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File Number: T 80/88 - 3.3.2

Application No.: 84 301 348.3

Publication No.: 0 120 624

Title of invention: Laminated paperboard container with absorption resistance  
means and blank for constructing same

Classification: B32B 15/12

D E C I S I O N  
of 28 November 1990

Applicant: Ex-Cell-0 Corporation

Proprietor of the patent:

Opponent:

Headword: Container/EX-CELL-0

EPC Article 56

Keyword: "Redefinition of the problem"  
"Inventive step (no) - obvious use of known measures"

Headnote



Case Number : T 80/88 - 3.3.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.2  
of 28 November 1990

**Appellant :** Ex-Cell-O Corporation  
2855, Coolidge  
Troy, Michigan 48084  
(US)

**Representative :** Hartley, David  
c/o Withers & Rogers  
4 Dyer's Buildings  
Holborn  
London EC1N 2JT  
(GB)

**Decision under appeal :** Decision of Examining Division 032 of the  
European Patent Office dated 9 September 1987  
refusing European patent application  
No. 84 301 348.3 pursuant to Article 97(1) EPC.

**Composition of the Board :**

**Chairman :** P.A.M. Lançon  
**Members :** I.A. Holliday  
R. Schulte

Summary of Facts and Submissions

- I. European patent application No. 84 301 348.3 (publication No. 0 120 624) was refused by a decision of the Examining Division. The refusal was based on Claims 1-23 filed on 11 October 1986.
- II. Claim 1, relating to a laminated paper blank for forming a sealed container for liquids, reads as follows:

"1. A one-piece foldable, laminated blank for forming a sealed liquid container, said blank comprising:

- a) a layer of kraft paperboard material;
- b) a layer of adhesive formed uniformly on said layer of kraft paperboard material;
- c) a layer of metallised material secured by said adhesive to said layer of kraft paperboard material; and
- d) first and second layers of thermoplastic material forming uniform inner and outer coatings, characterised in that
- e) said layer of kraft paperboard material is fluorochemically treated;
- f) a first layer of ionomer resin forming a uniform coating is provided on one surface of said layer of kraft paperboard material;
- g) a second layer of ionomer resin forming a uniform coating is provided on said layer of metallised material on the other surface of said layer of kraft paperboard material; and
- h) the first and second layers of thermoplastic material are formed on the first and second layers of ionomer resin, respectively."

Claim 17 is an independent claim to a heat-sealed container formed from a blank having the layers as set out in Claim 1 wherein layer (c) is aluminium and the adhesive

layer (b) is an ionomer resin, i.e. the container has three layers of ionomer resin.

Claim 18 is also an independent claim to a heat-sealed container which differs from Claim 17 in that there are only two layers specified as ionomer resin together with a third layer referred to as "adhesive". Furthermore the weights of the various layers are specified.

Claim 19 is a further independent claim to a heat-sealed container which is analogous to Claim 18 except that the metallised layer is metallised polyester.

Claim 20 is an independent claim to a laminated blank in which the metallised layer is aluminium foil. The laminate need only contain one layer of ionomer resin. However, in accordance with dependent Claim 23, the layers referred to as "adhesive" are preferably ionomer resins. The claim also specifies the weights of the respective layers.

III. In the opinion of the Examining Division, the subject-matter of Claim 1 together with that of Claims 17 to 20, although novel, failed to meet the inventive step requirements of Article 56 EPC. The Examining Division saw the problem as "to modify these known laminates in order that the formed containers are suitable for retaining edible oils and greases over an extended shelf life" and referred to six documents, the following of which remain relevant to the present decision:

- (1) FR-A-1 420 770
- (2) US-A-3 775 239
- (3) Abstract of Bulletin of the Institute of Paper Chemistry, Vol. 54, (1983), No. 4, Abstract No. 3794(M).
- (5) GB-A-1 518 302.

The containers of the present application which are intended for packaging of edible oils or mineral oil products have a similar configuration to those known from document (1), the latter being used for the packaging of milk or soft drinks. The containers of the application differ in that fluorinated paper was used for preparing the laminate and also in the presence of one or more layers of ionomer resin. It was known from (3) that fluorochemical finishes were desirable where oil resistance was required. Document (2) related to packaging materials resistant to the transmission of oil and grease which included ionomer resin between paper and thermoplastic layers. Thus it was the Examining Division's view that if one wished to adapt the containers of (1) for use with oily materials, the modifications necessary were obvious from the prior art. Other prior art was cited to show that the features of the remaining claims were known in the art.

The decision also pointed out that Claim 21 was not allowable as it was not in conformity with Article 123(2); the values for the weights of the intermediate adhesive and second layer of thermoplastic material had been transposed.

