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D E C I S I O N
of 10 February 2005

Case Number: T 0823/03 - 3.2.7

Application Number: 96908205.6

Publication Number: 0828663

IPC: B65D 6/30

Language of the proceedings: EN

Title of invention:

Can end and method for fixing the same to a can body

Patentee:

CarnaudMetalbox plc, et al

Opponent:

Rexam Beverage Can Company

Headword:

-

Relevant legal provisions:

EPC Art. 84, 123(3), 54, 56

Keyword:

"Claims - clarity (yes)"

"Amendments - extension beyond the scope of the claims as granted (no)"

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

T 1000/92

Catchword:

-



Case Number: T 0823/03 - 3.2.7

D E C I S I O N
of the Technical Board of Appeal 3.2.7
of 10 February 2005

Appellant I: Rexam Beverage Can Company
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
5 May 2003 concerning maintenance of European
patent No. 0828663 in amended form.

Composition of the Board:

Chairman: C. Holtz
Members: H. E. Hahn
K. Poalas

Summary of Facts and Submissions

- I. Appellant I, hereinafter "the opponent", and Appellant II, hereinafter "the patentee", lodged appeals against the decision of the Opposition Division to maintain European patent No. 0 828 663 in amended form.
- II. An opposition had been filed against the patent as a whole and was based on Article 100(a) EPC (lack of novelty and lack of inventive step), Article 100(b) (that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art) and Article 100(c) (extension of the subject-matter of the patent beyond the content of the application as filed).
- III. Oral proceedings before the Board of Appeal were held on 10 February 2005.
- (i) The opponent requested that the decision under appeal be set aside and that the patent be revoked.
- (ii) The patentee requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents:
- claims: 1 to 9 as submitted during the oral proceedings on 10 February 2005,
description: pages 2 to 8 as submitted during the oral proceedings on 10 February 2005, and
figures: 1 to 9 as granted.

(iii) The independent claims 1 and 8 as filed during the oral proceedings on 10 February 2005 read as follows:

"1. A can end before forming of a double seam with a can body, the can end comprising a peripheral cover hook (23), a chuck wall (24) dependent from the interior of the cover hook, an outwardly concave annular reinforcing bead (25) extending radially inwards from the chuck wall; and a central panel (26) supported by an inner portion (27) of the reinforcing bead, characterised in that, the chuck wall (24) is inclined to an axis perpendicular to the exterior of the central panel (26) at an angle c between 40° and 60° , and the concave cross-sectional radius of the reinforcing bead (25) is less than 0.75 mm."

"8. A method of forming a double seam between a can body (12) and a can end (22) according to any preceding claim, said method comprising the steps of:-

placing the curl (23) of the can end on a flange (11) of a can body supported on a base plate (4); locating a chuck (30) within the chuck wall (24) of the can end, said chuck having a frustoconical drive surface (32) of substantially equal slope B° to that of the chuck wall of the can end and a substantially cylindrical surface portion (33) extending away from the drive surface; causing relative motion as between the assembly of can end and can body and a first operation seaming roll (34) to form a first operation seam, and

thereafter causing relative motion as between the first operation seam and a second operation roll (38) to complete a double seam, during these seaming operations the chuck wall (24) of the can end becoming bent to contact the cylindrical portion (33) of the chuck."

IV. In the appeal proceedings the following documents were considered:

D1 = US-A-3 843 014

D2 = JP-A-57 117 323 (and original English translation)

D3 = Beverage Can, End and Double Seam Dimensional Specifications pages 2 and 1B-2 to 5 and 1E1 -8, Fourth revision, August 1993, published by Society of Soft Drink Technologists

D4 = US-A-4 217 843

D11 = Brewing Industry Recommended Can Specification Manual, Revised 1983, published by United States Brewers Association, pages 1-1, 2-1 and 3-2

D12 = Photocopies, taken from a video of a public seaming demonstration published in 1992 by Miller Brewing Company (figures 8-10)

D13 = "Modern Beverage Can Double Seaming" booklet published by Continental

D14 = EP-A-0 340 955

D15 = US-A-4 093 102

Technical Statement of Christer Sjöström, dated
3 September 2003

V. The opponent argued essentially as follows:

V.1 The introduction of the feature "A can end **before forming of a double seam with a can body**" introduces an unclarity since claim 1 as granted appeared to be directed to the can end after the seaming operation. The specification is consistent in the use of the term "curl" for the can ends (see figures 2, 5 and 6) and the industry norm uses this term "curl" for determining the diameter of the unseamed product while the term "hook" is normally used for the seamed product (see figures 3 and 7). Hence claim 1 as granted defined a peripheral cover hook, i.e. a can end fitted to a can body (see patent, page 2, lines 2 to 3, lines 31 to 34 and line 49; page 3, line 19). This view is confirmed by method claim 9 which defines placing the curl of a can end on a flange so that the can end is seamed to the can body. There is also an Article 123(3) EPC problem, since claim 1 as granted was directed to the seamed product whereas amended claim 1 defines the unseamed can end.

