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**Datasheet for the decision  
of 27 September 2018**

**Case Number:** T 0329/15 - 3.2.05

**Application Number:** 08152903.4

**Publication Number:** 2103413

**IPC:** B29C49/48, B29C49/06, B29C49/12

**Language of the proceedings:** EN

**Title of invention:**

A process for making a stretch-blow moulded container having an integrally moulded handle

**Patent Proprietor:**

The Procter & Gamble Company

**Opponent:**

APPE BENELUX

**Relevant legal provisions:**

EPC Art. 56, 83

**Keyword:**

Inventive step (yes: main request)  
Sufficiency of disclosure (yes)



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

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Case Number: T 0329/15 - 3.2.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.05**  
**of 27 September 2018**

**Appellant I:** The Procter & Gamble Company  
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**Appellant II:** APPE BENELUX  
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**Representative:** Franck Matkowska  
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**Decision under appeal:** **Interlocutory decision of the Opposition  
Division of the European Patent Office posted on  
9 December 2014 concerning maintenance of the  
European Patent No. 2103413 in amended form.**

**Composition of the Board:**

**Chairman** M. Poock  
**Members:** O. Randl  
D. Rogers

## **Summary of Facts and Submissions**

I. Both the patent proprietor and the opponent filed an appeal against the decision of the opposition division on the amended form in which European patent No. 2 103 413 could be maintained.

The opposition division had found claim 1 of the patent as granted to lack inventive step. The first auxiliary request, however, was found to comply with the requirements of the EPC.

The documents considered by the opposition division included:

D1: WO 00/59790;  
D2: US 7,153,455;  
D4: US 2007/0235905 A1;  
D5: EP 0 346 518 A1.

II. The board sent a communication pursuant to Article 15(1) EPC and summoned the parties to oral proceedings that were to be held on 2 August 2018.

III. In response, appellant II (the opponent) withdrew its request for oral proceedings and declared that it would not attend the oral proceedings.

IV. The board then cancelled the oral proceedings.

V. Appellant I (the patent proprietor) requested that the decision be set aside and the patent maintained as granted (main request) or in amended form according to one of auxiliary requests 1 or 2, filed together with the statement of grounds of appeal, or auxiliary

requests 3 to 9, filed under cover of a letter dated 8 October 2015.

Appellant II (the opponent) requested that the decision be set aside and the patent revoked.

VI. Claim 1 of the main request reads as follows:

"A process for making a container having an integral handle, consisting of the steps of:  
a) providing a preform (6) in a mould cavity (1);  
b) stretch-blow moulding the preform (6) to form an intermediate container (8) which comprises at least one, preferably two, convex bubble(s) (9);  
c) deforming the or each convex bubble (9) by means of an inwardly moving plug (5) to form one or more concave gripping region(s), whilst maintaining the pressure within the intermediate container (8) above 1 bar and whilst the temperature of the material in the gripping region of the intermediate container is maintained at a temperature between the glass transition temperature,  $T_g$ , and the melt temperature,  $T_m$ ;  
d) releasing excess pressure within the container, preferably prior to withdrawing the plug (5) from within the container; and  
e) ejecting the finished container from the mould cavity (1,3)."

VII. Appellant I (the patent proprietor) argued as follows:

(a) Articles 100(a) and 56 EPC

Claim 1 of the main request involves an inventive step, regardless of whether document D1 or D2 is chosen as the starting point:

(i) Starting from document D1

Contrary to appellant II's submission, document D1 does not disclose an intermediate container which comprises two convex bubbles.

The form of a convex bubble was purposively selected for physical reasons. In particular, when a bubble is formed, surface tension provides for the lowest energy form of such a bubble with a most favourable material distribution for the processing according to the invention. A convex bubble is characterised as a protruding structure with a more or less dome-like shape, clearly protruding from a surrounding area which, at least in the near vicinity, is essentially planar or only slightly curved. Document D1 does not disclose such a bubble.

The subject-matter of claim 1 according to the main request is inventive in light of document D1 alone or in combination with document D2. Document D2 does not disclose anything pointing to a convex bubble in the sense of the present patent and expressly teaches away from claim features "c) deforming ... whilst maintaining the pressure within the intermediate container above 1 bar" and "releasing excess pressure within the container" prior to ejecting.

(ii) Starting from document D2

Document D2 does not disclose stretch-blow moulding a preform to form an intermediate container comprising at least one convex bubble.

Appellant II's allegation that the container inherently has a surface that is necessarily convex is inconclusive.

Accordingly, document D2 does not disclose deforming a convex portion by means of an inwardly moving plug.

