embodiments described in paragraph [0020]).

Therefore, feature [F13'] is complied with in all of the following situations:

- The form of the ribs and the corresponding projections does not require a movable core for the demoulding step and the projections provided on the static thermoform mould in E6.
- The projections need to be retracted ("exited") and are formed on any one of the movable cores which also forms the tab or a further movable core.

The latter is also the case if the need to provide the respective projections on a movable core arises when the liner is inelastic due to a shelf structure in the vicinity of the ribs and tab shown in Figure 4 of E3.

5. Auxiliary requests 2 to 4 - inventive step

The amendments made to auxiliary requests 2, 3 and 4 do not affect the conclusion with respect to inventive step of claim 1 of auxiliary request 1. This was not disputed by the patent proprietor.

Therefore, the subject-matter of claim 1 of none of auxiliary requests 2 to 4 involves an inventive step.

6. Auxiliary request 6

Auxiliary request 6 is admitted into the proceedings and is also allowable for the reasons set out in the following paragraphs.

6.1 Auxiliary request 6 - admittance

Auxiliary request 6 was filed for the first time with the reply to the opponent's statement setting out the grounds of appeal. It is thus an amendment under Article 12(4) RPBA 2020 and its admittance lies within the discretion of the Board.

The opponent requested that auxiliary request 6 not be admitted since this request could and should have been filed in the first-instance proceedings. They further argued that the request was not *prima facie* allowable as it did not comply - *inter alia* - with Articles 83, 84, 123(2) and 56 EPC.

However, the Board has admitted auxiliary request 6 into the proceedings for the following reasons.

The substantive further limitation in claim 1 of auxiliary request 6 is that the tab has a planar front edge and an undulated contour rear edge. These features were already the subject of a different auxiliary request in the opposition proceedings (see auxiliary request 3a submitted by letter dated 5 May 2020). Although this request was not discussed in the appealed decision it was also not withdrawn. Therefore, auxiliary request 6 does not constitute a fresh case but relies in substance on a fall-back position previously submitted and maintained. Auxiliary request 6 was further submitted in direct response to the opponent's statement of grounds of appeal.

6.2 Auxiliary request 6 - Article 83 EPC

The opponent argued that the subject-matter of claim 1 was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art for the same reasons already discussed for the main request.

These objections are not convincing, as was already concluded in point 2. above.

6.3 Auxiliary request 6 - Article 84 EPC

The amendments made to auxiliary request 6 in the opposition appeal proceedings do not give rise to further objections under Article 84 EPC.

6.3.1 It is true that an inconsistency is present in claim 1 as to the use of the term "ribs". The "ribs" are introduced into claim 1 in the plural form (feature [F4]: "comprising pluralities of spaced ribs").

In the claims further reference is made to these ribs defined in feature [1.4] by use of the definite article, however both in the plural form ("ribs": features [F17.2] and [F17.3]) and in the singular form ("rib": features [F13] and [F17.1]). This inconsistency was, however, present in the wording of granted claims 1, 2 and 7 (features [F13] and [17.1]) and thus has to be lived with (cf. G 3/14, catchword).

In contrast, features [17.2] and [17.3] which were added from the description during the opposition-appeal proceedings consistently use the plural form as required by feature [F4].

In view of the above mentioned inconsistency the claim language has to be construed. The skilled person understands from the claim as a whole, and in particular from the definition in feature [F4] ("pluralities", "spaced") that the claim is directed to a plurality of ribs and thus also understands features [F13] and [F17.1] accordingly.

- 6.3.2 The opponent further argued that the term "edge" as used in feature [F16] was not clear and could apply equally well to a (two-dimensional) plane oriented in a particular direction and to a (one-dimensional) intersection of two planes. As an example the opponent referred to document E1, Figure 3, and argued that front plane 143 was the front edge while the intersection of the undulated side plane 144 with the side wall was the (opposite) rear edge. Furthermore, the terms "opposite", "front" and "rear" in feature [F16] were without reference and thus unclear and the meaning of an "undulated contour" was also unclear.

