BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Publication in the Official Journal Yes / No

File Number: T 449/89 - 3.5.2

Application No.: 84 900 256.3

Publication No.: WO 84/02798

Title of invention: Static reduction in magnetic recording cassettes

Classification: G11B 23/04

D E C I S I O N
of 6 February 1991

Applicant: Minnesota Mining and Manufacturing Company

EPC Articles 56, 123(2), 111(1)

Keyword: Main request - inventive step (no)
first auxiliary request - allowable extension (no)
second auxiliary request - remittal to Examining Division

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Case Number : T 449/89 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 6 February 1991

Appellant : Minnesota Mining and Manufacturing Company
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Decision under appeal : Decision of Examining Division of the European Patent Office dated 10 March 1989 refusing European patent application No. 84 900 256.3 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : E. Persson
Members : J. Van Voorthuizen
W. Riewald

Summary of Facts and Submissions

I. European patent application No. 84 900 256.3 (Publication No. WO 84/02798) was refused by a decision of the Examining Division dated 10.03.1989.

II. This decision was based on Claims 1-20 filed on 19.01.1988 and also dealt with an informal proposal for amendment of Claim 1 made in the oral proceedings before the Examining Division held on 25.01.1989.

The reason given for the refusal was that the claimed subject-matter lacked inventive step having regard to:

D2: US-A-4 313 978
D3: US-A-4 345 284
D4: Ullmanns Encyklopädie der technischen Chemie, Vol. 15 (1978) pages 270-271
D6: Kunststoff-Handbuch, Vol. 5 (1969), page 455.

III. The Appellant lodged an appeal against the said decision. Oral proceedings were held on 06.02.1991.

IV. In connection with these proceedings the Appellant submitted the following further documents:

D7: A report containing the results of experiments which had been performed on the composition according to Example 1 of the description
D8: "Video Review", September 1985, pages 50-69
D9: A number of tables referring to plant studies
D10: Parts of the correspondence between the Appellant's European and US representatives.

V. In the course of the oral proceedings the Appellant filed three sets of claims by way of a main and two auxiliary requests. The main and first auxiliary request are based on two sets of claims filed on 25.01.91 with minor changes of wording made in the oral proceedings.

Claim 1 of the main request reads:

1. An organic polymeric resin cassette for the housing of electromagnetic recording tape characterized by the fact that the cassette contains a coating of between 0.5 to 250 micrograms per square inch (0.08 to 40 micrograms per square centimeter) of a non-volatile, non-integral (as herein defined), electrically conductive, organic composition to reduce electrostatic charging.

Claims 2-8 are dependent on Claim 1.

Claim 1 of the first auxiliary request reads:

1. An organic polymeric resin cassette for the housing of magnetic recording tape characterized by the fact that the cassette contains a coating of between 0.5 to 250 micrograms per square inch (0.08 to 40 micrograms per square centimeter) of a non-volatile, non-integral, electrically conductive, organic composition to reduce electrostatic charging wherein the non-volatile, non-integral, electrically conductive, organic composition comprises:

   a. a fluorinated anionic surfactant which is an amine salt of an acid containing a fluorinated organic radical;

b. an antistatic agent which is an ionic salt of an amine; and

c. polyethylene glycol.

Claims 2-8 are dependent on Claim 1.

Claim 9 is an independent claim reading:

9. An antistatic composition, comprising:

a. a fluorinated anionic surfactant which is an amine salt of an acid containing a fluorinated organic radical;

b. an antistatic agent which is an anionic salt of an amine; and

c. polyethylene glycol.

Claim 10 is dependent on Claim 9.

Claim 1 of the second auxiliary request reads:

1. A method for the reduction of static charge build-up in cassettes for housing magnetic recording tape consisting of spraying plastic components of the cassette with an antistatic composition containing

0.057 parts by weight of piperidinium toluene sulfonate
0.023 parts by weight of piperidinium perfluoro-octyl sulfonate, and
0.02 parts by weight of polyethylene glycol 200

dissolved in a volatile vehicle consisting of

75 parts by weight of Freon and
25 parts by weight of ethyl or isopropyl alcohol

to form a coating on the surface of the components of between 0.5 to 250 micrograms per square inch (0.08 to 40 micrograms per square centimeter).

Claims 2-7 are dependent on Claim 1.

VI. The Appellant's arguments can be summarised as follows:

The Appellant, in the course of research on magnetic tape cassettes, has found that drop-outs in tape recording/replay are caused by dust particles which are attracted to the cassette by electrostatic effects during the manufacturing stage and successive handling of the cassette. He has also found that the said effects can be avoided to a surprisingly high degree by applying to the cassette or a part thereof a coating as defined in Claim 1 of the main request. Particularly good results are obtained with the coatings defined in Claims 1 of the first and second auxiliary requests. Although coating compositions as covered by Claim 1 of the main request may be known in themselves as antistatic agents, their use in tape cassettes is not obvious, as the person skilled in the art will not expect that the application of an external antistatic agent would significantly improve the reduction of static charge build-up in comparison with the application of conducting or other internal static agents in cassettes which was known. Moreover, as it is very undesirable that a transfer takes place of the antistatic agent to the tape, the skilled man would not have considered the application of a non-integral coating, i.e. a not self-sustaining film.

