BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

D E C I S I O N
of 13 November 2003

Case Number: T 0979/01 - 3.5.2

Application Number: 95307545.4

Publication Number: 0710962

IPC: H01B 7/34

Language of the proceedings: EN

Title of invention:
Fire resistant cable for use in local area network

Applicant:
AT&T Corp.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56, 84, 123(2)

Keyword:
"Amendments - added subject matter (no)"
"Claims - clarity (yes)"
"Inventive Step - yes

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0979/01 - 3.5.2

DECISION
of the Technical Board of Appeal 3.5.2
of 13 November 2003

Appellant: AT&T Corp.
32 Avenue of the Americas
New York, NY 10013 - 2412 (US)

Representative: Williams, David John
Page White & Farrer
54 Doughty street
London WC1N 2LS (GB)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 2 March 2001 refusing European application No. 95307545.4 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: M. Ruggiu
J. H. P. Willems

Summary of Facts and Submissions

I. The applicant filed an appeal against the decision of the examining division to refuse European patent application Nr. 95 307 545.4.

II. The reason given for the refusal was that the amendments to claims 1 and 3 introduced subject-matter extending beyond the content of the application as filed, contrary to Article 123(2) EPC. The decision also mentioned that claim 1 was not clear (Article 84 EPC) and that its subject-matter did not involve an inventive step in the sense of Article 56 EPC.

III. The decision under appeal cited the following prior art documents:

D1: US-A-5 173 960;

D2: DE-A-2 455 780; and

D3: US-A-5 162 609.

IV. The appellant requests the grant of a patent in the following version:

Description

Pages 1 to 3 as originally filed,
Pages 4 and 4a filed with a letter of 13 October 2003,
Page 5 filed with a letter of 17 October 2003,
Pages 6 and 7 filed with a letter of 14 April 1998.

Claims

No. 1 to 7 filed with the letter of 17 October 2003.

Drawings

Sheets 1/2 and 2/2 as originally filed.

V. Claim 1 reads as follows:

"A fire retardant telecommunications cable (11) for use within a building, the cable comprising:
a core consisting of twisted pairs (21) of insulated conductors (24), each of said conductors having single, relatively uniform, insulation layer (26) of a non-fire retardant polyolefin composition; and
an outer jacket (23) having flame retardant material surrounding said core;
characterised in that:
said core consists of groups (12-19) of twisted pairs, each of said groups containing a plurality of twisted pairs twisted with respect to each other with a twist lay differing from that of adjacent groups;
the twist lay lengths of the pairs within each group differ, and
the cable has a structural return loss in a frequency range of 20 to 100 MHz which is better than or equal to $SRL_{200} - 10 \log_{10} (f/20)$ where f is the frequency and SRL_{200} is the structural return loss at 20 MHz and is at least 23 dB."

Claims 2 to 7 are dependent on claim 1.

VI. The appellant essentially argued as follows:

Page 4, lines 17 to 25, and page 6, lines 4 to 6, of the original application indicated that the jacket comprised the listed components, thus supporting the wording used in claim 1. Reference D3 disclosed a fire-resistant cable suitable for the transmission of high frequency signals in a building, which cable comprised twisted pairs of conductors having different lay lengths, thereby reducing crosstalk. D3 required a dual insulation system and taught that "if the insulation system comprised only a flame-retardant polyolefin material, the insulated conductor also would not pass the spark test". Cables employing the dual insulation layer taught in D3 had consistently failed to meet the structural return loss (SRL) requirements, often in a measure exceeding ten percent of cable production. In accordance with the present invention, however, each conductor of a twisted pair was encased within a single insulating layer of polyolefin material. The single layer presented several advantages over the dual layer system, as noted in the present application. In particular, the single layer insulation resulted in less eccentricity and less distortion during the various manufacturing operations, thereby minimising SRL. Furthermore, it was not within the customary practice followed by persons skilled in the art to twist pairs of conductors as a group with different lays with respect to other groups in order to minimise crosstalk.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

