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**DECISION**  
**of 13 February 1998**

**Case Number:** T 0171/96 - 3.2.1

**Application Number:** 87901753.1

**Publication Number:** 0298973 (WO 87/05581)

**IPC:** B65D 19/32

**Language of the proceedings:** EN

**Title of invention:**  
Board with cellular structure

**Patentee:**  
Melin, Ulf, et al

**Opponent:**  
Perstorp AB

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 54, 56

**Keyword:**  
"Novelty (main request, no)"  
"Inventive step (auxiliary request, no)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0171/96 - 3.2.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.1  
of 13 February 1998

**Appellant:** Melin, Ulf, et al  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 28 December 1995  
revoking European patent No. 0 298 973 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** S. Crane  
J.-C. Saisset

## Summary of Facts and Submissions

- I. European patent No. 0 298 973 was granted on 3 June 1992 on the basis of European patent application No. 87 901 753.1.

Claim 1 of the granted patent reads as follows:

"A board with cellular structure, which board comprises a core (10) of cells located adjacent one another, which cells on both sides are covered by a cover layer or panel (16) in order to constitute a load bearing or supporting surface, **characterized** in that every cell (12) in the core (10) is of an elastically resilient material, that the cells (12) of the core (10) are joined by means of common walls (14) to a homogenous structure without joints, that the cover layers (16, 18) are joined to the structure, and that each cell (12) is hermetically sealed by means of welding, so that in the cells an entrapped air cushion is formed which absorbs and damps shocks and loads acting on the cells (12) and the core (10)."

Dependent claims 2 to 8 relate to preferred embodiments of the board according to claim 1.

- II. The granted patent was opposed by the present respondents on the grounds that its subject-matter lacked novelty and/or inventive step (Articles 100(a), 54 and 56 EPC).

In the course of the opposition proceedings particular weight was placed on the prior art shown in the following pre-published documents:

(D1) WO-A-83/01243, and

(E3) GB-A-1 325 017.

III. With its decision posted on 28 December 1995 the Opposition Division revoked the patent. The reason given for the decision was that the subject-matter of granted claim 1 lacked inventive step with respect to document E3.

IV. An appeal against this decision was filed on 19 February 1996 and the fee for appeal paid on 23 February 1996. The statement of grounds of appeal was received on 3 May 1996.

V. Oral proceedings before the Board were held on 13 February 1998.

At the oral proceedings the appellants (proprietors of the patent) submitted a new set of claims 1 to 6 according to an auxiliary request for maintenance of the patent in amended form. As before, their main request was that the decision under appeal be set aside and that the patent be maintained unamended.

Claim 1 according to the auxiliary request reads as follows:

"Use of a board with cellular structure comprising a core (10) of cells located adjacent one another and covered by a cover layer or panel (16) on both sides in which every cell (12) in the core (10) is of an elastically resilient material, the cells (12) of the core (10) are joined by means of common walls (14) to a

homogenous structure without joints, the cover layers (16, 18) are joined to the structure, and each cell (12) is hermetically sealed by means of welding, so that in the cells an entrapped air cushion is formed which absorbs and damps shocks and loads acting on the cells (12) and the core (10), as a load bearing surface in a pallet."

The respondents requested that the appeal be dismissed.

VI. The arguments put forward by the appellants in support of their requests can be summarised as follows:

Document E3 did not relate to the same technical field as the claimed invention. Instead, it was concerned with the production of a material similar to corrugated cardboard suitable for use of a lightweight packaging material. This had been confirmed by the proprietors of document E3 in the letter of their Japanese patent attorneys dated 1 December 1995 and submitted with the statement of grounds of appeal. Further confirmation of this was to be found in the expertise of Mr G. Howgate and Prof. A. Gradin, also submitted with the statement of grounds of appeal, and the expertise of Mr K. Almquist, filed on 12 January 1998. It was clear from these that if the process portrayed in document E3 were workable at all then only to the extent that the cover layers of the core would have to be very thin, indeed they were referred to as "films" in the document, the thickness of the core would have to be small and the core would have to comprise solely longitudinally extending ribs as shown in Figure 1 of the document. Thus, the honeycomb-like core shown in Figure 9 of document E3, on which the respondents essentially based their arguments, had to be seen as being purely speculative. In addition it had to be noted that the core of Figure 9 could not possibly be produced by using the fluted roller shown in Figure 8,

as stated in the document. Furthermore, there was no suggestion in document E3 that the cover layers when applied to the core hermetically sealed the cells of the core to form entrapped air cushions, this feature being the primary idea on which the claimed invention was based.