The Appellant further referred to the commercial success of the cassettes according to the invention as evidenced by D8.

In support of the first auxiliary request the Appellant stated that it was based on Example 1 on page 9 of the description. It had been found that the presence of polyethylene glycol (PEG) in the composition has the unexpected effect of making the antistatic composition far more effective at very low humidities. Although the example concerned a specific composition, the person skilled in the art would read it in the light of the description and would then realise that irrespective of the specified amounts of the constituents in the example, the general idea was disclosed of using PEG in combination with the other constituents which admittedly were known from D2. Therefore, a broader claim should be allowable without contravening Article 123(2) EPC.

VII. The Appellant requested the grant of a European patent on the basis of the main request or the first or second auxiliary request.

Reasons for the Decision

1. The appeal is admissible.

2. Documents 8-10 were submitted during the oral proceedings and no reasons were given for their submission at such a late stage of the appeal proceedings. As they did not appear to be relevant to the issues to be decided, the Board disregarded these documents (Article 114(2) EPC). Document 7 was submitted one day before the date of the oral proceedings. As, however, its contents appeared to be relevant to the issue of inventive step with respect to the

first and second auxiliary requests, the Board admitted this document into the proceedings.

3. Main request

3.1 Document D3 discloses a cassette for magnetic recording tape in which electrostatic charging is reduced. To this end, the housing (12) of the cassette is made of an organic polymeric resin (ABS, polystyrene) to which powdered or fibrous graphite has been added which renders the housing electrically conductive so that any electric charge accumulating thereon can discharge when the cassette is grounded.

3.2 With respect to this prior art the problem which the invention aims to solve appears to be that of further reducing the residual electrostatic charging of magnetic tape cassettes during manufacture and use.

The Appellant has pointed out that the known solution was not completely satisfactory because it allowed a residual charging (the charge retained on the body after 20 hours of exposure to air at 20°C and 30% relative humidity) in excess of 2000 V (see the description, page 3, lines 3-8 and 16-18).

No inventive merit can be seen in identifying this problem, since it is to be normally expected from a skilled person that he attempts to improve the known characteristics of known articles.

3.3 The Appellant has advanced that the more specific problem to be solved was that of reducing drop-outs in the recording and/or reproducing mode of the tape. Concerning this argument, the Board is of the opinion that it is generally known that drop-outs may be caused by minute dust

particles on the surface of the tape so that precautions are usually taken to prevent dust from entering the tape cassette. It is, furthermore, generally known that one of the major effects of static charging is the attraction of dust particles (cf. D4, page 270, right column, lines 7-9). It is also generally known that electric charges build up on articles made of organic polymeric resins during their manufacture and handling, especially if a rubbing action is involved so that these articles are prone to collecting dust. The Board, therefore, takes the view that the person skilled in the art must be considered to be able to attribute at least part of the drop-outs of magnetic tape to the presence of dust attracted by the cassette. This formulation of the problem as stated by the Appellant cannot consequently contribute to inventive step.

3.4 Antistatic compositions for reducing electrostatic charging of articles made from organic polymeric resins are well known in the art as documented by D4 and D6.

Essentially two kinds of antistatic agents are described in the prior art:

Agents for internal application, which are thus included in the resin constituting the article, and

agents for external application, which are applied on the surface of the article.

The internal agents (with the exception of carbon black) diffuse after some time to the surface of the article and constitute there an antistatic film.

The external agents are generally applied as water/alcohol solution on the surface of the article; they are immediately effective but can be removed by wiping the

surface, whereby they last a limited time since no supply from inside the article is possible (see in particular D4, page 270, right-hand column, lines 19-31 and D6, page 455, lines 22-27).

Moreover, D2 discloses a class of organic electrically conductive compositions for reducing electrostatic charging which is particularly advantageous as these compositions need to be applied only as a thin coating. Such coatings are not easily broken and are durable to withstand polishing and normal wear without appreciable loss of conductivity, cf. the passage bridging columns 3 and 4.

3.5 In the opinion of the Board, the skilled person, as appears from the cited passage of D4, would be aware that the use of an internal antistatic agent does not necessarily provide the optimal solution to the problem of static charging of cassettes, especially during their manufacture, because the internal agents are effective only after some delay.

Where an immediate effect is needed as is apparently the case during the manufacture of tape cassettes, the prior art suggests to use an external agent. An external agent can be wiped away from the treated article and thus appears to constitute a non-integral composition in the sense of the present application. Furthermore, the known conductive organic compositions for external application are by their nature all non-volatile.

Thus, it would be obvious to use an external antistatic agent for reducing the residual charging quickly after the manufacture of the cassette housing. As indicated in D6, an external agent has a limited life when the article on which it is applied is frequently wiped. Otherwise, an external agent would apparently remain effective for a long time.

Thus, it appears that once the problem of reducing residual charging during the manufacture of the cassette is solved by using an external agent, the problem of reducing the residual charging during use is also solved, at least for some time.

3.6 It appears clearly from the teaching of the prior art that an external application of an antistatic agent requires less agent than an internal application to obtain the same antistatic effect. In the opinion of the Board the skilled person would be able to determine, for example by simple experiments, the required amount of external agent per surface unit. The selection of the range specified in Claim 1 thus does not involve an inventive step. On the other hand, it is observed that amounts of 0.88 to 88.4 micrograms per square inch falling within the claimed range are disclosed in D2 for one of the external antistatic agents specified in the application (see D2, column 4, lines 32-38).

3.7 The Appellant has essentially submitted that the use of an external antistatic agent on a cassette would produce a surprising effect (the level of residual charging would be much less than with the prior art solution), that the prior art manifests a clear technical prejudice against the solution of the invention and that the invention has met commercial success and independent industry-wide recognition.

3.8 In respect of the first argument (surprising effect) the Board observes that the tests made by the Appellant have been limited to a particular composition as representative of the invention while present Claim 1 covers practically the use of any known external antistatic agent.

The tests presented by the Appellant also do not indicate which antistatic compositions were present in the "commercially available" cassettes used for comparison purposes.

Furthermore, the prior art indicates that the effect of an external agent is immediate and thus it appears that the skilled person would expect better results to be obtained with an external agent than with an internal agent at least for a certain time. Thus, it seems that a skilled person would not have been surprised that the application of an external antistatic agent reduces the level of residual charging.

3.9 The Board is of the opinion that the Appellant has not brought forward convincing evidence with regard to the alleged existence of a technical prejudice.

3.10 For the reasons set out above and irrespective of the alleged commercial success and industry-wide recognition, the Board takes the view that in consideration of the prior art the skilled person would arrive in an obvious manner at the subject-matter of Claim 1 of the main request, which consequently has to be rejected.

4. First auxiliary request

4.1 With respect to Claim 1 of this request, the Appellant has referred to Example 1 on page 9 of the description as supporting this claim.

The said Example discloses a coating consisting of three exactly defined "Additives", namely Piperidinium toluene sulfonate, Piperidinium perfluoro-octyl sulfonate and Polyethylene glycol (PEG) 200, in specified amounts. With

this specific coating, a very good result under low relative humidity conditions is obtained.

4.2 The claim under consideration, however, defines a coating in terms of the general classes to which these three "additives" belong.

The first two classes of additives are mentioned several times in the application as filed, also in combination, but the Example is the only place where PEG is referred to at all and even then, in relation to a particular type of PEG.

4.3 The Board is, therefore, of the opinion that the very specific disclosure of a coating composition according to the Example does not provide a basis for the much more broadly worded Claim 1. In particular, there was no reason for the person skilled in the art to assume that the presence of PEG would cause the high effectiveness of the coating at low relative humidities.

4.4 For this reason, the subject-matter of Claim 1 must be regarded as extending beyond the content of the application as filed, so that this claim contravenes Article 123(2) EPC. Consequently, the first auxiliary request has to be rejected as well.

5. Second auxiliary request

5.1 Claim 1 according to this request is formulated as a method claim based on Example 1.

Although all the claims presented up till now in the proceedings were of the product type, the Board sees no objection to the introduction of a method claim as the application as filed made reference to "a device and method

for the reduction of charge buildup" (page 1, lines 3,4) and stated that "the present invention provides for an improved method" therefor (page 1, lines 27, 28).

5.2 The present Claim 1 was filed at a very late stage of the proceedings but clearly constitutes a restriction in subject-matter remaining within the scope of the subject-matter for which the Appellant has consistently sought protection. Moreover, as this claim at first sight seems to offer a fair prospect of being allowable after examination, the Board has decided to accept this claim as a basis for continuing the procedure.

5.3 As, however, the subject-matter of Claim 1 has not been specifically claimed before and consequently has not been examined in detail, the Board, in order not to deprive the Appellant of an examination by two instances, making use of its power under Article 111(1) EPC, will remit the case to the Examining Division for further prosecution.

5.4 Incidentally, the Board has noted that in the passage bridging page 9 and page 10 of the description it is said that findings relating to the coating according to Example 1 have been published. This question should also be dealt with in the continued examination by the Examining Division.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The Appellant's main and first auxiliary requests are rejected.

3. The case is remitted to the Examining Division for further prosecution on the basis of the second auxiliary request.

The Registrar: The Chairman:

M. Kiehl E. Persson