- IV. An appeal was lodged against the said decision. Oral proceedings took place on 28 November 1990.
  
- V. The Appellant's arguments in the statement of appeal, a further communication and at the oral proceedings may be summarised as follows.

The Appellant accepted that document (1) was a reasonable starting point but submitted that the formulation of the problem was not appropriate. Four essential differences

were listed characterising the present application. Firstly the paper had been subjected to fluorochemical treatment. Secondly, ionomer resin was on the inside (i.e. nearest to the contents of the container). Thirdly there was an extra layer of ionomer (with the exception of Claim 20). Finally in the containers according to the invention, the metallised foil layer was on the outside. The Appellant emphasised that the position of the foil layer was a significant difference and pointed to document (5) (especially page 2, lines 3-17) which suggested that the aluminium layer was important as a barrier against the flow of liquids and gases. The Appellant also referred to skiving, i.e. corner lapping when constructing the container. If the aluminium layer was on the outside such skiving would not be possible (cf. application, page 10, lines 5-10).

Having regard to the containers previously used for the packaging of oils, the Appellant denied that it was legitimate to combine documents (1), (2) and (3). Document (2) especially, relating to a flexible pouch, indicated a trend away from the use of rigid boxes or cartons for containing oils and greases.

The Appellant also drew the Board's attention to the commercial success of the containers of the application which was claimed to be evidence in favour of inventive step.

At the oral proceedings the Appellant filed two auxiliary requests each of which limited the subject-matter claimed to containers only.

According to the first auxiliary request, the original Claims 1-16 to the container blank were withdrawn. The new Claims 1-7 correspond to Claims 17 to 23 of the main request except that new Claim 4, based on original Claim 20 had been amended to relate to a heat-sealed container formed from the blank originally claimed.

Claims 1-6 of the second auxiliary request correspond to Claims 1-6 of the first auxiliary request except that the adhesive in Claim 4 (originally Claim 20) was restricted to a zinc ionomer resin.

In each of the auxiliary requests, Claim 5 had been amended to take into account the Article 123(2) objection raised by the Examining Division to the original Claim 21.

VI. As a main request the Appellant requested that the decision under appeal be set aside and a patent granted on the basis of Claims 1-23 filed on 11 October 1986, Claim 21 having been amended to overcome the objection under Article 123(2) raised by the Examining Division.

Alternatively, the Appellant requested that a patent be granted on the basis of either of the auxiliary requests outlined above with a corresponding adaptation of the description.

#### Reasons for the Decision

1. The appeal is admissible.

2. **Amendments**

- 2.1 As far as the main request is concerned, Claim 1 is based on a combination of the originally filed Claims 1 and 3. Claim 17 corresponds to original Claims 16, 19 and 3; Claims 18 and 19 correspond to original Claims 20 and 21 respectively and Claim 20 corresponds to the original Claims 22 and 23 in combination. Each of the above noted independent claims has been redrafted in the two-part form to take the disclosure of document (1) into account.
- 2.2 The same applies to both of the auxiliary requests since, as noted above, the independent claims thereof correspond to Claims 17 to 20 of the main request.
- 2.3 The correction of Claim 21 of the main request and corresponding Claims 5 of each of the auxiliary requests is based on the original Claim 22 and the description on page 9, lines 15-23.
- 2.4 The requirements of Article 123(2) are accordingly satisfied.
3. The present application relates to laminated paperboard containers and to blanks for the construction thereof.
- 3.1 As recognised by the Examining Division and admitted by the Appellant, the closest state of the art is represented by document (1). The containers disclosed in (1) are formed, in the same way as those of the present application, by folding a one-piece laminated blank. The resultant container has a rectangular cross-section having fold-in top and bottom closures, the top closure being arranged to define a triangular form at the top of the rectangular side walls. Such containers have long been in commercial use for the packaging of milk, fruit juices

and other soft drinks. The laminate used for the containers in document (1) typically consists of a thermoplastics inner layer, e.g. polyethylene, laminated to an aluminium foil layer followed by an adhesive layer, e.g. polyethylene, then a paper layer and finally a thermoplastics exterior layer, e.g. of polyethylene. The paper layer is the thickest of the layers. The aluminium foil layer is stated to be present to retain the flavour of the liquid contents of the container (page 2, right hand column, last complete paragraph).