From all of this it was apparent that document E3, insofar as it could be considered as disclosing a board at all, certainly did not disclose a board having all the features of granted claim 1. Furthermore, any such board makeable according to the teachings of document E3 would not have the necessary structural qualities to render it suitable for use as a load bearing surface of a pallet, as required by claim 1 of the auxiliary request.

VII. In reply the respondents argued substantially as follows:

The appellants had not put forward any convincing arguments or evidence as to why the process disclosed in document E3 should be unworkable. Furthermore, since the document was specifically directed to the making of boards which were to be used as "building materials, packing case materials and buffers", the objection of the appellants that it belonged to a different technical field to that of the claimed invention was difficult to understand. It was clear from what was disclosed in document E3 that when the cover layers were extended onto the honeycomb-like core shown in Figure 9 to form a unitary structure then those cover layers would inevitably bond to the cells of the core in such a way as to seal them hermetically, as could be seen for example from Figures 11 and 12. Accordingly, the subject-matter of granted claim 1 lacked novelty.

It had already been proposed in document D1 to form a load bearing surface of a pallet from a material comprising a honeycomb-like core with upper and lower cover layers, all of which could be of plastics. It was an obvious choice for the person skilled in the art to use a board as taught by document E3 for this purpose. Thus the subject-matter of claim 1 of the auxiliary request lacked inventive step.

### **Reasons for the Decision**

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.
  
2. Document E3 is entitled "process and apparatus for making ribbed synthetic resin boards". Such a board comprises a ribbed structure having an integral film bonded to at least one surface thereof, see page 1, lines 11 to 14. In essence the process comprises extruding a ribbed structure from a fluted roller through a slot and extruding a film onto at least one surface of the ribbed structure at the speed at which the latter is extruded, see page 1, lines 22 to 28. The grooves in the roller may extend circumferentially, in which case a board as shown in Figure 1 will be produced. Alternatively the grooves may be arranged in a meshwork pattern such as shown in Figure 8, in which case the ribbed structure will have a corresponding meshwork form. As shown in Figure 9 this meshwork form may be honeycomb-like and comprises contiguous six-sided cells extending through the thickness of the structure. The first and second films may be extruded sequentially or simultaneously. After the extrusion of one or both films the resulting composite structure may be stretched by passing it through a pair of counter

rotating rollers, see page 1, lines 48 to 70; page 3, line 113 to page 4, line 26 and Figures 11 and 12. The stretching rollers may be heated to facilitate stretching of the composite, see page 1, lines 82 to 89. On page 4, at lines 20 to 24, it is stated that after extrusion of the second film onto the ribbed structure a unitary structure is formed comprising hollow spaces defined by the ribbed structure of a meshwork pattern "as shown in Figure 1". At page 1, lines 71 to 75, it is stated that the composite structures obtained by the process disclosed are "sufficiently rigid and elastic to have extensive utility as building materials, packing case materials and buffers".

The appellants have raised a number of issues concerning what is to be considered as being properly disclosed by document E3. In the expertise of Mr Howgate and Prof. Gradin particular reliance is placed upon the fact that the document refers to the extrusion of "films" as cover layers. In their view this term must be understood as meaning a thin membrane-like skin which could not therefore make any significant contribution to the rigidity of the composite structure. That structure would therefore be similar in its physical properties to corrugated cardboard and would at best be suitable only for light duty load bearing purposes. However, in the light of the totality of the disclosure of document E3, the Board cannot accept that the term "film" should be given the restricted meaning contended by the appellants. It is clear from the drawings, see Figures 11 and 12, that the extruded "films" are of a thickness comparable to that of the individual ribs of the ribbed structure constituting the core of the final product and will therefore contribute significantly to

the rigidity of that product. These "films" can therefore certainly be equated to the cover layers for the core of the board as required by granted claim 1 of the contested patent.

In the second expertise submitted by the appellants, that of Mr Almquist, the question of the thickness of the films is approached from a different angle. He is of the opinion that to obtain complete welding to the ribbed structure then the film would have to be very thin. He does not however clearly explain his reasons for that conclusion and on the basis of the technical facts involved the Board cannot accept that it must be correct. Particularly in the embodiment where both films are extruded simultaneously onto opposite sides of the ribbed structure, see Figure 13, before the resulting composite structure is passed between heated stretching rollers then there appears to be no sound reason why complete welding of the films would not be achieved even when these are of sufficient thickness to impart substantial rigidity to the final product.

It is also the opinion of Mr Almquist that the production of a ribbed structure with a honeycomb-like pattern is technically unworkable and "pure armchair speculation". This is however in direct contrast to what is said in the letter of the Japanese patent attorneys filed with the statement of grounds of appeal where it is stated in point 2 that a product according to Figure 9 (i.e. with a honeycomb-like ribbed structure) was manufactured.

