Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 27 September 2019

Case Number: T 0958/14 - 3.2.05

Application Number: 07820890.7

Publication Number: 2076372

IPC: B29C49/04, B29C69/00, B29C47/16, B29C47/22, B29C51/02, B29C47/06, B29C51/12, B29C49/20

Language of the proceedings: EN

Title of invention:
Process for manufacturing a plastic hollow body from a parison

Patent Proprietor:
Plastic Omnium Advanced Innovation and Research

Opponent:
Kautex Textron GmbH & Co. KG

Headword:

Relevant legal provisions:
EPC Art. 54(3)
EPC 1973 Art. 54(1), 56

Keyword:
Novelty (yes)
Inventive step (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0958/14 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 27 September 2019

Appellant: (Opponent)	Kautex Textron GmbH & Co. KG Kautexstr. 52 53229 Bonn (DE)
Representative:	Eric Richly Richly & Ritschel Patentanwälte PartG mbB Postfach 100411 51404 Bergisch Gladbach (DE)
Respondent: (Patent Proprietor)	Plastic Omnium Advanced Innovation and Research Rue de la Fusée, 98-100 1130 Bruxelles (BE)
Representative:	Thierry Debled LLR 11 boulevard de Sébastopol 75001 Paris (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 24 February 2014 rejecting the opposition filed against European patent No. 2076372 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman M. Poock
Members: P. Lanz
T. Karamanli

Summary of Facts and Submissions

I. The opponent lodged an appeal against the decision of the opposition division to reject the opposition against European patent No. EP 2 076 372.

II. During the opposition proceedings, the opponent had raised the grounds for opposition according to Article 100(a) EPC in conjunction with Article 54 or Article 56 EPC (lack of novelty and lack of inventive step).

III. Oral proceedings were held before the board of appeal on 27 September 2019.

IV. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.

V. The respondent (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as amended in the following version:

Claims: Nos. 1 to 4 of the main request filed by letter dated 12 July 2019;

Description: Columns 1 to 8 of the patent specification;

Drawings: Figures 1 to 5 of the patent specification.

VI. The documents referred to in the appeal proceedings include the following:

D1: EP 1 897 672 A2;

D2: JP 61 261021 A;
D2a: English translation of D2;

D3: DE 31 17 179 A1;

D4: US 2001/0015513 A1.

VII. Claim 1 according to the main request (including the parties' feature designations in square brackets) reads as follows:

"Process for manufacturing a plastic hollow body, said process comprising the following steps:
a) a molten plastic parison is extruded, in an extruder, through a die [feature a];
b) at least one longitudinal cut is made in the parison [feature b];
c) the parison is introduced into a mould comprising two cavities [feature c]; and
d) the hollow body is moulded by conforming the parison to the mould cavities [feature d], wherein the mould cavities are positioned underneath the die [feature e], and the lower end of the parison which hangs by gravity between the mould cavities [feature f], is guided and flattened by a suitable device [feature g],
characterized in that
- the longitudinal cutting taking place in the die using flow dividers (4) [feature h] which extend to the die outlet and which have a suitable shape and location to contribute, with the shape of the passage through the die, to converting the parison into two substantially flat sheets [feature i],
- said die being equipped with a passage for the molten plastic which gradually modifies the shape of the parison so that it is substantially flattened on exiting [feature j], and

- the parison is extruded continuously between the cavities of the mould [feature k], that it is then closed just before transversely cutting the parison and moulding it [feature l]."

VIII. The arguments of the appellant can be summarised as follows:

Interpretation of features f and g of claim 1

The opposition division's understanding of features f and g of claim 1 (*"[...] the lower end of the parison which hangs by gravity between the mould cavities, is guided and flattened by a suitable device"*) was that the guiding and flattening of the lower end of the parison had to be performed between the mould cavities. However, this interpretation was incorrect since it limited the term "lower end" to "lowest end". In doing so, the opposition division had not followed the established jurisprudence that a vague feature had to be interpreted in the broadest possible sense. Features f and g formed part of the preamble of claim 1, which meant that, at the time of the grant of the patent, the respondent had agreed that the feature was known from prior-art document D4. In fact, the respondent adopted the above interpretation only during the oral proceedings before the opposition division. Following paragraph [0006] of the contested patent, the term "parison" covered the extruded material which had left the extruder but was still in the die. The patent specification (see paragraphs [0027] and [0028]) designated the part which had already left the die as the hanging "free end" of the parison. In view of this, the claim wording "*the lower end of the parison which hangs by gravity*" referred to the hanging part of the parison which had left the die, even if the patent did

not explicitly define what the lower end of the parison was. The whole of this part was affected by an undesired curtain effect ("Gardineneffekt") which was generally known in the field of extrusion blow moulding (see paragraphs [0003] and [0004] of the patent). In the claimed process, this was avoided by guiding and flattening the hanging part of the parison according to claim features f and g. This had to be done for the whole of the parison's hanging part and was independent from the core of the claimed invention which resided in the flow dividers. Therefore, the term *"lower end of the parison"* in features f and g necessarily referred to the whole of the hanging part of the parison and not only to its lowest end. For these reasons, the claim did not exclude that the guiding and flattening device was positioned right at the exit of the die. Finally, it was noted that the respondent's explanation that the guiding and flattening means were travelling downwardly together with the continuously extruded preform was not mentioned in the patent.

