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D E C I S I O N
of 1 April 2004

Case Number: T 0435/02 - 3.2.1

Application Number: 93915133.8

Publication Number: 0646092

IPC: B67D 5/42, B65D 83/38

Language of the proceedings: EN

Title of invention:
Low pressure, non-barrier type valved dispensing can

Patentee:
Dispensing Containers Corporation

Opponent:
CARNAUDMETALBOX PLC

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 104(1)

Keyword:
"Novelty - yes"
"Inventive step - no"
"Costs - apportionment - oral proceedings - (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 0435/02 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 1 April 2004

Appellant: Dispensing Containers Corporation
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 4 March 2002
revoking European patent No. 0646092 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: J. Osborne
Members: M. Ceyte
S. Hoffmann

Summary of Facts and Submissions

I. The appeal is directed against the decision dated 4 March 2002 to revoke European patent 0 646 092. The patent as granted contains claims 1 to 14 directed to a product and claim 15 directed to a process.

II. In its decision the Opposition Division found that the subject-matter of claim 1 as granted lacked novelty with respect to the disclosure of:

D4: "Introducing two piece aluminium aerosol cans",
Aerosol Age, March 1970.

In particular, it was of the opinion that the sole illustration in D4 was of the can referred to in the text and that, by application of a formula, equation 146a, taken from

D10: *J.P. Den Hartog* "Advanced Strength of Materials",
McGraw Hill Book Company, 1952,

it could be shown that the critical pressure at which the illustrated can would crush was considerably lower than that for a can described in the patent specification as being in accordance with claim 1. The Opposition Division also found that the subject-matter of claim 15 as granted did not involve an inventive step and that the subject-matter of respective claims 1 of first and second auxiliary requests lacked novelty with respect to D4. During opposition the opponent had argued that even if the subject-matter of claim 1 as granted were to be found novel, it would lack inventive step with respect to the following prior art:

D1: US-A-4 271 991.

III. The appellant (patent proprietor) requested that the decision be set aside and that the patent be maintained as granted (main request) or in the alternative in amended form on the basis of first, second and third auxiliary requests filed with a letter dated 3 July 2002 and fourth, fifth, sixth and seventh auxiliary requests filed with a letter dated 26 February 2004. The respondent (opponent) requested that the appeal be dismissed. Both parties filed auxiliary requests for oral proceedings.

IV. The Board summoned the parties to oral proceedings to be held on 1 April 2004. In a communication pursuant to Article 11(1) RPBA the Board set out points which it considered would be of importance in arriving at the final decision but gave no provisional opinion. The appellant announced in a letter faxed on 18 March 2004 that it would not be represented at the oral proceedings and requested that the Board decide the case on the basis of the arguments present in the file. In reply the respondent stated that its attendance at the "oral hearing" would be "merely to rebut statements/arguments made by the Patentee during these Proceedings" and that it also would not be represented at the oral proceedings. It requested the Board to decide on the basis of the written submissions present in the file and requested apportionment of costs incurred in preparation for the oral proceedings, specifically the costs of flight tickets which were unrecoverable as a result of the appellant's late

notification of its decision not to attend the oral proceedings.

V. With a communication dated 24 March 2004 the Board informed the parties that the oral proceedings would be held as planned. At the oral proceedings held 1 April 2004 neither party was present and the proceedings were held in their absence in accordance with Rule 71(2) EPC.

VI. Claim 1 as granted (appellant's main request) reads:

"1. An aerosol dispensing can (10) for containing and dispensing fluent materials by compressed and/or liquefied gas, the can (10) comprising a generally cylindrical wall (12) and containing propellant and fluent material to be dispensed; the propellant and fluent material not being separated by a barrier in the can between them and, an aerosol dispensing valve (40) wherein said valve (40) has a valve-orifice (84) adapted to be opened to dispense a desired quantity and rate of flow of fluent material and propellant in selected spray or foam form in a manner such that the can (10) will retain enough propellant pressure to expel substantially all of the dispensable fluent material in the can (10) characterized in that the can (10) having a wall (12) of such a material and with such a thickness that when the can (10) is unpressurized, the can wall (12) is easily distortable by normal finger pressure and is easily crushable by normal hand pressure, but when the can (10) is pressurized, the can (10) is rigid enough to not be easily distortable and crushable by normal finger and hand pressure."

