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**D E C I S I O N**  
of 24 August 1992

**Case Number:** T 0535/88 - 3.5.1

**Application Number:** 83305151.9

**Publication Number:** 0108477

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**Language of the proceedings:** EN

**Title of invention:**  
Keying system for connector families

**Applicant:**  
AMP Incorporated

**Opponent:**  
-

**Headword:**  
-

**Relevant legal norms:**  
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Boards of Appeal

Chambres de recours

Case Number: T 0535/88 - 3.5.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.5.1**  
**of 24 August 1992**

**Appellant:** AMP Incorporated  
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**Decision under appeal:** Decision of the Examining Division of the European Patent Office dated 11 May 1988 refusing European patent application No. 83 305 151.9 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** P.K.J. van den Berg  
**Members:** C.G.F. Biggio  
E.M.C. Holtz

## Summary of Facts and Submissions

- I. European patent application No. 83 305 151.9, filed on 6 September 1983 and claiming rights of priority from US patent applications No. 0 420 762 and 0 423 486 of 21 September 1982 and 24 September 1982, was refused by a decision of the Examining Division dated 11 May 1988.
- II. The reason for the refusal was that the subject-matter of independent Claim 1 lacked an inventive step over the teaching from the following documents:
- US-A-3 860 316 and US-A-4 221 458 which respectively disclose a plug and a receptacle of the kind referred to by the application; said plug and receptacle being intended to be used together, as acknowledged by the Appellant himself in the application as filed, and
  - DE-A-616 550, referred to as D1 in the appealed decision.
- III. On 29 June 1988, the Appellant lodged an appeal against said decision and paid the appropriate appeal fee on the same day.
- The Statement of Grounds was filed on 12 September 1988.
- IV. By a communication pursuant to Article 1102) EPC dated 19 September 1991, the Board introduced into the procedure a further document, D3 = DE-A-0 708 208.
- Oral Proceedings were held on 24 August 1992.
- V. The Appellant's submissions may be summarised as follows:

The plug of the type known from US-A-3 860 316 and the receptacle of the type known from US-A-4 221 458 were intended to be used together, so that their combination pertained to the prior art. The precharacterising clause of Claim 1, according to the requests, was the explicit acknowledgement of such a state of the art.

As to citation D1, it was admitted that it disclosed a keyed connector system showing two keying systems and that each of said keying systems respectively comprised keys and keyways so arranged that, at a first superficial inspection, they might seem susceptible of ensuring both the mismatch preventing and the match ensuring functions disclosed and claimed by the application.

It was however contested that the teaching from D1 could be considered as leading a person skilled in the art to the characterising clause of Claim 1 according to the main request. The keyed connector systems known from D1 were, in fact, such that some relatively smaller plugs having a lesser number of contacts might be inserted into some relatively larger receptacles having a greater number of contacts, so that the main requirement, mentioned in said claim, was not met.

The objective of D1 was "to make sure that the electric consumers destined for connection to a higher rate ... cannot be connected with outlets pertaining to lower rate" (page 2, lines 84 to 90), so that, according to the drawings of D1, it was "possible to use the plugs of the second row with outlets of the first row, that is connecting them to the higher rate, since that will not constitute a disadvantage to the power company" (page 2, lines 97 to 101).

As to citation D3, it was contested that the teaching therefrom would have led a person skilled in the art to the characterising clause of Claim 1 according to the main request, i.e. "each primary keys (78) and primary keyways (84) of the connector assemblies (2) having greater numbers of contacts (30,62) being selectively located, relative to the locations of the primary keys and primary keyways of assemblies having lesser numbers of contacts, to prevent insertion of any relatively smaller plug (4) having a lesser number of contacts (30) into any relatively larger receptacle (6) having a greater number of contacts (62)".

The primary object of D3 was to facilitate the mating of a plug and a receptacle, by providing of hook shaped projections (8), spindles (9) about which said projections are rotatable and guide slots (16) for the plug contacts (7), all of which cooperate to enable the plug and receptacle to act in the manner of a "lever switch" (column 1, lines 7 to 14), so that, according to the teaching from D3,

- the "non-interchangeability means" was a secondary feature, indissolubly dependent upon the "lever switch" feature, and consequently,
- the "non-interchangeability feature" was only operative as long as the plug and socket device was used as a "lever switch".

