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Bezeichnung der Erfindung: Pressure operated dispensing container
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : B65D 83/14

ENTSCHEIDUNG / DECISION

vom / of / du 18 December 1990

Anmelder / Applicant / Demandeur : Scheindel Associates, Inc.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Articles 52(1) and 56

Schlagwort / Keyword / Mot clé : "Inventive step (no)"

Leitsatz / Headnote / Sommaire

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Case Number : T 491/88 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 18 December 1990

Appellant : Scheindel Associates, Inc.
Randolph Center
Vermont 05061 (US)

Representative : Arthur, George Fitzgerald et al
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Decision under appeal : Decision of Examining Division 2.3.08.082 of the European Patent Office dated 20 May 1988 refusing European patent application No. 84 303 950.4 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : F. Gumbel
Members : S. Crane
W. Moser

Summary of Facts and Submissions

I. European patent application No. 84 303 950.4, filed on 12 June 1984 with priority claimed from United States application US 503 624 dated 13 June 1983, was refused by a decision of the Examining Division dated 20 May 1988.

II. This decision was based on Claims 1 to 10 with letter of 19 January 1988 of which Claim 1 reads as follows:

"A pressure operated container (12) for the dispensing of a product (16) including a piston (10) having a substantial side wall, said wall being thin enough to at least partially conform to flats and other normal irregularities of the container body, and long enough to maintain alignment of the piston within the container body as the piston rides up along the interior of the container wall, characterised in that the piston comprises a composite piston body having a first layer (22) of a gas impermeable material and a second layer (20) of a water neutral material as a shield between said gas impermeable material and the product to be dispensed from said container and characterised in that the radial gap between the piston side wall (105) and the container side wall (12) is equal to or less than about 0.1 mm, substantially to prevent secondary migration of propellant (14) into the product to be dispersed."

Dependent Claims 2 to 10 related to preferred features of the container according to Claim 1.

III. The ground for the decision was that the subject-matter of Claim 1 lacked inventive step with respect to

(D1) CH-A-372 801
(D2) EP-A-0 030 990
(D3) FR-A-2 371 348

and that the claim was accordingly unallowable having regard to Articles 52(1) and 56 EPC.

IV. A Notice of Appeal against this decision was filed on 27 July 1988, the appeal fee being paid on the same day. The Statement of Grounds of Appeal was filed on 8 September 1988.

V. In a communication of the Board pursuant to Article 11(2) RPBA dated 10 July 1990 the Board pointed out that the second embodiment described in the particular description was inconsistent with the requirements of Claim 1 concerning the use of a two-layer piston. Reference was also made to the following document

(D4) Encyclopedia of Polymer Science and Engineering, Volume 7, pages 116 to 125

which was of potential relevance to the question of inventive step.

VI. In a reply to this communication filed on 12 December 1990 the Appellants (Applicants) proposed deletion of the second embodiment from the description and of dependent Claims 9 and 10 referring thereto, Claim 9 to be replaced by a new dependent Claim 9 which specified that the layer of gas impermeable material is at least three times as thick as the layer of water neutral material.

Two declarations of the inventors made in proceedings before the United States Patent Office were also filed at this time.

VII. At the oral proceedings on 18 December 1990 the Appellants requested the grant of a patent on the basis of Claims 1 to 8, filed with letter of 19 January 1988 and Claim 9 filed with letter of 10 December 1990 (main request), or in the alternative, on the basis of a new Claim 1 comprising the features of Claims 1 and 9 according to the main request together with dependent Claims 2 to 8 thereof (auxiliary request).

VIII. In support of their requests the Appellants have in the written and oral proceedings put forward essentially the following arguments:

It was clear from the declarations of the inventors that despite the advantages expected from the use of a piston barrier pressurized dispenser of the type known from document (D1) only few products had been successfully marketed in this form. Other dispensers of this form had had to be withdrawn after introduction when it was found that the propellant gas was unacceptably adulterating the product to be dispensed. In the very considerable period of time between the first proposal for a piston barrier pressurized dispenser with a thin-walled polyethylene piston in the late 1950's and the priority date of the present application attention had focussed on designing the piston to reduce by-pass and migration of the gas between the wall of the piston and the wall of the container. It had however still not proven possible to eliminate the problem of adulteration.

The inventors had been the first to realise that in fact product adulteration was also due to direct permeation of the propellant gas through the piston material. This was surprising to the skilled man, who as a mechanical engineer would always think in terms of a piston within a

cylinder as being essentially impermeable with the only possibility of transfer of gas from one side to the other being around the piston. Once the inventors had recognised the source of the technical problem they took the necessary measures to solve it. With hindsight these measures might in themselves seem obvious but it was most important in cases such as the present to avoid ex-post facto analysis. The clue to the invention lay in the discovery of the cause of the problems which had concerned people working in the field for a long time, not in how the problem was solved once the discovery was made.

There was nothing in the prior art that could have suggested to the relevant skilled man that permeation of gas through the piston could be the cause of adulteration. In particular, although documents (D3) and (D4) might be of interest to a polymer chemist or a man skilled in the art of working plastics, they would be of no interest to the skilled man addressed in the present case; the laminated films, sheets and structures disclosed therein were of completely different form and function to the barrier piston of the present application.