Claim 1 according to the first auxiliary request, which is identical to the corresponding request in the opposition procedure, differs from that of the main request by the addition of the following wording:

"wherein the can (10) also has a top (16) and a bottom (14) which are joined to the can wall (12) and close the can (10); wherein the can (10) is of such side wall (12), top (16) and bottom (14) construction that the pressure of the selected propellant does not cause the can (10) to exceed the regulatory distortion and burst requirements."

Claim 1 according to the second auxiliary request, which is identical to the corresponding request in the opposition procedure, differs from that of the main request by the addition of the following wording:

"wherein the can side wall (12), bottom (14) and top (16) are of such thickness and the type and quantity of propellant are selected so that the can (10) will not permanently distort at 130°F or 54.4°C and will not burst at one and one half times the pressure generated by the propellant at 130°F or 54.4°C."

Claim 1 according to the third auxiliary request differs from that of the main request by the addition of the following wording:

"and wherein the thickness of the can wall is such that the can (10), when pressurized to 100 psig or 689.5 kPa, expands across the diameter by at least one and one half thousandth of the diameter."

The claims according to the main request and first, second and third auxiliary requests also include an independent process claim having the subject-matter of claim 15 as granted.

The claims 1 according to the fourth, fifth, sixth and seventh auxiliary requests correspond to those of the main, first, second and third auxiliary requests respectively but without the independent process claim.

VII. The appellant's case in respect of the main request can be summarised as follows:

D4 is an article dating from 22 years before the priority date of the contested patent and relating to the development of non-barrier aerosol dispensing cans produced from aluminium by the DWI process. The article includes at the beginning an illustration of an aerosol dispensing can indicating the diameter and thickness of the wall. However, there is no suggestion that the illustration is of an aluminium can to which the text refers and the skilled person would not understand that to be the case. Indeed, the can allegedly disclosed by D4 could not have been assembled and was never put into production. Moreover, D4 contains no indication of the functional definitions in the characterising portion of claim 1 as granted although these would have been surprising at the time D4 was written. The Opposition Division was wrong to apply equation 146a from D10 in comparing the can allegedly disclosed by D4 with a can as defined in the claims. The formula is not applicable to a can of the type claimed and D4 contains too little information regarding the material used. In conclusion,

D4 does not destroy novelty of the subject-matter of claim 1 according to the main request.

The subject-matter of claim 1 according to the main request moreover involves an inventive step. Conventional wisdom over the years has been to increase the pressure in aerosol dispensing cans to ensure expulsion of all of the contents. In arriving at the can according to claim 1 the inventor discarded that conventional wisdom and arrived at a can which nevertheless satisfies regulatory requirements. The considerable commercial success enjoyed by the can is an indication of the inventive effort involved in arriving at the claimed subject-matter.

VIII. The respondent countered essentially as follows:

The text of D4 refers to a can of "211" diameter, which is the size shown in the illustration and there is no reason why the skilled person would not understand the illustration to be of the can described in the text. The functional requirements in claim 1 are merely an alternative way of defining the wall thickness of the can and it is not necessary that they be explicitly mentioned for there to be a disclosure of a can fulfilling those requirements. It was the appellant itself that introduced the equation 146a from D10 and applied it to the respective cans of D4 and of the patent.

If the subject-matter of claim 1 were found to be novel it would not involve an inventive step.

"Lightweighting", i.e. reducing the material content of cans, has been practised over many years and has

resulted in beverage cans produced by the DWI process having crushability characteristics similar to those defined in claim 1. Development of aerosol dispensing cans manufactured by the DWI process has been hindered by a number of factors but similar "lightweighting" efforts on such cans would result in the subject-matter of claim 1.

IX. Neither party filed arguments in respect of the auxiliary requests.

Reasons for the Decision

Main request

1. D4 is an article in a technical journal relating to the introduction in the USA of two-piece aluminium aerosol dispensing cans manufactured by the "DWI" (drawn and ironed) process. In this process a flat circle of metal is drawn into a cup-like shape and is then stretched to provide a greater height and reduced wall thickness so that the main body of the can is produced in one piece. A cap which carries the valve is attached to the upper portion of the wall.

1.1 On the right-hand side of the upper half of the first page, beside the title of the article, is an outline drawing of a two-piece aerosol dispensing can, the upper end of the body being reduced in diameter where a cap is shown to be attached by a rolled edge. Major dimensions such as outside diameter (2.604), overall height (7.000) and a wall thickness (0.008) are given and the designation "207.5 x 211 x 604" is shown

alongside the outline of the can. It is clear in the context of the disclosure, and uncontested between the parties, that the dimensions are quoted in inches. The drawing has neither a title nor a figure number and the text contains no explicit reference to it. However, there is a reference on page 46 to "the 211 diameter can" and it is stated in respect of the attachment of the cap both that the one-piece body is "necked-in at the open end" and that "the 211 diameter can is necked into the 207.5 size", all of which is consistent with the drawing and the designation contained therein. The appellant argues that the skilled person would not recognise the figure as being an illustration of the can described in the text. In particular, it argues that the skilled person would be aware that an aluminium wall of 0.008" thickness would not be suitable for attachment of the cap. However, in the Board's opinion both the presence of the single figure in the article and the correlation between the text in the article and the designation shown in the figure would be sufficient to lead the skilled person to understand that the figure illustrates the can to which the text refers. Even if the skilled person would immediately recognise that difficulties may arise in the attachment of the cap to the body due to the combination of the low wall thickness and the material being aluminium, in view of the fact that the article relates to an innovative manufacturing process he would not dismiss the information as obviously incorrect. The Board concludes that an aluminium can having the dimensions shown in the figure was made available to the public within the meaning of Article 54(2) EPC.

1.2 However, as the appellant rightly points out, D4 is silent in respect of the functional requirement in claim 1 that the can "has a wall of such a material and with such a thickness that when the can is unpressurized, the can wall is easily distortable by normal finger pressure and is easily crushable by normal hand pressure". This feature can only be considered as having been made available to the public if the can disclosed by D4 would necessarily exhibit these characteristics. The Opposition Division applied the equation 146a from D10 both to the can disclosed in D4 and to a can described in the specification of the contested patent and found that the critical pressure at which the D4 can would crush would be 0.4 of that for the can according to the patent. It concluded that the can according to D4 fell within the scope of contested claim 1. However, in the Board's view this conclusion is not necessarily correct. Equation 146a relates to the pressure at which a tube of infinite length will crush when exposed to a uniform external pressure. By contrast, an aerosol dispensing can is relatively short compared to its diameter so that the rigidity offered by the ends of the can may influence the crushability of the walls, depending on the relative values of length, diameter and wall thickness. In this respect the Board notes that the section of the specification of the contested patent from which the Opposition Division took dimensions in applying equation 146a does not specify the length of the can. Moreover, the functional requirements of the claim do not relate to the application of uniform external pressure represented by equation 146a but to the behaviour of the can when subjected to localised loading. It follows that it cannot be concluded

unambiguously by the application of equation 146a that the can disclosed by D4 would satisfy the requirements defined in claim 1.

1.3 The Board therefore concludes that the subject-matter of claim 1 is novel (Article 54 EPC).

2. The closest prior art for consideration of inventive step is a conventional non-barrier aerosol dispensing can as described in the preamble of contested claim 1. Such cans have a propellant of either compressed or liquefied gas. These conventional aerosol dispensing cans are charged to initial pressures at room temperature of "about 621 to 965 kPa" in the case of compressed gas and "about 207 to 345 kPa" in the case of liquefied gas (patent specification column 2, lines 12 to 18). At higher temperatures the internal pressures increase and at 54.4°C (130°F) conventional aerosol dispensing cans charged with compressed gas typically contain a pressure of "690 to 1103 kPa" (patent specification column 5, lines 53 to 58). Conventional aerosol dispensing cans having liquefied gas propellant exhibit even higher pressures at increased temperatures. A conventional aerosol dispensing can produced from steel having a diameter of 52.4 mm would have a wall thickness of "0.0203 to 0.305 mm" (patent specification column 4, lines 47 to 53).