Since, however, the plug and socket device of D3 did not compulsorily need to be used as a "lever switch" (page 2, lines 33 to 35), the "non-interchangeability feature" was not ensured in every case, as disclosed and claimed by the application at issue.

The teaching from D3 was, moreover, totally irrelevant, because it did not deal with the problem of preventing a smaller plug to fit into a larger socket, but rather that of facilitating the relative movements of a plug and a receptacle.

In conclusion, it was submitted that both D1 and D3 led the reader away from the invention, as claimed, because neither D1 nor D3

- did deal with the problem dealt with by the application, i.e. preventing a smaller plug to fit into a larger socket, and
- taught or suggested a primary keying system ensuring that no smaller plug having a lesser number of contacts could be mismatched with a larger receptacle having a greater number of contacts, thus, *a fortiori*, the provision of a secondary keying system ensuring that only a specific plug could be mated to a specific receptacle, as claimed by the application at issue.

VI. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of:

- a first set of claims, F, (main request);
- a second set of claims, G, (first auxiliary request); and
- a third set of claims, H, (second auxiliary request).

These three sets of claims were filed on 15 May 1991 and maintained unchanged since that date.

VII. Claim 1 of set F (main request), reads:

"A series of electrical connector assemblies (2), each assembly comprising a plug (4) and a receptacle (6), each plug (4) and each receptacle (6) comprising a moulded insulating housing having a mating end (8,34) and a rearward end (10,36) and having oppositely facing external housing sidewalls (12,14,38,40) and oppositely facing external housing endwalls (16,42) extending from the mating end to the rearward end, each of the receptacles (6) having a trough-like plug-receiving opening (52) extending into its mating end (34), the plug-receiving opening (52) in each receptacle having opposed sidewalls (56,58) which are proximate to the external housing sidewalls (38,40) and opposed endwalls (60) which are proximate to the external housing endwalls (42), the plug (4) of each connector assembly having a forward portion (54) which extends from its mating end (8) partially towards its rearward end (10) and which is dimensioned to be received in the plug-receiving opening (52) of the receptacle (6) of the same assembly, a plurality of at least five uniformly and closely spaced plug contacts (30) in the plug (4) of each assembly and a like plurality of receptacle contacts (62) in the receptacle (6) of the same assembly, the receptacle contacts (62) being within the plug-receiving opening (52) and being arranged in a row which extends between the endwalls (60) thereof, the plug contacts (30) of each plug (4) being proximate to the mating end (8) of the plug and being arranged in a row which extends between the plug-housing endwalls (16), the plug-receiving openings (52) of the receptacles (6) of the series being of increasing width, as measured between the endwalls (60) thereof, with increasing numbers of receptacle contacts (62) in the receptacles, the plugs (4) of the series similarly being of increasing width, as measured between the

plug-housing endwalls (16), with increasing numbers of plug contacts (30) in the plugs the height of the plug openings (52), as measured between the sidewalls (56,58) thereof, being uniform for all receptacles (6) in the series, each receptacle contact (62) in each receptacle (6) having a flexible contact spring portion (72) which extends from a first sidewall (58) of the plug-receiving opening (52) at a location proximate to the mating end (34) of the receptacle (6), obliquely towards the rearward end (36) of the moulded insulating housing, the contact spring portion (72) in the plug-receiving opening (52) of each receptacle (6) being uniformly and closely spaced with respect to each other, such that in the event of accidental insertion of any smaller plug into any larger receptacle the plug contacts (30) of said smaller plug are susceptible to make galvanic contact with the contact springs (72) of said larger receptacle, the series of electrical connectors being characterised in that a primary keying system is provided on the connector assemblies (2) of the series, the primary keying system comprising, on each assembly of the series, at least one primary key (78) moulded integrally on the second sidewall (56) of the receptacle (6) of each assembly and at least one primary keyway (84) in the plug (4) of the same assembly (2), each primary key (78) of the receptacle (6) being aligned with a corresponding primary keyway (84) of the plug (4) of the same assembly (2), each primary keys (78) and primary keyways (84) of the connector assemblies (2) having greater numbers of contacts (30,62) being selectively located, relative to the locations of the primary keys and primary keyways of assemblies having lesser numbers of contacts, to prevent insertion of any relatively smaller plug (4) having a lesser number of contacts (30) into any relatively larger receptacle (6) having a greater number of contacts (62)".