Novelty

The statement setting out the grounds of appeal was not confined only to challenging the interpretation of claim 1. It also contained objections regarding the novelty and inventive step of the subject-matter of claim 1. Hence, these issues formed part of the appeal proceedings.

According to paragraph [0014] of document D1, the flattening device was not disclosed exclusively in combination with the embodiment of Figure 18 but could be combined with any of the embodiments of document D1, including the one of Figure 17. In fact, the description of Figure 17 in paragraph [0044]

corresponded to the content of paragraph [0027] which mentioned that the flattening and guiding device according to Figure 18 could be combined with the blow moulding apparatus. Hence, document D1 as a whole disclosed that the arrangement of Figure 17 could be equipped with the flattening and guiding device of Figure 18. Features f and g were thus anticipated in combination with the other features of the contested claim. Finally, the aspect of closing the mould before transversely cutting the parison and moulding (feature l) was implicitly disclosed in document D1. The claimed subject-matter was thus not novel over document D1.

Inventive step

The inventive merits of the subject-matter of claim 1 were attacked starting from document D4 in combination with document D3, and on the basis of document D2 in combination with document D3.

Document D4 disclosed a guiding device (see paragraph [0030] and Figure 1) which could include means for transversely and longitudinally stretching the sheet. This anticipated features f and g of claim 1. The claim differed from document D4 in that the longitudinal cutting and initial flattening step was performed within the die and not at its exit. This allowed for a more compact arrangement and for improving the flattening of the parisons. Based on this technical effect, the objective technical problem to be solved was to achieve a better flattening of the parisons. The solution to this problem was rendered obvious by document D3. In fact, the die of document D3 (see Figures 4 to 6) had the same design as the die of the contested patent. On page 6, lower paragraph to page 8, second paragraph of document D3 it was explained that

two or more flat parisons could be produced with this die. The fact that the dies of document D3 and the contested patent had the same design in order to produce two flat parisons constituted a pointer to use the die of document D3 in the apparatus of document D4, which equally produced two parallel extruded sheets. In case of a combination of the apparatus of document D4 and the die of document D3, the skilled person would keep the rollers shown in Figure 1 of document D4 for keeping the extruded sheets apart (see D4, paragraph [0046]) in order to be able to insert bulky objects (see D4, paragraph [0027). With such a combination of the advantageous aspects of documents D4 and D3, all technical problems were solved.

Document D2 could be used as an alternative starting point. In this document (see D2, Figure 1) the rollers had not only a guiding but also a calendering function. The subject-matter of claim 1 differed in features i and j, and in feature k. The technical effects of features i and j on the one side and of feature k on the other side were not interrelated. Thus, their potential inventive contributions had to be assessed separately. The first partial problem relating to features i and j resided in a more compact arrangement (because a part of the rollers could be omitted) and a better flattening of the extruded sheets. As explained above, the solution to the first partial problem was rendered obvious by document D3. Regarding differing feature k, depending on the stability of the polymer melt, the skilled person had the two possibilities of the extrusion being continuous or discontinuous (by using a melt accumulator). For multi-layered fuel tanks melt accumulators could not be utilised. Thus, a continuous extrusion was the only option.

Finally, it was added that claim 1 merely required that the guiding and flattening means were suitable for guiding the flattened parisons along the open cavities. This could be achieved by both obvious document combinations. For these reasons, the subject-matter of claim 1 was not based on an inventive step.

IX. The respondent's submissions may be summarised as follows:

Interpretation of features f and g of claim 1

The respondent shared the opposition division's understanding of the claim. The fact that features f and g formed part of the preamble did not imply that it was known from the prior art. Moreover, the appellant erroneously interpreted paragraph [0004] of the patent, which referred to an ideal situation, in the sense that the problem of avoiding the curtain effect was already solved. However, under realistic conditions this was not true. It was also noted that in impugned decision the opposition division did not use the term *"lowest part".* According to its natural meaning, the wording *"lower end of the parison"* in the context of features f and g referred to the (lower) part of the hanging parison which was located between the open mould cavities. Paragraph [0004] of the patent related to the avoidance of a curving of the parison. This could be achieved by cylindrical rollers which could travel in the Z-direction together with the extruded parison. What mattered from a technical point of view was that the parisons were flattened when the moulding operation started and the cavities were closed.

