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**D E C I S I O N**  
**of 19 June 2001**

**Case Number:** T 0891/99 - 3.2.1

**Application Number:** 95830321.6

**Publication Number:** 0755863

**IPC:** B65D 19/10, B23K 11/14

**Language of the proceedings:** EN

**Title of invention:**  
A crate for pallets

**Patentee:**  
FUSTIPLAST S.p.A.

**Opponent:**  
PROTECHNA S.A.

**Headword:**  
-

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

**Keyword:**  
"Inventive step (yes)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0891/99 - 3.2.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.1**  
**of 19 June 2001**

**Appellant:**  
(Opponent)

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**Representative:**

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**Respondent:**  
(Proprietor of the patent)

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**Representative:**

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted 14 July 1999  
rejecting the opposition filed against European  
patent No. 0 755 863 pursuant to Article 102(2)  
EPC.**

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** S. Crane  
J. Van Moer

## Summary of Facts and Submissions

- I. European patent No. 0 755 863 was granted on 24 September 1997 on the basis of European patent application No. 95 830 321.6.

Claim 1 of the granted patent reads as follows:

"A pallet crate (10) comprising metal tubes (12, 13), which are arranged in a lattice structure and intended to be welded at crossing points (14), the metal tubes (12, 13) including respective flat faces (15) facing each other at the crossing points (14), and recesses (16) formed in the flat faces (15) each extending along the longitudinal axis of the respective metal tube (12, 13) and transverse the respective recess (16) of the facing metal tube (12, 13), **characterised in that** the recesses include extensive portions with a flat base (20), the flat bases (20) of the recesses (16) in mutually facing position adhering to each other when welding has been effected."

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

- II: The granted patent was opposed by the present appellants on the ground that its subject-matter lacked inventive step (Article 100(a) EPC).

The state of the art relied upon in the opposition proceedings was represented by the following documents:

(D1): EP-A-0 370 307

(D2): DE-C-27 56 471

- (D3): "Bänder Bleche Rohre", Düsseldorf, 15 (1974)  
Nr. 6, pages 249, 254
- (D4): "Der Praktiker, Schweißen und Schneiden",  
Jahrgang 29, volume 3, 1977, pages 38, 39
- (D5): Separate print from "Machinenwelt und  
Elektrotechnik", XV Jahrgang, volume 6 (1980)
- (D6): GB-A-998 580
- (D7): "Einführung in die Technologie" von F. Koch,  
G. Pyzalla, 4. Auflage 1980, Verlag H. Stam  
GmbH, pages 283, 284

- III. With its decision posted on 14 July 1999 the Opposition Division rejected the opposition and maintained the patent in unamended form.
- IV. A notice of appeal against this decision was filed on 6 September 1999 and the fee for appeal paid at the same time. The statement of grounds of appeal was filed on 24 November 1999. In this statement the appellants referred to a further prior art document, viz (D8) AT-C-276 029.
- V. In a communication pursuant to Article 11(2) RPBA dated 15 November 2000 the Board indicated its intention to disregard document D8 under Article 114(2) EPC as it appeared no more relevant than the state of the art already on file.
- VI. Oral proceedings before the Board were held on 19 June 2001.

The appellants requested that the decision under appeal be set aside and the patent revoked in its entirety.

The respondents (proprietors of the patent) requested that the appeal be dismissed and the decision to maintain the patent as granted confirmed. The previously made request for costs associated with the late filing of document D8 was withdrawn.

VII. The arguments of the appellants can be summarised as follows:

The alleged invention resided in nothing more than the application of the well known principles of projection welding to the joining of crossing metal tubes having flat faces. As could be seen from documents D5 and D7 it was inherent to the process of projection welding that on melting of the projections to form the weld spots the adjacent flat areas of the workpieces would be brought into contact by the pressure exerted on them by the welding electrodes. It was also generally known, cf for example documents D1 and D2, to form recesses into the surfaces of crossing tubes which were to be welded, the shoulders surrounding the recesses acting as the required projections. Thus taking this state of the art into consideration there was nothing in the subject-matter of claim 1 which involved an inventive step.

VIII. The reply of the respondents was essentially as follows:

The invention was concerned with the problems associated with welding together crossing thin-walled metal tubes to form a pallet crate. It was not denied

that projection welding was a well known technique, in fact this technique was used in document D1, which was the closest state of the art referred to in the patent specification. There as well the projections were created by forming recesses into the walls of the tubes at the crossing points. The invention effectively lay in providing recesses of a particular form having flat bases, which enabled simple and automatic control of the welding process. It was not appropriate to make comparisons with what might be derivable from documents relating to the welding together of metal sheets since there the problems associated with thin walled metal tubes did not arise.

### **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. The claimed invention relates to a pallet crate comprising a lattice structure of metal tubes welded together at their crossing points. Such a crate is known from document D1, which was already mentioned in the original application. According to this prior art the tubes are of circular cross-section. At their respective crossing points each of the tubes is formed with a longitudinally extending recess so that at each crossing point there are four points of contact between the two tubes, ie at the shoulders of the recesses. These points of contact are welded together by electric resistance welding, the process parameters being adjusted so that at the end of welding the overall thickness of the joint corresponds to the diameter of

the tubes.

During the course of the pre-grant examination proceedings a further voluntary delimitation of claim 1 was made, with the feature that the metal tubes include respective flat faces facing each other at the cross-points being taken up into the pre-characterising portion of the claim, although there is in fact no disclosure of such tubes in document D1. This has no effect on the evaluation of inventive step since it is the subject-matter of the claim as a whole which must be judged. It should be noted, however, that the respondents, consistent with the amendment made to the claim, have not attempted to argue that there is anything of individual inventive significance in the use of metal tubes having flat faces.

In addition to the feature just mentioned the other features distinguishing the subject-matter of granted claim 1 from the state of the art according to document D1 are that the recesses include extensive portions with a flat base, the flat bases of the recesses in mutually facing position "adhering" to each other when welding has been effected. In this context the term "adhering" should be understood, in the light of the description, as meaning that the surfaces involved are in contact, without any requirement that there be direct or indirect bonding between the two. The purpose of the flat bases of the recesses is explained at column 4, lines 9 to 41 of the patent specification. During electric resistance welding the contacting shoulders of the recesses fuse and the pressure exerted on the crossing tubes by the electrodes forces the flat bases of the recesses towards each other. When they come into contact the

electrical resistance is reduced so that at constant current strength the amount of heat required for further fusion of the tube wall is no longer generated, thus stopping welding automatically. This simplifies the setting of the welding process parameters.

Now, although they do not refer to it in these terms, both document D1 and the claimed invention are making use of an electrical resistance welding technique commonly known as projection welding. The basic idea behind this technique, as explained for example in documents D5, D6 and D7 is to concentrate the welding current into one or more small localised areas by the formation of projections on one or both of the facing surfaces of the workpieces. Document D5 explains that crossing circular tubes can be considered as having a "natural" projection at their intersection which can be made use of in the technique. With reference to Figure 5 it indicates how the overall thickness at the welded intersection can be reduced by forming recesses in the tubes. The welded joint illustrated in this Figure is substantially identical to that found in document D1, as discussed above. Documents D3 and D4 also illustrate, in less detail, resistance welded joints between crossing metal tubes of circular cross-section, the tubes being preformed with longitudinal recesses at the crossing point.

In both documents D1 and D5 the concern is with reducing the thickness of the welded joint and to this end the recesses formed in the tubes are of significant depth with a concave bottom, the cross-section of the tube in the region of the recesses being substantially semi-circular. These recesses are therefore not comparable with the flat based recesses of the claimed



subject-matter, the flat bases being provided to obtain the advantageous technical effect described above of which there is no suggestion in any of the prior art documents relating to the welding of crossing tubes. However, in the opinion of the appellants, this effect is one which would be well known to the person skilled in the welding art. Here they refer in particular to document D7 which shows how the major facing surfaces of two flat workpieces come into contact when the projections formed on one of them fuse into weld spots. The same can be seen in document D6. Nonetheless it is apparent from at least documents D1 and D5 that when the welding of crossing tubes is involved it is certainly possible to control the welding process independently of whether major surfaces of the workpieces come into contact with each other. The position with respect to document D2, also relied upon by the appellants, appears to be the same. Here a solid rod is welded to a tube, the tube being formed with a recess to accommodate the thickness of the rod and the base of the recess having a small raised area for projection welding purposes. It is stated at column 2, lines 46 to 50, that this raised area resists downwards deformation on welding so again there can be no automatic control of the welding process as a consequence of major surfaces of the workpieces coming into contact.

In any case it is important to emphasise that the patent is not directed to the use in general terms of projection welding for fabricating a pallet crate out of metal tubes having a respective flat face. Instead, what the respondents have done is to make a specific adaptation of the known welding technique, ie the provision of the projections by means of forming a flat

based recess in the respective faces of the tubes, in order to obtain the advantageous effect of automatic welding control. Since this combination of measures is not rendered obvious by the state of the art, the subject-matter of granted claim 1 is to be seen as involving an inventive step (Article 56 EPC).

## **Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

S. Fabiani

F. Gumbel