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D E C I S I O N
of 5 July 2002

Case Number: T 0158/98 - 3.2.5

Application Number: 91112434.5

Publication Number: 0468484

IPC: B29C 45/27

Language of the proceedings: EN

Title of invention:

Injection molding cooled socket holder for a heated nozzle

Patentee:

Gellert, Jobst Ulrich

Opponent:

Eurotool Operations B.V.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0158/98 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 5 July 2002

Appellant: Eurotool Operations B.V.
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Respondent: Gellert, Jobst Ulrich
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Representative: Grünecker, Kinkeldey,
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 28 November 1997
rejecting the opposition filed against European
patent No. 0 468 484 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: W. Moser
Members: W. R. Zellhuber
P. E. Michel

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against the European patent No. 0 468 484.

II. In the decision under appeal, it was held that the grounds of 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 having regard to the cited documents and to the alleged prior use.

III. The following documents were referred to in the appeal procedure:

D1: EP-A 0 374 549;

D2: Drawing by Eurotool B.V., Job nr. 1107- 1910D,
Title: "10 FACH "I+T+T" VERTEIELER SYSTEM",
Client: FORD, Date: 040889;

D3: Order by General Electric concerning a "Static
Runnerless System for "FORD" Prototype Mould
BE13", dated 12/08/88;

D4: Invoice for a "Manifoldsystem 8 Port "I" Pattern
incl. all components acc. to drawing and partlist
1107-1850 NL", order number: 15286, dated 88-12-
09, sent by Eurotool BV to G/E Plastics B.V,
shipping address: Tooling Prod. LTD, England;

D5: Order by J. Zimmermann Nachf. concerning a "Sierra
91 1/2 Notch, Heißkanalsystem kompl. gem. Angebot-
Nr. 8679 vom 15.06.89", dated 28.06.89;

D6: Shipping document addressed to J. Zimmermann
Nachf. concerning a "EUROTOOL-Heißkanalsystem 10-
fach zur Direktanspritzung" according to order
number 8679 ("gem. Angebot Nr. 8679 vom
15.07.89"), dated 23.10.89;

D8: NL-A 88 02 622;

D9: GB-A 21 09 296;

D10: GB-A 22 02 787;

D15: US-A 4 911 636.

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

V. The respondent (proprietor) requested that the appeal
be dismissed. As an auxiliary request, he further
requested that oral proceedings be held if the Board of
Appeal should not be prepared to reject the appeal on
the basis of the written submissions.

VI. Claim 1 of the patent in suit as granted reads as
follows:

"1. An injection molding integral cooled socket holder
(10), to be seated in a well (64) in a cavity plate
(12), and the socket holder (10) having a forward end
(70), a rear end (72), and a central socket (74)
extending therethrough to receive an elongated heated
nozzle (14) to convey melt to a cavity (34), the socket
holder (10), comprising:

(a) a hollow rear collar portion (84) having a central

opening (130) therethrough, a cooling fluid inlet passage (100) and a cooling fluid outlet passage (106), the inlet passage (100) having an inlet (102) and an outlet (104), the outlet passage (106) having an inlet (108) and an outlet (110),

- (b) a forward socket portion (86) having an opening (118) therethrough to receive a forward nose portion (38) of the heated nozzle (14) and to provide a gate (32) leading to the cavity (34), the forward socket portion (86) having a circular cooling fluid conduit (112) with an inlet (114) and an outlet (116) to convey cooling fluid around the forward nose portion (38) of the nozzle (14) adjacent the gate (32)

characterized by

- (c) a hollow central tube portion (88) of a preselected length with a central cylindrical opening (132) therethrough extending between the rear collar portion (84) and the forward socket portion (86), the tube portion (88) having a cooling fluid inlet duct (90) and a cooling fluid outlet duct (92), the inlet duct (90) connecting the outlet (104) from the inlet passage (100) in the rear collar portion (84) to the inlet (114) to the fluid conduit (112) in the forward socket portion (86), and the outlet duct (92) connecting the outlet (116) from the fluid conduit (112) in the forward socket portion (86) to the inlet (108) to the outlet passage (106) in the rear collar portion (84)."

VII. The appellant argued essentially as follows:

The subject-matter of claim 1 of the patent in suit was not novel with regard to each of documents D8, D9 and D10.

Document D8 disclosed an injection moulding apparatus wherein a heated nozzle was seated in a nozzle holder. The nozzle holder, cf. Figure 1, comprised

- clamping rings 2 and 3 and cooling fluid ducts in the surrounding area, thus representing a rear collar portion according to feature a) of claim 1 of the patent in suit,
- a cooled forward portion 7 comprising an opening to provide a gate leading to the mould cavity, thus representing a forward socket holder portion according to feature b) of claim 1 of the patent in suit, and
- a central tube portion 5 having on each side thereof a coolant duct 10, 11, thus representing a central portion according to feature c) of claim 1 of the patent in suit.

Document D9 disclosed an injection moulding apparatus wherein a nozzle, after insertion, was mechanically connected to a holder. The nozzle (runner) 1 shown in Figures 5 and 6 was received by heating wire 3 and outer cylinder 3. The fact that the nozzle and the holder were part of a one-piece structure did not represent a difference with respect to the subject-matter of claim 1 of the patent in suit as granted.

The socket holder according to document D10, cf., in particular, Figures 3 and 4, consisted of integrally

jointed parts and was formed of "portions" in the same way as the rear collar portion, forward socket portion and hollow central tube portion of claim 1 of the patent in suit. Furthermore, since claim 1 of the patent in suit did not specify the size of the opening in the forward socket portion, it might be large such that the nozzle projects through, as it was the case in the apparatus disclosed in document D10.

With respect to the question of inventive step, document D10 was considered to represent the closest prior art. Document D10 concerned a heated nozzle seated in a socket holder disposed in a well of a cavity plate. The only objective problem to be solved by the patent in suit was to provide a socket holder which might be manufactured simply. The solution was to execute the socket holder as modular system comprising three components, ie a rear portion, a forward portion and a central tube portion. By changing the length of the central portion, the system could easily be adapted to receiving nozzles of different lengths.

However, solving the problem of easily adapting a known machine component to different sizes with a minimum of modifications, by use of a modular construction and variation of the length-determining part, was a widespread construction principle. If the skilled person wished to solve the problem of providing socket holders of different lengths for accommodating nozzles of different lengths, he or she would arrive at the modular construction according to claim 1 of the patent in suit without the need of applying an inventive step.

Moreover, the subject-matter of claim 1 of the patent in suit also did not involve an inventive step with

regard to the prior art as disclosed in documents D2, D8 and D9, in particular when taking into account the teaching of these documents or the teaching of document D10 in combination with the teaching of document D15. The latter suggested a modular construction of a heated nozzle comprising a rear collar portion, a central tubular portion and a forward nose portion.

VIII. The respondent argued essentially as follows:

Document D1 represented the closest prior art, because it disclosed a cooled socket holder for receiving an elongated heated nozzle.

The integral cooled socket holder according to claim 1 of the patent in suit was composed of three parts: a) a hollow rear collar portion having cooling fluid passages, b) a forward socket portion for receiving the forward nose portion of the nozzle comprising cooling fluid conducts for cooling the heated nozzle at the gate, and c) a hollow central tube comprising cooling fluids connecting the inlet and the outlet openings of the hollow rear collar portion to respective openings in the forward socket portion. Each part had a specific design and met respective requirements. The cooling means were integrally formed within the holder while providing a simple adjustment of the integral cooled socket holder by just cutting the central tube portion to a preselected length. The socket holder, on the one hand, and the nozzle, on the other, were separate parts.

The inventive concept of an injection moulding integral cooled socket holder being separate from the heated nozzle, but providing a cooled gate, was neither

disclosed nor suggested by the state of the art. Furthermore, none of the cited documents suggested or disclosed an integral cooled socket holder having the three parts a), b) and c) as defined in claim 1 of the patent in suit.

Document D8 did not show a cooled gate contained in a part of the insert 8, the cooled forward part of the nozzle was an integral part of the nozzle. Cooling tubes were separately connected to the heated nozzle and were thus part of the nozzle, but not part of a separate integral cooled socket holder.

Document D9 disclosed an injection nozzle comprising cooling channels integrally formed in the nozzle body. It did not suggest an integral cooled socket holder for receiving a separate heated nozzle.

Document D10 disclosed neither a forward socket portion comprising a cooled gate nor a separate hollow central tube portion allowing easy adjustment, manufacturing and assembling of the cooling channels in particular to meet different lengths of the nozzle.

Document D15 suggested neither a three-piece integral cooled socket holder nor a rear collar portion to seat the nozzle, nor a tube portion as defined in claim 1 of the patent in suit.

IX. In a communication dated 3 September 2001, the Board expressed its provisional view that document D2 (Drawing nr. 1107 - 1910D) had to be disregarded for lack of proof beyond any reasonable doubt that the subject-matter of the drawing had actually been made available to the public before the priority date of the

patent in suit. Documents D3 to D6, which had been submitted by the appellant in order to substantiate that the subject-matter of drawing D2 had been made available to the public before the priority date of the patent in suit, did not seem to refer to the job to which document D2 seemed to be related to. Moreover, drawing D2 seemed to refer to "Ford" as customer, whereas, according to the documents D3, D4, D5 and D6, the customers were General Electric, Tooling Prod. LTD and J. Zimmermann Nachf, respectively.

Furthermore, the Board expressed its provisional view that the subject-matter of claim 1 of the patent in suit as granted seemed to be novel and to involve an inventive step with regard to the prior art as disclosed in documents D1, D8, D9, D10 and D15.

- X. With letter dated, and received on, 5 March 2002, the appellant stated that he disagreed with the Board's findings regarding novelty and inventive step of the subject-matter of the patent in suit with regard to the prior art cited in the appeal, as set out in the communication of 3 September 2001.

The appellant further stated that he did not wish to attend oral proceedings and requested that a decision be taken on the basis of the written evidence at present on file.

Reasons for the Decision

1. *Alleged prior use*

Document D2 concerns a drawing produced by Eurotool

B.V.. The title of the drawing is "10 FACH "I+T+T" VERTEIELER SYSTEM" and the Job nr. is 1107-1910 D. It appears to bear the date of 4 August 1989 ("040889") and revision dates of 28 August 1989 ("280889") and 26 September 1989 ("260989").

Further documents, in particular documents D3 to D6 were submitted by the appellant in order to substantiate that the subject-matter of drawing D2 was made available to the public before the priority date of the patent in suit.

However, documents D3 and D4 do not comprise any reference to the subject-matter of drawing D2. Furthermore, document D4 appears to concern an item different from that shown in drawing D2, namely an 8-port "I" manifold system, job nr. 1107-1850 NL. Moreover, documents D3 and D4 bear dates of the year 1988 whereas the drawing D2, apparently, was produced in August 1989.

Documents D5 and D6 do not refer to the job to which the drawing D2 is related to, either. Moreover, document D5 is dated 28 June 1989.

Consequently, it seems that the drawing D2 was produced after the products mentioned in documents D3 to D5 had been ordered. Furthermore, drawing D2 seems to be related to a client called "Ford", whilst, according to the documents D3, D4, D5 and D6, the clients who ordered an apparatus were General Electric, Tooling Prod. LTD and J. Zimmermann Nachf, respectively.

Therefore, document D2 has to be disregarded for lack of proof beyond any reasonable doubt that the subject-

matter depicted in the drawing was made available to the public before the priority date of the patent in suit.

Therefore, document D2 does not represent prior art.

2. *Subject-matter of claim 1*

Claim 1 of the patent in suit concerns a cooled socket holder comprising a hollow rear collar portion, a forward socket portion and a hollow central tube portion, each of these components comprising cooling fluid ducts or passages.

According to the preamble of claim 1, the claimed socket holder is an integral socket holder which has to be suitable, on the one hand, to be seated in a well in a cavity plate and, on the other, to receive an elongated heated nozzle to convey melt to a cavity. These objectives require a specific construction of the socket holder and its components wherein the socket holder, the cavity plate and the nozzle are separate components.

3. *Novelty*

The subject-matter of claim 1 of the patent in suit is novel with regard to the cited prior art.

- 3.1 Document D1, cf. Figure 1, discloses a socket holder comprising a hollow rear collar portion 24, a forward socket portion 18 (mould core insert) and a support plate 16. The forward socket portion 18, which is suitable to be seated in a well of a cavity plate, and the support plate comprise cooling fluid ducts or

passages 142, 148, 150, 152 and 154.

The socket holder disclosed in document D1 comprises neither a rear collar portion having cooling fluid passages nor a hollow central tube portion comprising fluid conduits connecting cooling fluid passages in the rear collar portion to cooling fluid passages in the forward socket portion.

3.2 Document D8, cf., in particular, Figure 1, discloses a heated injection nozzle 1, comprising heating elements 4 and a cooled tip portion 7. The nozzle 1 is held by clamping rings 2 and 3 and shielded by a central tube portion 5. Cooling fluid ducts 10 and 11 run through openings in the upper part of the moulding apparatus, outside of the clamping means, along the central tube portion, and end at a portion surrounding the tip portion of the nozzle.

Neither the clamping rings 2 and 3 nor the tube 5 comprise any cooling fluid ducts. Furthermore, the cooled tip portion 7 is part of the nozzle. The element 8, which is seated in a well, does not comprise cooling fluid ducts.