Novelty

The appellant's case as set out in the statement of grounds of appeal was limited to contesting the opposition division's interpretation of claim 1. The objections regarding the novelty and inventive step of the subject-matter of claim 1 were based on an interpretation of the claim which the board finally did not adopt. Therefore, a further assessment of the questions of novelty and inventive step was not required.

On the question of novelty, it was submitted that in the deep-drawing embodiment of paragraph [0013] of document D1 the parison did not hang by gravity between the mould cavities (see D1, Figure 18). Moreover, there was no direct and unambiguous disclosure of a combination of a blow moulding process with a flattening step. In fact, Figures 17, 18 and 19 of document D1 related to three different embodiments. It was not clearly disclosed that they could be combined. For these reasons, the subject-matter of claim 1 was novel over document D1.

Inventive step

Particular emphasis was put on the fact that none of documents D2, D3 and D4 disclosed that the lower part of the parison, which hung by gravity between the mould cavities, was guided and flattened by a suitable device according to features f and g. As explained in paragraph [0028] of the contested patent this was an important aspect of the invention. In particular, the combinations of documents D2 with D3 and D4 with D3 could not render obvious the claimed location for

guiding and fattening the parison as defined in claim 1. The subject-matter of claim 1 was therefore based on an inventive step.

Reasons for the Decision

1. Interpretation of features f and g of claim 1

1.1 It is contested between the parties to which part of the extruded parison claim features f and g

"[...] the lower end of the parison which hangs by gravity between the mould cavities, is guided and flattened by a suitable device"

relate. While the appellant argues that the lower end of the parison referred to the whole part of the parison which had left the die, the respondent essentially submits that it related only to the (lower) part of the hanging parison which was located between the open mould cavities.

1.2 The board observes that, due to its relative terminology *"lower end of the parison"*, the wording of claim 1 leaves room for interpretation. The general rule of claim construction is that the terms used in a claim should be given their ordinary meaning in the context of the claim in which they appear. In the field of moulding of plastics in general, the term "parison" refers to a partially shaped mass of polymer to be formed into a final shape. In fact, the expressions "parison" and "preform" are often used synonymously. In the specific context of the present invention, the term "parison" is explained in paragraph [0018] of the patent:

"The term "parison" is understood to mean an extruded preform of any shape, generally substantially cylindrical or tubular (which, according to the invention, is flattened in a die mounted on the head of the extruder), which is intended to form the wall of the tank after moulding, i.e. after an operation which consists in forming the parison, which is in the melt state, into the required shapes and dimensions using a mould, in order to obtain a tank from a single part."

This definition is not contested and is not in contradiction with the term's ordinary meaning as understood by the skilled person. Moreover, according to ordinary reading of the claim, the sub-clause *"which hangs by gravity between the mould cavities"* relates to "*the lower end of the parison*" and further defines the condition and location of this part of the parison to be guided and flattened.

Consequently, the wording of features f and g in claim 1 requires that the part of the extruded parison, which hangs by gravity between the mould cavities, is guided and flattened by a suitable device.

1.3 This interpretation is not only in accordance with the skilled person's understanding of the claim language but also sensible from a technical point of view and in line with the overall teaching of the patent. In particular, paragraph [0004] of the patent states that a correct application of the parts of the parisons which are located between the mould cavities requires that they are flattened and kept apart. Equally, paragraph [0028] of the patent explains that *"[...] the free end of the sheets (which hangs by gravity between the mould cavities) has a tendency to warp [...]. Therefore this end (or rather: this pair of sheet ends)*

is guided by jaws or hooks [...] that make it possible to flatten them and to prevent the formation of bends."

1.4 In view of the above, the board concludes that the contested claim features f and g

"[...] the lower end of the parison which hangs by gravity between the mould cavities, is guided and flattened by a suitable device"

require that the part of the extruded parison, which hangs by gravity between the mould cavities, is guided and flattened by a suitable device.

2. Novelty

2.1 The board first notes that the present appeal is not directed against the opposition division's interpretation of granted claim 1 only but also addresses the issues of novelty and inventive step of the subject-matter of claim 1 (see in particular points V and VI of the statement setting out the grounds of appeal as well as the appellant's further submissions dated 18 February 2015 and 20 November 2018). The respondent replied to these objections in its submissions dated 18 November 2014 and 18 January 2018. In a communication under Article 15(1) RPBA 2007, the board discusses in substance not only the interpretation of claim 1 but also the contested issues of novelty and inventive step of the subject-matter of claim 1. In accordance with Article 12(1) and (4) RPBA 2007, all these issues form the part of the appeal proceedings. In view of this, the board has to assess the contested issues of novelty and inventive step in the present appeal proceedings.

