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**Datasheet for the decision
of 14 September 2006**

Case Number: T 0721/05 - 3.2.05

Application Number: 96810360.6

Publication Number: 0747196

IPC: B29C 45/17

Language of the proceedings: EN

Title of invention:
Uniformly compressible platen

Patentee:
HUSKY INJECTION MOLDING SYSTEMS LTD.

Opponent:
Engel Maschinenbau Gesellschaft m.b.H.

Headword:

-

Relevant legal provisions:
EPC Art. 54, 56, 107, 108

Keyword:
"Admissibility (yes)"
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0721/05 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 14 September 2006

Appellant: HUSKY INJECTION MOLDING SYSTEMS LTD.
(Patent Proprietor) 500 Queen Street South
Bolton
Ontario L7E 5S5 (CA)

Representative: Dearling, Bruce Clive
Husky Injection Molding Systems SA
Technical Center
Zone Industrielle Riedgen
B.P. 93
L-3401 Dudelange (LU)

Respondent: Engel Maschinenbau Gesellschaft m.b.H.
(Opponent) Ludwig-Engel-Strasse 1
A-4311 Schwertberg (AT)

Representative: Hofinger, Engelbert
Patentanwälte Torggler & Hofinger
Wilhelm-Greil-Strasse 16
A-6020 Innsbruck (AT)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
17 January 2005 concerning maintenance of the
European patent No. 0747196 in amended form.

Composition of the Board:

Chairman: W. Moser
Members: P. Michel
H. Schram

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the interlocutory decision of the Opposition Division posted 17 January 2005 maintaining European Patent No. 0 747 196 in amended form. The appeal was lodged, and the appeal fee paid, on 25 March 2005. The statement setting out the grounds of appeal was filed on 23 May 2005.

The Opposition Division held that the subject-matter of claim 1 of the main request lacked novelty, but found that the auxiliary request met the requirements of the EPC.

II. Oral proceedings were held before the Board of Appeal on 14 September 2006.

III. The appellant requested that the decision under appeal be set aside and that the European patent No. 0 747 196 be maintained on the basis of the following documents:
(i) patent as granted as main request; or
(ii) claims 1 to 30, filed as first auxiliary request on 11 August 2006; or
(iii) claims 1, 11, 15 and 27, filed as second auxiliary request on 11 August 2006; or
(ii) claims 1, 11, 15 and 27, filed as third auxiliary request on 11 August 2006.

The respondent (opponent) requested that the appeal be rejected as inadmissible, or that the appeal be dismissed.

IV. The following documents are referred to in the present decision:

D1: DE-A-40 04 026

D3: "Kunststoff Maschinen Führer", Johannaber, F.
(editor), 3rd edition, Carl Hanser Verlag München
Wien, 1992, pages 27 and 97

D7: Letter of professors Zürbes and Maas dated
8 August 2006

V. The independent claims of the main request read as follows:

"1. A platen for use in a clamping operation wherein a force (F) is generated in a first direction, comprising: a mold platen (10,110,210) having two walls spaced from each other, with a first of said walls (12,112,212) being on the mold side and a second of said walls (14,114,214) being spaced from and parallel to said first wall, wherein said first and second walls extend substantially transverse to said first direction of said force (F), wherein each of said first and second walls have edges and a center area and wherein an intermediate support structure (16,116,216) is positioned between and connected to both of said walls, characterized in that said intermediate support structure (16,116,216) is adapted for directing said force away from the edges of said first wall toward the center area of said first wall for substantially preventing deflection of said first wall and has a narrow end and a wide end and is arch shaped, conically shaped, V-shaped or C-shaped."

"11. A method for distributing forces within a platen having two parallel walls spaced apart by an intermediate support structure (16,116,216) positioned between and connected to both of said walls, which comprises:

 providing a mold platen (10,110,210) having two walls spaced from each other, with a first of said walls (12,112,212) being on the mold side and a second of said walls (14,114,214) being spaced from and parallel to said first wall, wherein each of said two walls have edges and a center area;

 clamping together the two mold halves thereby generating a force (F) against at least one of said walls in a first direction, wherein said walls extend substantially transverse to said first direction,

 characterized in that said force is directed away from the edges of said first wall toward the center area of said first wall via said intermediate support structure (16,116,216) thereby substantially preventing deflection of said first wall, wherein said force is directed via said intermediate support structure (16,116,216) having a narrow end and a wide end and having an arch shape, a conical shape, a V-shape or a C-shape."

"15. An injection molding machine, comprising:
a platen (10,110,210) holding a first mold half adapted for use in mating with a second mold half for forming a cavity mold; means for guiding said platen (10,110,210); and means for injection molding molten resin into said mold, wherein during clamping of said mold halves a force (F) is generated in said platen having a first direction substantially perpendicular to said platen, said platen including a first wall (12,112,212) having

edges and a central area and at least first and second sides, wherein said first side is adapted to be positioned nearest said cavity mold, said cavity mold being adjacent said first wall (12,112,212) said platen (10,110,210) further including a second wall (14,114,214) spaced from a substantially parallel to said first wall (12,112,212), said first and second walls extending substantially transverse to said first direction of said force (F), and an intermediate support structure (16,116,216) positioned between and connected to both of said walls, characterized in that said intermediate support structure (16,116,216) is adapted for directing said force away from the edges of said first wall toward the center area of said first wall for substantially preventing deflection of said first wall and has a narrow and a wide end and is defined by one of (1) a substantially V-shaped support wall defining a cavity between said first (12,112,212) and second (14,114,214) walls, (2) a substantially arch-shaped support wall, (3) a support wall having a substantially C-shaped cross-section, and (4) a conically shaped wall, thereby defining a cavity between said first and second walls, wherein said platen (10,110,210) substantially eliminates platen curvature during clamping."

"27. A method for reducing flash formation during injection molding, comprising the steps of:
forming a cavity mold between a stationary platen holding a first mold half and a movable platen holding a second mold half, wherein at least one of said platens includes a first wall (12,112,212) nearest said cavity mold having edges and a central area (30,130,230) and a second wall (14,114,214) spaced from and

substantially parallel to said first wall by an intermediate support structure (16,116,216) positioned between and connected to both of said walls; clamping together the two mold halves thereby generating a force (F) having a first direction against said at least one platen (10,110,210) substantially perpendicular to said at least one platen; characterized in that said force (F) is directed away from the edges of said first wall of said at least one platen (10,110,210) toward the center area of said first wall via said intermediate support structure (16,116,216), thereby substantially preventing deflection of said first wall and the formation of flash, wherein said force is directed via said intermediate support structure (16,116,216) having a narrow end and a wide end and having an arch shape, a conical shape, a V-shape or a C-shape, and injecting molding resin into said cavity mold and forming a molded part."

VI. The appellant argued substantially as follows in the written and oral procedure:

The appeal is admissible. The appellant is adversely affected by the decision under appeal. The appeal was filed, the fee was paid, and a written statement setting out the grounds of appeal was filed within the respective time limits. It is correct that the fee for printing a new specification of the European patent in accordance with Article 102(3)(b) EPC was paid and that translations of the claims into the other two official languages were filed. However, at no time was the right to file an appeal waived.

Claim 1 of the main request is novel in view of the disclosure of document D3. The platen of the injection moulding machine illustrated in Figure 46 of this document does not possess the features specified in the characterising portion of claim 1.

The intermediate support structure of the platen of document D3, that is, all the material between the first and second walls, is essentially a rectangular block of material which does not have a narrow end and a wide end such as to ensure the redistribution of force.

The closest prior art is represented by document D1. This document is more relevant than document D3, since, in addition to the features of the preamble of the claim, the platen includes an intermediate support structure which is adapted for directing said force away from the edges of the first wall toward the centre area of the first wall. A problem associated with the platen of document D1 is that the rear plate deforms, resulting in some deformation being transmitted to the front plate. Such deformation permits the formation of undesired flash at the mould interface.

The problem to be solved is thus to reduce formation of flash at the mould interface.

The solution to this problem is for the intermediate support structure to have a narrow end and a wide end and be arch shaped, conically shaped, V-shaped or C-shaped.

Nothing in the prior art points to this solution, nor is this solution *prima facie* obvious.

The person skilled in the art has a number of possibilities for solving the above problem, for example, increasing the thickness of the rear plate, increasing the length of the intermediate support structure, or providing an additional band around the intermediate support structure of a different length, enabling successive force transmission. The person skilled in the art would thus not adopt the solution proposed in the patent in suit.