Reasons for the decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. **Formal matters**

The Board is satisfied that all the features of the claims under consideration can be derived from the originally filed documents. In particular, the feature set forth in Claim 1 that the radial gap between the piston and container side walls is equal to or less than about 0.1 mm

can be derived from the preferred value of approximately 0.1 mm given with respect to the first preferred embodiment as originally disclosed together with the indications that this value can be decreased when the viscosity of the product to be dispensed is lower than in that embodiment.

3. Main request

3.1 Novelty

The subject-matter of Claim 1 is distinguished from the closest prior art according to document (D1) by the features of its characterising clause. The subject-matter of Claim 1 is therefore novel.

3.2 Inventive step

The technical problem with which the claimed invention is concerned is the provision of a barrier piston for a pressurized dispenser which substantially eliminates the possibility of adulteration of the product to be dispensed.

This problem is solved by the features of the characterising clause of Claim 1, which for convenience can be divided into two groups:

(a) the piston comprises a composite piston body having a first layer of a gas impermeable material and a second layer of water neutral material disposed between the first layer and the product to be dispensed;

(b) the radial gap between the piston side wall and the container side wall is equal to or less than about 0.1 mm.

At the priority date of the present application it was well known in the packaging art that polyolefins, in particular polyethylene of which the piston according to document (D1) is made, although having the favourable characteristic of being neutral with respect to products to be packaged, has a substantial permeability with respect to gases such as oxygen and nitrogen. This is evidenced by documents (D3) and (D4). It is therefore proposed in these documents to combine a polyolefin layer with a layer of a gas impermeable material such as a nitrile polymer in a laminated structure so as to achieve the right balance of characteristics for a packaging material. In this regard document (D4), which is a standard reference work, although published after the above-mentioned priority date, contains clear references to the sale of large quantities of laminated packaging material such as films and sheets before that priority date as well as tables of permeability data the information of which must also have been available before that date.

The Board cannot accept the Appellants' suggestion to consider the appropriate skilled man in the present case to be a general mechanical engineer who would have no knowledge of the gas permeability of polyolefins and might even be surprised thereby. Instead, the skilled man addressed by the technical problem identified above must be seen as being an engineer working in the packaging field and having knowledge of the packaging art extending beyond the limited field of pressurized dispensers. At the priority date of the application this skilled person could not have failed to be aware of the gas permeability of

polyolefins and of laminated packaging materials in which this problems had been solved by combining a polyolefin layer with a gas impermeable layer, as mentioned in documents (D3) and (D4). Thus if it was found that despite optimisation of the form of the polyethylene piston suggested by document (D1) the product was still being contaminated by the propellant gas it would not extend beyond the normal practice of the skilled man to investigate whether permeation through the piston was the cause. The argument of the Appellants to the effect that pistons are normally considered as a matter of course to be impermeable and that this would inhibit the skilled man from even considering the possibility of gas permeation cannot be accepted because the material of pistons involved in the present case is very thin, of the order of 0.5 mm, and can therefore be better compared with the sheet materials mentioned in documents (D3) and (D4) rather than with conventional pistons.

Once having established by routine experimentation that gas permeation through the piston was the cause of the adulteration of the product it would be obvious for the skilled man, having regard to the teachings of documents (D3) and (D4), to replace the polyolefin piston of document (D1) with a composite piston in which a polyolefin layer is combined with a layer of gas impermeable material, such as a nitrile polymer as specifically suggested in the present application. The simple replacement of the polyolefin piston by a piston of such gas impermeable material would not be appropriate in those circumstances where the product was sensitive to contact with water and where the chosen gas impermeable material, such as the nitrile polymer mentioned above, has a high water absorption capacity. The retention of a water neutral layer on that side of the piston contacting the product follows in these circumstances as a matter of course.

It is therefore not possible to recognise an inventive contribution to the art in the characterising features of group (a) identified above.

As for the features of group (b), it is stated in paragraph 1, page 11 of the present application that the choice of the size of the radial gap depends on several factors, in particular the viscosity of the product to be dispensed, and the gap is selected to provide an optimum trade-off between propellant by-pass and piston binding. The difference between the width of the gap proposed in Claim 1, i.e. less than or equal to about 0.1 mm, is not so significantly different from that proposed in document (D1), i.e. 0.25 mm or substantially less, that the claimed value could not be derived from the routine optimisation explained above.

The features of group (b) are also therefore not of inventive significance. Furthermore, the Board is not capable of recognising, nor have the Appellants asserted, a combinatorial effect of the features of groups (a) and (b) in the sense that only by choosing the appropriate materials was the use of the claimed gap width possible.

Accordingly the Board comes to the conclusion, in essential agreement with the impugned decision, that the subject-matter of Claim 1 lacks the inventive step required by Articles 52(1) and 56 EPC.

4. Auxiliary request

Claim 1 of the auxiliary request differs from Claim 1 of the main request in that it is stated that the layer of gas impermeable material is at least three times as thick as the layer of water neutral material.

Since the effectiveness of the piston as a gas barrier is dependent on the thickness of the gas impermeable layer whereas the water neutral layer is in effect only a coating it is self-evident to use a gas impermeable layer that is substantially thicker than the water neutral layer. Nothing beyond routine optimisation can be seen in setting a lower value of three for this thickness ratio.

Thus the subject-matter of Claim 1 of the auxiliary request also lacks inventive step.

5. Hence, it follows from the foregoing that the subject-matter of the present European application according to both the main and the auxiliary request is not patentable within the terms of Articles 52 to 57 EPC. Consequently, the appeal has to be dismissed.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Fabiani F. Gumbel