Claim 1 of set G (first auxiliary request) reads as Claim 1 according to the main request, but with the addition of the following features, at the end of its characterising clause:

"and in that a secondary keying system (86,88) is provided on the connector assemblies (2) of the series for keying specifically a specific plug (4) of the series to a specific receptacle (6), the secondary keying system comprising secondary keys (86) in the receptacles (6) and secondary keyways (88) in the plugs (4), the secondary keyways (88) being dimensioned to preclude entry of a primary key (78) therein and being integrally moulded on the second sidewall (56) of the plug-receiving opening (52)".

Claim 1 of set H (second auxiliary request) reads as Claim 1 according to the first auxiliary request, but with the addition of the following features, at the end of its characterising clause:

"the secondary keys (86) and keyways (88) being between primary keys (78) and keyways (84) in at least some of the receptacles (6)".

#### Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.
2. The presently effective Claim 1, according to each of the Appellant's requests, is duly supported by the application as originally filed. The requirements of Article 123(2) EPC are therefore met.

3. *The acknowledged prior art*

According to the application as filed (page 1, lines 10 to 15), the receptacles of the type known from US-A-4 221 458 are dimensioned to receive connector plugs of the type known from US-A-3 860 316; their combination disclosing all the features mentioned by the precharacterising clause of Claim 1 according to any of the presently effective requests, to the effect that said two US patents have to be regarded as constituting a single piece of prior art, as confirmed by the Appellant (see under foregoing Item V).

However, neither of said two US patents discloses any of the features mentioned by the characterising clause of Claim 1, according to any of the presently effective requests.

4. *The invention according to the present application*

4.1 The precharacterising clause of Claim 1 is identical for each of sets F, G and H.

The essential technical features of this common prior art part are the following:

First feature:

the assemblies have uniformly spaced contacts, i.e. the contacts are not only uniformly spaced in the plugs and receptacles belonging to the same assembly, but the spacing of the contacts is the same for all assemblies; that is independently of the number of contacts of each assembly.

Second feature:

the plug of each assembly has at least five such plug contacts and a like plurality of receptacle contacts in

the receptacle of the same assembly; this feature also comprises the case of an assembly in which both the plug and the receptacle have only five such contacts.

Third feature:

in the event of accidental insertion of any smaller plug into any larger receptacle, the plug contacts (30) of said smaller plug are susceptible to make galvanic contact with the contact springs (72) of said larger receptacles.

4.2 *Main request (Set F)*

The characterising clause of Claim 1 according to the main request concerns the provision of a primary keying system having keyways in the plugs and corresponding keys in the receptacles.

4.3 *First auxiliary request (Set G)*

The characterising clause of Claim 1 of the first auxiliary request adds, to Claim 1 of the main request, a secondary keying system also having keys and corresponding keyways. According to said characterising clause, the secondary keying system is superimposed onto the first keying system; the secondary keying system serving for keying specifically a specific plug of the series to a specific receptacle.

Here the question may arise in how far "a specific" plug and "a" corresponding "specific" receptacle are specific. On its proper interpretation, the wording of this claim seems to mean that plugs and receptacles are further individualised in that, among all the plugs and receptacles with equal numbers of contacts, each one of all said plugs fits only into one of all said receptacles.

The Board therefore accepts that this claim meets the requirements of Article 84 EPC.

4.4 *Second auxiliary request (Set H)*

The characterising clause of Claim 1 of the second auxiliary request further adds, to Claim 1 of the first auxiliary request, the geometrical position of the keys and keyways of the secondary keying system, with regard to those of the primary keying system.

4.5 It seems appropriate to note here that the third feature of the common precharacterising clause of the Claims 1 of all the requests applies to the acknowledged common prior art, as documented by the combination of the two US patents mentioned before (see point 3).

However this feature seems no longer to apply to an assembly according to any of the Claims 1 as a whole. This is because once an assembly, according to the common precharacterising clause of Claims 1 according to any of the requests, is provided with the features comprised in the characterising clause of that particular claim, the latter features just prevent that the event according to this third feature occurs.

Thus the wording of the said Claims 1 do not coherently define a series of electrical connector assemblies.

The Board interprets this feature to mean that the series of connector-assemblies is such that, as long as the features of the characterising clause are not yet added, "in the event of accidental insertion of any smaller plug into any larger receptacle", the plug contacts of said smaller plug are still susceptible to make galvanic contact with the contact springs of said larger receptacles.