Thus, document D8 does not disclose an integral socket holder comprising a hollow rear collar portion having a central passage and cooling fluid inlet and outlet passages, a forward socket portion having an opening to provide a cooled gate leading to a cavity, and a central tube portion having cooling fluid inlet and outlet ducts as defined in claim 1 of the patent in suit.

3.3 Document D9, cf., in particular, Figures 1, 5 and 6,

discloses an integral injection moulding nozzle unit comprising heating means 3 and cooling means 6.

Document D9 thus does not disclose a cooled socket holder suitable to be seated in a well in a cavity plate and to receive an elongated heated nozzle.

- 3.4 Document D10, cf. in particular, Figures 3 to 8, discloses an injection moulding nozzle unit comprising a portion with a central flow path 7 and a gate 8 through which the molten resin is fed to a cavity. The nozzle unit comprises heating means 10, 16, 17 and 18 and a cooling mechanism 13, wherein a cooling fluid passage is provided on the outer periphery of the gate. Document D10 thus does not disclose a cooled socket holder separate from the nozzle wherein the holder is suitable to be seated in a well in a cavity plate, and to receive an elongated heated nozzle.

- 3.5 Document D15, cf., in particular, Figure 1, discloses an injection moulding apparatus comprising a cooled gate insert 35, a cavity support plate 14 comprising cooling conduits, and a rear collar portion 20. A heated nozzle is located in an opening of the cavity support plate 14, the nose portion of the nozzle is received in an opening of the gate insert leading to a cavity.

Document D15 does not disclose a socket holder comprising a rear collar portion having cooling fluid ducts and a central tube portion comprising fluid conduits connecting cooling fluid passages in the rear collar portion to cooling fluid passages in the forward socket portion.

Therefore, the subject-matter of claim 1 of the patent

in suit is novel with regard to the cited prior art.

4. *Inventive step*

- 4.1 Document D1, cf. Figure 1, discloses a socket holder 14, 18, 24, which, on the one hand, is suitable to receive an elongated heated nozzle 10 to convey melt to a cavity, and, on the other, comprises a cooled forward socket portion 18. That socket portion 18 is suitable to be seated in a well of a cavity plate and is provided with a gate 34 leading to a cavity. Since the patent in suit concerns a cooled socket holder for a heated nozzle, in the Board's judgement, document D1 represents the closest prior art.

The appellant argued that document D10 represented the closest prior art. However, document D10 does not relate to a socket holder which is seated in a cavity plate and receives an elongated heated nozzle. Document D10 concerns an injection moulding apparatus wherein the injection unit (runner tip body) comprises, in combination, heating and cooling means, cf. page 9, lines 10 to 24 and Figures 3 to 6.

- 4.2 The object of the patent in suit is to provide a socket holder and a cooling arrangement which are economical to make with provision for nozzles of different lengths, cf. column 1, lines 31 to 34 of the patent in suit.

This object is solved by an integral cooled socket holder as defined in claim 1 of the patent in suit, in particular by providing an integral socket holder comprising

- a rear collar portion having cooling fluid inlet and outlet passages,
- a forward socket portion having a circular cooling fluid conduit with an inlet and an outlet, and
- a central tube portion having cooling fluid ducts connecting the cooling fluid passages of the rear collar portion to the cooling fluid passages of the forward collar portion.

According to the patent in suit, cf. column 4, lines 5 to 14, that structure of the socket holder facilitates the manufacture of socket holders having matching standard lengths in that the central tube portion, including the inlet and outlet tubes, is cut to different standard lengths prior to assembly. A further advantage is the reduction of component inventory costs.

4.3 The cited prior art is silent about the above-mentioned object, and, furthermore, does not suggest an integral socket holder having the above-mentioned structure. In particular, none of the cited documents D1, D8 to D10 and D15 suggests an integral socket holder comprising a rear collar portion and a central tube portion, both portions having cooling fluid ducts. Accordingly, any combination of the teachings of these documents does not give rise to a socket holder as suggested in the patent in suit.

Admittedly, selecting a modular construction might be a widespread constructional principle. However, this does not give rise to the assumption that a modular construction of any item in any technical field would

be obvious. In the present case, the cited prior art does not suggest a modular construction of an injection moulding socket holder for a nozzle, and, in particular, does not suggest the specific construction of the socket holder as defined in claim 1 of the patent in suit.

Therefore, the subject-matter of claim 1 of the patent in suit involves an inventive step. The subject-matter of claims 2 to 9 which are appendant to this claim 1 similarly involves an inventive step.

5. Under the circumstances, oral proceedings requested by the respondent as an auxiliary request could be dispensed with.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Dainese

W. Moser