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Case Number: T 1007/11 - 3.2.07

Application Number: 05019031.3

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Title of invention:
Insulated container and method of manufacturing the same

Patent Proprietor:
SEDA S.p.A.

Opponents:
Huhtamäki Oyj
Michael Mörauf Maschinenfabrik GmbH u. Co. KG

Headword:
-

Relevant legal provisions:
EPC Art. 56
EPC R. 115(2)
RPBA Art. 15(3)

Keyword:
"Understanding of claim 1 (points 2.3.3, 2.5.3); inventive step - no (all requests)"

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Catchword:
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Case Number: T 1007/11 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 6 March 2013

Appellant I: (Patent Proprietor)	SEDA S.p.A. Corso Salvatore d'Amato 84 I-80022 Arzano-Napoli (IT)
Representative:	Grünecker, Kinkeldey Stockmair & Schwanhäusser Leopoldstrasse 4 D-80802 München (DE)
Appellant II: (Opponent 2)	Michael Hörauf Maschinenfabrik GmbH u. Co. KG Mozartstrasse 39-41 D-73072 Donzdorf (DE)
Representative:	Wilhelm, Martin Patentanwälte Ruff, Wilhelm Beier, Dauster & Partner Postfach 10 40 36 D-70035 Stuttgart (DE)
Party as of rights: (Opponent 1)	Huhtamäki Oyj Keilaranta 10 FI-02150 Espoo (FI)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted 10 March 2011 concerning maintenance of European patent No. 1712490 in amended form.**

Composition of the Board:

Chairman: H. Meinders
Members: H.-P. Felgenhauer
E. Kossonakou

Summary of Facts and Submissions

I. The proprietor (appellant I) and the opponent 02 (appellant II) each filed an appeal against the decision of the opposition division maintaining European patent No. 1 712 490 in amended form.

Appellant I requested that the decision under appeal be set aside and the contested patent be maintained in accordance with the main request (claims of the patent as granted) submitted with the notice of appeal dated 20 May 2011 or in accordance with one of the auxiliary requests 1 to 4 submitted with letter dated 6 February 2013.

Appellant II requested that the decision under appeal be set aside and that the European patent No. 1 712 490 be revoked.

Although having been duly summoned, opponent 01 did not attend the oral proceedings, as announced with fax of 11 February 2013.

II. Claim 1 according to the **main request** (as granted) reads as follows

"An insulated container (10) for hot drinks or the like, comprising:

(a) an inner cup (12) having a generally frusto-conical cup body (22);

(b) a generally frusto-conical outer shell (14);

(c) a thermo-sealable plastic coating (42) on at least one of the inside of said shell (14) and the outside of said cup body (22);

(d) said cup (12) being seated within said shell (14) so that the coating (42) extends at least along a contact path (3) near an upper edge (9) of the shell (14) along which contact path outer surface of the cup body (22) and inner surface of the shell (14) are in contact,

characterised in that

at least one bonding spot (1) and/or bonding area (2) for bonding said shell (14) to said cup body (22) by said plastic coating (42) is only locally formed within said contact path (9).

Claim 1 according to **auxiliary request 1** differs from claim 1 as granted in that the expression "characterised in that" after the term "... are in contact," has been replaced by "wherein", in that the last feature of claim 1 was amended (highlighting of the added expressions in bold by the Board) to

"at least one bonding spot (1) and/or bonding area (2) for bonding **a wall of** said shell (14) to **a wall of** said cup body (22) by said plastic coating (42) is only locally formed within said contact path (3)", and in that as sole characterising feature the feature of claim 3 as granted was added:

"characterised in that a number of bonding spots (1) and/or bonding areas (2) are formed along the contact

path (3), all separated from each other by bonding-free parts of said contact path".

Claim 1 according to **auxiliary request 2** differs from claim 1 of the first auxiliary request in that after the expression "wherein" the feature of claim 9 as granted has been added:

"cup body (22) and/or shell (14) are made of paper board coated with said thermo-sealable plastic coating (42)".

Claim 1 according to **auxiliary request 3** differs from claim 1 of the first auxiliary request in that as last feature, corresponding to the additional feature of claim 7 as granted, it was added:

", said contact path (3) formed between an annular upper wall section (37) of the cup body (22) and an upper essentially cylindrical section (50) of said shell (14)".

Claim 1 according **auxiliary request 4** is based on claims 10 and 11 as granted and reads as follows:

"A method of fabricating an insulated container for hot drinks or the like, comprising the steps of:

(a) forming a generally frusto-conical shell (14);

(b) heating a thermo-sealable plastic coating (42) provided on the inside of said shell (14) and/or on the outside of a generally frusto-conical cup (12) to its melting point;

(c) inserting said cup (12) into said shell (14) until the outside of the cup wall (13) seats against the inside of the shell (14) along a contact path (3) near an upper edge (9) of the shell (14), so that the melted plastic coating extends at least along said contact path (3),

characterised by

(d) positioning an annular or first member (17) with at least one radially displaceable or protruding pressing element (19) inside the cup body (22), and

(e) pressing said pressing member against an external or second member (18) to press the walls (13, 16) of the cup body (22) and the shell (14) together by both members to form one or more bonding spots (1) and/or bonding areas (2), which are only localized within said contact path (3), wherein shell and cup wall (16, 13) are pressed together forming a plurality of bonding spots (1) and/or bonding areas (2) to locally bond said shell to said cup, said bonding spots and/or areas separated from each other by non-bonding parts along said contact path (3)".