With regard to step c), D2 does not disclose compression while maintaining the pressure within the container above 1 bar.

Starting from D2 as the closest prior art, the claimed subject-matter of the present patent is clearly non-obvious in light of D2 alone or in combination with D1, since neither document discloses anything pointing to a convex bubble in the sense of the present patent and D2 expressly teaches away from claim features "c) deforming ... whilst maintaining the pressure within the intermediate container above 1 bar" and "releasing excess pressure within the container" prior to ejecting.

(b) Articles 100(b) and 83 EPC

Pegs and pins are known to the skilled person, who would know what is meant without needing to refer to an illustration, particularly in light of the disclosure that the peg and pin are aligned and interlocked.

Appellant II's objections based on an exemplary variant in which both peg and pin are to protrude towards the outside of the container are a classic example of "a mind desirous of misunderstanding". The skilled person, who has a mind willing to understand, would understand that in this variant the pegs and pins formed in the respective bases of the concave gripping

regions will each have convex shaped elements - relative to the base - that are shaped and positioned relative to one another to allow for interlocking.

Thus the patent discloses the subject-matter of the claims as maintained by the opposition division and the claims of the main request in a manner sufficiently clear and complete for it to be carried out by the skilled person.

VIII. Appellant II (the opponent) has only filed objections against the request found to be allowable by the opposition division. Its arguments, in so far as they apply to the main request, may be summarised as follows:

(a) Articles 100(a) and 56 EPC

The subject-matter of claim 1 does not involve an inventive step.

Both documents D1 and D2 can be considered the closest prior art.

(i) Starting from document D1

Claim 1 differs from the teaching of document D1 in that the temperature of the material in the gripping region of the intermediate container is maintained at a temperature above the glass transition temperature  $T_g$ .

The objective technical problem solved by the invention consists in facilitating the deformation of the gripping region in the intermediate container.

The skilled person knew that a polymer is easier to deform above  $T_g$ .

Taking into account that document D1 teaches heating the intermediate container in the gripping region in order to facilitate the mechanical deformation of these regions, the skilled person looking to facilitate the deformation of the polymer of the gripping regions would have selected a heating temperature above  $T_g$ , based on his common general knowledge.

Alternatively, the skilled person trying to improve the deformation of the polymer in the gripping region of the intermediate container of document D1 would have consulted the teaching of D2, which describes a similar process in which a final container having two integral handles is obtained by deforming an intermediate stretch-blow moulded container by means of inwardly moving plugs to form concave gripping regions.

Document D2 explicitly teaches the skilled person to practise a temperature in the gripping region between the glass transition temperature  $T_g$  and the melt temperature  $T_m$  of the polymer.

Thus, it was obvious for the skilled person starting from document D1 and trying to solve the objective technical problem, based on his common technical knowledge or on the teaching of document D2, to maintain the temperature of the material in the gripping region of the intermediate container at a temperature above the glass transition temperature  $T_g$ .



(ii) Starting from document D2

Claim 1 differs from document D2 only in the formation of at least one convex bubble in the intermediate container at step b) and in the deformation of this convex bubble during step c), instead of the deformation of a convex portion of the intermediate container that is disclosed in document D2.

Starting from document D2, the technical problem to be solved is to make a container having a deeper grip.

When trying to solve this problem, the skilled person would have carefully considered the teaching of document D1, which deals with the same problem. Following the teaching of document D1, he would have modified the process of document D2 by forming at least one convex bubble in the intermediate container of document D2 and by deforming this convex bubble inwardly in order to form a deep grip.

Therefore, the skilled person would have reached the subject-matter of claim 1 in an obvious way.

(b) Articles 100(b) and 83 EPC

Paragraph [0042] of the patent contains a very short description wherein the finished containers comprise means for interlocking the opposing gripping regions against each other, such as "peg and pin". There is no drawing showing such interlocking means of that type, and the description does not contain any clear explanation for the skilled person as to how to manufacture a container having such means.

The description states that both the "peg" and the "pin" are convex (i.e. protrude towards the outside of the container). It is not clear how two such opposite convex portions that protrude outwardly can be interlocked. Thus the invention is not sufficiently disclosed for practising claim 8.

(c) Articles 100(c) and 123(2) EPC

Appellant II's objections only concern claim 1 of the request maintained by the opposition division and do not apply to the main request.