- 3.2 In relation to the prior art known from (1), the problem underlying the present application can be seen as to expand the field of application of such containers to include the packaging of oil products, e.g. edible oils or mineral oils (cf. application page 3, lines 4-6). The Board agrees with the submission of the Appellant in the communication dated 7 November 1990 that the problem posed by the Examining Division in the contested decision was not valid in the light of decision T 229/85 (OJ EPO 1987, 237) insofar as the problem was formulated therein so as to contain pointers to its solution. Accordingly the Board has found it necessary to redefine the problem.
- 3.3 The solution lies in modifying the known laminates of (1) according to the three measures set out in Claim 1 or the four measures relating to the container of Claim 17. Under the present circumstances the Board has no reason to doubt that the problem has been plausibly solved.
4. None of the cited documents disclose the laminated blanks claimed in Claims 1 and 20 of the main request nor the containers claimed in independent Claims 17 to 19 thereof. The subject-matter of the main request is accordingly new. In any event, novelty has not been contested.

5. It remains to be considered whether or not the subject-matter of the main request satisfies the requirements of Article 56 EPC in respect of inventive step.
- 5.1 The state of the art to be considered when examining for inventive step includes, as well as that in the specific field of the application (packaging of oily materials), the state of any relevant art in neighbouring fields and the state of the art in a non-specific (general) field (foods or liquid packaging) dealing with the solution of any general technical problem which the application seeks to solve in its specific field (cf. decision T 195/84, OJ EPO 1986, 121).
- 5.2 Document (1) is concerned with containers for flavoured liquids, such as fruit juices and milk. Although milk is a fat-containing liquid, this fat is in diluted form. Thus, the man skilled in the art, seeking to expand the field of use of the said containers known from (1), would realise that the containers (and laminated blanks) would have to be adapted to accommodate their new contents. Looking for solutions already suggested in relation to oil resistance in the fields of packaging, he would be aware of two different measures. The original paper on which the post published abstract (3) was based was published before the priority date of the application. Thus the skilled man would know that fluorochemical finishes are not wetted by oil based materials and furthermore that such fluorochemically treated papers and boards are useful in packaging materials for products containing high levels of fat or oil, including folding cartons. The skilled man would also know from (2), which is also concerned with packaging material, that the oil resistance of a paper-polyethylene laminate would be improved by the presence of an intermediate layer of an ionomer resin.

5.3 According to decision T 2/83 (OJ EPO 1984, 265), which preceded the unpublished decision T 274/85 referred to by the Appellant, the question to ask when considering whether the skilled man would be led to follow a teaching of the prior art is not whether he could have adopted either or both the measures mentioned in point 5.2 above, but whether he would have done so in expectation of some improvement or advantage (Reasons, point 7). In contradistinction to decision T 23/88 cited by the Appellant, the documents cited are all in the general field of packaging of liquids, as is apparent from the overlapping classification symbols relating to the present application and patent documents (1) and (2). It is accordingly clear to the Board that the skilled man would have been led by the teachings of both (2) and (3) to adopt the measures actually taken when seeking to improve the oil resistance. The fact that the Appellant chose to adopt both of the said measures does not affect this view, especially since the Appellant has not demonstrated any synergistic effect for the two measures over the individual measures taken singly. This also applies to each of the independent claims as no particular advantage has been shown for the containers of Claim 17, which must contain three ionomer layers over the blank (and resultant container) of Claim 20 which need only contain one ionomer layer.

5.4 The Appellant has attached considerable importance to the order of the layers especially the foil (aluminium) layer arguing that its position on the outside, i.e. farthest from the contents, is a significant distinction from the containers known from (1) where the aluminium layer is on the inside (see point V above). The Board cannot accept that it can have any significance in relation to the blanks. In terms of what is actually claimed in Claims 1 and 20, it would be possible to assemble the container in

such a way that the aluminium layer appeared on the inside.

5.4.1 The Appellant has referred to document (5) in relation to the aluminium layer. In the opinion of the Board, (5) could equally well have been a suitable starting document for the present application since it is also concerned with paper-thermoplastics laminates and their application in the provision of containers for liquids, pastes and syrups. Aluminium foil is referred to twice in (5) on page 2, lines 12-17 and page 5, lines 9-16 and furthermore on page 2, lines 123-125 "Surlyn" ionomer resin is mentioned as a possible thermoplastics layer. Considerable detail is also given in (5) in respect of the thickness of the various layers. Document (5) is, however, equivocal concerning the position of the aluminium foil layer. If its purpose is, as indicated on page 2, as a barrier against the inflow and outflow of gases or liquids, it might seem appropriate to place the said layer on the inside. However, the indicated passage on page 5 states that the aluminium layer may be in an interior or exterior position in relation to the paperboard when constructing a container.