V.2 The subject-matter of claim 1 lacks an inventive step for the following reasons. The wall (34) of the can end according to document **D4** represents a chuck wall similarly as the wall (30) according to

document D15 (see D4, figure 3; and D15, figure 2). Document D4 specifies no upper limit for the angle C which is defined to be at least six-times the angle B. Since angle B is almost 5°, angle C can be greater than 30° (see column 4, lines 49 to 51; and column 5, lines 13 to 16).

V.3 The drawings of document **D2** allow only one sensible interpretation for the skilled person, namely that the slope of the seamed can corresponds to that of the can end before the seaming operation. The different experts basically state that there is no significant change to the countersink part of the can end. The can end used for seaming had substantially the same shape as shown in the drawings of document D2. The maximum variation allowed between the two angles of the chuck and the chuck wall is 5°. Document D2 teaches to save metal by using a chuck wall angle between 20° and 70° (preferably 45°) which term "chuck wall" implicitly teaches that a chuck is used and engaged against said "chuck wall (18b)". The shape of the anti-peaking bead, called countersink, of document D2 corresponds to that shown in figure 2 of the patent in suit. The patent in suit states that metal saving is the object to be solved so that the skilled person would add another metal saving feature by narrowing the reinforcing bead (see e.g. document D11 or D14). The result is entirely predictable and based on common general knowledge.

V.4 Alternatively document **D3** can be taken as the closest prior art which shows the can ends before

the seaming step. It reveals a radius of the countersink of about 0.5 mm but does not allow the calculation of the chuck wall angle. The object to be solved starting from document D3 is metal saving (since table 6 of the patent relates only to metal saving and is completely silent with respect to scuffing). Document D2 leaves the radius for the countersink open and teaches that an angle of the chuck wall between 20° and 70°, preferably 45° is good for metal saving (see original translation of D2, page 2, third paragraph; page 5, line 4). Therefore claim 1 lacks an inventive step in view of either the combination of document D3 with D2 or the combination of documents D4 and D2. Process claim 8 lacks an inventive step for the same reasons.

VI. The patentee argued essentially as follows:

VI.1 The terms "cover hook" and "curl" are used interchangeably in the patent. For example paragraph [0022] of the patent refers to figure 4 showing an unseamed can end comprising a "cover hook". Thus the amendments to claim 1 neither result in an unclarity nor contravene Article 123(3) EPC. There is also a clear basis in the specification as filed (see application as filed, claim 8; and page 3, lines 17 to 19; page 4, lines 15 to 16 and lines 26 to 27).

The subject-matter of claim 1 is novel, since the prior art does not disclose a can end in the unseamed condition having a chuck wall angle of

between 40° and 60° in combination with a radius of the reinforcing bead of less than 0.75 mm.

VI.2 The problem to be solved by the patent in suit is not only to save metal but also to avoid the scuffing problem or to provide an alternative to document **D1**, wherein a value of angle X of 30° gives the worst result. Document D1 comprises an error in its table 2 since the angle X cannot be bigger than the angle Y in the given equation $(X-Y)$. Taking the values of $X=30^\circ$ and $Y=36^\circ$ this equation should read $(Y-X)=6^\circ$. If one would make a can using the dimensions for the further parameters v , u , R_{CD} , R_{b-c} and r in combination with said X and Y values one would obtain a non-working can which does not allow to drink. Document D1 clearly teaches that the angle X should be below 20° (see column 4, lines 3 to 9) and figure 3 shows the isobars for the pressure ranges based on said Y and X values and the necessary radius of curvature for a limit pressure of 7 kg/cm² which is essentially above 0.75 mm (see figure 3; column 4, lines 15 to 29). The skilled person is thus guided into a different direction and has no incentive to increase the chuck angle.