III. The following documents considered in the impugned decision are referred to:

E1/E1a JP 2001-293802 and machine translation

E2/E2a JP 2001-103479 and machine translation

E3/E3a JP 2001-103478 and machine translation

E4/E4a JP 2001-118520 and machine translation

E8/E8a JP 4-97833 and machine translation

E9 US-A-4 344 814

E11/E11a JP 2000-190943 and machine translation

E12 EP-B-1 227 043

E13/E13a JP 2001-294282 and machine translation.

In the following the machine translations of the Japanese documents will be used and referred to without the suffix "a".

IV. *Impugned decision*

According to the impugned decision the subject-matter of claim 1 as granted lacks novelty with respect to the insulated container according to E1.

In this respect the expression "only locally formed within said contact path" in the characterising feature has been considered as not excluding the case that the bonding area covers the whole contact path.

The subject-matter of claim 1 of the patent as maintained was considered as involving an inventive step starting from the container according to E1 as

closest prior art and considering additionally documents E2, E3, E4, E9 and E11.

V. The submissions of appellant I can be summarized as follows:

(a) The insulated container of claim 1 (main request) is distinguished over the insulated container of E1 by the feature of a thermo-sealable plastic coating applied on at least one of the inside of said shell and the outside of said cup body and the further feature that at least one bonding spot and/or bonding area for bonding said shell to said cup body by said plastic coating is only locally formed within said contact path and is thus novel.

(b) The insulated container of claim 1 according to auxiliary request 1 is furthermore distinguished over the insulated container of E1 in that it is defined that a wall of the shell is bonded to a wall of the cup body. This is in contrast to the bonding disclosed in document E1 which occurs between a wall of the cup body and a curled end section of the outer shell. The effect of the feature added to claim 1 can be seen in allowing a bonding suited to satisfy specific requirements depending on possible stresses caused by the bonding, the consumption of heat energy required for the bonding and the bonding force to be obtained. Starting from E1 as closest prior art, neither further consideration of general technical knowledge nor the teaching of E2 would have led in an obvious manner to the insulated container of claim 1.

(c) The insulated container of claim 1 according to auxiliary request 2 is distinguished from the container of claim 1 of auxiliary request 1 by the feature that the cup body and/or shell are made of paper board coated with said thermo-sealable plastic coating. Starting from the container of E1 as closest prior art, it involves an inventive step considering the teaching of E2 and general technical knowledge.

(d) The insulated container of claim 1 according to auxiliary request 3 is distinguished from the container of claim 1 of auxiliary request 2 by the feature that the contact path is formed between an annular upper wall section of the cup body and an upper essentially cylindrical section of the shell. Starting from the container of E1 as closest prior art this feature leads to the subject-matter of claim 1 involving an inventive step considering the teaching of e.g. E11 and E12.

(e) The method of fabricating an insulated container of claim 1 according to auxiliary request 4 is distinguished from the method for fabricating a container as known from features relating to method steps performed in the fabrication method of E1, when taken as closest prior art. It involves an inventive step considering, next to the method of E1 the teaching of E2, E8 or E9 and the general technical knowledge of the person skilled in the art.

VI. The submissions of appellant II can be summarized as follows:

(a) The insulated container of claim 1 (main request) lacks novelty over E1.

(b) The feature that a wall of the shell is bonded to a wall of the cup body of claim 1 of auxiliary request 1 is not a distinguishing feature with respect to the container of E1. One should take into account that, irrespective of their particular shape e.g. as curled end section, in that container it is still a wall of the shell which is bonded to a wall of the cup body. The effect of the feature that a number of bonding spots and/or bonding areas are formed along the contact path, all separated from each other by bonding free parts of the contact path, depends on the area covered by the number of spots and/or bonding areas and can possibly be seen in the provision of a measure allowing a bonding satisfying specific requirements, e.g. with respect to stresses arising due to the bonding, the consumption of heat energy required for the bonding and the bonding force to be obtained. Starting from E1 as closest prior art the insulated container having at least one bonding spot or bonding area is obvious considering e.g. additionally the general technical knowledge or the teaching of E2.

(c) The insulated container of claim 1 according to auxiliary request 2 differs from the container of claim 1 of auxiliary request 1 in that the feature

has been added defining that cup body and/or shell are made of paper board coated with the heat-sealable plastic coating. Since such a base material is known for the container of E1 the added feature cannot be considered as a distinguishing feature over this prior art. Consequently, the container of this claim 1 lacks inventive step for the same reasons as given with respect to the container of claim 1 according to auxiliary request 1.

(d) The insulated container of claim 1 according to auxiliary request 3 is further distinguished from the container of claim 1 of auxiliary request 2 by the feature that the contact path is formed between an annular upper wall section of the cup body and an upper essentially cylindrical section of the shell. This feature relating to the shapes of the wall sections of the shell and the cup body forming the contact path cannot contribute to inventive step, since starting from the container of E1 as closest prior art these shapes are rendered obvious by the teaching of documents E11 or E12.

(e) The method of fabricating an insulated container of claim 1 according to auxiliary request 4 differs from the method for fabricating a container as derivable from E1 merely by features relating to the application of pressure on the walls of the outer shell and the cup body. This application of pressure comes, starting from the container and the fabricating method of E1, within regular design practice in case the teaching of

e.g. E8 or E9 or general technical knowledge is taken into account.

VII. In the annex to the summons for oral proceedings (in the following: the annex) the Board referred i.a. to the understanding of the subject-matter of claim 1 according to the main request, the question of novelty of the subject-matter of this claim with respect to the container of E1 and considerations to be taken into account with respect to the examination of inventive step concerning the container according to claim 1 as maintained.

VIII. Oral proceedings before the Board took place on 6 March 2013.

Reasons for the Decision

1. *Procedural aspects*

Although having been duly summoned opponent 01, the party as of right, did not attend the oral proceedings, as announced with their fax of 11 February 2013. According to Rule 115(2) EPC and Article 15(3) RPBA the oral proceedings were held without that party.

Main request

2. *Subject-matter of claim 1*

2.1 Claim 1 is directed to an insulated container for hot drinks or the like, comprising an inner cup having a generally frusto-conical cup body (**feature a)**), a

generally frusto-conical outer shell (**feature b)**) and a thermo-sealable plastic coating on at least one of the inside of said shell and the outside of said cup body (feature c)).

According to **feature d)** the cup is seated within the shell so that the coating extends at least along a contact path near an upper edge of the shell along which contact path outer surface of the cup body and inner surface of the shell are in contact.

According to the characterising feature of claim 1 – in the following **feature e)** - at least one bonding spot and/or bonding area for bonding said shell to said cup body by said plastic coating is only locally formed within said contact path.

2.2 Consequently the insulated container is composed of two elements, a cup body and an outer shell, which both are of a generally frusto-conical shape.

These frusto-conical shapes are such that when the cup is seated within the shell, the outer surface of the cup body and the inner surface of the shell are in contact along a contact path near an upper edge of the shell. The contact path not necessarily extends over the whole circumference of the cup body and the shell, but may instead only extend partially over it (cf. paragraph [0009]).

2.3 According to feature c) a thermo-sealable plastic coating is provided on at least one of the inside of the shell and the outside of the cup body; it extends,

as defined by feature d), at least along the contact path near an upper edge of the shell.

2.3.1 According to appellant I the thermo-sealable plastic coating is part of a coating which is, e.g. in order to provide the cup body with sufficient fluid density (cf. paragraph [0017]), foreseen irrespective of the purpose of bonding by this coating, as derivable from feature e). The coating referred to in features c) and d) is therefore not an additional one, having regard to the coating necessarily provided for obtaining sufficient fluid density.

2.3.2 The Board, however, considers the opinion expressed by appellant II correct, namely that it is neither defined by claim 1 nor derivable from the remainder of the patent in suit, that the coating according to feature c) is one already provided on at least one of the inside of the shell and the outside of the cup body and not an additional coating provided solely for the purpose of bonding according to feature e). The understanding of appellant I is, as indicated by the Board during the oral proceedings, not derivable from the wording of claim 1. It is furthermore, as discussed during the oral proceedings, also not derivable from the description or the drawings of the patent in suit. Paragraph [0017] which has been discussed during the oral proceedings in detail, states that "it is possible that cup and/or shell are made of paper-board. To obtain sufficient fluid density of at least the cup the corresponding paperboard for forming the cup is coated with the above mentioned polyethylene resin or the like. Of course, the paperboard can also be coated with the thermo-sealable plastic coating wherein it may be

provided on the outside of the cup wall, the inside of the shell wall or also may be arranged on both of those walls". The Board in this respect considers the opinion of appellant II to be correct that this statement does not support the conclusion that the thermo-sealable plastic coating according to feature c) is necessarily the same as the polyethylene resin provided to obtain sufficient fluid density.

2.3.3 The Board thus does not follow the more restricted understanding of appellant I (cf. point 2.3.1 above) and considers that **feature c) cannot be understood as excluding that the thermo-sealable plastic coating is an additional one provided for the purpose of bonding** (**feature e)**).

This understanding of feature c) has the consequence that the undisputed fact that according to E1 a heat-sealing varnish is provided in addition to the paper for the cup body which is coated on both sides with a polyolefinic resin film, does not lead to a feature distinguishing the container of claim 1 over the container of E1.

2.4 According to the claim, shell and cup body are bonded to each other by the plastic coating such that, according to feature e), **at least one bonding spot and/or bonding area is only locally formed within the contact path**.

2.4.1 Appellants I and II are of different opinion concerning the location of the at least one bonding spot and/or bonding area.

2.4.2 According to appellant I the expression "only locally formed within the contact path" has to be understood as defining that – within the contact path – there is at least one bonding spot and/or bonding area. Thus the claimed at least one bonding spot and/or bonding area is within the area of the contact path but does not cover all of it, due to the relationship defined by the expression "only locally" between the area of the contact path and the area covered by the at least one bonding spot and/or bonding area.

2.4.3 According to appellant II the expression "only locally formed within the contact path" has to be understood as merely defining that the at least one bonding spot and/or bonding area are provided "locally" within the area covered by the contact path, but without giving any further definition concerning a relationship between the area covered by the contact path and the area covered by the at least one bonding spot and/or bonding area.

2.4.4 The Board is of the opinion that neither of these two meanings can be excluded in connection with feature e), with the result that, as can be derived from the following, the subject-matter of claim 1 with the understanding of feature e) as given in point 2.4.3 above lacks novelty over E1.

This is in line with the understanding of the impugned decision (reasons, point 3.1) that, when interpreting the expression "only locally formed within said contact path" in its broadest sense, the case where the bonding area covers the whole contact path is not excluded.

3. *Disclosure of E1*

3.1 It is not disputed by appellants I and II that E1 discloses, corresponding to features a) and b), an insulated container suited for the use defined in claim 1 (for hot drinks and the like) comprising an inner cup having a generally frusto-conical cup body (body part 11) and a generally frusto-conical outer shell (barrel 20) as can be derived i.a. from the abstract, claim 1 and figures 1 and 2.

3.2 The material of the cup body is referred to as "polyolefine system resin treatment paper" or as paper having on both sides a polyolefine system resin film applied to it. The material of the outer shell is referred to as paper (cf. claims 1, 2).

Only for completeness' sake the Board wishes do indicate that it understands the reference to "paper" in E1 to mean "paper in general". In view of the use foreseen for the container the material referred to can only be understood to be identical with the material referred to e.g. in paragraph [0027] of the patent in suit as "paper board".

3.3 As shown in figures 1, 2 of E1 the upper edge of the shell is formed by a radially inwardly curled end section; the upper end of the cup body has a radially outwardly curled end section.

The cup body is seated within the shell such that the two curled end sections are separated by a small vertical gap (figures 1, 2). A contact path, along which the cup body and shell are in contact, is formed

near an upper edge of the shell, between the outer surface of the frusto-conical wall of the cup body and the inner surface of the curled upper end section of the shell (cf. e.g. paragraph [0022] and figures 1, 2).

A heat-sealing varnish 5 is applied as thermo-sealable plastic coating (cf. the abstract, claims 1, 22 and paragraph [0022]) over the circumference of the cup body on top of the polyolefine system resin film (cf. point 3.2 above). The heat-sealing varnish serves to bond the cup body and the outer shell together (abstract, claims 1, 2). It thus extends along the contact path.

3.4 The Board does not follow the interpretation of appellant I that the contact path is, on the side of the shell, not formed by a wall of the shell but by the curled end section formed adjacent, and in continuation of, the wall of the shell. This interpretation is based on an understanding of the structure of the cup body that the curled end section is an entity different from the remainder of the cup body.

Such an understanding of the disclosure of E1 is, however, not supported by its claims, description and its figures. Claim 1 e.g. refers to "the curl section **in** the barrel (= shell) made of paper" in line with the description where it is referred to the "inner curl section (21) of the barrel made of paper" (cf. paragraph [0022]). The cross-sectional view of figure 2 shows with the same hatching the upper part of the shell consisting of wall and curled section.

Based on this disclosure of the outer shell the Board considers, as indicated during the oral proceedings, the opinion of appellant II to be correct that the upper part of the shell comprises two different sections, a part of generally frusto-conical shape and a curled upper end section. Despite their different shape each of these sections forms part of the only wall of the outer shell.

3.5 The connection between outer shell and cup body is referred to in E1 as "bonded and fixed" (abstract) and as "adhesion immobilization" (cf. e.g. claims 1 and 2, paragraphs [0010] and [0022]).

The Board does not follow the opinion of appellant I that by using the wording "adhesion immobilization" the nature of the attachment provided by the heat-sealing varnish differs from the bonding referred to in feature e) of the claim. The reason is that the expression "adhesion immobilization" cannot as such be construed to have a meaning other than the expression "bonded and fixed" as used in E1. Furthermore, the attachment is described by "contact immobilisation of the medial surface of the inner curl section (21) of the barrel made of paper is carried out with the polyolefine system resin film which applied and fused the heat-sealing varnish directly under the opening edge of the body of a paper cup" (paragraph [0022]). This allows to the Board only the conclusion that this attachment has the same properties as one by bonding, as in feature e) of claim 1 of the patent in suit. Moreover, it has to be considered in this respect that the term "bonding" does not have any particular meaning in the patent in suit, which applies also to the terms "thermally

bonded" and "spot weld" likewise used (paragraph [0037]).

3.6 Corresponding to an alternative encompassed by feature e) of claim 1 of the patent in suit, in the cup of E1 at least one bonding area for bonding the shell to the cup body by the varnish is only locally formed within said contact path (cf. the abstract, claims 1 and 2).

4. *Novelty*

Considering the understanding of the subject-matter of claim 1 and the disclosure of E1 as discussed above (points 2 and 3) it is evident that the finding of the impugned decision (reasons, points 3.1 and 3.2) that the subject-matter of claim 1 lacks novelty (Article 54 EPC) in view of the insulated container of E1 is correct.

Auxiliary request 1

5. Claim 1 according to auxiliary request 1 differs from claim 1 of the patent as granted essentially in that feature e) has been amended – the amended feature being referred to in the following as **feature e')** - to emphasize that the at least one bonding spot and/or bonding area are for bonding **a wall of** said shell to **a wall of** said cup body. Further, a feature - in the following **feature f)** - has been added that a number of bonding spots and/or bonding areas are formed along the contact path, all separated from each other by bonding-free parts of said contact path.

6. *Disclosure of E2*

Document E2 relates, as indicated in the annex (point 10.5.1), to a container of the kind concerned comprising an outer shell 3 and cup body 4. The shell is, near its upper edge, provided with an inwardly embossed portion or portions 9 to which emulsion system adhesives etc. are applied (cf. paragraph [0010]). The embossed portion or portions 9 thus form the contact path and, simultaneously, also bonding spots or bonding areas (cf. abstract, figures 1, 2: horizontal embossed line 9). The embossed portion according to E2 can be either in the form of a continuous line or as a number of embossed portions forming a discontinuous line.

7. *Features distinguishing the subject-matter of claim 1 over the container of E1*

7.1 It is undisputed that the container of claim 1 is distinguished over the container of E1 by feature f), since as indicated above (cf. point 3.2) the known container has the heat-sealing varnish applied to the perimeter of the cup body.

7.2 Appellants I and II are of divided opinion whether or not feature e'), which implicitly defines that the contact path extends between a wall of the shell and a wall of the cup body, should be considered a distinguishing feature with respect to the container of E1.

The Board does not find appellant's I argument convincing since according to E1 the contact path is formed between a frusto-conical section of the outer

surface of the cup body and an inner surface of the outer shell provided on its inside with a curled end section 21 (cf. point 3.3 above). As pointed out by appellant II, it needs to be taken into account that the curled end section is an integral part of the outer shell such that it forms part of the wall of the outer shell.

Considering that, as indicated by the Board during the oral proceedings, neither one of these walls referred to in feature e') is further defined in claim 1, this feature cannot distinguish the container of claim 1 over the container of E1.

7.3 Possible effects of feature f) as the sole distinguishing features and as discussed at the oral proceedings, can be seen in avoiding or reducing possible stresses otherwise caused by bonding along a peripheral line, reducing the energy required for the bonding and increasing the bonding force if necessary. This is despite the unspecified number and manner in which the bonding spots and/or bonding areas as well as the bonding-free parts are formed.

7.4 Possible problems to be formulated, based on each of these effects, can be seen in designing the container such that possible stresses and/or the energy consumption is/are reduced and/or the bonding force is increased.

7.4.1 The reduction of energy consumption is in line with the more general problem to save costs, as considered in the impugned decision (reasons, point 4.3.1). In this respect the Board remains of the view expressed in the

annex (point 10.4.1) that the latter problem appears to be too general and thus not suited to serve as the technical problem, in particular if the improvement is not further defined.

7.4.2 It has not been disputed that these problems can be considered to have been solved by the subject-matter of claim 1, if the number of bonding spots and/or bonding areas as well as the areas covered by them are properly selected.

The Board indicated during the oral proceedings that the skilled person will pay attention to these problems when designing the container, starting from the teaching of E1.

7.5 *Obviousness*

7.5.1 As indicated in the annex (point 11.3), according to the impugned decision (reasons, point 4.3.1) the documents E2, E3, E4 and E11 do not lead the skilled person "directly and unambiguously" to the solution according to claim 1 of auxiliary request 1.

In this respect it is necessary to examine whether the right criteria for the assessment of inventive step have been applied, namely whether starting from the container of E1 there is a reason to consider one of the documents E2, E3 and E4, in an attempt to solve the problem, and whether by doing so the skilled person would have arrived at the container of claim 1 without inventive step being involved.

7.5.2 According to appellant I, starting from the container of E1 in an attempt to solve any of these problems, the skilled person would not arrive at the container as defined by claim 1. In its view there is no support for the assumption that starting from the container of E1 application of general technical knowledge or consideration of the container of E2 as further prior art leads in an obvious manner to the container defined by claim 1.

Concerning the combined consideration of documents E1 and E2 as indicated in the annex (point 11.3) appellant I argued that due to the different shapes of the outer shells of the containers of E1 and E2 (cf. E1, figures 1, 2: inside curl section 21; E2, figures 1, 2: outer shell without a curl section) the – possibly discontinuous - circumferential embossed line according to E2 is not applicable for the container of E1.

7.5.3 Appellant II used two lines of argumentation. First, the container of claim 1 is obvious in view of the container disclosed by E1, taking additionally general technical knowledge into account. Second, the container of claim 1 is obvious in view of the container disclosed by E1, taking additionally the teaching of E2 into account.

Concerning the second line of arguments it has been indicated in the annex (point 11.3) that it needs to be considered that according to appellant II there is no functional difference between the distribution of the bonding spots/areas of claim 1 and the distribution shown in figure 2 of E2.

This argument was maintained by appellant II during the oral proceedings.

The Board considers both lines of argumentation of appellant II convincing.

7.5.4 Regarding the first line of argumentation, the Board considers that the skilled person, starting from the container of E1, and attempting to solve one of the problems referred to above, considers the area covered by the heat-sealing varnish as an important parameter to be taken into account. The skilled person is aware of the fact that the consumption of heat energy in the process of heating the heat-sealing varnish depends on the size of the area(s) to which the heat-sealing varnish is applied. Further, a continuous peripheral line distribution of heat-sealing varnish can be the reason for stresses arising in either one or both walls bonded together. It is further evident that the size of the area(s) of the contact path covered by the heat-sealing varnish is directly related to the bonding force.

In case the skilled person is to solve any of the problems concerned, it is evident that the focus will be on the manner in which the heat-sealing varnish is distributed according to E1. It is likewise evident that e.g. in case stresses or the energy consumption caused by the bonding, respectively the amount of heat-sealing varnish, is to be reduced as a result of such considerations, the skilled person has two options. One option is to maintain the peripheral shape of the applied heat-sealing varnish while the amount of heat-sealing varnish applied per unit length is reduced.

Another is to change, more precisely reshape, the application of the heat-sealing varnish along the peripheral line into a number of bonding spots and/or bonding areas.

In the view of the Board the latter consideration is more evident, taking into account the general technical knowledge that stresses and energy consumption due to bonding can be reduced by reducing the area covered by the bonding or by separating it into parts.

The subject-matter of claim 1 thus does not involve an inventive step (Article 56 EPC).

7.5.5 Also the second line of argumentation leads to this result.

Considering the bonding as a parameter to be taken into account in connection with an attempt to solve the problem(s) and the manner in which bonding is performed according to E2, it is apparent that the container of claim 1 does not involve an inventive step (Article 56 EPC).

E2 discloses (cf. point 4 above) a container of the kind concerned comprising an outer shell and a cup body which are in contact near the upper edge of the shell via a contact path which is, on the side of the shell, constituted by an inwardly embossed continuous portion (figure 1) or a number of bonding areas 9 formed along the contact path (figure 2), all separated from each other by bonding-free parts. The sequence of bonding areas together forms a contact path.

7.5.6 The above results hold even more true considering that the problem(s) discussed (cf. point 7.4 above) can be seen as corresponding to requirements which are imposed on such containers in the form of specifications concerning the production of such containers and/or the containers (cf. e.g. their bonding strength) themselves. It is evident that the bonding applied along the contact path can without problems be chosen to be continuous or discontinuous, to satisfy the specific use. Since the outlined, obvious, approach corresponds exactly with the approach as defined by claim 1, in particular by feature f), the container of claim 1, being the result of such an approach, does not involve an inventive step.

Auxiliary request 2

8. Claim 1 according to the second auxiliary request differs from claim 1 of the first auxiliary request essentially in that the feature – in the following feature g) - has been added:

g) cup body and/or shell are made of paper board coated with said thermo-sealable plastic coating.

8.1 According to appellant I, although feature g) defines material which is commonly used for the production of containers of the kind concerned it leads to subject-matter involving an inventive step. It should be seen in combination with the remaining features of claim 1, which need to be seen in a different light in view of the added feature.

8.2 The Board cannot agree with this reasoning. Questioned by the Board during the oral proceedings appellant I failed to point out a synergistic effect resulting from the combination.

The Board considers it to be known from E1 (cf. point 3.1 above) that containers of the kind concerned are made of paper board coated with a thermo-sealable plastic coating, therefore the use of the material according to feature g) does not lead to a feature distinguishing the subject-matter of present claim 1 from the container of E1. Accordingly, the reasoning of lack of inventive step (Article 56 EPC) against the first auxiliary request applies mutatis mutandis to present claim 1.

Only for completeness sake the Board wishes to indicate that it understands the reference to "paper" in E1 instead of "paper board" in feature g) as leading to a purely linguistic distinction and not one leading to in substance different materials (cf. point 3.2 above).

Auxiliary request 3

9. Claim 1 according to the third auxiliary request differs from claim 1 of the first auxiliary request in that the feature – in the following feature h) - was added:

h) said contact path formed between an annular upper wall section of the cup body and an upper essentially cylindrical section of said shell.

9.1 This feature concerns the shape of the cup body and the outer shell in the area where the outer surface of the cup body and the inner surface of the shell come into contact and thus the area referred to as the "contact path" (feature d)).

Beyond that, as indicated by the Board during the oral proceedings, feature h) does not further define the shapes of the outer shell and the cup body outside the region referred to in this feature. Concerning the cup body the shape of the wall section at the contact path is only defined as being annular.

9.2 According to appellant I feature h) is a further distinguishing feature to be considered with respect to the container of E1. In the container according to E1 the contact path is differently formed, between an inwardly directed curled end section of the outer shell and a frusto-conical wall section of the cup body (figures 1, 2).

In its view feature h) has, in the combination of features of claim 1, the effect that the inner wall of the outer shell and the outer wall of the cup body are in direct contact with each other, which leads to a clearly defined contact path and, correspondingly, to clearly defined bonding spots and/or bonding areas. Thus the quality of the bonding is improved and, due to the cylindrical section of the shell, insertion of a (counter-)pressing member and thus the production of the container are facilitated.

According to appellant I the problem solved in view of the container of E1 can therefore be formulated as to

design the container known from E1 such that the quality of the bonding is improved and/or the production of the container is facilitated.

However, based on the above assessment of the disclosure of E1 (cf. above points 3.3 – 3.5) feature h) cannot be considered to distinguish the subject-matter of claim 1 from the container of E1. Feature h) defines, as referred to by appellant II, merely that the contact path is formed between an annular upper wall section of the cup body and an upper essentially cylindrical section of the shell, however without any reference to the shape of the two walls which are in contact, thus resulting in the contact path.

Following this reasoning the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC) for the same reasons as given with respect to the subject-matter of claim 1 according to auxiliary request 1 (cf. points 7.5.4, 7.5.5 above).

9.3 The Board is furthermore of the opinion that, as indicated during the oral proceedings, even if feature h) is considered as a distinguishing feature with respect to the container of E1, this feature cannot, in combination with the remaining features of claim 1, lead to subject-matter involving inventive step.

Even if it is assumed to the advantage of the appellant I that feature h) has the alleged effects and that one or both of the problems resulting therefrom (point 9.2 above) are to be solved starting from the container of E1, the skilled person recognises immediately that

these problems can be solved by modification of the upper portion of the cup body.

Possible shapes can be derived e.g. from E11 and E12. According to E11 (figures 7(a) and 7(b)) the upper sections of a cup body and an outer shell which are in contact and are bonded to each other have a frusto-conical shape. According to E12 (cf. figure 2b) a contact path near an upper edge of the shell is formed between cylindrical upper wall sections of the cup body and the shell. A further contact path is formed at the lower edge of the shell (figure 2a). As it is derivable from the description the outer shell and the cup body can be bonded by gluing or sealing on either one of these contact paths (column 2, lines 40 - 42).

9.4 Since it is obvious for the skilled person to give, starting from the container of E1, the wall section of the outer shell in the area of the contact path a shape as known from E11 or E12, if required by the conditions of use, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC).

9.5 For completeness' sake it shall be indicated that, as pointed out by the Board during the oral proceedings, the discussion of feature h) has limited this feature to the shape of the walls of the cup body and the outer shell at the area where these two walls contact each other, thus creating the contact path. Due to this limited focus on particular wall sections, necessary deviations from the otherwise continuous shapes, resulting in the formation of an air gap between the outer shell and the cup body required for this type of container (cf. patent in suit, paragraphs [0002] and

[0015]), are not taken into consideration (cf. patent in suit: spacing between the walls of the outer shell and the cup body via an angled connection area in the wall of the cup body as can be derived from figures 5, 6, 11 and 12; E1: spacing provided via the curled end section 21 of the outer shell as can be derived from figures 1 and 2).

Since only wall sections of the outer shell and the cup body in the area of the contact path are to be considered, the arguments of appellant I concerning bonding of the shell and the cup body in the bottom section of the container become moot.

Furthermore, since it is obvious to modify the shape of the upper end section of the wall of the outer shell such that no longer a curled end section but rather a cylindrical section is used, the arguments of appellant I based on alleged disadvantages resulting from the curled end (low bonding quality due to the latter being deformable such that the required pressure for bonding cannot be applied; uneven distribution of the heat-sealing varnish due to the curvature of the curled end) become likewise moot.

Auxiliary request 4

10. *Subject-matter of claim 1*

10.1 Claim 1 is directed to a method of fabricating an insulated container for hot drinks or the like.

The container has, as defined by feature a), and the portions of features b) to e) relating to the **structure**

of the container the same structure of the container as defined by auxiliary request 1.

Claim 1 further comprises **method** features.

According to feature b) the thermo-sealable plastic coating provided on the inside of the shell and/or on the outside of the cup is heated to its melting point and according to a portion of feature c) the cup is inserted into the shell so that the melted plastic coating extends at least along said contact path.

Feature d) defines that an annular or first member with at least one radially displaceable or protruding pressing element is positioned inside the cup body.

According to feature e) the pressing member is pressed against an external or second member to press the walls of the cup body and the shell together by both members to form one or more bonding spots and/or bonding areas.

As discussed during the oral proceedings one or more bonding spots and/or bonding areas which are only localized within the contact path are obtained in that the shell and cup wall are pressed together according to feature f) - forming a plurality of bonding spots and/or bonding areas to locally bond said shell to said cup, said bonding spots and/or areas being separated from each other by non-bonding parts along said contact path.

10.2 Present claim 1 can, due to its method features for the manner in which the plurality of bonding spots and/or bonding areas are formed, be understood such that the

thermo-sealable plastic coating is provided continuously in circumferential direction and is heated to its melting point (feature b)). According to features e) and f), the plurality of bonding spots and/or bonding areas to locally bond the shell to the cup with the bonding spots and/or areas separated from each other by non-bonding parts along the contact path are formed by pressing the walls of the cup body and the shell together. This implies that, as discussed during the oral proceedings, the walls of the cup body and the shell are pressed together selectively, i.e. there are wall sections remaining as non-bonding parts, which are at least not pressed together to the extent at which bonding occurs.

10.3 It is common ground that the container of E1 still represents the closest prior art, also with respect to the method of claim 1.

Concerning the manner in which the known container is manufactured E1 refers to the heat-sealing varnish being fused by heating it with hot air (cf. paragraph [0022]).

Beyond that E1 remains silent concerning the manner in which the outer shell and the cup body are bonded together, in particular concerning the application of pressure against the two walls to be bonded with the fused heat-sealing varnish in between.

10.4 *Feature distinguishing the method of claim 1 over the method disclosed in E1*

Based on the above understanding of the method of claim 1 and the above disclosure of E1 the subject-matter of claim 1 distinguishes itself by features d) and f): the two walls to be bonded are pressed together to form localized bonding spots and/or bonding areas.

The effect of these features is that they contribute to defining the method for the fabrication of the container of claim 1 (and likewise claim 1 of auxiliary request 1).

Concerning the disclosure of E1 the effect of the distinguishing features is to close a gap in the disclosure of this document.

10.5 *Obviousness*

The Board considers the opinion expressed by appellant II to be correct that it is evident for the skilled person that the fabrication of the container of E1 presupposes that a pressure is exerted to the two walls to be bonded together via the fused heat-sealing varnish therebetween. In this connection the Board also considers the opinion of appellant II to be correct that already the seating of the cup within the shell according to feature c) leads to a certain amount of pressure being applied to both walls, with the heat-sealing varnish therebetween.

The Board, on the contrary, does not find the counterargument of appellant I convincing that the

skilled person would consider the curled end section of the shell (cf. point 3.3 above) of the container of E1 as an obstacle for the application of pressure. One reason is that it has not been shown by appellant I that the container of E1 can be bonded as indicated in this document without at least a certain amount of pressure being applied. Furthermore, in the view of the Board the curled end has, depending on its wall thickness and diameter, a certain stiffness of its own, therefore can withstand the pressure. Finally, a limited deformation of the curled end due to the application of pressure does not pose a problem, as can be derived from figure 2 of E1 in which the curled end is shown as having already an oval cross-section.

10.5.1 To answer the question whether the method of claim 1 involves an inventive step or not it remains to be examined whether the manner in which the pressure is applied according to features d) and e) can be considered to involve inventive step.

As indicated above (point 10.5) it is obvious to apply pressure to the walls of the shell and the cup body to make sure they bond together.

Concerning the application of pressure by means of a pressing device it is further apparent that such a device must comprise at least two elements, in the terminology of claim 1: an annular or first member and an external or second member, the two members enclosing the wall of the shell and the cup body. It is likewise apparent that both elements must be able to press against the circular contours of the walls of the shell and the cup body. For that reason these elements have

to follow, at least in part, the circular contour of these walls.

It thus remains to be examined whether it involves an inventive step to make, according to a part of feature d), the annular or first member comprising at least one radially displaceable or protruding pressing element.

It is evident to the skilled person that pressing elements which are arranged on opposite sides of the two walls that are to be pressed together exert pressure on the two walls in that the radial distance between them is decreased, which requires movement of at least one of the pressing elements with respect to each other.

It is further evident to the skilled person that in case a plurality of bonding spots and/or bonding areas as defined by feature f) are to be formed, at least one of the external or internal pressing members needs to have a corresponding shape with protruding and recessed portions or individually movable portions which form, as the protruding portions, bonding spots and/or bonding areas separated from each other.

The method of claim 1 thus does not involve an inventive step (Article 56 EPC) considering the container and method of E1 together with the application of general technical knowledge.

10.5.2 The same result is arrived at considering next to the container and method of E1 e.g. the method of E8. From this document, the pressing via internally arranged radially movable chuck elements is known (cf. e.g.

figures 5 - 7). According to appellant I the skilled person would not have considered the teaching of E8 in combination with the container of E1, since the pressing element serves to form a radially outward protruding circular line on a frusto-conical wall and thus a different purpose as referred to in claim 1.

10.5.3 The Board does, as indicated during the oral proceedings, not follow this opinion. In its view the skilled person will immediately recognise that the approach of E8 can be employed, also if a pressure is to be applied only locally for bonding purposes.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The appeal of the proprietor is dismissed.

3. The European patent no. 1 712 490 is revoked.

The Registrar: The Chairman:

G. Nachtigall H. Meinders