2.1 It is acknowledged in the patent specification that some states in the USA have requested a reduction in the amount of container material (column 8, lines 19 to 22) and the aim of the contested patent is to provide a non-barrier aerosol dispensing can which

allows a weight reduction, thereby lowering the material consumption and weight of waste (column 1, lines 9 to 12).

- 2.2 Aerosol dispensing cans are subject to safety regulations specifying limits in respect of distortion and bursting. The United States Department of Transportation (DOT) has a regulation that a can must withstand and not permanently distort at an internal pressure equal to the equilibrium pressure of its contents at 54.4°C and that this internal pressure may not exceed 965 kPa (140 psig). There is a further requirement that the can may not burst at a pressure of one and a half times the equilibrium pressure at 54.4°C.
- 2.3 Cans of generally similar construction are known for containing carbonated beverages. Development of these cans has led to reductions in wall thickness, a process called "lightweighting", and it is acknowledged in the patent specification that the resulting cans when they are filled and sealed are essentially rigid under the influence of the internal pressure but when unpressurised are easily distortable by normal finger pressure and easily crushable by normal hand pressure, as defined in present claim 1 (column 3, line 54 to column 4, line 13). Typically, the wall thickness for such a beverage can would be 0.127 mm when produced from steel. These cans contain a pressure of typically 310 kPa at room temperature, rising at elevated temperatures to a value of typically 655 kPa.
- 2.4 As acknowledged by the appellant a similar process of "lightweighting" has also taken place in the field of aerosol dispensing cans. D1 relates to a barrier

aerosol dispensing can, i.e. one in which the propellant and the fluent material are separated by a barrier. Conventional barrier cans were charged with propellant to a pressure of around 690 kPa (D1 column 1, lines 32 to 34) and when produced from steel would have a wall thickness within the approximate range 0.2 to 0.3 mm (see D1 column 4, line 42). Comparison with the corresponding values for non-barrier aerosol dispensing cans contained in the specification of the contested patent, as set out under 2 above, shows broad similarity between the two types of can. The can according to D1 when charged with compressed gas is at a pressure which is lower than is conventionally used whereby the wall thickness of the container may be reduced, in the case of metal to a thickness similar to that used for cans to contain beverages (column 3, lines 13 to 16), resulting in lower usage of material and less waste (column 2, lines 16 to 24) but nevertheless satisfying the same DOT safety requirements as conventional cans. Specifically, D1 discloses pressures at room temperature up to 276 kPa (see column 4, lines 54, 55: "6 to 40 psig") and that the can may be made of steel having a wall thickness of 0.076 to 0.178 mm (column 4, line 42).

- 2.5 In view of the general trend to "lightweighting" and particularly the acknowledged pressure within the USA to reduce waste the skilled person would be expected to explore the possibilities to reduce material consumption in non-barrier aerosol dispensing cans. D1 is evidence that it was already known in the course of "lightweighting" barrier aerosol dispensing cans to reduce both the charging pressure and the wall thickness whilst nevertheless satisfying safety

regulations. Furthermore, it follows from the above mentioned information derivable from D1 and from the patent specification that conventional barrier and non-barrier aerosol dispensing cans are similar in both their dimensions and materials and are initially charged to similar pressures. In view of these similarities and the requirement for both barrier and non-barrier aerosol dispensing cans to satisfy the same safety regulations the skilled person working with non-barrier aerosol dispensing cans would also reduce charging pressures, thereby permitting the use of lower strength walls. It is evident that in the selection of similar materials for a similar duty the skilled person would arrive at a similar result and therefore at a can having the characteristics defined in claim 1.

- 2.6 The Board concludes that the subject-matter of claim 1 according to the main request does not involve an inventive step (Article 56 EPC).

First auxiliary request

3. The subject-matter of claim 1 according to this request has the following features additional to the subject-matter of claim 1 according to the main request:

- the can also has a top and a bottom which are joined to the can wall and close the can; and

- the can is of such side wall, top and bottom construction that the pressure of the selected propellant does not cause the can to exceed the regulatory distortion and burst requirements.

- 3.1 The first additional feature is evidently present in the can according to the closest prior art. The second additional feature is mandatory for any aerosol dispensing can which is to be marketed and so cannot establish an inventive step.

Second auxiliary request

4. The subject-matter of claim 1 according to this request has the following features additional to the subject-matter of claim 1 according to the main request:

- the can side wall, bottom and top are of such thickness and the type and quantity of propellant are selected so that the can will not permanently distort at 130°F or 54.4°C and will not burst at one and one half times the pressure generated by the propellant at 130°F or 54.4°C.

- 4.1 These features correspond to the requirement of the DOT regulation, as set out in both the patent specification and in D1. For the reason given above, compliance with statutory requirements cannot establish an inventive step.

Third auxiliary request

5. The subject-matter of claim 1 according to this request has the following features additional to the subject-matter of claim 1 according to the main request:

- the thickness of the can wall is such that the can, when pressurized to 100 psig or 689.5 kPa, expands

across the diameter by at least one and one half thousandth of the diameter.

- 5.1 The description of the specification includes an example of a steel can according to the invention (column 4, lines 32 to 36). The can has a diameter of 52.4 mm and a wall thickness not exceeding 0.165 mm. It is stated in column 4, lines 42 to 46 that it will "expand outwardly by about ... 0.076 - 0.152 mm under a pressure of ... 690 kPa". The value "0.076 mm" corresponds to 1.45 thousandths of the diameter. The additional feature according to this request is therefore merely a parameter which would result from a steel can having a wall thickness which is less than or equal to the maximum stated to satisfy the requirements of claim 1. The appellant has presented no arguments in support of the existence of inventive step of this feature and in the Board's view it is merely the result of the normal work of the skilled person in specifying the construction of the can in accordance with its duty.

Fourth to seventh auxiliary requests

6. Claim 1 in each of these requests corresponds to that according to a respective one of the main, first, second and third auxiliary requests. Since each of those claims in the higher requests defines subject-matter which is not patentable these lower requests also cannot be allowed.

Request for apportionment of costs

7. Article 104(1) EPC provides that each party to the proceedings shall meet the costs it has incurred

"unless a decision of ... a Board of Appeal, for reasons of equity, orders ... a different apportionment of costs incurred during ... oral proceedings". In the present case the respondent argues that a different apportionment of costs would be equitable because the appellant withdrew its request for oral proceedings so late that the respondent had incurred costs which no longer could be recovered.

When in reply to the appellant's announcement that it would not be represented at the oral proceedings the respondent announced that it also would not attend, it stated that its attendance at the "oral hearing" would have been "merely to rebut statements/arguments made by the Patentee during these Proceedings". However, not only the appellant but also the respondent had formerly filed an auxiliary request for oral proceedings. The respondent's request was worded "in the event that the Appeal Board decides to overturn the decision of the Opposition Division the opponent requests oral proceedings". At the time the respondent filed its request for oral proceedings it therefore wished to attend them in order to ensure that the Board would not overturn the decision under appeal without the respondent having the opportunity to present its case orally. Although the Board expressly informed the parties that the oral proceedings would take place as planned the respondent failed to attend. Contrary to the respondent's allegation its non-attendance was not in response to the appellant's decision not to be present but the result of a choice not to utilise the opportunity which it had requested to present its case orally. Under these circumstances it would not be

equitable for the appellant to bear any portion of the respondent's costs.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for apportionment of costs is refused.

The Registrar:

The Chairman:

S. Fabiani

J. Osborne