This is also not persuasive.

It should firstly be noted that insofar as the term "edge" is ambiguous with respect to its one- or two-dimensional meaning, this is a problem already present in claim 3 as granted. The wording used here is "rear edge facing the inner liner" and corresponds to feature [F17.2]. Apart from the fact that this wording does not justify an objection under Article 84 EPC and has to be "lived with" (see G 3/14, catchword and Reasons 55), i.e. it has to be interpreted, claim 3 as granted itself supports the understanding of the edge as a surface. The term "facing" thus does not apply to a one-dimensional edge, it is directed to the tab's rear

surface, even if this surface is slightly inclined with respect to the panel of the inner liner. Using the above understanding of the term "edge" in claim 3 as granted, the characterisation of the rear edge (surface) as having an "undulated contour" is also not ambiguous and refers to undulations on the rear edge's surface. In this context the Board does not see a clarity issue with the term "undulated" *per se*.

With feature [F16], the front edge is additionally qualified as being "planar". This wording too thus relates to a surface. Moreover, the skilled person would not apply different interpretations (one- and two-dimensional) to two edges defined in direct relation (opposite) to a single item (the tab) in feature [F16]. Therefore, the addition of the feature "planar front edge" does not result in any lack of clarity being introduced by the amendments.

Finally, the terms "front", "rear" and "opposite" are unambiguously clear due to the definition in feature [F17.2]. According to this definition, the ribs extend between the rear edge and the panel of the inner liner. Therefore, the "rear edge" is the tab surface pointing towards ("facing") the door, i.e. the panel section of the inner liner. Consequently, the "front edge" is the opposite tab surface pointing towards a user when the door is open. This definition is not inconsistent with the embodiment in Figure 3 even though in this embodiment both the front and rear edges are slightly inclined with respect to the panel surface.

#### 6.4 Auxiliary request 6 - Article 123(2) EPC

Claim 1 of auxiliary request 6 is based on the following parts of the application as filed:



- features [F1] to [F4]: claim 1
- features [F10] to [F15]: claim 7
- feature [F16]: page 4, lines 24 to 26
- feature [F17.1]: claim 2
- feature [F17.2]: claim 3
- feature [F17.3]: claim 4

All the features except for feature [F16] are undisputedly disclosed by combined claims 1 to 4 and 7 of the application as filed. The only amendments made to this original claim wording are in features [1.3] and [1.4] and these amendments also do not extend the subject-matter as previously explained (see point 1. above).

The wording of feature [F16] comes from the part of the description related to the embodiment of Figure 3. This additional feature [F16] also does not extend the subject-matter of claim 1 beyond the content of the application as filed for the following reasons.

6.4.1 The opponent argued that feature [F16] was originally only disclosed on page 4, lines 22 to 31 and in Figure 3 in combination with other features. The following highlighted features were omitted in claim 1 which gave rise to an unallowable intermediate generalisation:

- (a) that the embossment forms are embossed **outwardly**
- (b) that the ribs have a **bar form**
- (c) that the ribs extend **orthogonally** with respect to the rear edge
- (d) that the ribs extend in the **transverse direction**
- (e) that a **distance** is foreseen between the rear edge and the ribs.

In particular, the tabs and the ribs were functionally linked (ribs were supporting the tabs), such that the existence of a distance between them had to be considered essential and could not be omitted.

However, any one of the features (a) to (e) can be omitted without extending the subject-matter.