5.4.2 Returning to the present application, the blanks and containers claimed already contain fluorinated paper and ionomer layers as barriers against oil penetration and thus the function of the aluminium layer is not so clear. If it is present for aesthetic purposes or, as indicated on page 1, lines 32-35 of the application, as a means of preventing oxygen and ultraviolet rays from penetrating the container, it would seem to be appropriate to place the aluminium on the outside of the container. Accordingly the Board has not been convinced that the position of the aluminium layer would have importance in respect of any relevant effect.

5.4.3 In any event, as stated in the paragraph bridging pages 8 and 9 of the application, it may be possible to omit the aluminium layer and still retain oil resistance.

5.5 The Appellant argued that the weights of the various layers referred to in independent Claims 18, 19 and 20 served to establish inventive step. However, a comparison with document (5) indicates that the weight of paperboard (250-550 grams per m<sup>2</sup>) mentioned in Claim 2 of the application or the specific value of about 320 g/m<sup>2</sup> of Claim 18 falls within the range of 244 to 630 g/m<sup>2</sup> disclosed in (5). The thickness of the aluminium foil in the application 0.0096 mm (corresponding to about 25 g/m<sup>2</sup>) is in line with the preferred value of 0.0089 mm disclosed in (5). The present application mentions thermoplastics layers of 25 to 15 g/m<sup>2</sup> which for low density polyethylene corresponds to a thickness of the order of 0.026 to 0.016 mm; document (5) mentions thicknesses of 0.00127 to 0.0508 mm (0.0005-0.0020 inch). It is apparent that the layers of the present invention, in respect of the above are in line with values known in the prior art. The thicknesses of the various ionomers layers mentioned in the claims (15 to 40 g/m<sup>2</sup>) are appreciably higher than those known from (5) (0.4-1.6 g/m<sup>2</sup>; page 3, lines 77-81) but in the case of (5), the ionomer is used only as a primer layer. In the case of document (2), where the ionomer layer is used in an analogous manner to the present application, the values mentioned in column 3, lines 30-32 correspond to about 8-35 g/m<sup>2</sup>, i.e. very much in line with those of the application. It is accordingly the Board's conclusion that the thicknesses of the various layers are wholly conventional in the art of paper laminate containers.

- 5.6 The previous discussion has centred on the use of aluminium as the metallised foil layer. Claim 19, however, relates to the use of metallised polyester for this purpose. Since no arguments have been advanced in favour of metallised polyester over aluminium foil, the Board can only conclude that it is an obvious alternative.
- 5.7 The Appellant has also submitted that the commercial success of the containers claimed is evidence in favour of inventive step. In decision T 106/84 (OJ EPO 1985, 138), the Board accepted that the commercial success of the invention could stem from the technical advantages of the features claimed (Reasons, point 8.5). However, in a later unpublished decision T 191/82 dated 23 January 1986, the same Board refused to accept such grounds when the Appellant had not submitted convincing evidence that the commercial success derived from a claimed technical feature (Reasons, point 9.5). In the present appeal, the Appellant has not submitted any evidence whatsoever in this respect. Accordingly, the Board cannot accept the said argument in favour of inventive step.
- 5.8 Another argument advanced by the Appellant is that the container disclosed in document (2), that is a flexible pouch for containing oily materials, indicated a trend away from the solution adopted in the present application. The Board is unable to accept this view; a single document, especially a patent document, cannot be considered to represent a trend.
- 5.9 It follows from the preceding that the blanks of Claims 1 and 20 and the containers of independent Claims 17 to 19 of the main request represent obvious solutions to the problem underlying the application. Consequently, the

subject-matter lacks the inventive step required by Article 56 EPC.

6. The Board did not recognise in any of sub-Claims 2-16 of the main request any material which might form the basis of an inventive step. Neither in writing nor at the oral proceedings has the Appellant brought forward any new argument in support of these features. The Board can thus follow the view of the Examining Division that the choice of suitable ionomer resins or metallised layers in view of their known properties or of particular weights for the respective layers belongs to the routine work of the man skilled in the art of laminated paperboard cartons.
7. Since, as indicated above, Claims 1-4 of the first auxiliary request correspond to independent Claims 17-20 of the main request, the same arguments must apply to the containers according to the auxiliary request as to the blanks and containers of the main request. Accordingly, the first auxiliary request must also be refused for lack of inventive step.
8. The second auxiliary request corresponds to the first except that Claim 3 thereof refers under (c) to an intermediate zinc ionomer resin layer instead of the more general term "adhesive" used in the first auxiliary request. However, having regard to the previous arguments concerning ionomer resin, the Board can see no reason why this claim might be considered to relate to inventive subject-matter within the meaning of Article 56 EPC.

Order

For these reasons, it is decided that:


The appeal is dismissed.

The Registrar:



M. Beer

The Chairman:



P. Lançon

Schmitt 14.2.91