VI.3 Document **D3** represents an industry norm and comprises dimensions of can ends but does not explicitly specify any angles thereof. The given dimensions C, D, E, F and H, however, allow to calculate the angle c for the flat chuck wall using the equation $\tan c = (E-H-D)/(F-C)$ (see figure, dimension key for ends). This calculation results in angles of about 18° and of 14-16° for

all manufacturers mentioned in document D3. Such a range of about 12°-20° is conventional. The dimension G refers to the radius of the tool and not of the can end itself. Document D3 therefore does not give any incentive to change anything to the skilled person to use an angle in the range claimed in claim 1 of the patent in suit.

VI.4 Document **D2** (original translation) only reveals can ends which in the seamed condition have a chuck wall angle c between 20° and 70°. Since the end may be deformed or is deformed during the seaming operation depending on the shape of the used chuck it is not possible to derive the profile and shape of the can end before the seaming operation. This is also indicated in the declaration of Mr. Sjöström stating that "I believe ... the can end could be like the drawing submitted ...". The fact that a drawing was made may be interpreted as meaning that the slope had to change during the seaming operation (see e.g. the Sjöström declaration, paragraph 4). It could not be predicted exactly how the can end looked like before it was seamed, since there were too many variables involved. Furthermore, the profile of the chuck wall 18b with the big radius of curvature 16b as shown in figures 4 or 5 of document D2 in combination with a large angle such as about 45° does not form an anti-peaking bead in accordance with the patent in suit. Thus the skilled person would have to incorporate an anti-peaking bead to improve the pressure resistance, but this would require additional metal. Not giving sufficient detail information with respect

to the dimensions and the chuck, document D2 would not be any help to the person skilled in the art.

VI.5 Document **D4** does not refer to a chuck wall, which has a specific meaning in the art. In particular wall 34 is no chuck wall, since the document states that standard chucks and conventional commercial tooling should be used (see column 2, line 26, lines 30 to 35, lines 43 to 46 and lines 54 to 57) which implies that such a standard chuck cannot get into contact with wall 34. According to document D4, the countersink is the crucial point of the specific can end and the wall 24 contacting the chuck is inclined at an angle of less than 5° (see column 2, line 61 to column 3, line 2). The radius R_1 of the countersink is less than three times the thickness of the aluminium metal (see column 4, lines 65 to 66). Document D4 aims to minimize or eliminate the interference between the conventional chuck seamer (see column 3, lines 4 to 10; column 5, lines 9 to 13; and column 8, lines 10 to 14). Furthermore, the angle C between said flat wall portion 34 and the plane P is substantially greater and preferably at list six times greater than angle B (see column 5, lines 9 to 16). According to a specific embodiment made of 0.305 mm gauge aluminium said angle B of wall 24 is 4° , said angle C for wall 34 is 25° and R_1 is approximately 0.76 mm (see column 7, lines 31 to 44). Documents D12 and D13 show sequences of the seaming procedure and that the bottom radius can engage with the countersink and with the chuck wall which minimizes interferences (see D12 and

D13, figures). Therefore, document D4 is no good starting point for the skilled person.

Thus, the subject-matter of claims 1 and 8 also includes an inventive step.

Reasons for the Decision

1. *Admissibility of amendments to claim 1*

1.1 Article 84 EPC

The Board cannot accept the arguments of the opponent (see point V above) for the following reasons.

As referred to by the patentee (see VI.1 above), the terms "cover hook" and "curl" are interchangeably used in the patent. The patent in suit refers for example to a "cover hook (23)" in its paragraph [0022] with respect to figure 4 which shows an unseamed can end while with respect to figure 2 and the unseamed can end it refers to a peripheral "curl (13)" (see paragraph [0017]), said last term being also used in method claim 9 as granted. Furthermore, in the context of figures 5 and 6 only the term "peripheral flange (23)" is used.

Claim 1 as granted therefore embraced both alternatives, namely a can end before forming a double seam as well as a can end after the seaming operation when double seamed to a can body. Thus this amendment to claim 1 does not contravene Article 84 EPC.

1.2 Article 123(2) and (3) EPC

The amendments introduced into claim 1 "A can end before forming of a double seam with a can body" and "at an angle c between 40° and 60° " have a basis in the specification as filed (see e.g. claims 1, 2 and 8 as filed; page 3, lines 17 to 19; page 4, lines 15 to 16; page 5, lines 5 to 12; page 6, lines 19 to 22; page 8, lines 1 to 4; and figures 1, 3, 6 and 7) and thus meet the requirements of Article 123(2) EPC. This conclusion is also valid for the subject-matter of the claims 2 to 9 which is based on claims 2 to 9 as filed.