- 6.4.2 As to (a), it is implicit to features [F17.1] and [F13] that the embossment formed by projection(s) on the thermoform mould can only be directed outwardly.
- 6.4.3 As to (b), an embossment form with a particular extension direction will result in a bar-form rib.
- 6.4.4 As to (c) this feature is mentioned in the description of Figure 3, however it does not reflect what is shown in Figure 3. The undulated contour of the rear edge gives no proper reference point to apply an orthogonal direction. As the feature is not required in the embodiment of Figure 3, its omission does not constitute an intermediate generalisation, let alone an unallowable one.
- 6.4.5 As to (d), feature [F17.1] requires that the "rib comprises an embossment form extending in the transverse direction". In feature [F17.2] the ribs are defined to extend between the rear edge and the panel, which is in line with such orientation of the embossment. In any case, the ribs are formed by the embossment form and therefore their forms correlate.
- 6.4.6 As to (e), the mere fact that the ribs and the tab are defined as separate items also implies a distance between them. It is to be noted that the distance does

not refer to the distance at the base of the tab and the ribs at the inner wall, but to the upper end of the ribs and tab seen from the plane of the inner wall. As no further restrictions as to the required distance can be derived from paragraph [0018], there is no need to define said distance explicitly in the claim.

#### 6.5 Auxiliary request 6 - inventive step

The opponent raised the following objections of lack of inventive step against the subject-matter of claim 1 of auxiliary request 6:

- E1 as the starting point in combination with E6 and common general knowledge
- E2 as the starting point in combination with E1, E6 and common general knowledge
- E3 as the starting point in combination with E1, E6 and common general knowledge
- E6 as the starting point in combination with E1 and common general knowledge

#### 6.6 E1 as the starting point

E1 discloses a cooling device with a door composed of a frame and an inner liner (Figure 2, 140) filled with a foamed insulation material. The inner liner comprises mutual support parts (141). The support parts are connected at their bottom and top side, which is not excluded by claim 1, however. E1 also discloses a plurality of elongate structures extending in the transverse direction (Figures 2 and 3, "bent portions 142") on the side walls of the support parts which are - contrary to the patent proprietor's view - considered to encompass pluralities of spaced ribs (see the discussion under point 3.3 above which applies *mutatis*

*mutandis* here). On the side walls tabs ("hook portions 143") are provided having a rear edge with undulated contour (referred to in E1' as "concave-convex irregularities 144" or "grooves and protrusions 144").

According to the patent proprietor the following features of claim 1 were not shown in E1.

- (a) E1 was mute with respect to the production method of the inner liner. Therefore, none of steps [F11] to [F15] was disclosed.
- (b) E1 did not disclose two mutual support parts as defined in feature [F2] but a support frame.
- (c) The material of the inner liner was undefined in E1 (features [F1])
- (d) Even if the bent portions 142 were considered to be pluralities of spaced ribs, the ribs disclosed in E1 could not be formed by projections on the thermoform mould as required by feature [1.13] but only by recesses therein.
- (e) The tab disclosed in E1 had no rear edge with a planar surface as required by feature [1.16].

The opponent argued that the allegedly distinguishing features (a) to (e) were not all interrelated and thus partial problems applied for any of them. The Board agrees to this conclusion at least insofar as feature (e) is not technically interrelated with any of features (a) to (d).

#### 6.7 Distinguishing feature (e)

6.7.1 E1 does not disclose a tab with a rear edge (surface) having an undulated contour and an opposite planar front edge (surface) as required by feature [1.16]. This is shown in Figure 3 and it is also explicitly

disclosed in the description of E1 (E1', page 4, second paragraph: "On both side surfaces of the hook portion 143, concave-convex irregularities 144 are formed").

Insofar the opponent argued that E1 showed in Figure 3 a one-dimensional rear edge with an undulated contour at the intersection with the side wall and opposite two-dimensional planar front edge in the plane most distant from the side wall, this is not a valid construction of feature [F16] (see point 6.3.2 above).

- 6.7.2 The opponent argued that distinguishing feature (e) was not a technical feature but a mere design aspect which was not patentable. This is not convincing.

The technical effect of providing undulated front and rear edges is explained in E1 in detail (see E1', page 4, second paragraph to page 5, first paragraph). It is said here that even if the tab is not completely filled with the foamed insulation material to the whole depth thereof, deformation of the tab under load is successfully prevented by providing undulations at **both** the rear and the front side "so that the foamed liquid is not easily separated". By providing the undulations "on both sides of the hook portion 143, the strength of the hook portion 143 is reinforced, and the hook portion 143 is less deformed" "even if the foamed liquid is insufficiently filled in the hooking part". A similar effect is associated in the patent with the undulated rear edge (see paragraph [0007]). It is explained here that by providing a rear edge which is "elongate" "the connection between the tab and the support part becomes firmer and more rigid".

- 6.7.3 The patent proprietor argued that by providing only the rear edge with an undulated contour but the front edge

with a planar surface, mounting and demounting of a shelf on the tab was simplified. In so doing, tilting ("verkanten") of the fixing parts of a shelf with the opposite undulations of the tab is prevented.

While this problem is in principle agreed to, it is, however, already solved in E1 in a different way. In E1, the tab has a wedge shape from bottom to top with the smaller end at the top. As a result, the smaller end faces the fixing groove 185 of a shelf to be engaged with the tab (see page 4, first paragraph: "the hooking portion 143 is formed in such a shape that the cross-sectional area protruding from the upper side to the lower side is widened"). This design also prevents tilting.

Therefore, the objective technical problem is to provide an alternative solution to simplify mounting and demounting of a shelf on a reinforced tab.

6.7.4 Contrary to the view of the opponent, the skilled person would not deviate from the two undulated edges in E1 as this would be inconsistent with the teaching of E1 as outlined in the paragraph of E1' bridging pages 4 and 5. In this respect the opponent's reference to common general knowledge, for which no evidence was presented, is not convincing.

Undisputedly, none of further documents E2, E3 or E6 provides teaching pointing towards the provision of an undulated rear edge in combination with a planar front edge.

Therefore, the subject-matter of claim 1 involves an inventive step with respect to distinguishing feature (e).

6.7.5 Hence, it can be left open whether the further features (a) to (d) are also distinguishing features over E1 and whether the subject-matter of claim 1 including any of these features involves an inventive step.

6.8 Objections under Article 56 EPC starting from E2, E3 or E6

It is common ground that none of documents E2, E3 and E6 discloses feature [F16]. The tabs disclosed in E2 and E3 only have planar surfaces at both edges. In addition, none of these documents discusses the problem of reinforcement of the tab's connection to the support part and none addresses the problem of simplifying engagement of the tab with the shelf either.

As explained above, E1 merely teaches providing undulations on both the front and rear edges. Therefore, irrespective of the objective technical problem to be solved, the subject-matter of claim 1 is not made obvious considering any of E2, E3 and E6 as the starting point even if combined with the teaching of E1.

6.9 Adaptation of the description

The amendments made to the description are allowable.

None of the following objections raised by the opponent is persuasive.

6.9.1 The opponent argued that the term "rib" in paragraphs [0005], [0009], [0011], [0014], [0019] and [0020] had to be replaced by the plural form "ribs".

It is true that claim 1 is directed towards a cooling device comprising **pluralities of ribs** (see point 6.3.1 above). However, the inconsistent use of the terms "rib" and "ribs" in the singular and plural form throughout the description is, as is also true of claim 1 (see point 6.3.1 above), already present in the patent as granted. Clarification under Article 84 EPC is therefore not possible within the framework of decision G 3/14 nor allowable under Rule 80 EPC.

6.9.2 The Board further concludes that the amendments made to paragraphs [0006] and [0009] do not result in an inconsistency with the terms "in this case" and "in order to reach said objects" since clear reference to the invention defined in the claim is made in paragraph [0009].

6.9.3 Also the appellant's argument that the features in paragraph [0020] had to be deleted is not convincing. Contrary to the opponent's view, these features concern embodiments of the invention defined in claim 1. Neither the reduced height of the rib[s], nor the semi-circular cross-section of the rib[s] is inconsistent with the claim wording.



## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent as amended in the following version:
  - Claim 1 of auxiliary request 6 filed with the reply to the opponent's statement of grounds of appeal
  - Description:  
Paragraphs 1, 4 to 9, 11, 12 and 20 filed during the oral proceedings before the Board, and 2, 3, 10 and 13 to 19 according to the patent specification
  - Figures 1 to 4 according to the patent specification.

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated