BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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

Datasheet for the decision of 10 September 2007

Case Number: T 0411/06 - 3.2.07

Application Number: 98949521.3

Publication Number: 1027196

IPC: B28B 3/26

Language of the proceedings: EN

Title of invention:
Modified slot extrusion die

Applicant:
Corning Incorporated

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

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

Case Number: T 0411/06 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 10 September 2007

Appellant: Corning Incorporated
One Riverfront Plaza
Corning
New York 14831 (US)

Representative: Boon, Graham Anthony
Elkington and Fife LLP
Prospect House
8 Pembroke Road
Sevenoaks
Kent TN13 1XR (GB)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 19 October 2005 refusing European application No. 98949521.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. O'Reilly
Members: H.-P. Felgenhauer
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application No. 98 949 521.3.

According to the impugned decision claims 1 according to each of the then main request and first auxiliary request lack novelty.

Concerning the second auxiliary request the impugned decision indicates that it fulfils the requirements of the EPC, that it could be decided to grant the European patent, but that the applicant does not approve the text.

II. In the course of the appeal proceedings a summons dated 4 May 2007 to oral proceedings accompanied by an annex setting out the provisional opinion of the board has been issued.

In its response dated 14 June 2007 the applicant withdrew its then main and first auxiliary request. The then second auxiliary request was indicated to be the main request and a new first auxiliary request was filed.

Both, the main request and the first auxiliary request comprise claims 1 to 14 identical to the ones of the second auxiliary request underlying the impugned decision, an amended description and drawings identical to the ones filed originally. These two requests differ in each case only with respect to the manner in which the description is amended. In the description of the

first auxiliary request clerical errors have been corrected and the prior art has been acknowledged more extensively.

In a further communication dated 11 July 2007 the board indicated that the amended description according to the first auxiliary request appears to be more in line with the requirements of the EPC.

The applicant responded to this communication with letter dated 11 July 2007 filing anew the former first auxiliary request as main request.

The oral proceedings were cancelled. The decision is based on the main request identified above.

III. Claim 1 of the European patent application according to the main request as submitted with the letter dated 11 July 2007 reads as follows:

"1. A honeycomb extrusion die (102) comprising a die body incorporating an inlet face, a discharge face (18) opposite the inlet face, a plurality of feed holes (13) extending from the inlet face into the body, and an intersecting array of discharge slots (17) extending into the body from the discharge face (18) to connect with the feed holes (13), the intersecting array of discharge slots being formed by the side surfaces (20) of a plurality of pins (19a) bounded by the slots and extending into the die body from the discharge face (18), characterised in that at least some of the side surfaces (20) of the pins (19a) forming the walls of the discharge slots (17) incorporate at least one surface protrusion or surface recess as a geometrically

designed, macroscopic, flow—modifying discontinuity (21) in surface flatness at a location closer to the discharge face (18) than the base of the pins (19a)."

Claim 8 concerns the use of a honeycomb extrusion die essentially comprising the features of claim 1 in a method of forming a plasticized batch material.

IV. The following prior art, already referred to in the decision under appeal, has been considered relevant for the appeal proceedings

D1: US-A-5 487 863

D2: US-A-4 235 583

D4: EP-A-0 776 743.

V. The facts, evidence and arguments relied upon by the appellant concerned essentially the subject-matter of claim 1 according to the main and first auxiliary request underlying the impugned decision.

Concerning claim 1 according to the present main request (second auxiliary request underlying the decision under appeal), the favourable conclusion of the decision under appeal is agreed with.

Reasons for the decision

1. Claim 1 according to the main request differs, besides the introduction of reference numerals and formulating the claim in the two-part form (replacing the

expression "wherein" by the expression "characterised in that"), from claim 1 of the original application by limiting the features defining the incorporation of at least one surface protrusion or surface recess, stating that the side surfaces of the pins concerned are the ones forming the walls of the discharge slots and by defining the nature and the location of the flow—modifying surface discontinuity as to be one in surface flatness at a location closer to the discharge face than the base of the pins.

2. In the decision under appeal (Grounds No. 2) the examining division expressed its opinion that the then second auxiliary request comprising a claim 1 identical to the one of the present main request fulfils the requirements of the EPC.

2.1 The board concurs with this conclusion and notes that it has convinced itself that amended claim 1 satisfies the requirement of Article 123(2) EPC. The amended features are disclosed in figures 2 and 3 - as compared to figure 1 concerning a conventional honeycomb extrusion die - of the application as filed in combination with the description of the application (cf. e.g. page 8, lines 10 - 25 and page 10, lines 30 - 34).

2.2 The decision under appeal merely gives reasons for claim 1 of each of the then main and first auxiliary requests lacking novelty with respect to documents D2 and D4, respectively.

The honeycomb extrusion die according to claim 1 differs from the honeycomb extrusion die according to D1, D2 and D4 in that, as defined by its characterising

features, at least some of the side surfaces of the pins incorporate at least one surface protrusion or surface recess as a geometrically designed, macroscopic, flow—modifying surface discontinuity in surface flatness at a location closer to the discharge face than the base of the pins (19a).

D1 discloses a honeycomb extrusion die with discharge slots which can comprise a reservoir adjacent their inlet face (column 11, line 54 - column 12, line 26; figures 11 - 13).

D2 discloses a honeycomb extrusion die having discharge slots which are provided with recesses at the inlet face (cf. figure 1). These recesses, which are not referred to in the description, have thus the same location as the recesses shown in figure 1 of the application concerning a conventional honeycomb die.

D4 discloses a honeycomb extrusion die with discharge slots having a transition section adjacent the inlet face, which can be formed as dual width slots (column 6, lines 39 - 47; column 8, lines 52 - 58; figures 2, 3).

The honeycomb extrusion die according to claim 1 is thus novel (Article 54 EPC).

2.3 In the decision under appeal it is not indicated why claim 1 according to the then second auxiliary request (claim 1 according to the present main request) is considered as involving an inventive step.

Considering the honeycomb extrusion die according to D2 as closest prior art (cf. figures 1, 2), which corresponds essentially with the prior art referred to by figure 1 of the present application, the distinguishing features are the ones essentially defining that the surfaces of the pins forming the walls of the discharge slots incorporate at least one surface protrusion or surface recess as a geometrically designed, macroscopic, flow—modifying surface discontinuity in surface flatness at a location closer to the discharge face than the base of the pins (cf. section 2.2 above).

It is credible that these surface continuities have the effect stated by the functional portion of these features, namely to be flow-modifying. This effect is referred to in the description, stating that the modified slot design (provision of flow-modifying surface discontinuities) appears to mask smaller finish irregularities and thereby remove many of the harmful of small variations of slot geometry and surface finish, variations which cannot be economically eliminated by conventional machining methods (page 4, lines 10 - 25).

Starting from the known honeycomb extrusion die according to document D2 and considering the effect of the distinguishing features the problem to be solved by the subject-matter of claim 1 appears to lie in the provision of an economically feasible honeycomb extrusion die having discharge slots with good flow characteristics (page 4, lines 18 - 25).

This problem is solved by claim 1 for a honeycomb extrusion die and correspondingly by claim 8 concerning the use of such a die in a method for forming a plasticized batch material.

The discontinuity in surface flatness of side surfaces forming the walls of the discharge slots according to D2 is

(a) at the inlet face; furthermore

(b) no effect is stated for this discontinuity.

D2 thus could not have led the person skilled in the art attempting to solve the problem indicated above to the solution according to claim 1, according to which discontinuities are not located at the inlet face but at a location closer to the discharge face than the base of the pins (inlet face) and in a manner such that the discontinuities in surface flatness are geometrically designed, macroscopic, flow-modifying discontinuities.

Likewise combined consideration of the honeycomb extrusion die of D2 with the one according to D1 or D4 does not lead to the one according to claim 1.

As indicated above (section 2.2) D1 discloses a honeycomb extrusion die wherein reservoirs can be provided at the inlet face of discharge slots and D4 discloses a die of this type wherein at the inlet face a transition section is provided and wherein discharge slots can be formed as dual width slots.

Neither one of these known approaches gives an indication leading to the provision of surface protrusions or recesses as defined in claim 1.

The honeycomb extrusion die according to claim 1 thus involves an inventive step (Article 56 EPC).

3. The above considerations apply correspondingly with respect to claim 8 since according to this claim in a method for forming a plasticized batch material into a honeycomb shape the material is pressed through a die having essentially the structure of the one according to claim 1.

3.1 The dependent claims 2 to 7 and 9 to 14 relate to further modifications of the subject-matters of claim 1 and claim 8, respectively, and thus likewise involve an inventive step.

Order

For these reasons it is decided that:

1. The decision is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Claims:
1 to 14 as filed with letter of 11 July 2007

Description:
pages 1 - 12 as filed with letter of 11 July 2007

Drawings:
sheets 1/3 to 3/3 as filed with letter of 11 July 2007

The Registrar: The Chairman:

G. Nachtigall P. O'Reilly