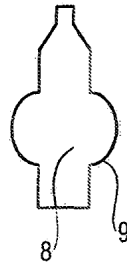
## **Reasons for the Decision**

1. Claim interpretation
- 1.1 "Convex bubbles"

The opposed patent does not contain any definition of "convex bubbles". The expression is found only in passages reciting process steps b) and c). The claim's wording requires only that the convex bubbles be part of the intermediate container formed by stretch-blow moulding of the preform (process step b)) and capable of being deformed by an inwardly moving plug (process step c)).

Figure 3 (ii) illustrates step b) and shows an intermediate container 8 that comprises two convex bubbles 9:

**Fig. 3 (ii)**



The Oxford English Dictionary defines "convex" as "curved like the outside of a circle or sphere" and "the reverse of concave", "concave" being defined as "hollow" or "having the outline or surface curved like the interior of a circle or sphere". This dictionary also defines "bubble" as "a thin globular (or hemispherical) vesicle of water or other liquid, filled with air or gas" or "a hollow globe of thin glass, produced by blowing".

Having considered all the above, the board has reached the conclusion that "convex bubble" in claim 1 designates a non-solid protrusion of the intermediate container the surface of which is curved in a way similar to (part of) a sphere.

Appellant I has proposed an alternative definition according to which a convex bubble is a "protruding structure with more or less dome-like shape, clearly protruding from surrounding area which, at least in the near vicinity, is essentially planar or only slightly curved".

The first part of this definition is similar to the board's understanding. The board cannot see, however, why a bubble would necessarily have to have an essentially planar surrounding area. Therefore, the

board will stick to its interpretation as set forth above.

1.2 "Releasing excess pressure within the container"

Step d) requires that the excess pressure within the container be released. The remaining features of step d) are merely optional and may be disregarded.

The board understands the feature to mean that the excess pressure (i.e. pressure beyond the atmospheric pressure of 1 bar) in the container is released such that, at the end of this step, the container contains gas at atmospheric pressure.

2. Main request: Articles 100(a) and 56 EPC

The novelty of claim 1 was not contested in the appeal proceedings.

For the assessment of inventive step the board will use the problem-solution approach.

Appellant II having based its attacks on documents D1 and D2, the board will consider both starting points.

2.1 Starting from document D1

2.1.1 Differences

The opposition division found claim 1 to differ from the teaching of document D1 in that, when step c) is performed, the temperature of the material in the gripping region of the intermediate container is maintained at a temperature above the glass transition temperature  $T_g$ . Appellant I agreed but argued that document D1 also did not disclose convex bubbles.

The opposition division was of the opinion that document D1 disclosed an intermediate container comprising convex bubbles. It referred to item 6a of Figure 9, which corresponds to the central region of the initial profile (before deformation) of the deformable portion of an intermediate container.

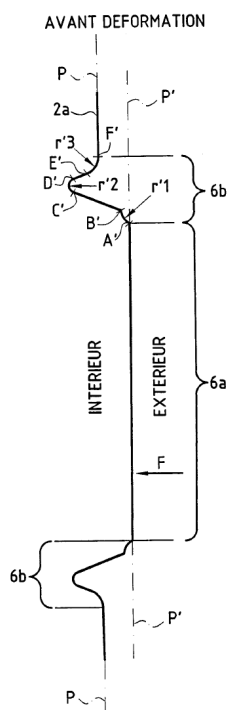


FIG.9

Considering its definition of "convex bubble" (see point 1.1 above) the board has reached the conclusion that an unprejudiced skilled person contemplating Figure 9 would not consider the protruding central region 6a to form a convex bubble.

Therefore, document D1 cannot be said to disclose step b) in its entirety. It discloses a step of stretch-blow moulding the preform to form an

intermediate container which comprises two protrusions, but not two convex bubbles.

To sum up, claim 1 differs from the disclosure of document D1 in that:

- the intermediate container comprises two convex bubbles; and
- when step c) is performed, the temperature of the material in the gripping region of the intermediate container is maintained at a temperature above the glass transition temperature  $T_g$ .

#### 2.1.2 Objective technical problem(s)

##### (a) Convex bubbles

The opposed patent does not disclose any technical effect of shaping the intermediate container such that it comprises convex bubbles.

Appellant I has pointed out several advantages of this feature, such as an improved evenness of material distribution in the intermediate container and the reduced danger of material failures and wrinkle formation.

These are indeed the advantages that the skilled person would expect as a consequence of replacing the protrusions of document D1 by convex bubbles according to the invention, in which the distribution of material is more uniform in the boundary regions (points A' and B' in Figure 9 of document D1).

Therefore, the underlying aspect of the objective technical problem consists in obtaining a more even

material distribution in the gripping region of the intermediate container and the mechanical and aesthetic properties that result therefrom.

(b) Temperature during deformation

The opposition division was of the opinion that the objective technical problem here consisted in facilitating the deformation of the material of the intermediate container. This has not been challenged by appellant I. The board shares the view that a temperature above the glass transition temperature  $T_g$  facilitates the deformation of the material.

(c) Synergy

Both differences contribute to a more even material distribution in the gripping region of the intermediate container. Therefore, it is appropriate to define this as the common objective technical problem solved by the invention.

2.1.3 Obviousness for the skilled person

It has not been persuasively demonstrated that for the skilled person starting from the process of document D1 and seeking to obtain a more even distribution of the material of the intermediate container, it would be obvious to alter the process of document D1 by providing the distinguishing features mentioned above (see point 2.1.1 above). Although the choice of a temperature above the glass transition temperature  $T_g$  may indeed be obvious to the skilled person, as found by the opposition division, it has not been shown that the choice of an intermediate container comprising

convex bubbles instead of the protrusions 6a is obvious.

## 2.2 Starting from document D2

### 2.2.1 Differences

The opposition division was of the opinion that document D2 did not disclose "at least the feature regarding the convex bubbles" (see point 1.2 of the decision under appeal). There appears to be general agreement on this point. Appellant I argued that there were further differences, namely:

- that the deformation is carried out in the pressure and temperature ranges according to process step c); and
- process step d).

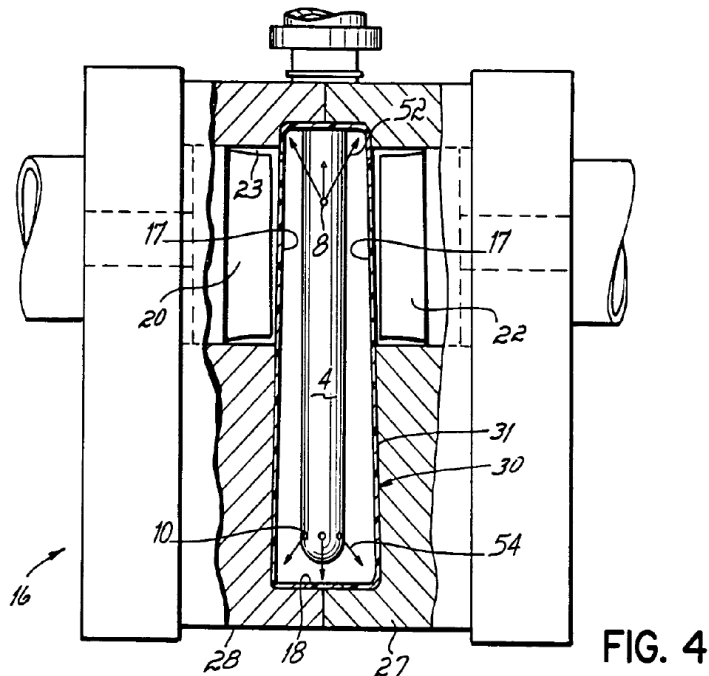
#### (a) Pressure above 1 bar

Appellant II argued that this feature was disclosed in column 7, lines 20 to 26, of document D2. Appellant I pointed out that document D2 taught depressurisation prior to compression and re-pressurisation after compression (column 7, lines 33 to 59).

The board understands the relevant teaching of document D2 as follows: once the PET preform is inserted into the cavity 18 and the stretch rod 4 inserted into the preform, some blow gas is discharged via the through holes 8 and 10 while the stretch rod stretches the preform. Once the stretching is completed, blow gas is injected at a pressure of between about 100 psi (7 bar) and about 750 psi (52 bar) via the through holes, but also around the exterior of the stretch rod



(arrows 50 in Figure 2) so that the PET fills the cavity 18. The final state is shown in Figures 3 and 4.



Then the blow gas is stopped and the blow mould is depressurised before the movable mould segments 20 and 22 are set in motion. During this step, blow gas is discharged only via the through holes 8 and 10, at a pressure that is sufficient to keep the preform in contact with the walls that form the cavity 18. Once the bonded area 25 is established (see Figure 5), blow gas is reinjected both around the rod and via the through holes. Finally the mould is opened and the bottle is removed.

Consequently, the pressure is maintained above 1 bar (i.e. atmospheric pressure) during the deformation to keep the preform in contact with the walls. This feature does not qualify as a distinguishing feature.

(b) Temperature between Tg and Tm

The passage in column 3, lines 14 to 17, of document D2 discloses that prior to blowing the preform, the temperature of the preform is set to a temperature in the range of about 190°F (88°C) to 265°F (129°C) if PET is used. The passage in column 3, lines 59 to 62, adds that the surface temperature of the movable mould segments should be of about 380°F (193°C) in the case of PET. PET has a melting point of about 250 to 260°C and a glass transition temperature somewhere between 67 and 81°C. Therefore document D2 unambiguously discloses that the temperature is maintained at a temperature (193°C) that is situated between the glass transition temperature and the melting point of the container material. The fact that the range as such is not disclosed is irrelevant because the novelty of a range is destroyed by the disclosure of a single point within that range. Also, the fact that the feature is optional in document D2 does not alter the fact that the feature is disclosed.

(c) Process step d)

Process step d) requires that the excess pressure be released within the container. Appellant II pointed out that this feature was implicit in the opening of the mould, whereas appellant I referred to the re-pressurisation mentioned in column 7, line 59, of document D2.

The board has reached the conclusion that the opening of the blow mould 16 necessarily releases any excess pressure (see point 1.2 above). It makes no difference that the blow mould is re-pressurised beforehand; on the contrary, there would not be any excess pressure to

be released if the blow mould had not been re-pressurised.

(d) Conclusion

Claim 1 differs from the teaching of document D2 in that the intermediate container comprises at least one convex bubble which is being deformed to form a gripping region of the intermediate container. In document D2 the handle is formed by deforming a flat surface against which the movable mould segments exert their pressure.

2.2.2 Objective technical problem

Appellant II contended that the objective technical problem was "to make a container having a deeper grip". The board cannot endorse this position because this problem appears not to be related to the convexity of the surface that is deformed.

In the absence of a more persuasive proposition, the board reaffirms the objective technical problem defined above (see 2.1.2 (a)), i.e. obtaining a more even material distribution in the handle region and the mechanical and aesthetic properties that result therefrom.

2.2.3 Obviousness for the skilled person

Appellant II argued that the skilled person starting from document D2 and faced with the objective technical problem would turn to document D1, the teaching of which would lead him to alter the process of document D2 and so reach subject-matter falling within the scope of claim 1. The board cannot endorse this argument

because document D1 (i) does not offer a solution to the objective technical problem and (ii) appears not to disclose the use of a preform comprising convex bubbles.

Thus the board reaches the conclusion that appellant II has failed to demonstrate that the subject-matter of claim 1 is obvious in view of the teaching of document D2 in combination with document D1.

### 2.3 Conclusion

Appellant II has not established that the subject-matter of claim 1 is obvious to a person skilled in the art, having regard to the state of the art before the board. Therefore, in application of Article 56 EPC, the invention is considered to involve an inventive step.

The ground of opposition under Article 100(a) EPC does not prejudice the maintenance of the patent.

### 3. Articles 100(b) and 83 EPC

Claim 9 refers to means for interlocking the opposing concave gripping regions against each other so as to substantially eliminate any relative movement during the gripping. This feature is discussed in paragraph [0042] of the patent, which refers to a "peg and pin" embodiment. Appellant II's objection is based on the absence of any teaching in respect of "peg and pin" interlocking means.

The board has reached the conclusion that the skilled person would not be at a loss to provide for means for interlocking opposing concave regions, regardless of

whether this is obtained by pegs and pins or in another way.

Consequently, the ground of opposition under Article 100(b) EPC does not prejudice the maintenance of the patent.

4. Articles 100(c) and 123(2) EPC

The objections raised by appellant II against claim 1 of auxiliary request 2 (see point I of its statement of grounds of appeal) do not apply to the claims of the main request.

As a consequence, the ground of opposition under Article 100(c) EPC likewise does not prejudice the maintenance of the patent.

5. Conclusion

As none of the grounds of opposition under Article 100 EPC prejudices its maintenance, the patent can be maintained as granted.

6. Need for oral proceedings

In response to the communication under Rule 15(1) RPBA, appellant II withdrew its request for oral proceedings.

Appellant I's request for oral proceedings was only conditional (see its statement of grounds of appeal, item I.4: "... in case the Board does not comply with the requests I.1 to I.3 in the written proceedings ...").

As the board has allowed appellant I's main request, based on the reasons presented in the communication under Rule 15(1) RPBA, which appellant II had the opportunity to comment upon, there is no need to hold oral proceedings. Accordingly, the board has cancelled the oral proceedings and decided to deliver its decision in writing.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. Appellant II's appeal is dismissed.
3. The opposition is rejected; the patent is maintained as granted.

The Registrar:

The Chairman:



N. Schneider

M. Poock

Decision electronically authenticated