2.2 The appellant raises an objection of lack of novelty on the basis of document D1, which is considered as comprised in the state of the art in accordance with Article 54(3) EPC. The parties' views differ in particular on the question of whether the flattening device shown in Figures 18 (in the context of a deep-drawing apparatus) and 19 is also disclosed in combination with the blow moulding apparatus of Figure 17.

2.3 The board observes that in document D1 the devices of Figure 17 (a blow moulding apparatus), 18 (a deep-drawing apparatus) and 19 (a flattening device) are disclosed as separate embodiments. The beginning of paragraph [0014] points to a combination of the flattening and deep-drawing apparatuses but is silent as regards blow moulding. In paragraph [0027], the blow moulding apparatus of Figure 17, the deep-drawing apparatus of Figure 18 and the flattening device of Figure 19 are explicitly presented as alternatives (*"Alternativ oder in Ergänzung ist auch eine Glättvorrichtung denkbar, die zum Glätten eines der bandförmigen Vorformlinge nach dem Austritt aus der Formvorrichtrung dient."*). Even if the second possibility (*"in Ergänzung"*) in the same paragraph were understood as a general suggestion that the blow moulding apparatus of Figure 17 could be combined with the flattening device of Figure 19 (or 18), this would still not constitute a direct and unambiguous disclosure of the specific claim features f and g as interpreted above in point 1.4, i.e. that the lower part of the parison, which hangs by gravity between the mould cavities, is guided and flattened by a suitable device.

2.4 For this reason, the subject-matter of claim 1 of the main request is novel over document D1 (Article 54(1) EPC 1973 in conjunction with Article 54(3) EPC).

3. Inventive step

3.1 The appellant uses document D4 as a starting point for assessing the question of inventive step. In document D4 the tubular parison is longitudinally cut into two halves at the exit of the die (see D4, reference signs 2 and 3). Neighbouring rollers (see D4, reference sign 4) positioned upstream of the mould serve as guiding and flattening means for holding the two resulting parisons apart and for flattening their circular cross section. Based on the above claim construction (see point 1.4), document D4 does not disclose that the part of the extruded parison which hangs by gravity between the mould cavities is guided and flattened by a suitable device, according to features f and g.

3.2 In order to solve the objective technical problem of achieving a better flattening of the parisons (which is based on the disclosure in paragraph [0006] of the patent specification), the skilled person would turn to document D3, which relates to the design of a die for extruding flat, sheet-like parisons. In particular, Figure 4 of document D3 discloses a die with flow dividers extending to the die outlet and having a suitable shape and location for converting the parison into two substantially flat sheets. Moreover, the die of document D3 is equipped with a passage for the molten plastic which gradually modifies the shape of the parisons so that they are not only flattened on exiting the die but also separated from each other. Hence, the die of document D3 integrates the functions of guiding and flattening the parisons and thereby

obviates the need for additional guiding and flattening means at the die outlet, as shown in Figure 4. It is therefore not apparent why the skilled person should keep the rollers of document D4 (see reference sign 4) at the die exit when replacing the die of document D4 (see reference signs 2 and 3) with die of document D3. Even if he were to do so, guiding and flattening would be done at the die exit and not on the part of the extruded parison which hangs by gravity between the mould cavities, as required in claim features f and g.

Consequently, a combination of documents D4 and D3 does not render obvious the subject-matter of claim 1.

3.3 Regarding the alternative reasoning starting from document D2, the board notes that the die of document D2 has a circular orifice (see D2, Figure 2). Similar to document D4, the tubular parison of document D2 is longitudinally cut into two halves at the exit of the die (see D2, Figure 2, reference sign 9). Neighbouring rollers (see D2, reference sign 10) upstream of the mould serve as guiding and flattening means for holding the two resulting parisons apart and for flattening their circular cross section. In view of these similarities, the above reasoning on the objective technical problem and the non-obviousness of the proposed solution in view of documents D4 and D3 equally applies if document D2 is used as a starting point instead of document D4 and combined with document D3.

Therefore, a combination of documents D2 and D3 does not render obvious the subject-matter of claim 1.

3.4 For these reasons, the subject-matter of claim 1 of the main request is based on an inventive step in the sense of Article 56 EPC 1973.

4. Conclusion

The board concludes that the patent as amended according to the respondent's main request meets the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

Claims: Nos. 1 to 4 of the main request filed by letter dated 12 July 2019;

Description: Columns 1 to 8 of the patent specification;

Drawings: Figures 1 to 5 of the patent specification.

The Registrar: The Chairman:

N. Schneider M. Poock

Decision electronically authenticated