*Novelty*

5. *Document D1*

5.1 The drawings of D1 show only the receptacles of the connector assemblies described in that document. In this drawing the spacings between the contacts of the assemblies having three, four and five contacts appear all to be uniform. The spaces between each pair of neighbouring contacts of the assemblies having three contacts are equal to each other; similarly such spaces are equal to each other in the four-contacts-assemblies and this applies also to the contact spaces of the five-contacts-assemblies.

Besides, the spaces between neighbouring contacts of the three-contacts-assemblies are equal to those of the four-contacts- and those of the five-contacts-assemblies.

Consequently the first feature of the common precharacterising clause is not novel with regard to D1.

5.2 The second feature is known from D1, where it is indicated as: "3 + N + E".

Consequently this feature is not novel with regard to D1.

It remains to be noted, however, that assemblies having more than five contacts are not explicitly disclosed by D1.

5.3 In considering document D1, it becomes clear that

- plugs having three contacts would fit into receptacles having four contacts or five contacts, and,
- plugs having four contacts would fit into receptacles having five contacts, if the elements (d) and (e) in the receptacles and the corresponding complementary elements in the plugs were not yet provided in the plug/receptacle-assemblies shown there.

The third feature of the common precharacterising clause, in its interpretation as presented under the foregoing point 4.5, is consequently also known from D1.

5.4 Thus D1 discloses a series of electrical connector assemblies which comprise all the features mentioned in the said common precharacterising clause.

5.5 Having regard to the characterising clauses of Claims 1 according to each of the Appellant's requests, D1 also discloses a first and a second keying systems, which, like those claimed,

- have the same specific implementation form, i.e. keys and keyways, and
- are equally integrally moulded on the top and/or bottom edge of the plug and the moulded insulating housing of the receptacle.

According to page 2, lines 59 to 74, the keys ("Nocken d") of the receptacles and the corresponding keyways of the plugs ("die entsprechenden Aussparungen am Körper der Stecker") may be used to achieve non-interchangeability between plugs having different numbers of contacts. The foregoing means seem to

correspond to what is called in the claims the "primary keying system".

5.6 The Board concludes from this, that the characterising clause of Claim 1 according to the main request is known from D1.

5.7 The Appellant put forward that D1 did not solve the problem which is solved by the present invention as claimed, because, according to D1, a smaller plug, having a lesser number of contacts, can be inserted into a larger receptacle, having a larger number of contacts, which is not possible with the connector assemblies as presently claimed.

What the Appellant alleges is that a smaller plug according to Claim 1 of the main request cannot be fitted into a larger receptacle because this is prevented by the primary keying system, which is provided on the sidewalls of the housings of the plugs and of the receptacles, but that this is possible, at least according to the drawings of D1.

5.8 The Board agrees to this, with the notice however, that even if this is possible according to the drawings of D1, these same drawings make it very clear that the contacts of the plugs and the receptacles are situated with respect to the primary keying system in such a way that, although the smaller plug may fit into the housing of the larger receptacle and may penetrate to some extent, the plug contacts will not make a galvanic connection with the contacts of the receptacle and D1 thus achieves, in practical terms, the non-mating realised according to page 2, lines 59 to 74 of its text.

5.9 The Board further notes that the claims on file are not so limited that they necessarily exclude some penetration of the plugs into the housing of the receptacles; they seem only to guarantee that no galvanic contacts are being made.

5.10 Claim 1 of the main request is distinguished over D1 only by the said first feature in the precharacterising clause, insofar as this feature comprises assemblies having six or more contacts.

However, because this claim also comprises assemblies of which both the plugs and the receptacles have only five contacts, Claim 1 of the main request is not novel over D1.

Therefore this claim is not allowable.

5.11 D1 continues on page 2, lines 75 and the following, by describing a second means for achieving non-interchangeability which is carried out by providing further keys ("Vorsprünge e") in the receptacles and corresponding keyways in the plugs. As is shown by the drawing of D1, this second means is superimposed on the first non-interchangeability means and corresponds to some extent to the "secondary keying system" according to the characterising clause of Claim 1 of the first auxiliary request.

However, this "secondary keying system" according to D1 does not provide a one-to-one correspondence between a plug and its specific receptacle as does that according to Claim 1 of the first auxiliary request.

On the contrary, the drawings of D1, showing receptacles provided with primary keys (d) and secondary keys (e) as well as the corresponding text of the description, make

it clear that a plug which would, in accordance with the primary keying system, fit into a receptacle with an equal number of contacts of the third row, would according to the secondary keying system disclosed in D1 (keys e) also fit into the receptacles with equal numbers of contacts of the second and first rows.

Therefore, Claim 1 of the first auxiliary request is novel over D1 in that the secondary keying system, according to this claim, is such that it guarantees a one-to-one correspondence between plug and receptacle.

5.12 Claim 1 of the second auxiliary request is, of course, also novel over D1, since it has the same distinction over D1 as Claim 1 of the first auxiliary request.

Additionally its feature at the end of its characterising clause: "the secondary keys and keyways being between primary keys and keyways in at least some of the receptacles", seems *prima facie* not to be explicitly known from D1, which, as far as it shows the two keying systems simultaneously, has them on different sidewalls.

However, it should be noted that, in the passage following line 75 on page 2 of D1, it is further stated that, in order to prevent interchangeability of contact-making, the key and keyways should be provided on only one sidewall of the plug and of the receptacle respectively. This statement might be construed as advice on how to proceed in a specific situation where such erroneous contact-making is to be avoided, thus leading to the disclosure of a preferred embodiment.

In the view of the Board, this does not mean that D1 excludes the possibility of having primary and secondary keying systems on one and the same sidewall. In the

extreme, the latter could be considered as implicitly disclosed by D1.

This leads to the conclusion, that Claim 1 according to the second auxiliary request is novel with regard to D1, at least for the same reason as is Claim 1 of the first auxiliary request.

6. *Document D3*

6.1 The Appellant agrees with the Board that D3 discloses a series of electrical connector assemblies (a to f) in which

- on each assembly of the series spindles (9) made integral with the bottom sidewall of the receptacle (5) of each assembly and complementary hook-shaped projections (8) moulded integrally on the bottom side wall of the plug (6) of the same assembly (a to f) are provided,
- each spindle (9) of the receptacle (5) being aligned with "corresponding" complementary hook-shaped projections (8) of the plug(6) of the same assembly (a to f),
- the projections (8) being rotatable about the corresponding complementary spindle (9) and guide slots (16) for the plug contacts(7) being provided,
- all this for the plug (6) and the receptacle (5) of each assembly of the series (a to f) to be operated "as a lever switch"
- in order to ensure that a specific plug (6) of the series is specifically matched to a specific receptacle (5).

6.2 The Board considers each combination of the spindle (9) of a receptacle (5) and the corresponding complementary hook-shaped projections (8) of the plug (6) of the same assembly (a to f) as a "keying system" within the meaning of this term, as used in the context of the present invention as claimed. In the assemblies according to D3, that "keying system" assures that only a specific plug can be inserted into a specific receptacle and not into a receptacle which is not specific for that plug, i.e. a one-to-one mating correspondence, which represents what the Appellant has called the "non-interchangeability" - feature.

The Board agrees with the Appellant that the non-interchangeability feature disclosed by D3 is only operative as long as the plug and socket according to D3 are used "as a lever switch".

In the Board's interpretation, however, the non-interchangeability feature, that is the matching ensuring function according to the lever switch of D3, also implies the mismatch preventing function of preventing any relatively smaller plug having a lesser number of contacts from being inserted into any relatively larger receptacle having a greater number of contacts.

6.3 The Appellant has pointed out that the drawings of D3, in particular Figure 8 clearly shows that plug (a) can be inserted into a receptacle corresponding to plug (b), and that plug (e) can be inserted into a receptacle corresponding to plug (f), thereby providing for mismatching.

Although according to D3 (page 2, lines 33 to 35), the plugs (6) are detachable from the sockets (5) by unhooking their projections (8) from their spindles (9)

- of course they are; otherwise a plug could not be taken away -, the Board finds

- that D3 neither discloses nor even gives the slightest hint that the plug and socket devices should, or even could, be used in any other way than "as a lever switch",

- that the plug and socket devices according to D3 would totally fail to achieve the primary object itself of that invention, in the hypothetical event that said devices would effectively be used otherwise than "as a lever switch", and

- that such an hypothetical event goes far beyond what is effectively disclosed by D3.

6.4 The Board finds, consequently, that the whole disclosure of D3 would become fully contradictory to itself and its teaching would not make any sense neither logically nor technically, if, as alleged by the Appellant, the disclosed plug and socket devices should or could be used otherwise than "as a lever switch".

6.5 For the sake of completeness, the Board points further out that, if someone would indeed try to use the plug and socket device disclosed by D3 according to the Appellant's hypothesis, i.e. not "as a lever switch", but by moving the plug towards the socket along the axis (12) of the plug with said plug axis (12) coincident with the socket axis (13), the respective geometrical dimensions of said plug and socket, as shown by Figure 1 of D3, would nevertheless prevent any smaller plug (6) having a smaller number of contacts (7) not only from being "mated" with any larger socket (5) having a greater number of contacts (2), but even from being merely "inserted" into it.

The Board notes in fact that, in Figure 1 of D3, the shortest front dimension of said plug (6), as measured perpendicularly to said plug axis (12), is manifestly larger than the largest dimension of the input opening of said socket (7), as measured perpendicularly to said socket axis (13), thereby materially excluding any hypothetical insertion of any said plug into any said socket of the series disclosed by D3, even if they would have to be used according to the Appellant's hypothesis.

6.6 Therefore the Board concludes, contrary to the Appellant's opinion, that D3 discloses electrical connector assemblies, operating as lever switches which exhibit the non-interchangeability feature and because of that also prevent any relatively smaller plug having a lesser number of contacts from being inserted into any relatively larger receptacle having a greater number of contacts, all this by means of a system of spindles and hook-shaped projections which may be interpreted as a keying system.

This keying system performs the functions of the primary and the secondary keying systems of the present application, as claimed according to the auxiliary requests, simultaneously.

6.7 D3 does, however, neither disclose the same specific implementation form - keys and keyways - according to Claim 1 of any of the Appellant's requests, nor two clearly distinct systems of keys and keyways as claimed in Claim 1 of each of the auxiliary requests.

Thus Claim 1 of each of the requests is novel over D3.

*Inventive step*

7. *Main request*

Claim 1 according to the main request was considered not to be novel over D1.

7.1 It may be noted that, even if this claim would have been amended so as to exclude the case of assemblies having only five contacts in the plugs as well as in the receptacles (as known from D1), this claim so amended, although it would have been novel over D1, would in the Board's view still not have been allowable because of lack of an inventive step; the extension of the disclosure of D1 to connector assemblies having more than five contacts for both plugs and receptacles being regarded as obvious for a person skilled in the art.

7.2 Moreover, the Board finds it obvious to modify the primary keying system of D1 in such a way that also the slight penetration discussed under the foregoing points 5.7 to 5.9 is avoided.

7.3 The main request is thus not allowable.

7.4 *First auxiliary request*

The problem to be solved by the secondary keying system is to guarantee a one-to-one correspondence between a plug and a receptacle having equal numbers of contacts.

The secondary keying system of D1 does not provide such a guarantee; on the contrary it allows (on purpose) some exceptions.

However, the keying system according to D3 offers such a guarantee, which is explicitly mentioned by said

citation. This means that the formulation of the problem to be solved by the subject-matter of Claim 1 of the first auxiliary request is known as such.

Having regard to this fact the Board finds it obvious to modify the secondary keying system of D1 accordingly.

Therefore the subject-matter of Claim 1 of the first auxiliary request lacks an inventive step and this claim is not allowable.

7.5 *Second auxiliary request*

As already indicated under the foregoing point 5.12, the feature added by Claim 1 of this request, to the subject-matter of Claim 1 of the first auxiliary request, is not explicitly disclosed by D1.

The question, whether or not it may be considered to be disclosed there implicitly, need not to be decided, since in the Board's view this feature only represents an alternative which is obvious to the skilled person.

Therefore Claim 1 of the second auxiliary request is not allowable because it lacks an inventive step.

8. In view of the foregoing:

- the main request is refused because the subject-matter of its Claim 1 lacks novelty over D1;
- the first auxiliary request is not allowed because the subject-matter of its Claim 1 does not involve

an inventive step having regard to the disclosures  
by D1 and D3 in combination;

- the same applies to the second auxiliary request.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

M. Kiehl

P.K.J. van den Berg