Furthermore, as already stated above, the subject-matter of claim 1 as granted covered two alternatives of the can end, namely the can end before and after the seaming operation to the can body.

Consequently, the restriction of present claim 1 to the alternative of the can end before the seaming operation to the can body does not contravene Article 123(3) EPC. The same conclusion applies likewise to method claim 8 which refers back to claim 1.

1.3 Therefore the Board concludes that all claims of the single request are admissible.

2. *Novelty*

2.1 Novelty of the can end according to claim 1 was not disputed by the opponent.

Furthermore, the most relevant documents D1, D2 and D4 neither disclose a can end having a chuck wall angle c between 40° to 60° (D1 and D4) nor a can end having a radius of the reinforcing bead of less than 0.75 mm (D2).

2.2 All other cited documents are less relevant than documents D1, D2 and D4.

2.3 The Board therefore concludes that the subject-matter of claims 1 and 8 is novel.

3. *Inventive step*

3.1 Closest prior art

The opponent argued that anyone of documents D2, D3 or D4 could serve equally well as the closest prior art.

3.2 The Board is of the following opinion:

3.2.1 Document D2

3.2.1.1 Document D2 only shows can ends which in the seamed condition have a chuck wall angle c between 20° and 70° without specifying any radius of curvature of a reinforcing bead (see figures 4 and 5). The problem underlying document D2 with respect to the prior art described therein, i.e. a can end having a vertical chuck wall which is seamed to the can body in a concentric manner (see figures 1 and 2), is to provide a can end having high pressure resistance while reducing the volume of metal used (see original

translation, page 2, third paragraph). This chuck wall angle range is stated to result in a metal saving (see original translation of D2, page 2, third paragraph; page 5, line 4). The radius of the schematic arc-like profile of the chuck wall 18b as shown in figures 4 or 5 is not specified and document D2 does also not disclose any details concerning the seaming process.

3.2.1.2 The said arc-like profile of the seamed can end according to document D2 is not considered to act as a countersink or anti-peaking bead in the sense of claim 1 (i.e. it does not act as a countersink which reinforces the can end against the internal pressure of the can when filled with a beverage drink) due to a bigger radius of curvature as derivable from the description of the embodiments according to the figures 4 and 5. According to this part of the description the pressure resistance can be enhanced by forming the flat plate-like shape of centre panel 13b into a curved and expanded shape so as to exhibit a semi-circular arc-like or semi-oval arc-like cross sectional shape (see original translation, page 4, last sentence of first paragraph; and figures 4 and 5). This arc-like profile results from the teaching in document D2 that, if the radius of the reinforcing bead according to the prior art (wherein the chuck wall is vertically oriented at an angle of 0° ; see figures 1 and 2) is increased the risk of deformation of the can end under high internal pressure is increased. The solution to this problem provided by document D2, however, is not to change the radius of the reinforcing bead but by using an angle of the

chuck wall to the vertical axis of between 20° and 70°, preferably of about 45° (see claims 1 and 2).

3.2.1.3 Furthermore, document D2 shows only seamed can ends which, as admitted by both parties, were deformed during the seaming operation. However, the parties view with respect to the extent of the deformation occurring during the seaming operation differs substantially. The shape of the chuck and its dimensions are not described in document D2 at all. It seems that the deformation of the can end depends on the shape of the chuck used (compare in this context the seaming operation steps shown in documents D12 and D13). The technical statement of Sjöström, wherein he sketched on the attached drawing the form he believed the original unseamed can end should have had in reference D2 (see Sjöström statement, paragraph 5), was based on the assumption that "the lower portion of the chuckwall of the can end and also the countersink of the can end did not change **significantly** during seaming". Both parties confirmed that the slope of the seamed can is determined by the slope of the chuck and that there exists an admissible amount of variation between the chuck and the chuck wall angle. Consequently, it is not predictable with certainty what the can end looked like before the seaming operation even if the skilled person could assume that deformation would take place during seaming.

3.2.1.4 More importantly, document D2 does not give sufficient detail information with respect to the essential dimensions of the can end (e.g. the chuck wall length, the chuck wall radius, etc.) and also

the dimensions given in the tables of document D2 are doubtful, see e.g. the inconsistency between the quoted "can body **diameter** of 65.35 mm" and the specified "diameter of chuck wall radius (mm)" of 61.00 mm and 52.50 mm in table 2 (see original translation, page 6). So the question arises whether the diameter or the radius of the diameter is actually specified in said tables 1 and 2.