The arguments in connection with novelty and inventive step of claim 1 apply equally to the remaining independent claims 11, 15 and 27.

VII. The respondent argued substantially as follows in the written and oral procedure:

The appeal is not admissible. The appellant is not adversely affected by the decision under appeal. The letter of the appellant filed with the EPO on 28 February 2005, in which translations of the amended claims as maintained by the Opposition Division were filed and the payment of the fees for maintenance of the patent in amended form was authorised indicates that the appellant was in agreement with the maintenance of the patent in suit in the form as maintained by the Opposition Division, so that the main request was implicitly abandoned. Such abandonment must be regarded as being irrevocable.

The subject-matter of claim 1 according to the main request lacks novelty in view of the platen shown in Figure 46 of document D3. As set out in the decision under appeal, the structure shown in the lower half of this figure constitutes an intermediate support structure as specified in claim 1. The portions of the platen between the two walls at the corners of the platen and surrounding the tie bars need not necessarily be regarded as forming part of the intermediate support structure as required by claim 1 of the main request.

The intermediate support structure of the platen shown in Figure 46 of document D3 is adapted, at least to some extent, for directing force away from the edges of the first wall toward the centre area of the first wall. The fact that forces are also transmitted through corner portions of the platen surrounding the tie bars is not relevant.

The top and bottom of the platen are identical, so that the intermediate support structure of the platen shown in Figure 46 of document D3 also has a narrow end and a wide end and is arch shaped.

The closest prior art is represented by document D1, and the problem to be solved is to reduce formation of flash at the mould interface.

In the platen disclosed in document D1, the first plate will undergo more deformation than the second plate, since the distance between the points at which forces are applied is greater in the case of the second plate. It is thus obvious that the distance between the points

at which forces are applied to the second plate must be reduced. The support structure must therefore be modified so as to extend towards the tie bars, thus resulting in a structure which has a narrow end and a wide end and is arch shaped, conically shaped, V-shaped or C-shaped. This is merely the result of applying the solution to the problem of bending of the first plate as taught in document D1 to the second plate.

The alternative solutions to the problem proposed by the appellant would be discarded as being too complex, heavy or large.

The subject-matter of claim 1 thus lacks an inventive step.

The arguments in connection with novelty and inventive step of claim 1 apply equally to the remaining independent claims 11, 15 and 27.

Reasons for the Decision

1. *Admissibility*

It is objected by the respondent that the appeal is not admissible, since the appellant is not adversely affected by the decision under appeal.

In the decision under appeal, the Opposition Division held that the subject-matter of claim 1 of the main request lacks novelty, but found that the auxiliary request meets the requirements of the EPC.

On 28 February 2005, that is, before the period for filing an appeal in accordance with Article 108 EPC had expired, the appellant filed translations of the amended claims according to the auxiliary request and authorised the payment of the fees relating to the maintenance of the patent.

On 16 March 2005, also before the period for filing an appeal had expired, the Opposition Division issued a final decision maintaining the European patent in amended form.

On 25 March 2005, the appellant filed "an appeal against the decision (notified on 17 January 2005) to revoke the originally granted form of the above referenced European patent."

It is argued on behalf of the respondent that the letter of 28 February 2005 together with the payment of the necessary fees constitutes an implicit withdrawal of the main request. The letter of 28 February 2005 is, however, concerned entirely with the auxiliary request of the appellant, so that the main request of the appellant cannot be considered to have been withdrawn.

The appellant is considered to be adversely affected by the interlocutory decision of the Opposition Division as specified in Article 107 EPC. The notice of appeal against this decision and the statement setting out the grounds of appeal were filed within the period specified in Article 108 EPC (cf. point I above). The appeal is thus admissible.

As regards the final decision to maintain the patent in amended form, issued on 16 March 2005, this decision was taken in contravention of the rights of the appellant, since the time limit for filing an appeal against the interlocutory decision had not yet expired. The Opposition Division thus acted *ultra vires* and the final decision is null and void.

Main Request

2. *Novelty*

Figure 46 of document D3 shows an injection moulding machine having a platen shown entirely in cross-section, the upper portion being a section on a line passing through the centre of the platen and a tie bar and the lower portion being a vertical section. The platen thus has the form shown in document D7 at page 3/4. The platen thus has essentially the form of a rectangular block having a transverse aperture, recessed at each side and, at least in the upper surface thereof, a recess defined by an angled lower surface and a portion of the first wall.

It is argued on behalf of the respondent that the intermediate support structure should be considered to be formed by the portion of the structure between the first and second walls excluding the portions of rectangular section surrounding the tie bars at each corner of the platen. The Board is, however, of the opinion that such a division of the structure of the platen is artificial and not supported by the disclosure of document D3. On the contrary, the intermediate support structure should be considered to

be constituted by all the material positioned between, and connected to, the first and second walls.

Such a structure cannot be regarded as being adapted for directing force away from the edges of the first wall towards the centre area of the first wall for substantially preventing deflection of the first wall. Forces applied in the first direction, that is, perpendicular to the walls of the platen in the region of the first wall adjacent to the transverse aperture are directed away from the centre of the wall towards the upper and lower edges. Forces in the region of the tie bars are transmitted without a change in direction. It is only forces in the region of the first wall adjacent to the aperture in the upper surface of the platen which, at least in part, are directed away from the edge.

In addition, the intermediate support structure disclosed in document D3 does not possess a narrow end and a wide end and is not arch shaped, conically shaped, V-shaped or C-shaped.

The subject-matter of claim 1 is thus distinguished over the disclosure of document D3 by the characterising features of the claim.

The intermediate support structure 13 of the platen disclosed in document D1 does not have a narrow end and a wide end and is not arch shaped, conically shaped, V-shaped or C-shaped (see point 3.1 below).

The subject-matter of claim 1 is accordingly novel.

3. *Inventive step*

3.1 Closest prior art

Document D1 constitutes the closest prior art. As shown in Figure 1, in addition to the features of the pre-characterising portion of claim 1, the platen comprises an intermediate support structure 13, which is adapted for directing force away from the edges of the first wall 3 toward the centre area of that wall.

The subject-matter of claim 1 of the patent in suit is thus distinguished over this disclosure by the intermediate support structure having a narrow end and a wide end and being arch shaped, conically shaped, V-shaped or C-shaped.

3.2 Problem

A problem associated with the platen of document D3 is that the rear plate undergoes deformation owing to forces being applied to the front face of the second wall (that is, the wall remote from the mould) through the intermediate support structure 13 close to the centre of the platen, whilst these forces are resisted at the rear face of the second wall at the tie bar nuts 5 positioned adjacent the corners of the wall. These forces result in deformation of the rear wall, some of which deformation is transmitted to the front plate through the intermediate support structure 13. Such deformation further permits some deformation of the portion of the mould mounted on the platen, which may permit the formation of flash at the mould interface.

The problem to be solved is accordingly regarded as being to reduce the formation of flash at the mould interface.

3.3 Solution

According to claim 1, this problem is solved by forming the intermediate support structure with a narrow end and a wide end and being arch shaped, conically shaped, V-shaped or C-shaped. By virtue of this structure, forces are transmitted to an area of the second wall at a location which reduces the bending moment applied to the second wall. The mould mounting face of the platen thus deforms in a substantially parallel manner, so that formation of flash at the mould interface is substantially prevented.

There is nothing in the cited prior art which would point the person skilled in the art towards this solution of the problem. Moreover, as stated by the appellant, other solutions to the problem are also available.

This solution to the above problem is also not *prima facie* obvious to the person skilled in the art. It is argued on behalf of the respondent that this solution is merely applying the technique used to reduce deformation of the first wall to the second wall. However, this line of argument requires that the person skilled in the art seeking a solution to the problem of reducing flash formation in the injection moulding machine disclosed in document D1 would appreciate that the problem originates in deformation of the second

wall 12. There is, however, no indication that this is the case.

The subject-matter of claim 1 according to the main request thus involves an inventive step.

4. Claims 11, 15 and 27 are characterised by the same features as claim 1 and the subject-matter of these claims is thus novel and involves an inventive step for the same reasons.

Claims 2 to 10, 12 to 14 and 28 to 30 are directly or indirectly dependent from the independent claims 1, 11, 15 or 27 and relate to preferred embodiments of the subject-matter of said independent claims. The subject-matter of these dependent claims is thus similarly novel and involves an inventive step.

5. It is accordingly not necessary to consider the auxiliary requests of the appellant.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:

D. Meyfarth

W. Moser