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Datasheet for the decision of 2 December 2009

Case Number: T 0453/09 - 3.2.06

Application Number: 05704930.6

Publication Number: 1701809

IPC: B21D 17/02

Language of the proceedings: EN

Title of invention:
Indented tube for a heat exchange

Applicant:
Cooper-Standard Automotive, Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56, 54

Relevant legal provisions (EPC 1973):
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Keyword:
"Main request - novelty (no)"
"First auxiliary request - inventive step (no)"
"Third auxiliary request - remittal to the first instance"

Decisions cited:
-

Catchword:
-

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Case Number: T 0453/09 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 2 December 2009

Appellant: Cooper-Standard Automotive, Inc.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 13 October 2008 refusing European application No. 05704930.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. de Crignis
K. Garnett

Summary of Facts and Submissions

I. By the decision posted on 13 October 2008 the examining division refused the European patent application No. 05704930.6 for lack of novelty and inventive step when considering documents

D1 EP-A-1 113 237

D5 Patent abstracts of Japan Vol. 007, No 116 (M-216), 20 May 1983 & JP 58 035023 A, 1 March 1983

D6 US-A-3 494 170

D7 EP-a-1 221 579

D8 US-A-5 375 654

D9 Patent abstracts of Japan Vol. 1995, no 11, 26 December 1995& JP 07 218037 A, 18 August 1995.

II. On 9 December 2008 the appellant (applicant) filed an appeal against this decision and simultaneously paid the appeal fee. Together with a statement setting out the grounds of appeal a main request and eight auxiliary requests were filed on 12 February 2009.

III. In a communication, annexed to the summons to oral proceedings, the Board questioned the disclosure of the subject-matter of the claim 1 of all requests filed with the grounds of appeal.

IV. Oral proceedings were held on 2 December 2009.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request, alternatively the first or third auxiliary requests, all filed during the oral

proceedings and for this purpose the case be remitted to the Examining Division for further prosecution.

V. Claim 1 of the main request reads:

"A method of forming a heat exchanger tube, said method comprising the steps of:
positioning a tube in a mold at a first position;
crimping the tube with the mold to form an indentation in the tube; releasing the mold from the tube;
axially translating the tube to a second position relative to the mold; and
crimping the tube with the mold to form an additional indentation in the tube."

Claim 1 of the first auxiliary request additionally refers to the tube as "having a circular cross-section".

Claim 1 of the third auxiliary request additionally specifies that the method comprises that the steps are sequential and that the tube is axially and rotatably translated "from the first position to a second position relative to the mold, wherein the tube is rotated between 5 and 10 degrees".

VI. The arguments of the appellant may be summarised as follows:

Contrary to the decision of the examining division, the subject-matter of claim 1 is novel over the disclosure in D6. The tube disclosed in this document is not specified as being a heat exchanger tube and the dimensions for the tube disclosed in D6 are not

appropriate for a heat exchanger tube in view of its rectangular cross-sectional shape.

With regard to claim 1 of the first auxiliary request, the tubes are limited to having a circular cross-section. Accordingly, the subject-matter of claim 1 is novel over the disclosure of D6. D6 does not represent a suitable starting point for the assessment of inventive step as it does not concern a method of forming a heat exchanger tube. D1 discloses a heat exchanger tube which is formed by positioning a tube having a circular cross-section in a mould at a first position and crimping the tube with the mould to form an indentation in the tube and releasing the mould from the tube. D1 does not disclose the further feature of axially and rotatably translating the tube to a second position relative to the mould and crimping the tube with the mould to form an additional indentation in the tube. The problem to be solved is to provide an efficient forming method. The skilled person would not consider an axial and rotatable translation of the tube in order to crimp the tube additionally.

With regard to claim 1 of the third auxiliary request, the method is clearly specified by sequential method steps. Moreover, it was limited to a specific degree of axial and rotatable translation of the tube from the first position to a second position relative to the mould. No such teaching is available in the prior art. Such subject-matter had not been assessed by the examining division that is why the case should be remitted for further prosecution.

Reasons for the Decision

1. The appeal is admissible.

2. *Main Request*

2.1 D6 discloses an apparatus for making metal tubes of square or rectangular cross-section having ribs or flutings swaged thereon spaced at regular intervals comprising, in combination, a process for preferably operating simultaneously on two opposite faces of the tube and a mandrel insertable into the tube, the mandrel having dies mounted pivotably thereon, cooperating with the press, and disengageable from the internal tube faces whereby a longitudinal displacement of the tube with respect to the mandrel can occur between swaging operations. In its Figures 1 to 6 the respective positions are illustrated to show how in a longitudinal axial section a piece of apparatus performs the desired swagings on the tube.

2.2 The appellant's view is that the application differs from the disclosure in D6 in that it concerns a circular heat-exchanger tube whose indentations are more substantial. However, this feature is not related to any feature specified in the subject-matter of claim 1.

2.3 Accordingly, the subject-matter of claim 1 does not overcome the lack of novelty objection (Article 54 EPC) for the reasons set out by the examining division, and is not allowable.

3. *First auxiliary request*

3.1 The subject-matter of claim 1 of the first auxiliary request is further limited to the tube having a circular cross-section.

3.2 The appellant relied for support for such an amendment on Figures 1, 2, 3, 5 and 6.

3.3 Although no literal wording in this regard is present, the Board concurs with the appellant that in view of all the figures, the skilled person would clearly and unambiguously derive that tubes with circular cross-section are to be considered. Therefore, the requirements of Article 123(2) EPC are met.

3.4 The subject-matter of claim 1 is novel over the disclosure in D6 in view of the fact that this document refers to rectangular tubes.

3.5 D1 can be considered as representing a suitable starting point for the assessment of inventive step. It discloses a method of forming a heat exchanger tube. The tube is crimped with a mold and indentations are formed. The releasing of the mold from the tube represents a mandatory process step.

3.6 The subject-matter of claim 1 differs from the disclosure in D1 in that it requires the tube to be axially and rotatably translated to a second position relative to the mould in order to be crimped again with the mould for forming an additional indentation.

3.7 D1 discloses in its Figure 2 a prior art tube having indentations in various sections which are separated from each other by smooth intermediate sections. The skilled person considering the provision of such differently structured sections with the method disclosed in D1 would have two options: (a) either to use one moulding station for forming the indentations and to translate the tube or (b) to use various moulding stations and to form the indentations simultaneously. These two possibilities represent equivalent and obvious alternatives. No inventive step is necessary to perform the one or the other.

3.8 Accordingly, when starting from the disclosure of D1 and combining it with the general knowledge of the skilled person both alternatives would suggest themselves. The choice in the claimed method to translate the tube instead of using a multiplicity of moulding stations does not involve an inventive step (Article 56 EPC). Since the tool used in D1 is a rotatable profiling tool it speaks for itself that after translation to the next position the tube should be rotated for providing the profiling pattern at the next position on the tool.

3.9 The view of the appellant that Figure 2 should be disregarded because it relates to the prior art of D1 is not convincing. D1 refers to such profiled alternate sections of its tubes in the abstract as well as in the description (paragraphs [0010], [0030]).

3.10 Hence, the subject-matter of claim 1 does not involve an inventive step and is not allowable.

4. *Third auxiliary request*

4.1 All requests were filed during the oral proceedings, hence at the latest possible state in the proceedings. According to Article 13(1) of the Rules of Procedure of the Boards of Appeal (RPBA), it lies within the discretion of the Board to admit such late filed requests in the proceedings.

4.2 The subject-matter of claim 1 of this request includes the step that the tube is rotated between 5 and 10 degrees when axially and rotatably translated from the first to the second position relative to the mold. Such subject-matter was already included in claim 1 of the eighth auxiliary request filed with the grounds of appeal. Moreover, the request is limited to a set of four claims and the appellant argued that accordingly, the request was limited to the tube shown in Figure 4. For these reasons, the board decided that the request should be admitted.

4.3 Considering the appellant's request for remittal it is to be noted that the finding of the examining division referred to a claim 1 with different wording and was based mainly upon D6 and D5. D5 as present before the Board is an English abstract and a Japanese document. Therefore, the Board does not consider itself in a position to assess the scope of this document on the present information and the implications for the evaluation of inventive step on the current request. Accordingly, the case is sent back for further prosecution.

Order

For these reasons it is decided that:

The case is remitted to the examining division for further prosecution.

The Registrar The Chairman

M. Patin P. Alting van Geusau