3.2.1.5 It has also to be born in mind, in the context of point 3.2.1.4 above, that normally the parameters or dimensions of the can end which e.g. form a countersink are critical and are interrelated to each other. One cannot change one dimension without adapting the others in order to compensate for the change.

3.2.1.6 The skilled person has good reasons not to select D2 content as a basis for further development since too many uncertainties exist (compare "Case Law of the Boards of Appeal of the European Patent Office", 4th Edition 2001, section I.D.3.7; see decision T 1000/92).

3.2.1.7 Taking all the aforementioned facts into account it is the opinion of the Board that document D2 can not be considered as the closest prior art.

3.2.2 Document D3

Document **D3** does not mention any technical problem since it represents an industry norm for soft drink technologists. It reveals dimensions of can ends for cans of the 202 diameter, the 206 diameter

conventional end, and the 206 diameter C-86 or B-64 end which have a countersink radius (dimension G of the tool) of 0.508 mm and/or 0.635 mm but it does not explicitly specify any angles thereof.

Contrary to the allegations of the opponent, however, the given dimensions C, D, E, F and H allow the calculation of the chuck wall angle as shown in the figure using the equation $\tan c = (E-H-D)/(F-C)$ (see figure, dimension key for ends). As submitted by the patentee, these calculations result in angles of about 18° and of $14-16^\circ$ for the can ends mentioned in document D3.

3.2.3 Document D4

The disclosure of document **D4** is related to an improved can end formed from a metal having a specific thickness capable of withstanding a certain buckle and rock pressure and which can be seamed to a can body utilising conventional commercial tooling (see column 2, lines 51 to 57). The disclosed can end corresponds to the preamble of claim 1, and thus does not disclose the features of its characterising part, i.e. the range of the chuck wall angle c and the maximum radius of the countersink (or anti-peaking bead). The same conclusion is valid for process claim 8.

3.2.4 Of the three documents discussed above, D3 would therefore provide a reasonable starting point as the closest state of the art.

3.3 Problem to be solved

3.3.1 The only distinguishing feature with respect to document D3 resides in the fact that a non-conventional chuck angle c of between 40° and 60° is chosen.

3.3.2 The patentee argued that the specific chuck wall angle c would solve a scuffing problem arising from the use of narrower anti-peaking beads (see patent, paragraphs [0006], [0020] and [0032]).

The Board remarks in this context, however, that the patent in suit fails to disclose any data showing a relationship between the occurrence of scuffing according to the prior art and the avoidance thereof due to a specific chuck wall angle c range of between 40° and 60° according to the invention. In accordance with the existing jurisprudence of the EPO the scuffing problem is therefore not taken into consideration (see "Case Law of the Boards of Appeal of the European Patent Office", 4th Edition 2001, section I.D.4.4).

3.3.3 Therefore the Board considers that the technical problem actually to be solved is to provide alternative can ends which save metal and to provide a method for double seaming these can ends to a can body (cf. patent, page 2, lines 28 to 31).

3.4 Solution to the problem

The problem is solved by a can end as defined in claim 1 and the method of forming a double seam

between a can body and a can end as defined in claim 8. The Board finds it credible that the claimed measures provide a solution to the aforementioned technical problem.

3.5 Obviousness

The Board considers that the subject-matter of the independent claims 1 and 8 is not obvious for the person skilled in the art for the following reasons:

3.5.1 In relation to document D3 the Board considers that D3 only discloses dimensions of can ends having chuck wall angles in a range of about 12° - 20° which is considered to be conventional by all parties.

Such a conventional chuck wall angle c corresponds to the teaching of e.g. document D1. Document D1, however, clearly teaches that the chuck wall angle X should be below 20° (see column 4, lines 3 to 9). This fact is also supported by figure 3 of document D1 showing the isobars which separate the zone for limit pressure ranges below and above a limit pressure of 7 kg/cm^2 for $X = 0^{\circ}$ and $X = 20^{\circ}$ with the radius of curvature r being shown in abscissas and angle y being shown in ordinates (see figure 3; column 4, lines 15 to 29) and by figure 4 showing the variation of the limit pressure as a function of angle X for a radius of 0.7 mm at an angle $Y = 20^{\circ}$ (see figure 4; and column 4, lines 30 to 32). Document D1 thus unambiguously directs the skilled person into a different direction and there exists no incentive to increase the chuck angle.

