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**D E C I S I O N**  
**of 31 May 2006**

**Case Number:** T 0800/03 - 3.2.07

**Application Number:** 94903639.6

**Publication Number:** 0675806

**IPC:** B32B 31/26

**Language of the proceedings:** EN

**Title of invention:**

Method of labeling articles having convex surfaces

**Patentee:**

B&H MANUFACTURING COMPANY, INC.

**Opponent:**

KRONES AG

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56

**Keyword:**

"Novelty (yes)"

"Inventive step (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0800/03 - 3.2.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.07  
of 31 May 2006

**Appellant:** KRONES AG  
(Opponent) Boehmerwaldstrasse 5  
D-93068 Neutraubling (DE)

**Representative:** -

**Respondent:** B&H MANUFACTURING COMPANY, INC.  
(Patent Proprietor) 3461 Roeding Road  
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**Representative:** Kindler, Matthias  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
23 May 2003 concerning maintenance of European  
patent No. 0675806 in amended form.

**Composition of the Board:**

**Chairman:** C. Holtz  
**Members:** H. Felgenhauer  
K. Poalas

## Summary of Facts and Submissions

I. Both the patentee and the opponent filed an appeal against the interlocutory decision of the opposition division maintaining the European patent No. 0 675 806 in amended form.

Opposition was filed against the patent as a whole based on the ground of opposition according to Article 100(a) EPC (lack of novelty and of inventive step).

The following prior art documents have been relied upon essentially in the appeal proceedings.

E5: Dullinger, K.: "Handbuch der Ausstattungstechnik",  
5. Auflage, 1985, Herausgeber: Krones AG

E8: US-A-4 923 557

E10: EP-A-0 025 332

E12: Drawing Krones No. 8-099-08-6317, "0,5 Ltr. PET-Fl.  
COCA COLA", dated 20 March 1997

II. Oral proceedings before the Board were held on 31 May 2006.

(i) The opponent-appellant requested that the decision under appeal be set aside and that the patent be revoked.

(ii) The patentee withdrew its appeal and requested as respondent that the appeal be

dismissed and the patent be maintained with amended claims 1 to 9 underlying the decision under appeal.

III. Amended claim 1 reads as follows:

" A method of applying a segment (16) of heat shrinkable sheet material to an article (25), said article being moulded with a flexible convex surface (46) presenting around a vertical axis a sector (45) which is convex in vertical section and includes a maximum circumference or diameter of said sector, said segment having a leading end and a trailing end unattached to the leading end, said method comprising:

- a) adhesively attaching the leading end of the segment to said convex surface,
- b) then wrapping the segment around the article, slightly flattening in said vertical section the sector (45) of maximum diameter during segment application,
- c) adhesively attaching the trailing end of the segment to the convex surface or lapping it over and attaching it adhesively to the leading end of the segment,
- d) conducting steps (a), (b) and (c) in such manner that only a narrow sector of the segment is attached to said sector of maximum circumference or diameter and major portions of the segment on either side of said narrow sector are unattached to the article, and
- e) then applying heat to the segment to shrink said major portions onto the article."

IV. The facts, evidence and arguments relied upon by the appellant may be summarised as follows:

- (i) Concerning the interpretation of claim 1 underlying the decision under appeal it needs to be considered that the method defined in claim 1 is directed to a segment of heat shrinking material being applied to an article. According to claim 1 the shape of the surface of the article to which the segment is applied and the state of this surface while the segment is wrapped around the article are of vital importance. In claim 1 the article is referred to as being moulded with a flexible convex surface presenting around a vertical axis a sector which is convex in vertical section and includes a maximum circumference or diameter. In features b) and d) of claim 1 " a sector of maximum diameter" or " a sector of maximum circumference or diameter" is referred to. This sector has to be of substantive extent in the direction along the vertical axis as can be derived from the description and the drawings of the patent in suit. One reason for this is that an article of the kind referred to in claim 1 is described and shown in the patent in suit as the familiar Coke bottle which, as can be derived from E12, has a convex surface with a sector of maximum diameter of substantial extent. A further reason is that according to the embodiment given with respect to such an article two nozzles for applying heat to

shrink the segment are associated with the sector of maximum diameter, which thus has to be of substantial extent in the direction along the vertical axis. Therefore it has to be concluded that the features of claim 1 relating to the convex surface and in particular its sector of maximum circumference or diameter do not impose a limitation as to the extent of the sector of maximum diameter along the vertical axis.