The appellants have also drawn attention to some inconsistencies in the disclosure of document E3. In particular they point to the facts that the structure of Figure 1 is stated to have a ribbed structure of a meshwork pattern, which is clearly not the case, and that the honeycomb-like ribbed structure of Figure 9

could not be produced by using a fluted roller as shown in Figure 8, since the grooves of that roller form a simple diagonal meshwork pattern. These inconsistencies are however not of such a nature that they could put the overall disclosure of document E3 into doubt for the person skilled in the art. In particular, it is apparent that the structure of Figure 1 would result from the alternative of using a roller having circumferential grooves and that the pattern of grooves in the roller would have to be modified somewhat from that shown in Figure 8 to produce the ribbed structure of Figure 9.

Having regard to the above the Board has come to the conclusion that document E3 discloses a workable method for producing a composite structure which can properly be called by virtue of its rigidity a "board" (as it is indeed entitled). Furthermore, when the ribbed structure constituting the core of this board has a meshwork pattern as shown for example in Figure 9, that core comprises cells located adjacent to one another, the cells being of an elastically resilient material and being joined by means of common walls to a homogeneous structure without joints, as defined in granted claim 1 of the contested patent. Further in accordance with that claim a cover layer is provided on both sides of the core. On the basis of what is said in document E3 and on the technical considerations involved the Board is also of the opinion that those cover layers are joined to the cells of the core by "welding", which term includes within its ambit the extrusion of one plastics layer onto another, in such a way as to seal those cells hermetically, thereby entrapping an air cushion in each cell. Those air cushions will inevitably act to absorb and damp shocks and loads acting on the cells and the core, as required by the claim. As a consequence, the subject-matter of granted claim 1 lacks novelty (Article 54 EPC).

3. Claim 1 of the auxiliary request relates to the use of board as defined in granted claim 1 "as a load bearing surface in a pallet".

Although document E3 makes reference, as quoted above, to the boards obtained by the disclosed process having utility amongst other things as packing case materials, there is no direct proposal to use them for making pallets. The subject-matter of claim 1 of the auxiliary request is therefore novel.

Document D1 relates to a pallet having a load bearing surface which comprises a core of honeycomb material having a cover layer on both sides. In the preferred embodiment both the honeycomb material and the cover layers are of cardboard and are joined together by glueing. It is however stated at the bottom of page 2 that the pallet could be made wholly of plastic. In view of that proposal the person skilled in the art would have an incentive to look for a suitable plastics board material comprising a honeycomb core and cover layers joined thereto. In the opinion of the appellants the board disclosed in document E3 would not constitute such a suitable material since it would not be sufficiently rigid, having only the strength of corrugated cardboard as is mentioned in the letter of the Japanese patent attorneys referred to above. However, the particular product which may have been originally targeted by the authors of document E3 is not definitive for all products which the person skilled in the art can manufacture on the basis of the teachings of that document, given that it contains clear indications as to how the properties of those products can be varied by for example adapting the form and thickness of the ribbed structure constituting their core. The Board is therefore satisfied that an appropriately manufactured board as proposed in

document E3 would be suitable for use as a load bearing surface in a pallet and that the choice of such a material to replace the composite cardboard load bearing surface of the pallet disclosed in document D1 would be an obvious one for the person skilled in the art. The subject-matter of claim 1 of the auxiliary request therefore lacks inventive step (Article 56 EPC).

As for the argument of the appellants that the choice mentioned above could not have been obvious given the relative age of document E3 the Board is of the opinion that the manufacture of pallets is not such a fast moving technical field (many pallets are still for example made of wood) that the thirteen years between the publication of document E3 and the priority date of the contested patent can be considered an inordinate length of time. In any case, the proper starting point for the evaluation of the inventive step of the subject-matter of claim 1 of the auxiliary request is not document E3 but document D1, which was published only three years before the relevant priority date.

**Order**

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

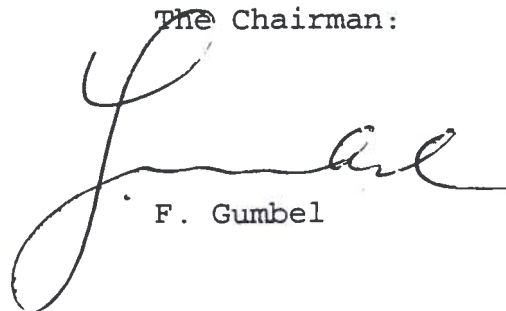
The appeal is dismissed.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel