BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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Publication in the Official Journal ~~Yes~~ / No

File Number: T 973/91 - 3.4.2

Application No.: 84 305 562.5

Publication No.: 0 137 653

Title of invention: Coupling device

Classification: G02B 6/38, H02G 15/18

D E C I S I O N
of 23 July 1992

Applicant: Hamblin, Brian David, et al

Headword:

EPC Art. 84, 54

Keyword: "after amendments: clarity (yes); novelty (yes); remittal for further prosecution"

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 973/91 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 23 July 1992

Appellant : Hamblin, Brian David
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and

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Decision under appeal : **Decision of Examining Division of the European Patent Office dated 12 July 1991 refusing European patent application No. 84 305 562.5 pursuant to Article 97(1) EPC.**

Composition of the Board :

Chairman : E. Turrini
Members : M. Chomentowski
J.-C. Saisset

Summary of Facts and Submissions

I. The Appellants are Applicants for the European patent application No. 84 305 562.5 (publication number 0 137 653), which was refused by the Examining division on the grounds that Claim 1 was not clear, that the subject-matter of this claim, as it could be conjectured, lacked novelty having regard to the disclosure in any of

D1 = US-A-4 345 816 or
D2 = GB-A-2 058 484,

and that the subject-matter of the dependent claims did not appear to contain any novel or inventive matter.

II. The Appellants filed an appeal against this decision.

III. In a communication annexed to the invitation to the oral proceedings requested auxiliarily by the Appellants, the Board expressed the provisional opinion that the subject-matter of Claim 1 treated in the appealed decision was not novel having regard to the disclosure in any of D1, D2 or

D3 = EP-A-0 125 795, which is a prior art document according to Article 54(3) and (4) EPC,

that the subject-matter of some of the dependent claims also lacked novelty, that the subject-matter of the other dependent claims did not involve an inventive step having regard to the further teaching of, in particular,

D4 = DE-A-3 011 902,

and that the two auxiliary requests did not appear to be allowable for the same reasons.

IV. At the end of the oral proceedings, during which the teaching of

D5 = DE-A-1 925 781

was also mentioned, the Appellants filed an amended specification and requested that the decision under appeal be set aside and that the case be further prosecuted on the basis of said specification.

V. Claim 1 reads as follows:

"1. An explosion proof optical coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment, said device comprising a body containing optical means for electrically isolating the equipment connected by the device, material surrounding the isolating means and extending across the body to form a fluid tight, explosion proof barrier in the body, and the body being connectable to one of said items of equipment to form an explosion proof, threaded connection or an explosion proof connection by a circlip between the exterior of the body and the equipment, whereby an explosion in one of said items of equipment is prevented from being transmitted through the device to another item of electrical equipment connected thereto."

Claims 2 to 10 are dependent claims.

VI. The Appellants submitted the following arguments in support of their request.

As can be seen from the filed document

D6 = CENELEC EN 50 018, edited by the European Committee for Electrotechnical Standardization, March 1977, with the title "Electrical apparatus for potentially explosive atmospheres-Flameproof enclosure "d"-",

"explosion proof" is a technical term with a specific meaning which the person skilled in the art will unambiguously understand. Therefore, the claims as amended are clear

None of the documents D1 to D4 discloses an explosion proof coupling device. Moreover, as is generally known in the relevant technical field and as illustrated for instance from the filed document

D7 = "Hazardous locations - A guide for the design, construction and installation of electrical equipment", by J. Bossert and R. Hurst, edited by the Canadian Standards Association, with no certain date,

an explosion proof enclosure (known in international terms as a flame proof enclosure) is generally defined as an enclosure which withstands the internal explosion of a combustible mixture of a gas or vapour without rupturing or releasing the burning or hot gases into the surrounding atmosphere; the common misconception is that explosion proof enclosures are gastight in their connection with the exterior, but this is not the case, since an explosion proof enclosure merely limits the amount of gas entering the enclosure itself. Contrary to this definition, the coupling components known from D1, D2 or D3 all are fluid-tight structures, and therefore, the subject-matter of Claim 1 is novel. It is also to be noted that the decision G 2/88, OJ 1990 093, paragraph 10,

fourth section and paragraph 10.1, second section, states that a line must be drawn between what is in fact made available to the public, and what remains hidden or otherwise has not been made available, whereby the Enlarged Board emphasises that under Article 54(2) EPC the question to be decided is what has been "made available" to the public, and not what may have been "inherent" in what was made available. Thus, in accordance with said decision, since the teaching of any of D1 or D2 does not make available an explosion proof coupling device, the subject-matter of Claim 1 is novel.

Reasons for the Decision

1. The appeal is admissible.

2. Allowability of the amendments

Claim 1 is based on Claim 1 as originally filed with, in particular, amendments for specifying the features of the explosion proof threaded connection or explosion proof connection by a circlip of the coupling device to the equipment which are based on the description as originally filed (see page 5, lines 9 to 26; Fig. 1 to 7). The amendments in the description are for adaptation to Claim 1 and for consistency therewith. The dependent Claim 10, which specifies that one of the items of electrical equipment comprises intrinsically safe equipment and the other comprises high voltage equipment, is based on the considerations, in the description as filed (see page 1, lines 11 to 18), of particular problems of the prior art which the claimed device should solve. Therefore, the Board is satisfied that the European patent application has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Art. 123(2) EPC).

3. Clarity

3.1 The invention as defined in present Claim 1 is an optical coupling device comprising optical means for electrically isolating the equipment connected by the device, whereby, according to the description (see page 2, penultimate section and page 8,lines 7 to 11) said isolating device can be for example an optical coupling and, when necessary, additional isolation means can be included, whereby other forms of radiation or magnetic, electrostatic or inductive coupling can also be used.

3.2 D6 (see page 5, paragraphs 1.1 , 2 and 2.1), which is a European Standard, specifies the requirements for the construction and testing of electrical apparatus with flameproof enclosure, type of protection "d", intended for use in potentially explosive atmospheres, whereby in this type of protection the parts which can ignite an explosive atmosphere are placed in an enclosure **which can withstand the pressure developed during an internal explosion** of an explosive mixture **and which prevents the transmission of the explosion** to the explosive atmosphere surrounding the enclosure. Therefore, the Appellants' argument that the technical terms "explosion proof" have a generally accepted meaning in the relevant technical field, in particular by reference to D6, are credible.

3.3 In this context, it is derivable from D6 that the feature that the enclosure be fluid tight is not required in flameproof enclosures. It is to be noted that, in the explosion proof coupling device of D5 (see the title, page 3, penultimate section, first sentence; Fig. 1 to 3), the surrounding body (1) of said coupling device is fixed into item of equipment by a threading connection, and there is no indication concerning any fluid tight features

of the fixing means. As credibly argued by the Appellants, it is also generally known to people having some technical skill that the Davy's security lamp for underground workers is intended to prevent explosions due to gas in the surrounding atmosphere and is not fluid tight either. Therefore, the Appellants' further arguments that the presently claimed subject-matter, which concerns a pressure developed during an explosion, i.e. during a short period of time, is different from a device for making the enclosure "fluid-tight" during a long time under a mainly static pressure and thereby presents different structural features, is credible. Incidentally, the information disclosed in D7 (see the introduction; first column, first section to second column, first section) that an explosion-proof enclosure is not gastight and that it is for this reason that explosion-proof enclosures are equipped with flame-arresting joints, can be taken into account, although no publication date of D7 is available, because it confirms the informations in the above-mentioned documents. Thus, the Appellants' argument that the coupling device of present Claim 1 is to be understood as not being fluid-tight at the connection "between the exterior of the body and the equipment" can be accepted.

3.4 Therefore, the Board is satisfied that, since the meaning of the technical terms of Claim 1 are specifically defined by structural and functional features, in particular the means for fixing the body in the item of equipment, in accordance with the definitions which are generally accepted in the relevant technical field, Claim 1 is clear in the sense of Article 84 EPC.

4. Novelty

4.1 An optical coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment is known from D1 (see column 1, lines 23 to 44; column 1, line 58 to column 3, line 37; Fig. 1 and 2); said device comprises a body (4) containing optical means (2, 3) for electrically isolating the equipment connected by the device, an epoxy-system adhesive material (5) surrounding the isolating means and extending across the body to form a fluid tight barrier in the body. However, contrary to the device of present Claim 1, the known coupling device is not connected to the item of equipment (1) by a threaded connection or by a connection by a circlip. Moreover, as credibly argued by the Appellant in relation to the features of the presently claimed device, in accordance with the decision G 2/88, OJ 1990 093 (see paragraph 10, fourth section and paragraph 10.1, second section), a line must be drawn between what is in fact made available to the public, and what remains hidden or otherwise has not been made available, whereby it should be emphasised that under Article 54(2) EPC the question to be decided is what has been "made available" to the public, and not what may have been "inherent" in what was made available; the known coupling device is not derivable as being explosion proof in the sense of the present Claim 1 and the whole patent application, i.e. in the way defined for instance in D6, that it can in particular withstand the pressure developed during an internal explosion. In this respect, it is also to be noted that the known coupling device, which is sealed by sealing means, i.e. by O-rings (9) and, supplementarily, by external welding means (10), to the equipment (1), is thus in fluid tight connection therewith and that, as mentioned in paragraph 3.3 above, it is not explosion proof in the sense of the presently claimed feature.

4.2 An optical coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment is known from D2 (see page 1, lines 3 to 25 and 41 to 74; page 1, line 85 to page 2, line 65; Fig. 1 and 2); said device comprises a body (1; 13, 15, 17) containing means (the optical fibres (2) and the encapsulating material (12) made of an epoxy resin) for electrically isolating the equipment connected by the device; thereby, a barrier capable of withstanding a high axial pressure differential is provided in the body. However, since the known coupling device is not derivable as being explosion proof and since it is connected to the item of equipment (4, 21) by means such as the sealing rings (7, 8; 16, 18), it is thus not explosion proof in the sense of the present patent application for the same reasons as those mentioned in relation to D1.

4.3 An optical coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment is known from D3 (see page 1, lines 1 to 27; page 2, lines 1 to 12; page 2, line 29 to page 3, line 10; Fig. 1); said device comprises a body (1) containing means, i.e in particular the optical fibre (4) and the encapsulant (7) of epoxy resin, for electrically isolating the equipment connected by the device; thereby, the device, which may be submitted to water or gas at considerable pressure, is provided with means for reducing the possibility of water and gas ingress therein; however, since the device of D3 (see page 2, lines 6 to 12; page 4, line 1 to page 5, line 8; Fig. 3) is to be used in a sealing assembly in an aperture in an item of equipment (13) whereby deformable sealing members (16) are utilized, the device of present Claim 1 is also distinguished from said known device.

4.4 An optical coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment is known from D4 (see page 3, lines 3 to 24; page 5, lines 7 to 16; page 5, line 26 to page 6, line 16; the Figure); in this device, the photodiode (2) converts in an electrical signal to be transmitted into a lead (4) the optical signal received from the optical conductor (3); moreover, this whole converting unit is located within an epoxy encapsulant (5). However, contrary to the device of present Claim 1, except for a statement concerning the ability of the device for resisting mechanical efforts, there is no information derivable from D4 about any explosion proof feature of the known device.

4.5 D5 (see page 3, penultimate section to page 4, first section; Fig. 1 to 3) discloses an explosion proof coupling device for connecting together separate items of electrical equipment so that a signal can be passed between said equipment; however, contrary to the device of present Claim 1, said coupling device is not an optical coupling device and does not electrically isolate the equipment connected by the device.

4.6 Therefore, since the subject-matter of present Claim 1 is not known from the above-mentioned or from the other documents of the available prior art, which are less relevant, said subject-matter is novel in the sense of Article 54 EPC.

5. Since the question of inventive step of the subject-matter of the claims has not been taken into account by the Examining Division, this point should be prosecuted by the first instance (Art. 111 EPC).

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. Claims 1 to 10 filed during oral proceedings meet the requirements of Article 84, 123(2) (Claims in conjunction with the description filed also during oral proceedings and with the drawings as originally filed) and 54 EPC.

3. The case is remitted to the Examining Division for further proceedings on the basis of these claims, of the adapted description pages 1, 1a and 2 to 9 filed also during oral proceedings and of the drawings as originally filed.

The Registrar

P. Martorana

The Chairman

E. Turrini

MCH