- (ii) Consequently the method according to claim 1 does not exclude articles having a flexible convex surface comprising a sector of maximum circumference or diameter of substantial extent along the vertical axis with adjacent convex portions on its both ends as shown in documents E5 (page 52, figure 2/24) and E8 (figures 2, 4).
  
- (iii) The method according to claim 1 thus lacks novelty with respect to the method disclosed in document E5 or E8, each of these methods relating to articles having such a flexible convex surface with an extended section of maximum circumference or diameter, since furthermore in each of these methods the article comprising a flexible convex surface is slightly flattened while a segment is wrapped around the article due to the pressure applied to the article, in order to properly attach the leading and the trailing end of the segment to the article and to properly spin the article during wrapping.

- (iv) Even if the method according to claim 1 should be considered as excluding articles having a flexible convex surface comprising an extensive sector of maximum circumference or diameter with adjacent convex portions as referred to above and instead as relating to articles with a flexible convex surface, wherein the sector of maximum diameter is part of this convex surface, which thus extends along the vertical axis in either direction from this sector, the method according to claim 1 lacks novelty with respect document E8, since this document explicitly discloses that the article can be elliptical in vertical direction and thus convex with a sector of maximum diameter in the sense referred to above.
- (v) Additionally the method according to claim 1 does not involve an inventive step. According to the description of the patent in suit the problem to be solved concerns the provision of a method by which heat shrinkable material may be rapidly applied to, and attached sufficiently for the purpose to a convex sector on an article, and then heated to shrink the remainder of the material properly onto the convex portion. Such a problem, without the aspect of applying heat shrinkable material, can be derived from document E10. The solution of this problem according to claim 1 is, likewise without the aspect of applying heat

shrinkable material, obvious in view of document E10, in which deformation of the article during handling is mentioned. This portion of the description of E10 needs to be understood as referring to the deformation of an article, which according to E10 can have a flexible convex surface, during segment application such that the sector of maximum diameter is flattened. For a similar method the steps of applying a segment of heat shrinkable material and of applying heat to the segment to shrink major portions onto the article are known from document E8. Since it is obvious that the segments according to E10 can finally be attached by heat shrinking, the method according to claim 1 does not involve an inventive step with respect to combined consideration of documents E8 and E10.

V. The facts, evidence and arguments relied upon by the respondent may be summarised as follows:

- (i) According to claim 1 the article to which a segment of heat shrinkable sheet material is applied is moulded with a flexible convex surface presenting around a vertical axis a sector which is convex in vertical section and includes a sector of maximum circumference or diameter. According to feature b) of claim 1 the sector of maximum diameter is slightly flattened while the segment is wrapped around the article. The sector of maximum diameter is clearly



defined as part of the flexible convex surface of the article; it thus denotes the location of the convex surface at which in either direction along the vertical axis the slope of the convex surface, having the form of a barrel, changes. Qualification of the sector of maximum diameter as part of the convex surface excludes it being of substantial extent along the vertical axis. This understanding of the vertical surface and in particular its sector of maximum diameter corresponds to the description and the figures of the patent in suit which, as far as an article is in form of a bottle is concerned, clearly and exclusively discloses a bottle having such a convex surface. It would not be admissible to construe claim 1 based on shapes of an article, like the Coke bottle according to E12, which is not referred to in the patent in suit and which has a shape distinguished from the one of the Coke bottle clearly disclosed in the patent in suit. Association of two nozzles to a middle portion of the convex surface, as it is the case for an embodiment of the invention, furthermore does not bear any significance as to the extent of the sector of maximum diameter of the convex surface along the vertical axis.

