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D E C I S I O N
of 1 April 2003

Case Number: T 0843/00 - 3.2.5

Application Number: 93108241.6

Publication Number: 0579925

IPC: B29C 45/16

Language of the proceedings: EN

Title of invention:
A device for the co-injection in different points of a mold

Patentee:
Johnson Control S.P.A.

Opponent:
Battenfeld GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 84, 123(2)

Keyword:
"Inventive step, main request (no)"
"Extension beyond the content of the application as filed, first auxiliary request (yes)"
"Inventive step, second auxiliary request (yes)"

Decisions cited:
T 0472/92, T 0619/99

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0843/00 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 1 April 2003

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 18 July 2000 rejecting the opposition filed against European patent No. 0 579 925 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: W. Moser
Members: W. Widmeier
H. M. Schram

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against European Patent No. 0 579 925.

II. The Opposition Division held that the grounds for opposition submitted by the appellant under Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC) did not prejudice the maintenance of the patent in suit as granted.

III. Oral proceedings were held before the Board of Appeal on 1 April 2003.

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents filed on 3 March 2003:

(a) claims 1 to 7 as main request; or

(b) claims 1 to 7 as first auxiliary request; or

(c) claims 1 to 4 as second auxiliary request; or

(d) claims 1 to 4 as third auxiliary request; or

(e) claims 1 to 4 as fourth auxiliary request; or

(f) claims 1 to 4 as fifth auxiliary request.

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

"1. A device (4, 17) to perform the coinjection into a mold (2) of at least two materials at the fluid state coming from one or more equipments (1) for feeding under pressure said materials, comprising canalization means, wherein said materials separately flow, said canalization means being in communication with a plurality of coinjection units (3, 20) arranged in correspondence to different points of a same cavity of said mold, characterized in that said canalization means are independently controlled in temperature and said coinjection units (3, 20) are comprising injectors that have means for independent temperature control of each flow of material and that are independently regulated as to flow rate."

Claim 1 of the first auxiliary request reads as follows:

"1. A device (4, 17) to perform the coinjection into a mold (2) of at least two materials at the fluid state coming from one or more equipments (1) for feeding under pressure said materials, comprising canalization means, wherein said materials separately flow, said canalization means being in communication with a plurality of coinjection units (3, 20) arranged in correspondence to different points of a same cavity of said mold, and wherein the lengths [the erroneous term "legths" being used in the claim as submitted] of said canalization means between the ducts (7, 8; 18, 19) feeding said materials to said device (4) and the ducts (9, 10; 23, 24) for distribution of said materials to said coinjection units are different, characterized in that said canalization means are independently

controlled in temperature and said coinjection units (3, 20) are comprising injectors that have means for independent temperature control of each flow of material and that are independently regulated as to flow rate."

Claim 1 of the second auxiliary request reads as follows:

"1. A device (4, 17) to perform the coinjection into a mold (2) of at least two materials at the fluid state coming from one or more equipments (1) for feeding under pressure said materials, comprising canalization means, wherein said materials separately flow, said canalization means being in communication with a plurality of coinjection units (3, 20) arranged in correspondence to different points of a same cavity of said mold, characterized in that said canalization means are independently controlled in temperature and said coinjection units (3, 20) are comprising injectors placed side by side, said injectors having means for independent temperature control of each flow of material and being independently regulated as to flow rate."

V. The following documents were *inter alia* referred to in the appeal proceedings:

E5: Drawings of "2-K-Heißkanalverteiler" (E5a) and "2-K-Heißkanal" (E5b) of Battenfeld Maschinenfabriken GmbH in combination with an affidavit of 22 December 1997 signed by Mr Helmut Eckardt, employee of the respondent, Battenfeld Maschinenfabriken GmbH

E6: EP-A-0 467 274

E11: DE-B-24 45 786

E12: US-A-4 104 353 (family member of E11)

VI. In the written and oral proceedings the appellant argued essentially as follows:

Main request

Document E11 is to be considered to represent the closest prior art. This document shows all features of the preamble of claim 1. It also shows that the injectors are independently regulated as to flow rate. This is achieved by the spigot cocks 39 and 40 and the valve 55. The flow rate regulation of the patent in suit is not to be understood as a continuous adjustment, but rather, like the regulation in document E11, as an on-off control. Document E11 does not show that the canalization means are independently controlled in temperature and that the injectors have means for independent temperature control of each flow of material. However, these features are rendered obvious from document E6. This document explains the necessity of an independent temperature control of two different materials in moulding devices, and it shows how such an independent temperature control can be technically realized. With the combination of documents E11 and E6 a person skilled in the art arrives therefore at the subject-matter of claim 1 according to the main request.

First auxiliary request

The additional feature of claim 1, according to the first auxiliary request, that the lengths of the canalization means are different goes beyond the content of the application as filed. The application as filed does not mention such different lengths and the drawings appear to show equal lengths. Furthermore, this feature lacks clarity because it does not specify in an unambiguous manner which lengths are meant and gives therefore room for interpretation. Thus, claim 1 according to the first auxiliary request does not meet the requirements of Articles 123(2) and 84 EPC.

Second auxiliary request

The additional feature of claim 1, according to the second auxiliary request, that the injectors are placed side by side is not disclosed in the application as filed. An injector is to be understood as the complete part 25 of Figure 4 of the patent in suit. There is no support in the application as filed for an arrangement with a plurality of such parts placed side by side. If, however, the expression "injectors placed side by side" is to be understood as the configuration shown in Figure 4 of the patent in suit, then there is a lack of clarity. On the other hand, injectors placed side by side are known from document E11, since the coaxial arrangement shown in Figures 2 and 4 falls under the definition "side by side". Thus, the additional feature of claim 1 of the second auxiliary request cannot give rise to an inventive step. Also drawings E5a and E5b show a coinjection unit with injectors placed side by side, which is similar to the arrangement shown in Figure 4 of the patent in suit. The affidavit of Mr Eckardt gives all necessary information to prove the public prior use so that these documents constitute

prior art within the meaning of Article 54(2) EPC. Drawing E5a also shows an independent temperature control of the canalization means so that the subject-matter of claim 1 of the second auxiliary request lacks an inventive step with respect to the public prior use.

VII. In the written and oral proceedings the respondent argued essentially as follows:

Main request

The subject-matter of claim 1 differs from document E12 in that the canalization means and the injectors are independently controlled in temperature and in that the injectors are independently regulated as to flow rate. The term "flow rate" is to be understood as the amount of material per unit time, as stressed in decision T 619/99, point 3.3.3 of the Reasons. In document E12 the material flow can only be switched on and off. Thus, there is no regulation of the flow rate. Document E12 shows a device for the production of large sized products by injection in several points of the same mould. Thus, it is unavoidable that there are ducts of different lengths, unless the cavity is adapted to the lengths of the ducts. In contrast thereto, document E6 requires equal lengths of the ducts. Document E6 does not show a temperature control of the injectors. A combination of documents E12 and E6 is therefore not obvious and would not lead to all features of claim 1.

First auxiliary request

The different lengths of the ducts as defined in claim 1 according to the first auxiliary request are

disclosed in the application as filed. Figure 3 clearly shows that the length of the horizontal duct 21 leading from duct 18 to duct 23 on the left side is shorter than the length of the horizontal duct 21 leading from duct 18 to duct 23 on the right side. The embodiment shown in Figure 1 of the patent in suit does not fall under the definition given in claim 1 of the first auxiliary request and is to be deleted, together with the corresponding part of the description.

Second auxiliary request

Figure 4 of the application as filed shows the lower part of the coinjection unit. There are two injectors, one for material A and another for material B, and these two injectors are placed side by side. Thus, the additional feature of claim 1 according to the second auxiliary request is supported by the application as filed.

The injectors for the two materials in document E11 are arranged coaxially. Such a coaxial arrangement is different from a side by side arrangement. The side by side arrangement offers the advantage of an easy, efficient and independent temperature control of each of the injectors and is not rendered obvious from the coaxial arrangement of document E11. The alleged prior use was mentioned for the first time in the appeal procedure during the oral proceedings and cannot therefore be used at that late stage of the proceedings. Apart from that, the appellant did not prove the facts of the prior use so that it cannot be considered representing relevant state of the art.

Reasons for the Decision

1. *Main request*

1.1 Claim 1 of the main request is supplemented with respect to claim 1 as granted by the feature that the coinjection units comprise injectors which have means for independent temperature control of each flow of material and which are independently regulated as to flow rate. The subject-matter of claim 1, including this feature, is disclosed in the application as filed (cf. column 5, lines 13 to 17 and 40 to 42 and claim 7 of the published version).

The Board is therefore satisfied that claim 1 meets the requirements of Article 123(2) and (3) EPC. It also meets the requirements of Article 84 and of Rule 57(a) EPC. The appellant did not raise objections in that respect.

1.2 Document E11 is to be considered the closest prior art. This document discloses a device in accordance with the preamble of claim 1. The problem to be solved in view of this document is to provide a device ensuring also in the production of large products the distribution homogeneity of the injected materials in their correct proportions (cf. column 3, lines 49 to 56 of the patent in suit). This problem is solved by the features of the characterising portion of claim 1, i.e. by canalization means which are independently controlled in temperature and by injectors which have means for an independent temperature control of each flow of material and which are independently regulated as to flow rate.

Document E6 discusses the problems that arise when

different materials are processed in one injection moulding device, and it recommends as a solution for these problems independent temperature controls of the hot-runner blocks so that it is possible to adapt each hot-runner to the melting point of the material and thus to keep the materials in their optimum liquid state (cf. page 3, lines 18 to 26; page 3, line 51 to page 4, line 2; and page 7, lines 41 to 50). Although document E6 is related to a moulding device in which the coinjection units lead to different cavities, the recommendation to control the temperature of each of the materials independently is a basic teaching that can be applied also in a device in which the materials are injected at different points in the same cavity. In both cases it is necessary to press the materials through ducts of considerable lengths, and in both cases the injectors may be arranged at a considerable distance from the hot-runner heaters. Thus, a person skilled in the art, confronted with the problem to produce moulding products of two different materials in a single cavity by coinjecting the different materials at different points of the cavity, as in document E11, is taught by document E6 to heat the canalization means independently. When further confronted with the problem to produce in such a way large products, it may not be satisfying to heat only the canalization means independently because of the different distances along the ducts through which the materials flow. It is therefore also obvious to supplement the injector heater 28 of document E6, which already allows a temperature control of one material in the injector (cf. page 6, lines 10 and 11), by a further injector heater for the second material, to provide also a temperature control of the other material in the injector, so that up to the end of their flow ways the

materials are kept under optimum conditions.

Thus, in the light of the disclosure of document E6, the features of claim 1 that the canalization means are independently controlled in temperature and that the injectors have means for independent temperature control of each flow of material are obvious features.

The further distinguishing feature between the subject-matter of claim 1 and the device shown in document E11 is that the injectors are independently regulated as to flow rate. The Board agrees with the respondent that the term "flow rate", in the context of an injection moulding device, is to be interpreted as the quantity of injected material per unit time. The device of document E11 is equipped with means suitable for regulating the flow rate in the injectors. Although the spigot cocks ("Drosselklappenventile") 39 and 40 (cf. Figures 2 and 4) seem to be operated as on-off valves (cf. column 4, lines 25 to 37), a person skilled in the art would immediately recognize that these spigot cocks can be used to regulate the flow rate, if necessary. Thus, also the feature of claim 1 that the injectors are regulated as to flow rate is to be considered as obvious.

All features which distinguish the subject-matter of claim 1 from the device shown in document E11 are therefore obvious and do not involve an inventive step. Claim 1 of the main request is not allowable for this reason.

2. *First auxiliary request*

Claim 1 of the first auxiliary request is supplemented

with respect to claim 1 of the main request by the feature that the lengths of the canalization means between the ducts feeding the materials to the device and the ducts for distribution of the materials to the coinjection units are different.

The respondent mentioned Figure 3 of the application as filed as basis for this feature. The description and the claims of the application as filed are silent about different lengths of the ducts. However, it is established case law that drawings of patent applications are merely schematic. Also Figure 3 of the application as filed is a schematic drawing which cannot be considered reflecting the true configuration and true dimensions of the device and which is, moreover, only one part of an injection moulding arrangement of unknown form, leaving it open how this arrangement left and right of the shown part looks like. Thus, Figure 3 of the application as filed cannot serve as a basis for the additional feature of claim 1.

The Board concludes therefore that claim 1 of the first auxiliary request is not allowable under Article 123(2) EPC.

