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D E C I S I O N
of 7 May 2004

Case Number: T 0844/00 - 3.2.5

Application Number: 92904242.2

Publication Number: 0529080

IPC: B29C 45/00

Language of the proceedings: EN

Title of invention:
Injection-molded hollow article, injection molding method for molding such article and metal mold therefor.

Patentee:
Asahi Kasei Kogyo Kabushiki Kaisha

Opponents:
Battenfeld GmbH
Ninkaplast GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2), (3)
EPC R. 57a

Keyword:
"Novelty, inventive step (yes, after amendment)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0844/00 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 7 May 2004

Appellant: (Proprietor of the patent)	Asahi Kasei Kabushiki Kaisha 2-6, Dojimahama 1-chome, Kita-ku Osaka-shi, Osaka 530-8205 (JP)
Representative:	Smulders, Theodorus A. H. J., Ir. Vereenigde Postbus 87930 NL-2508 DH Den Haag (NL)
Respondent I: (Opponent 01)	Battenfeld GmbH Scherl 10 D-58540 Meinerzhagen (DE)
Representative:	Gosdin, Michael, Dr. Battenfeld Service GmbH Scherl 10 D-58540 Meinerzhagen (DE)
Respondent II: (Opponent 02)	Ninkaplast GmbH Benzstrasse 6 D-32108 Bad Salzuflen (DE)
Representative:	Wiesbusch, Manfred TER MEER STEINMEISTER & PARTNER GbR Patentanwälte Artur-Ladebeck-Strasse 51 D-33617 Bielefeld (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 14 June 2000 revoking European patent No. 0529080 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: W. Moser
Members: W. R. Zellhuber
W. Widmeier

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the decision of the Opposition Division revoking the European patent No. 0 529 080.

II. The Opposition Division held that the grounds for opposition cited in the Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC) prejudiced the maintenance of the patent having regard to documents

D1: US-A 4 247 515 and

D5: JP-A 01 168 425.

III. The appellant requested that the decision under appeal be set aside and that the patent be maintained, on the basis of the following documents:

(a) claim 1 filed on 18 December 2003;

(b) description: pages 2 to 7 filed on 18 December 2003, with inserts in column 1 of page 2 and column 3 of page 3, respectively filed as Insert I and Insert II on 18 December 2003;

(c) drawings: Figures 1 to 14 as granted, and Figures 15 to 18 filed on 18 December 2003.

IV. The respondents I and II (opponents 01 and 02) have not submitted any requests.

V. Claim 1 according to the single request of the appellant reads as follows:

"1. An injection molding method for molding hollow articles, having at least one supporting rib (2) between oppositely located walls, comprising the steps of

- injecting a melted resin into the cavity (4) of a metal mold(6), said mold (6) having a movable cavity surface (7) provided with at least one protrusion (5) at a location where a supporting rib (2) is to be formed, and
- supplying a pressurized fluid into said metal mold cavity characterized in that
- the protrusion is a movable core (5) capable of projecting into said metal mold cavity (4) and of being retracted, independently of said cavity surface (7) from a projected position,
- said pressurized fluid being supplied into said cavity (4) in the state in which said movable core (5) projects into said cavity (4) and
- the volume of said cavity (4) being initially increased by moving said cavity surface (7) while said movable core (5) is kept at a constant distance from the opposite cavity surface of the mold (6), followed by a retraction of said movable core (5) until the extreme end thereof substantially coincides with said cavity surface (7)."

VI. The appellant argued essentially as follows:

A further limited and more precise claim had been submitted.

The crux of the method according to claim 1 was that, initially, the movable cavity surface was retracted, while the movable cores were kept stationary, whereas the retraction of these cores to arrive in their end positions took place after the retraction of the movable cavity surface.

This method had the advantage that, due to the fact that the movable cores were retracted only after the volume of the mould cavity had been increased by moving the cavity surface into its end position, the supporting ribs to be formed did not shift in a direction sideways of the movable cores under the influence of the pressurized fluid supplied into the mould cavity.

Document D1 disclosed a method wherein a cavity surface provided with protrusions (key stocks 50) was moved. Contrary to the method according to claim 1 of the single request of the appellant, the key stocks moved together with the cavity surface.

The description and the drawings had been amended in order to make it clear that various methods were described in the description that were not covered by the single claim, and that the method according to the single claim was an optimal choice out of a number of possible methods.

VII. Respondents I and II did not object against claim 1 of the single request of the appellant. Furthermore, no comments have been received from respondents I and II with regard to the amended description and drawings of the patent in suit.

Reasons for the Decision

1. *Amendments (Articles 84 and 123(2) and (3) EPC)*

The subject-matter of claim 1 is disclosed in the application as filed (published version) in claims 1 and 3 in connection with the passage in column 13, lines 1 to 13 (Example 2) of the description. The feature of "while said movable core (5) is kept at a constant distance from the opposite cavity surface of the mold (6)", which is not explicitly disclosed, is directly and unambiguously derivable from the fact that the movements of the moulding cavity surface, on the one hand, and the core, on the other, are carried out subsequently as described in the above-mentioned Example 2.

The description was amended to bring it into line with the subject-matter of claim 1, in particular to make it clear that, among the various methods described in the description, the method according to Example 2 (column 11, lines 34 to 50 of the patent in suit) represents a method according to the invention.

Furthermore, by specifying the way of moving the moulding cavity surface and the independently moving core, the scope of protection conferred by claim 1 is more limited than that of claim 1 of the patent in suit as granted.

The patent in suit as amended thus meets the requirements of Articles 84 and 123(2), (3) EPC, and Rule 57a EPC.

2. *Novelty (Article 54 EPC)*

None of the documents cited in the course of the opposition and appeal procedures disclose a method according to claim 1 of the patent in suit, in particular, an injection moulding method, wherein the mould has a movable moulding cavity surface provided with an independently movable core, and wherein the volume of the cavity is initially increased by moving the cavity surface, followed by a retraction of the movable core until the extreme end thereof substantially coincides with said cavity surface.

3. *Inventive step (Article 56 EPC)*

Document D1, which represents the closest prior art, concerns an injection moulding method for moulding hollow articles having at least one supporting rib between oppositely located walls, cf. Figures 3b and 7. According to one embodiment, a movable cavity surface comprises projections (key stocks), and ribs are formed around these projections, cf. column 8, lines 33 to 53, and Figures 5 and 7.

The object of the patent in suit is to provide a method for moulding an injection moulded hollow article which is securely provided with a desired strength, without the formation of unnecessary recesses and differences in thickness, cf. column 3, lines 5 to 9 of the patent in suit as amended.

That object is achieved by the method according to claim 1 of the single request of the appellant, in particular, by the features referred to under point 2 above.

The method according to the single claim gives rise to the formation of a hollow article having a uniform thickness in the area of the ribs. Moreover, ribs having a small size can be formed, cf. column 11, lines 46 to 50 of the patent in suit as amended.

Document D1, however, suggests providing protrusions which are rigidly connected to a moulding cavity surface and, consequently, moved together with the latter.

Document D5, cf. Figures 1 to 4, shows a mould wherein the volume of the mould cavity is increased by retracting a slidable core portion provided in one of the mould halves thus forming a body having a hollow interior and a smooth outer surface. It does not show the formation of supporting ribs between oppositely located walls at the location of that core portion.

Neither document D1 nor document D5 nor any of the further documents cited in the course of the opposition procedure suggest controlling an injection moulding process for forming a supporting rib such that, initially, the volume of the cavity is increased by moving a cavity surface, while a movable core is kept at a constant distance from the opposite cavity surface, followed by a retraction of the independently movable

core as claimed in claim 1 according to the single request of the appellant.

Therefore, the subject-matter of claim 1 according to the single request involves an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:

   (a) claim 1 filed on 18 December 2003;

   (b) description: pages 2 to 7 filed on 18 December 2003, with inserts in column 1 of page 2 and column 3 of page 3, respectively filed as Insert I and Insert II on 18 December 2003;

   (c) drawings: Figures 1 to 14 as granted, and Figures 15 to 18 filed on 18 December 2003.

The Registrar: The Chairman:

D. Meyfarth W. Moser