3.5.2 In relation to document D2 the Board considers that the skilled person would not combine the teachings of documents D3 and D2 for being non-compatible with respect to the chuck wall angle c of document D2 of between 20° and 70° . This is due to the fact that the chuck wall angle range of document D3 corresponds to the teaching of document D1 (see point 3.5.1 above).

3.5.3 Even if the skilled person - despite this non-compatibility - were nevertheless to combine the documents D3 and D2, he would additionally have to incorporate a countersink into the arc-like profile of document D2 in order to arrive at the subject-matter of claim 1. The skilled person, however, has no reason to do so since neither document D3 nor D2 suggests such an additional countersink and this approach would be counterproductive with respect to the technical object to be solved. Such an additional countersink would increase metal consumption. Besides, the teaching of document D2 already results in a seamed can having a high pressure resistance which allows considerable metal savings. Furthermore, the values of the countersink radius of the can ends according to the mentioned documents D11 and D14, namely 0.76 mm (see D11, page 3-2) and 0.18 to 0.5 mm and 0.18 to 0.43 mm (see D14, figure 18; column 1, lines 1 to 11; column 2, line 48 to column 3, line 13; column 8, lines 10 to 50), are only disclosed in combination with conventional chuck angle c values in the range of about 12° to 20° , preferably 12° to 15° . Therefore the same conclusions as drawn with regard to document D2 in paragraph 3.2.1.2 above are valid. Consequently, the skilled person would not take a countersink radius value or range in isolated form

from a first concept such as taught in document D11 or D14 and incorporate it into another totally different concept as taught in document D2.

3.5.4 In relation to document **D4** the arguments of the opponent with respect to a combination of documents D4 and D2 can also not be accepted for the following reasons.

In document D4 the countersink is the crucial point of the specific can end. The outer wall portion 24 contacting the chuck is inclined at an angle of less than 5° (see column 2, line 61 to column 3, line 10). The radius R_1 of the countersink is less than three times the thickness of the aluminium metal (see column 4, lines 65 to 66). Furthermore, the angle C between the second flat wall portion 34 and the plane P is substantially greater and preferably at least six times greater than angle B (see column 5, lines 9 to 16). According to a specific embodiment made of 0.305 mm gauge aluminium said angle B of wall 24 is 4° , said angle C for wall 34 is 25° and R_1 is approximately 0.76 mm (see column 7, lines 31 to 44). Therefore, the range of between 40° and 60° for the chuck angle according to claim 1 of the patent in suit is not derivable from document D4.

Document D4 does not refer to any chuck wall. This term has a certain meaning in the art, namely that the wall is intended to engage with the chuck during the seaming operation. Particularly the second flat wall portion 34 between wall portion 24 and peripheral curl 12 represents no chuck wall, since document D4 aims to minimize or eliminate the

interference with the conventional chuck seamer (see column 3, lines 4 to 10; column 5, lines 9 to 13; and column 8, lines 10 to 14). It further states that standard chucks and conventional commercial tooling should be used (see column 2, line 26, lines 30 to 35, lines 43 to 46 and lines 54 to 57). This statement implies that such a standard chuck will not get into contact with said wall 34 during the seaming operation since the bottom radius of the chuck can engage with the countersink and with the wall 24.

The teaching of document D2 could not be combined with that of document D4 because the countersink and its dimensions represent the crucial points according to document D4, whereas according to document D2 the slope of the chuck wall is the crucial issue while the countersink apparently has no specific importance.

The same conclusion as for document D4 is valid for the very similar can end according to document D15 which suggests a wall angle D for the flat wall portion (28) in the range of 14° to 16° so that standard commercial seaming tools can be utilised (see column 3, lines 18 to 21; column 4, lines 2 to 10).

Consequently, the skilled person has also no incentive to combine documents D15 and D2.

3.6 Conclusion

The subject-matter of independent claims 1 and 8 thus involves an inventive step within the meaning of Article 56 EPC.

The same applies to the subject-matter of the dependent claims 2 to 7 and 9 which define further preferred embodiments of the can end according to claim 1 and the method of forming a double seam between a can body and a can end according to claim 8, respectively.

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 grant a patent with the following documents:

Claims: 1 to 9 as filed during the oral proceedings,

Description: pages 2 to 8 as filed during the oral proceedings,

Drawings: figures 1 to 9 as granted.

The Registrar:

The Chairman:

U. Bultmann

C. Holtz