3. *Second auxiliary request*

3.1 Claim 1 of the second auxiliary request is supplemented with respect to claim 1 of the main request by the feature that the injectors are placed side by side.

The appellant was of the opinion that this feature is not disclosed in the application as filed and therefore not in accordance with Article 123(2) EPC, or that this feature lacks clarity and is therefore not in

accordance with Article 84 EPC. The Board cannot share this opinion.

The subject-matter of claim 1, including the feature that the coinjection units comprise injectors placed side by side, is disclosed in the application as filed in column 5, lines 13 to 17, claim 6 and Figure 4. The requirements of Article 123(2) EPC are therefore fulfilled.

The corresponding text of the patent in suit (cf. column 5, lines 46 to 50) refers to the cross section of the "lower portion of an injector (25)". However, it is clear for a skilled reader of the whole content of the patent in suit that this is an obvious mistake and that the lower portion (25) of the coinjection unit (20) is meant. The same obvious mistake occurred in column 5, line 1 with respect to Figure 2 of the patent in suit.

The Board is therefore satisfied that the subject-matter of claim 1 and the description according to the second auxiliary request meet the requirements of Articles 123(2) and (3) and 84 EPC.

3.2 The respondent objected to the fact that the appellant relied on the public prior use according to documents E5 during oral proceedings for the first time in the appeal procedure. However, documents E5 were filed together with the notice of opposition. In the decision under appeal the Opposition Division has decided that the subject-matter of claim 1 was novel with respect to the alleged public prior use, without having addressed the question whether the public prior use was proven or not. The appellant tried to rely on the alleged public

prior use in response to an amendment made by the respondent during the appeal procedure, i.e. the side by side arrangement of the injectors. The alleged public prior use seems to disclose also such a side by side arrangement of injectors and would therefore, if proven, be highly relevant.

However, the appellant failed to prove up to the hilt that the alleged public prior use is to be considered prior art within the meaning of Article 54(2) EPC. Although having already been requested by the Opposition Division during the opposition procedure to submit further evidence of the facts and circumstances of the alleged public prior use, the appellant failed to do so. In decision T 472/92 (OJ EPO 1998, 161; cf. point 3.2 of the Reasons) it is held that the following facts must be established in order to prove the existence in fact and in law of a public prior use:
(a) the date on which the prior use occurred,
(b) exactly what was in prior use, and
(c) the circumstances surrounding the prior use (e.g. confidentiality). In the present case, the date of the alleged public prior use is more than eleven years prior to the date when Mr Eckardt signed his affidavit. It is however very doubtful, whether any person skilled in the art is able to remember the exact date, the exact technical details and the exact circumstances of the alleged prior use after eleven years. Further documents clearly supporting these facts are missing so that the Board has no evidence as to what device was delivered, and when, and under which circumstances it was delivered.

It follows that the alleged public prior use according to documents E5 may not be considered prior art within

the meaning of Article 54(2) EPC.

3.3 The injectors of document E11 are of a coaxial design. This can be seen from Figures 2 and 4 and was acknowledged by the appellant. Also document E6 shows coaxial injectors (cf. the drawings). A coaxial design and a side by side design are mutually exclusive. In addition, neither document E6 nor document E11 suggest to replace the coaxial injector design by a side by side arrangement for injecting the materials. Thus, the feature that the coinjection units comprise injectors placed side by side constitutes a further difference of the subject-matter of claim 1 with respect to documents E6 and E11.

The side by side arrangement has the advantage that the independent temperature control of the individual injectors is much more easier than in a coaxial arrangement. A coaxial design makes it difficult to control the temperature in the injectors independently.

The Board is therefore satisfied that the subject-matter of claim 1 of the second auxiliary request, including the feature that the coinjection unit comprises injectors placed side by side, involves an inventive step.

3.4 Dependent claims 2 to 4 refer to embodiments of the subject-matter of claim 1 according to the second auxiliary request; thus, their subject-matter does also involve an inventive step.

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) claims 1 to 4 filed as second auxiliary request on 3 March 2003; and

   (b) description, pages 2 to 4 submitted as second auxiliary request during oral proceedings; and

   (c) drawings, Figures 1 to 4 as granted.

The Registrar: The Chairman:

M. Dainese W. Moser