2.1 The present application as originally filed indicates at page 5, lines 10 to 12, of the description that "within each group, the twist length of the pairs differs in order to minimize crosstalk, or interpair noise". Furthermore, the description as originally filed specifies at page 5, lines 15 and 16, that "the different groups, especially those immediately adjacent to each other, should have different lays for best overall performance". Originally filed Claim 10 specifies that the cable "is a UL designated Category V cable" and, at page 3, lines 18 to 26, the originally filed description explains that "for a Category V cable, the SRL, in dB, should be, at 20 MHz, 23 dB or more. For frequencies above 20 MHz, the allowable SRL is determined by $SRL_f \geq SRL_{200} - 10 \log_{10} (f/20)$ where SRL_{200} is the SRL at 20 MHz and f is the frequency. It should be understood that the measured SRL is given by dB below signal and hence, in actuality, is a negative figure". The originally filed description also indicates at page 6, lines 4 to 6, that "in accordance with the principles of the invention, jacket 23 comprises a mixture of PVC material and other ingredients which render it highly flame retardant". The application as filed thus discloses a jacket having flame retardant material as specified in present claim 1. The further features of claim 1 are found in claim 1 as originally filed.

Thus, the combination of features recited in present claim 1 is contained in the application as originally filed.

2.2 The dependent claims have been amended for consistency with present claim 1.

2.3 The description of the application has been amended to make it consistent with the present claims, acknowledge the background art and correct some clerical errors.

2.4 Therefore, the application has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed and the amendments do not contravene Article 123(2) EPC.

3. *Clarity*

The wording of present claim 1 makes clear that the twist lengths of the pairs within each group differ and that the twisted pairs of each group are twisted with respect to each other with a twist lay differing from that of adjacent groups.

The board therefore considers that the wording of claim 1 meets the requirement of Article 84 EPC.

4. *Novelty*

None of documents D1, D2 and D3 discloses a telecommunications cable with a core consisting of groups of twisted pairs, in which each of said groups contains a plurality of twisted pairs twisted with

respect to each other with a twist lay differing from that of adjacent groups.

Thus, the subject-matter defined by present claim 1 is considered to be new in the sense of Article 54(1) EPC.

5. *Inventive step*

5.1 Document D1 relates to a fire retardant telecommunications cable for use within a building, in particular as a riser cable. The cable of D1 has a core 22 consisting of a plurality of twisted pairs 24 of insulated conductors 26. A single insulation layer 34, made of polyethylene or copolymers thereof, i.e. a non-fire retardant polyolefin composition, is provided around each of the conductors 32, which permits higher transmission frequencies and bit rates. As appears from Figure 1 of D1, this single insulation layer 34 is relatively uniform. An outer jacket 29 surrounding the core 22 is made of a plastic fire retardant material, in particular including PVC as a base resin (see in particular column 4, line 16 to column 5, line 3 of D1). The fire retardant material in the jacket 29 may include a constituent which releases water vapour or carbon dioxide endothermically during decomposition which serves to retard the spread of fire by cooling the substrate and diluting combustible gases (see column 5, lines 49 to 55 of D1). Therefore, D1 also discloses the inclusion of a flame retardant additive in the jacket.

5.2 The features recited in the characterising portion of present claim 1 are new with respect to the prior art disclosed in D1 and aim at improving the structural

return loss (SRL) of the cable. In particular, these new features increase the SRL margin with respect to what is required for a Category V cable and thereby lower the rejection rate due to not meeting the SRL requirement (see page 4a, lines 17 to 24, page 7, lines 1 to 16, and Figure 2 (table I) of the application in its present form).

5.3 D2 discloses a fire retardant telecommunications cable with a core consisting of conductors insulated by a layer of polyethylene and an outer jacket of flame retardant material.

5.4 D3 describes a fire retardant telecommunications cable with a core consisting of twisted pairs having different twist lay lengths.

5.5 However, none of the cited documents of the state of the art discloses to arrange twisted pairs of a telecommunications cable into groups and to twist the twisted pairs of each group with respect to each other with a twist lay differing from that of adjacent groups.

Therefore, no evidence is available that this feature would be obvious to the skilled person and, in combination with the other features recited in present claim 1, would lead to a cable having an improved SRL.

Thus, the board comes to the conclusion that, having regard to the state of the art, the subject-matter of claim 1 is not obvious to a person skilled in the art and can be considered as involving an inventive step in the sense of Article 56 EPC.

5.6 Claims 2 to 7 are dependent on claim 1, so that their subject-matter can also be considered as involving an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in the following version:

Description

Pages 1 to 3 as originally filed,
Pages 4 and 4a filed with the letter of 13 October 2003,
Page 5 filed with the letter of 17 October 2003,
Pages 6 and 7 filed with the letter of 14 April 1998.

Claims

No. 1 to 7 filed with the letter of 17 October 2003.

Drawings

Sheets 1/2 and 2/2 as originally filed.

The Registrar: The Chairman:

D. Sauter W. J. L. Wheeler