- (ii) Contrary to the article referred to in claim 1 the methods disclosed in E5 and E8 relate to articles which do not have such a convex surface but essentially a straight walled cylindrical surface of circular cross-section, adjacent to which a convex section follows in the direction to the bottom and the neck of the respective article in the form of a bottle. The method according to claim 1 is thus distinguished from these prior art methods with respect to this feature relating to the shape of the surface of the article to which according to the method of claim 1 a segment is applied. This method is further distinguished from the one according to document E5 or E8 by the method step defined by feature b), according to which the sector of maximum diameter is slightly flattened in vertical direction during segment application. The method of claim 1 is thus novel with respect to the one according to document E5 or E8.
- (iii) The method according to claim 1 furthermore involves an inventive step since neither document E8 nor document E10 gives an indication towards the application of a segment to an article having a convex surface to which the segment is applied, the shape of the convex surface being as defined in claim 1. Furthermore none of these documents gives an indication concerning the method step according to feature b) of claim 1, according to which the sector of

maximum diameter is slightly flattened during wrapping of the segment. Taking the straight wall surface of the article according to either one of these documents to which according to the known methods a segment is applied, it is furthermore apparent that flattening of the surface to which a segment is applied does not have any apparent advantage with respect to the application of the segment. On the contrary considering the high speeds of wrapping occurring in such methods and the resulting forces acting on the articles, deformation during wrapping without advantageous effect is something being considered as unfavourable with respect to proper application of segments to articles and consequently as an effect to be avoided.

### **Reasons for the Decision**

1. Amended claim 1

Claim 1 has been amended in that it has been further defined that the article is being moulded with a flexible convex surface 46 presenting around a vertical axis a sector 45 which is convex in vertical section and includes a maximum circumference or diameter of said sector and that when wrapping the segment around the article, the sector 45 of maximum diameter is slightly flattened in said vertical section during segment application.

The amendments have not been objected to by the appellant. They satisfy undisputedly the requirement of Rule 57a EPC.

Considering that the features resulting from these amendments are disclosed in the application as filed (cf. WO-A-94 146 11, e.g. page 6, lines 14 - 28; figure 2 - 4, 6), do not extend the subject-matter of claim 1 and explicitly define that the surface of the article to which a heat shrinkable sheet material is applied is convex in vertical section, the Board is satisfied that the requirements of Articles 84, 123(2) and (3) EPC are fulfilled.

2. Subject-matter of claim 1

Concerning the shape of the flexible convex surface to which a segment is applied, the extent of the sector of maximum diameter or circumference included in this surface along the vertical axis is disputed.

2.1 In agreement with the opinion expressed by the respondent the Board considers claim 1 as referring to an article being moulded with a flexible convex surface, this surface being defined as " including" a sector of maximum diameter. Consequently this sector of maximum diameter is part of the convex surface and thus marks the position at which the slope of the convex surface changes in either vertical direction.

2.2 This understanding of the features of claim 1 defining the shape of the article results directly from the fact that the sector of maximum diameter is defined in claim 1 as " included" in the flexible convex surface.

The surface concerned is thus defined in claim 1 as being in its entirety - thus including the sector of maximum diameter - convex.

The convex surface of the article to which a segment is applied is thus defined in claim 1 as being barrel shaped as referred to by the respondent. Contrary to the opinion expressed by the appellant the convex surface of the article referred to in claim 1 thus does not comprise a cylindrical portion of maximum diameter of substantive extent along the vertical axis.

- 2.3 This definition of the convex surface referred to in claim 1 resulting from the wording of this claim is moreover supported by the description and the drawings of the patent in suit.

