Europäisches Patentamt
Beschwerdekammern

European Patent Office
Boards of Appeal

Office europeen des brevets
Chambres de recours

Veröffentlichung im Amtsblatt Ja/Nein
Publication in the Official Journal Yes/No
Publication au Journal Officiel Oui/Non

Aktenzeichen: T 33/81
Case Number:
N° du recours :

ENTSCHEIDUNG / DECISION
vom / of / du 16 May 1983

Anmelder: BICC plc
Applicant:
Demandeur :

Stichwort:
Headword:
Référence :

EPÜ / EPC / CBE Art. 52(1), 56

"Inventive step"

Leitsatz / Headnote / Sommaire

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 33 / 81

DECISION

of the Technical Board of Appeal 3.5.1

of 16 May 1983

Appellant: BICC plc
Patents and Licensing Department
38 Ariel Way
Wood Lane
GB-LONDON W12 7DX

Representative: M. J. Denton
European Patent Attorney
BICC plc
Patents and Licensing Department
38 Ariel Way
Wood Lane
GB-LONDON W12 7DX

Decision under appeal: Decision of Examining Division 053 of the European Patent Office dated 19 May 1981 refusing European patent application No 79300971.3 pursuant to Article 97(1) EPC

Composition of the Board:

Chairman: G. Korsakoff

Member: J. van Voorthuizen

Member: L. Gotti Porcinari

Summary of Facts and Submissions

I. European Patent Application No. 79 300 971.3 filed on 29.05.79 (Publication No. 0 005 983), claiming a priority of 30.05.78 (GB) and of 13.11.78 (GB), was refused by a decision of the Examining Division 053 of the European Patent Office of 19.05.81. That decision was based on claims 1 to 10 filed on 15.09.80.

II. The reason given for the refusal was that the subject matter of at least claims 1, 3 and 7 lacked inventive step, with reference to GB-A-618 141, GB-A-1 181 370, US-A-3 710 287 and the article "Selective Cladding Cuts Connector Costs 66%" at page 18 of Machine Design, volume 47 (1975) No. 2.

III. The applicant lodged an appeal against this decision on 07.07.81. The Statement of Grounds was filed on 22.08.81. The appeal fee was duly paid.

IV. In a communication of 23.03.82 the Rapporteur of the Board of Appeal set out objections with regard to the absence of inventive step in claims 1, 3 and 7. With his reply of 08.05.82 to this communication the applicant, while still defending the allowability of the claims 1 to 10 filed on 15.09.80, submitted an alternative set of amended claims 1 to 8 for consideration and acceptance by the Board only if the application containing claims 1 to 10 of 15.09.80 would be rejected. The reply was accompanied by a declaration by one of the inventors concerning his knowledge about hollow plug pins having a partial gold inlay.

.../...

V. In a second communication of 29.11.82 the Rapporteur notified the applicant that claims 1, 3, and 7 were still regarded as lacking inventive step, but that the alternative set of claims was held allowable and that some amendments to the description were required. Such amendments and amended drawings were submitted by the applicant on 08.01.83.

In his reply of 10.03.83 to a communication by the Rapporteur of 23.02.83 the applicant submitted some further amendments to the claims and the description.

The applicant requested that a European patent be granted on the basis of claims 1-10 filed on 15.09.80 which, read as follows:

1. A hollow electrically conductive pin (1, 5, 11, 14, 14') for use in an electric plug (6), said pin being formed from sheet metal or metal alloy (7, 17, 17') which has been folded or otherwise shaped to form the pin, characterised in that a substantial part of that surface of the folded sheet metal or metal alloy forming the outer surface of the pin carries a covering of electrically insulating material (2, 4, 9, 18, 18') which extends over a substantial part of that length of the pin which will project from the plug body, said covering having been applied to the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin.

2. A hollow electrically conductive pin (1, 5, 11, 14, 14') for use in an electric plug (6), said pin being formed from sheet metal or metal alloy (7, 17, 17') which has been folded or otherwise shaped to form the pin, characterised in that a substantial part of that surface of the folded sheet metal or metal alloy forming

.../...

the outer surface of the pin carries a covering of electrically insulating material (2, 4, 9, 18, 18') which extends over a substantial part of that length of the pin which will project from the plug body, said covering having been applied to the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin, and in that the sheet metal or metal aloy is so folded or otherwise shaped that the edges (15, 15', 16, 16') of that part of the folded sheet metal or metal alloy carrying the of electrically insulating material are turned inwardly.

3. A hollow electrically conductive pin 1, 5, 11, 14, 14') for use in an electric plug (6), said pin being formed from sheet metal or metal alloy (7, 17, 17') which has been folded or otherwise shaped to form the pin, characterised in that the pin has a groove or other recess (8) in a substantial part of that surface of the folded sheet metal or metal alloy forming the outer surface of the pin, and electrically insulating material (2, 4, 9, 18, 18') at least partially fills the groove or recess such that the electrically insulating material extends over a substantial part of that length of the pin which will project from the plug body, said electrically insulating material having been applied in the groove or recess in the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin.

4. A hollow electrically conductive pin (1, 5, 11, 14, 14') for use in an electric plug (6), said pin being formed from sheet metal or metal alloy (7, 17, 17') which has been folded or otherwise shaped to form the pin, characterised in that the pin has a groove or other

.../...

recess (8) in a substantial part of that surface of the folded sheet metal or metal alloy forming the outer surface of the pin, in that electrically insulating material at least partially fills the groove or recess such that the electrically insulating material extends over a substantial part of that length of the pin which will project from the plug body, said electrically insulating material having been applied in the groove or recess in the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin, and in that the pin is so folded or otherwise shaped that the edges (15, 15', 16, 16') of that part of the folded sheet metal or metal alloy carrying of electrically insulating material are turned inwardly.

5. A hollow electrically conductive pin as claimed in any one of Claims 1 to 4, characterised in that the insulating material is a hardenable thermosetting synthetic resin.

6. A hollow electrically conductive pin as claimed in any one of Claims 1 to 4, characterised in that the insulating material is a linear polymer.

7. A method of forming a hollow electrically conductive pin (1, 5, 11, 14, 14') for use in an electric plug (6), which method comprises punching or otherwise cutting a sheet (7, 17, 17') of metal or metal alloy to form a multiplicity of integral pin preforms (3, 10) and, before or after detaching a pin preform from the sheet, folding or otherwise shaping the preform to form a hollow pin, characterised in that before or after the sheet has been punched or otherwise cut but before the preform is folded or otherwise shaped,

electrically insulating material (2, 4, 9, 18, 18') is applied to a selected part of the surface of the sheet to cause a layer of electrically insulating material to adhere to said selected part of the surface to form a covering of electrically insulating material, the covered part of the sheet being such that, when each of said pin preforms is detached from the sheet before or after it has been folded or otherwise shaped to form a hollow pin, the pin has on the outer surface of a substantial part of the length of the pin that will project from a plug body, a covering of electrically insulating material.

8. A method as claimed in Claim 7, characterised in that before or after the sheet (7, 17, 17') has been punched or otherwise cut but before the preform (3, 10) is folded or otherwise shaped, the sheet is heated and electrically insulating material (2, 4, 9, 18, 18') is applied to the said selected part of a surface of the heated sheet in powdered form and is permitted or caused to coalesce, with or without pressure.

9. A method as claimed in Claim 7, characterised in that a groove or other recess (8) is formed in the said selected part of the surface of the sheet (7, 17, 17') before the sheet is folded, and in that, before or after the sheet has been punched or otherwise cut but before the preform (3, 10) is folded or otherwise shaped, a preformed strip or other insert of insulating material (2, 4, 9, 18, 18') is laid in the groove or other recess and is secured by the application of heat and pressure or by an adhesive.

.../...

10. An electric plug (6) characterised in that at least one of the pins (5) is a hollow electrically conductive pin as claimed in any one of Claims 1 to 6.

In the case that these claims would be held unallowable by the Board of Appeal, the applicant requested that a European patent be granted on the basis of the alternative set of claims 1-8 as amended in the course of the procedure before the Board. These claims read as follows:

1. A hollow electrically conductive pin (1, 1') for use in an electric plug, said pin being formed from sheet metal or metal alloy which has been folded or otherwise shaped to form the pin, characterised in that a substantial part of that surface of the folded sheet metal or metal alloy forming the outer surface of the pin carries a covering of electrically insulating material (2, 2', 5) which extends over a substantial part of that length of the pin which will project from the plug body, said covering having been applied to the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin, and in that the sheet metal or metal alloy is so folded or otherwise shaped that the edges (9, 9', 10, 10') of that part of the folded sheet metal or metal alloy carrying the covering of electrically insulating material are turned inwardly.

2. A hollow electrically conductive pin (1, 1') as claimed in Claim 1, characterised in that the pin has a groove or other recess (4), in a substantial part of that surface of the folded sheet metal or metal alloy

forming the outer surface of the pin, in that electrically insulating material (2, 2', 5) at least partially fills the groove or recess such that the electrically insulating material extends over a substantial part of that length of the pin which will project from the plug body, said electrically insulating material having been applied in the groove or recess in the sheet metal or metal alloy before the sheet has been folded or otherwise shaped to form the pin, and in that the pin is so folded or otherwise shaped that the edges (9, 9', 10, 10') of that part of the folded sheet metal or metal alloy carrying the covering of electrically insulating material are turned inwardly.

3. A hollow electrically conductive pin as claimed in Claim 1 or Claim 2, characterised in that the insulating material is a hardenable thermosetting synthetic resin.

4. A hollow electrically conductive pin as claimed in any one of Claims 1 to 3, characterised in that the insulating material is a linear polymer.

5. A method of forming a hollow electrically conductive pin (1, 1') for use in an electric plug, which method comprises punching or otherwise cutting a sheet (3) of metal or metal alloy to form a multplicity of integral pin preforms (6) and, before or after detaching a pin preform from the sheet, folding or otherwise shaping the preform to form a hollow pin, characterised in that before or after the sheet has been punched or otherwise cut but before the preform is folded or otherwise shaped, electrically insulating material (2, 2', 5) is applied to a selected part of the surface of the sheet

to cause a layer of electrically insulating material to adhere to said selected part of the surface to form a covering of electrically insulating material, the covered part of the sheet being such that, when each of said pin preforms is detached from the sheet before or after it has been folded or otherwise shaped to form a hollow pin, the pin has on the outer surface of a substantial part of the length of the pin that will project from a plug body, a covering of electrically insulating material, and characterised in that the pin is so folded or otherwise shaped that the edges (9, 9', 10, 10') of that part of the folded sheet metal or metal alloy carrying the covering of electrically insulating material are turned inwardly.

6. A method as claimed in Claim 5, characterised in that before or after the sheet (3) has been punched or otherwise cut but before the preform (6) is folded or otherwise shaped, the sheet is heated and electrically insulating material (2, 2', 5) is applied to the said selected part of a surface of the heated sheet in powdered form and is permitted or caused to coalesce, with or without pressure.

7. A method as claimed in Claim 5, characterised in that a groove or other recess (4) is formed in the said selected part of the surface of the sheet (3) before the sheet is folded, and in that, before or after the sheet has been punched or otherwise cut but before the preform (6) is folded or otherwise shaped, a preformed strip or other insert of insulatng material (2, 2', 5) is laid in the groove or other recess and is secured by the application of heat and pressure or by an adhesive.

.../...

8. An electric plug characterised in that at least one of the pins is a hollow electrically conductive pin as claimed in any one of Claims 1 to 4.

VI. In the Statement of Grounds and the replies to the communication of the Rapporteur the applicant argues essentially as follows:

The article in Machine Design contains no positive statement that the gold inlay is applied to the sheet metal prior to formation of the pin, although there might be an implication to this effect. In any case, however, it would not be obvious to a person skilled in the art to cover the sheet metal partially with an insulating material prior to forming the pin. The idea of forming hollow pins from folded sheet metal has been known for many years (UK 618 141, 1946), the idea of applying a layer of insulating material to solid pins has been known for many years (UK 1 181 370, 1967) and the idea of using gold inlays on pins has been known for over 15 years as appears from the written declaration of one of the inventors and despite all these well known arrangements no suggestion has been made pointing to the present invention.

Reasons for the decision

1. The appeal complies with Articles 106-108 and Rule 64 EPC and is, therefore, admissible.

2. In the declaration referred to above which is dated 26 April 1982, the inventor states inter alia : "Hollow plug pins having a partial gold inlay as described in the article in Machine Design, dated January 1975,

on page 18 have been known to me for over 16 years". However, the fact that such pins were known to the declarant at that time does not establish proof that this knowledge was available to the public as required by Article 54(2) EPC in order that it could be regarded as forming part of the state of the art for the purposes of Article 56 EPC. Under these circumstances the Board cannot except the applicants' contention that hollow pins of the type in question already formed part of the state of the art in 1966 or thereabouts, but rather considers that such pins formed part of the state of the art as from the date of publication of the article in Machine Design.

3. With regard to the set of claims of 15.09.80 and more particularly claims 1, 3 and 7 thereof, the Board considers that no inventive step is involved in the subject matter of these last claims for the following reasons:

Hollow pins formed from folded sheet metal are known from GB-A-618 141, while solid pins covered over a substantial part of their length by insulating material are known from GB-A-1 181 370 and US-A-3 710 287. Forming hollow pins from metal sheet which is partially covered with another material (in particular gold or some other metal) prior to folding, are known from the article in Machine Design, January 1975. In the light of this state of the art it is considered obvious to a person skilled in the art to arrive at the hollow pins which form the subject matter of claims 1 and 3 and at the process for making such pins as described in claim 7.

Consequently the claims 1-10 of 15.09.80 are not allowable.

4. The Board of Appeal having thereupon duly considered the set of alternative claims 1-8 is of the opinion that they, in their present form, comply with the requirements of the EPC and its Implementing Regulations and are therefore not open to objection. The same applies to the description and drawing.

For these reasons, it is decided that:

1. The decision contested is set aside;

2. The case is remitted to the Examining Division with the order to grant the European patent applied for on the basis of the following documents:

   a) Claims 1, 3-8 filed on 8.05.82 and claim 2 filed on 10.03.83

   b) Description consisting of page 1 and 2 submitted on 10.03.83, page 3 submitted on 8.05.82, page 4 as originally filed and page 5 submitted on 8.05.82.

   c) Drawings submitted on 8.05.82.

The Registrar: The Chairman: