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File No.: T 0711/90 - 3.3.2
Application No.: 80 300 953.9
Publication No.: 0 018 110
Classification: CO3C 13/00
Title of invention: Optical fibre core glass, optical fibres containing such glass and process for the manufacture of such glass.

DECISION
of 15 September 1993

Applicant: The Post Office
Proprietor of the patent:
Opponent: Schott Glaswerke

Headword:

EPC: Art. 84 and 123(2)

Keyword: "Clarity of the Claim (no)- compositions adding to less than 100% - presence of additional components excluded by the terms "consists of".

Headnote
Catchwords



Case Number: T 0711/90 - 3.3.2

DECISION
of the Technical Board of Appeal 3.3.2
of 15 September 1993

Appellant:

(Proprietor of the patent) The Post Office
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Representative:

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Respondent:

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 3 July 1990 revoking
European patent No. 0 018 110 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: P.A.M. Lançon
Members: M.M. Eberhard
C.C. Perryman

Summary of Facts and Submissions

- I. European patent No. 0 018 110 based on application No. 80 30 953.9 was granted on the basis of 12 claims.
- II. The Respondent (Opponent) filed a notice of opposition requesting revocation of the patent on the ground of lack of inventive step.
- III. In response to the notice of opposition, the Appellant (Patentee) filed an amended set of claims with the letter dated 7 November 1986. In a first communication of 15 April 1988, the Opposition Division indicated the reasons for which the amended Claim 1 did not meet the requirements of Articles 123(2) and 84 EPC (clarity). In reply thereto, the Appellant submitted a second set of claims with the letter of 25 July 1988. The parties were informed by a second communication dated 16 August 1989, that Claims 1 and 6 of this set of claims did not comply with the requirements of Article 123. The Appellant was given the opportunity to comment on the reasons given in this communication but did not present any observations.
- IV. The Opposition Division revoked the patent. According to the decision of revocation, the two sets of claims filed with the Patentee's letters of 17 November 1986 and 25 July 1988 respectively did not comply with Article 123(2) and in, one instance, with Article 123(3) for the reasons given in the communications referred to above. Moreover, the subject-matter of Claims 1 and 6 of the patent as granted was considered not to involve an inventive step.
- V. The Appellant lodged an appeal against this decision and submitted a third amended set of Claims on 13 November 1990 together with the Statement of Grounds of Appeal. In a communication pursuant to Article 110(2) EPC, the

parties were informed that the wording of Claim 1 filed on 13 November 1990 was ambiguous and that Claim 10 appeared not to be in conformity with the requirements of Article 123(2). It was further pointed out that a soda amount of 15 to 25% did not seem to be compatible with the amounts of B_2O_3 , BaO and SiO_2 recited in Claim 10. Both parties were invited to comment on the ground of insufficiency of disclosure raised by the Respondent.

In response to this communication, the Appellant filed a fourth amended set of Claims on 25 March 1993.

VI. Oral proceedings were held on 15 September 1993 in the absence of the Respondent. In a telefax dated 6 September 1993 the Respondent informed the Board that it would not attend the oral proceedings.

At the beginning of the oral proceedings the Appellant was told the reasons for which it was doubtful that the fourth set of claims meets the requirements of Article 123(2) and 84. After consideration of these reasons the Appellant submitted an amended Claim 1 as main and single request. This claim reads as follows:

"A high numerical aperture optical fibre core glass having a composition chosen so that it is not subject to devitrification or phase separation and having a refractive index greater than 1.54, said glass containing 0.01 to 1% by weight of arsenic trioxide as a redox buffering agent to maintain a fictive partial oxygen pressure of substantial 1 Pascal in the glass, wherein the glass consists of:

(i) 15-25 mole % of soda

(ii) 5-20 mole % of boric oxide or 5-20 mole% of a mixture of boric oxide and barium oxide such that up to 12 mole % of the glass is barium oxide, and

(iii) 25-65 mole % of silica or 25-65 mole % of a mixture of germania and silica such that up to 42 mole % of the glass is germania, the glass including at least 5 mole % of boric oxide plus either at least 8 mole % of barium oxide or at least 8 mole % of germania"

VII. During the oral proceedings The Appellant's attention was drawn to the fact that this claim was unclear. Although the use of the terms "the glass **consists of**" excluded the presence of components other than those denoted (i), (ii) and (iii), the proportions of these components could not add up to 100 mole % in particular when the content of component (iii) was its lower limit of 25 mole % since the maximum proportions of the remaining components (i) and (ii) were 25 mole % and 20 mole % respectively. Even if arsenic trioxide were taken into consideration, a total of 100 mole % could not be reached. The Appellant was told that the terms "the glass consists of" were not in agreement with the feature stated in the fifth line of the claim that the glass additionally contains 0.01 to 1% by weight of arsenic oxide. The question of the conformity of this claim with the requirements of Article 123 was also discussed in particular in connection with the lower limit of 5 mole % for the mixture of boric oxide and barium oxide and with the limitation to a glass including at least 5 mole % of B_2O_3 , plus at least 8 mole % of either BaO or GeO_2 .

As regards clarity, the Appellant argued that the first deficiency (i.e. total amount of the components lower than 100 mole %) resulted from two mistakes in the limits given for the proportions of components (ii) and (iii). The correct lower limits should be 10 mole % for the amount of component (ii) and 55 mole % for the content of component (iii), instead of 5 and 25 mole %. The Appellant handed over a ternary diagram similar to that submitted during the examining procedure (cf. letter dated 4 January 1982) in order to show that the amended limit were derivable from the ranges indicated in the original application, assuming the glass to contain only components (i), (ii) and (iii).

Concerning the allowability of the amendments under Article 123, the Appellant contended that the alternative lower limits of 8 mole % for BaO and GeO₂, together with the 5 mole % lower limit for B₂O₃, were all clearly based on the examples of table IV (cf. table IV of the patent in suit, 6th, 9th and 11th examples and table IV of the original application). It was further argued that the glass compositions of table IV contained **only** the components denoted (i), (ii) and (iii) in the claim. Therefore the terms "consist of" were directly derivable from the original application.

VIII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the Claim 1 submitted during the oral proceedings. The Respondent had requested in writing that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. The substitution of the terms "consists of" for "contains" in Claim 1 raises the question of clarity of the claim. When, as now indicated in Claim 1, the glass **consists of** the components denoted (i), (ii) and (iii), the presence of any additional component is excluded and, therefore, the proportions of the components (i), (ii) and (iii) expressed in percentages should add up to 100 mole % for **each** claimed composition. Thus, each maximum or minimum percentage stated in Claim 1 for any of these components should also add up to 100% with the amounts of the remaining components lying within the ranges defined in this claim. Otherwise, the limits are meaningless and the claim cannot be considered to meet the clarity requirements of Article 84 EPC, (cf. decision T 2/80, OJ OEB, 1981, 431, point 3 of the reasons; T 305/89 of 11 July 1991 unpublished).

According to Claim 1 the glass **consists of** 15-25 mole % soda (i), 5-20 mole % of the component denoted (ii), i.e. boric oxide or boric oxide plus barium oxide and 25-65 mole % of the component denoted (iii), i.e. silica or germania plus silica, the glass including at least 5 mole % of boric oxide plus either at least 8 mole% of barium oxide or at least 8 mole % of germania. However, if the amount of component (iii) is 25 mole %, namely the lower limit stated in Claim 1, the total proportions of the components (i), (ii) and (iii) which constitute the glass do not come to 100 mole % but only to 70 mole % since the highest contents for components (i) and (ii) are 25 mole % and 20 mole % respectively. In other words, with an amount of component (iii) of 25 mole %, the glass composition should contain 30 mole % of an additional component in order for the composition to

reach the requisite total of 100 mole %. However as the glass "consists of" the components (i), (ii) and (iii) the presence of 30 mole % of an additional component is excluded. Furthermore, this inconsistency does not concern only the glass composition including the lowest content of 25 mole % of component (iii) but also each glass composition having a content of component (iii) lying within a considerable part (more than half) of the claimed range.

2.1. Likewise, when the lower limit of 5 mole % for the proportion of component (ii) is added to the upper limits of 25 mole % and 65 mole % for the contents of the components (i) and (ii) respectively, the total proportions of the components amount to only 95 mole %. In this case, 5 mole % of an additional component would be necessary to reach the requisite total of 100 mole %, which additional component is excluded by the wording "the glass consists of".

2.2 It is stated in the 5th line of Claim 1 that the glass contains 0.01 to 1% by weight of arsenic trioxide as redox buffering agent whereas according to the 8th line and ff. the glass "consists of" the components denoted (i), (ii) and (iii). However the list of these components does not comprise arsenic trioxide. As the terms "consists of " clearly excludes the possibility of the glass containing other oxides than those listed under (i), (ii) and (iii) these two features are not consistent with each other.

2.3 The Board observes that even if the content of arsenic trioxide were converted into mole % and added to the proportions of the components (i), (ii) and (iii) the deficiencies referred to in points 2 and 2.1 above would still exist for a great part of the claimed ranges.

2.4 It follows from the preceding that the amended Claim 1 submitted during the oral proceedings does not meet the requirement of clarity set out in Article 84 EPC.

3. The appellant has argued that the inconsistencies referred to in points 2. and 2.1 above were due to incorrect lower limits of 5 mole % and 25 mole % for the amounts of components (ii) and (iii) and that these limits should be replaced by 10 mole % and 55 mole % respectively (cf. point VII above).

It should be noted in this respect that if Claim 1 had been amended accordingly, the inconsistency mentioned in point 2.2 would still have remained. Furthermore, it would have been questionable whether such a claim would have fulfilled the requirements of Article 123(2) taking into account that, on the one hand, the content of 55 mole % of component (iii) is not mentioned in the application as filed and, on the other hand, the proposed amendments do not represent the sole possible correction leading to a total amount of the components (i), (ii) and (iii) of 100 mole %. The proposed amendments involve making the assumption that the maxima for components (i), (ii) and (iii) had been correctly stated, and that it was only the values for the minima of components (ii) and (iii) that should be corrected. However, Example 11 of Table IV (in the description originally filed, being Example 10 of the granted patent) shows a composition with 22.5% of component (ii), i.e. an amount outside the maximum limit of 20% stated in the claim. As this is an example of the invention, there seems no clear justification for assuming that the maximum for component (ii) is correct. In this context the Board observes that already during the examining procedure an amendment changing the lower limit of mole % for the content of component (iii) to 55 mole % had been considered as contravening

Article 123(2) (cf. the 4th communication of the
Examining Division, dated 28 April 1982).

Order

For these reasons, it is decided that

The appeal is dismissed

The Registrar:



P. Martorana

The Chairman



P.A.M. Lançon

M.Es
P.H.