Figures 2 - 4, 6 relating to articles in form of bottles, which are the types of articles exclusively discussed at the oral proceedings, show bottles having a convex surface to which a segment is to be adhesively attached, the sector of maximum diameter being included as marking the position at which the slope of the convex surface changes direction in either vertical direction.

Moreover the prior art referred to by reference to the "familiar Coke (TM) bottle" article in the patent in suit (column 1, lines 30 - 37) as well as in the application as filed (WO-A-94 146 11, page 2, lines 7 - 11) shows a bottle of the type shown in figures 1 - 4 and 6 of the patent in suit as referred to above.

2.4 In view of the wording of claim 1 and the corresponding disclosure of the patent in suit as well as of the application as filed the Board cannot follow the argument of the appellant according to which the sector of maximum diameter included in the convex surface has to be interpreted as not excluding a sector of maximum diameter and thus a straight-walled cylindrical portion within the convex surface which is of substantive extent in the direction of the vertical axis.

As far as this argument relies on the description (column 5, lines 5 - 14) and figure 4 according to which nozzles are arranged " just above the mid-portion 49 of the sector 45" and correspondingly " just below the mid-portion 49" it needs to be conceded that this portion of the disclosure relates to the provision of nozzles with respect to an article and does not concern the definition of the article. It is apparent that within figure 4 no article in form of a bottle is shown that differs from the bottle shown in figures 2 and 3 (cf. column 2, lines 24 - 31). Thus contrary to the opinion expressed by the appellant the disclosure with respect to an article and nozzles associated with this article, the location of the nozzles being described with reference to the sector of maximum diameter included in the convex surface, does not alter the disclosure given with respect to the shape of the convex surface of the article.

2.5 In this connection the appellant also referred to figures 3 and 4 arguing that the convex surface, to which the segment is applied, is of only small convexity. In this respect the Board firstly wishes to

point out that the question of whether the convex surface is of small or large convexity is not directly related to the question of whether or not the sector of maximum diameter is of substantial extent in vertical direction. Secondly since the method of claim 1 relates to the application of a segment to the convex surface of an article, wherein according to feature b) the sector of maximum diameter is slightly flattened during wrapping and wherein according to feature d) only a narrow sector of the segment is attached to the sector of maximum circumference, the convex surface has to be such that the method steps acting on it can be performed as defined in claim 1.

2.6 Finally since the article is clearly and exclusively disclosed in the patent in suit as having a convex surface including a sector of maximum diameter as indicated above, articles disclosed outside of the patent in suit and without apparent relation to its disclosure like the bottle according to E12 or samples of Coke bottles shown by the appellant at the oral proceedings cannot alter the disclosure of the patent in suit and the features of claim 1 relating to the shape of the convex surface being in line with this disclosure.

### 3. Novelty

3.1 According to the appellant the method defined in claim 1 lacks novelty with respect to document E5 or E8, each document disclosing a method within which a segment is applied to a convex surface of an article. Concerning the shape of the article this opinion is based on the understanding that the convex surface

according to either one of both documents includes a sector of maximum diameter as defined in claim 1, irrespective of its substantial extent along the vertical axis (cf. E5, figure 2/24 on page 52; E8, column 2, line 56 - column 3, line 4; figures 2 - 5 and 7). Concerning the method of applying a segment to an article this opinion is based on the assumption that since a positive or compressive contact is applied to this convex surface in order to wrap the segment around the article and in order to spin the article (cf. E5, page 125, first paragraph; E8, column 1, lines 59 - 66; column 3, lines 20 - 47; column 6, lines 42 - 68), the articles deform due to this compressive contact such that the known methods comprise method step b), according to which during wrapping of the segment the sector of maximum diameter is slightly flattened.

- 3.2 The Board cannot follow these arguments since they do not take into account the shape of the convex surface of the article as defined in claim 1. According to this definition (cf. section 2.1 above) the convex surface includes a sector of maximum diameter marking a position at which the slope of convexity of the, in its entirety, convex surface changes its direction along the vertical axis. Documents E5 and E8 on the other hand show an article having a surface to which a segment is applied which is essentially straight-walled cylindrical with adjacent convexly shaped minor portions in the direction to the bottom and the neck of the article (cf. E5, figure 2/24 on page 52; E8, column 2, line 56 - column 3, line 4; figures 2 - 5 and 7).



Thus even if the unproven assumption of the appellant is followed that compression of the surface to which a segment is wrapped leads in the method according to E5 or E8 to this surface being slightly flattened, the method according to claim 1 is distinguished from the methods according to E5 and E8, since such flattening does not relate to the sector of maximum diameter as defined in claim 1 and since, as outlined above, the article according to document E5 or E8 does not comprise such a convex surface including such a sector of maximum diameter to which a segment is applied.

- 3.3 According to an additional argument of the appellant the method according to claim 1 lacks novelty with respect to a further embodiment of the method disclosed in document E8, within which it is referred to an article to which a segment can be applied " being stepped, circular, or elliptical in vertical cross-section" (column 3, lines 8 - 13).

Although the Board considers in agreement with the appellant that a surface elliptical in vertical direction corresponds to the convex surface including a sector of maximum diameter as referred to in claim 1 it notes that E8 does not give any disclosure with respect to compressive forces occurring during the application of a segment to an article result in a deformation of the surface of the article concerned. This holds true even more with respect to the particular kind of deformation, namely flattening of the sector of maximum diameter, defined in claim 1 and considering the undisputed fact that E8 does not comprise any disclosure concerning the material of the article. Even if in this respect the assumption of the appellant is

followed that the article shown in figures 2 and 4 of document E8 is, due to the collar shown on the neck being typical for plastic bottles, made of plastic material it cannot be concluded that this applies likewise for the other articles referred to in E8, including the one being elliptical in vertical section.

Thus due to the lack of a direct and unambiguous disclosure in E8 for the embodiment according to which the article is elliptical in vertical cross-section the method according to claim 1 is novel since the article to which a segment is applied has a flexible convex surface, wherein according to feature b) the sector of maximum diameter is slightly flattened in the vertical section while the segment is wrapped around the article.

3.4 The method of claim 1 is thus novel over document E5 and E8 (Article 54 EPC).

4. Inventive step

4.1 Although document E10 did not relate to an article having a convex surface to which a segment is applied as referred to in claim 1 of the patent in suit, the appellant relied on it as closest prior art. In its view the statement of E10 " Also, it accommodates itself to deformation of the container during handling." (page 1, line 28 - page 2, line 1) relates to handling of the container while a segment is applied to it.

None of the documents discussed by both parties in the appeal proceedings concerns a method according to which a segment is applied to an article having a convex

surface as referred to in claim 1. Since in addition none of the documents discussed has more features in common with the method according to claim 1 as does E10 and since the respondent did not object to E10 being considered as representing the closest prior art, this document is considered as the starting point in the evaluation of inventive step.

4.2 The method according to claim 1 differs from the one according to E10 with respect to the feature referring to the article as having a convex surface in vertical section including a sector of maximum diameter and with respect to features b) and d) defining the method steps according to which the segment is attached to the sector of maximum diameter. The method according to claim 1 is further distinguished from the one according to E10 by the feature according to which a segment of heat shrinkable sheet material is applied to an article and by feature e) according to which heat is applied to the segment to shrink major portions onto the article.

4.3 Starting from E10 the technical problem underlying the patent in suit can be seen in the provision of a method applying heat shrink sheets to convex surfaces of articles, whereby the heat shrinkable material may be applied rapidly to, and attached sufficiently for the purpose to a convex sector of an article (column 1, lines 47 - 56).

4.4 This problem is solved according to claim 1 in that when wrapping the segment around the article the sector of maximum diameter is slightly flattened in vertical direction as defined by feature b) and that according to feature d) only a narrow sector of the segment is

attached to the sector of maximum circumference or diameter and major portions of the segment on either side of said narrow sector are unattached to the article.

It has not been contested that the problem is solved by the method according to claim 1. The Board considers it plausible that the problem is solved by the method of claim 1.

- 4.5 According to the appellant document E10 discloses that PET containers which have a flexible surface (page 1, lines 22 - 25) are deformed during handling (page 1, line 27 - page 2, line 1). Such a manner of applying a segment to an article being known for one type of article, namely the bottle shown in figure 7 of E10, it can easily and without any structural modification on the apparatus on which the method is performed being required be used advantageously also within the method according to document E8 and in particular in case the article to which a segment is applied being elliptical in vertical section as indicated in E8 (column 3, lines 8 - 13). From document E8 it is furthermore known, corresponding to feature e), to apply heat to the segment to shrink major portions remaining unattached after the segment has been wrapped to the article (cf. E8, claim 1).

According to the appellant it is furthermore, in conformity with the explicit mention of deformation during handling in E10, apparent that in the method according to E10 as well as the one according to E8 the wrapping of a segment around an article and gluing the ends of the segment to each other or to the article

automatically results in the article being deformed in a manner resulting in the slight flattening in vertical section of the sector as defined by feature b).

Consequently according to the appellant the method according to claim 1 does not involve an inventive step in view of combined consideration of documents E10 and E8.

According to the respondent it is not apparent that the deformation referred to in E10 in connection with handling is one which occurs during wrapping of the segment around the article. The context in which deformation during handling of the article is referred to (page 1, line 22 - page 2, line 1) making it more probable that the handling of an article to which a label has already been applied to is concerned.

This question however does not have to be resolved as the Board agrees to the opinion of the respondent that, even if the view of the appellant is followed, E10 refers to deformation occurring during application of a segment and that this cannot distract from the fact that for the straight-walled cylindrical portions to which segments are applied, such a deformation of a straight-walled cylindrical portion would be highly undesirable and result in no advantageous effect with respect to the application of a segment to a surface of an article which is straight along the vertical axis, such that no further modification of this surface by slight flattening in the vertical section would be required or even possible.

This is in stark contrast to the situation at hand for the method defined in claim 1 where at the outset the convex surface of the article to which the segment is applied makes, due to its convexity, the attachment of the segment difficult.

Thus irrespective of whether or not in the methods known from E10 or E8 deformation of the surface of the article to which a segment is applied occurs during application of the segment by chance, such an effect without apparent advantage cannot lead the person skilled in the art to purposefully apply a deformation under entirely different conditions due to different shapes of the surfaces to which the segment is applied, such that the at the outset convex surface is slightly flattened to make an attachment of a narrow sector of the segment to the sector of maximum diameter according to features b) and d) possible.

Consequently neither document E10 nor E8 nor considered in combination gives an indication leading to the method according to claim 1.

This applies likewise considering that according to document E8 the article can have an elliptical shape in the vertical section. One reason for this is that for such an article E8 remains silent as to whether this article is flexible and thus amenable to deformation or not. Another equally important reason is that E8 does not give any hint justifying the assumption that the method of applying a segment to an article is different in case the surface to which the segment is attached is not essentially straight-walled cylindrical, as described with reference to the figures, but instead

elliptical in vertical section as referred to without further disclosure as to the method of application of the segment under such circumstances.

The method according to claim 1 defining a method improving the application of a segment to the flexible convex surface of an article thus involves an inventive step (Article 56 EPC) since neither document E10 or E8 nor their combined consideration or any other document referred to in the appeal proceedings gives an indication leading to a purposeful deformation of the sector of maximum diameter included in the convex surface to slightly flatten this sector in vertical section while the segment is wrapped around the article.

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Nachtigall

C. Holtz