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File Number: T 233/90 - 3.3.2  
Application No.: 83 306 618.6  
Publication No.: 0 107 984  
Title of invention: Magnetic recording medium

Classification: G11B 5/70

D E C I S I O N  
of 8 July 1992

Proprietor of the patent: Konica Corporation

Opponent: 01) Bayer AG, Leverkusen Konzernverwaltung RP  
02) BASF Aktiengesellschaft, Ludwigshafen

Headword: Recording medium/KONICA

EPC Art. 54(3)

Keyword: "Novelty (no) - Feature implicitly disclosed in a document according to Art. 54(3) - "Usual manner" on the effective date of this document - Only one usual manner on this date"

When assessing novelty, it is not permissible to "combine" separate items of prior art together. Only the actual content of a prior document as it would have been understood by a skilled person on its effective date can destroy novelty. In the case of a prior document according to Article 54(3), the effective date is the date of filing or the priority date of the said document. However, in a case such as the present, where the document according to Article 54(3) refers to "a usual manner" of preparing a product, it is permissible to use documents of reference such as handbooks, encyclopaedia or dictionaries in order to determine what the skilled person would have understood by such a reference on the effective date of the prior document.



Case Number : T 233/90 - 3.3.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.2  
of 8 July 1992

**Appellant :**  
(Proprietor of the patent)

Konica Corporation  
2226-2, Nishi-shinjuku 1-chome  
Shinjuku-ku  
Tokyo (JP)

**Representative :**

Ellis-Jones, Patrick George Armine  
J.A. KEMP & Co.  
14 South Square  
Gray's Inn  
GB-London WC1R 5EU (GB)

**Respondent :**  
(Opponent 01)

Bayer AG, Leverkusen  
Konzernverwaltung RP  
Patente Konzern  
Bayerwerk  
W-5090 Leverkusen (DE)

**Respondent :**  
(Opponent 02)

BASF Aktiengesellschaft, Ludwigshafen  
- Patentabteilung - C6 -  
Carl-Bosch-Straße 38  
W-6700 Ludwigshafen (DE)

**Decision under appeal :**

Decision of Opposition Division of the European  
Patent Office dated 19 December 1989, posted on  
26 January 1990 revoking European patent  
No. 0 107 984 pursuant to Article 102(1) EPC.

**Composition of the Board :**

**Chairman :** P.A.M. Lançon  
**Members :** M.M. Eberhard  
R.L.J. Schulte

## Summary of Facts and Submissions

- I. European patent No. 0 107 984 concerning magnetic recording media and based on application No. 83 306 618.6 was granted on the basis of fifteen claims.
- II. The two Respondents filed notices of opposition against the European patent. They relied upon the following documents during the opposition proceeding:
- (1) EP-A-0 076 462
  - (2) "Das Magnetband", Altrichter, Verlag der technischen Chemie, Berlin (1958), page 47.
  - (3) Ullmanns Encyclopädie der technischen Chemie, 4. Auflage (1978), Band 16, pages 364/365.
  - (4) Table of magnetization values.
- III. The Opposition Division revoked the patent on the ground that amended Claim 1, filed 18 May 1989 did not comply with Articles 52(1) and 54(3) EPC. The said claim reads as follows:
- "A magnetic recording medium which comprises, on a support, a magnetic layer containing ferromagnetic powder comprising ferromagnetic iron oxide particles characterised in that the iron oxide particles possess a surface layer with cobalt adsorbed thereon, the average grain size of said particles being not more than 0.5  $\mu\text{m}$ , the ratio of the major axis to the minor axis (acicular ratio)  $R_a$  and the coercive force  $H_c$  thereof satisfying the following formulae:
- $1.3 \leq R_a \leq 4.5$ , and  $43.8 \leq H_c \leq 63.7 \text{ kA/m}$   
( $550 \leq H_c \leq 800 \text{ Oe}$ ), and in that the magnetic layer is formed on the support with the application of a magnetic field."

According to the decision the magnetic recording medium of Claim 1 was not novel having regard to the disclosure of document (1). The Opposition Division considered that the feature "the magnetic layer is formed on the support with the application of a magnetic field" resulted from the disclosure in (1) of a magnetic tape with "excellent orientation property" which was prepared "in a usual manner". Documents (2) and (3) would confirm that a "usual manner" includes the application of a magnetic field. This feature would also result from the squareness ratio of 0.8 according to Example 6 of (1) since it was clear from document (4) that magnetic layers exhibited a squareness ratio of from 0.7 to 0.9 when formed with the application of a magnetic field and a squareness ratio of from 0.55 to 0.65 in the absence thereof.

IV. The Appellant (Patentee) lodged an appeal against this decision. The Appellant's arguments in the statement of grounds of appeal and during the oral proceedings held on 8 July 1992 may be summarised as follows:

There was no support in document (1) for the inevitability of using a magnetic field (as regards inevitability, cf. T 103/86 of 20 March 1987, not published in OJ EPO). The fact that the missing feature was a common one was not enough, it had to be the only one. Although the application of a magnetic field was not unusual, orientation could also be achieved by controlling the manner of extrusion or coating of the particle composition. The additional documents (X2) and (Z1) cited by Respondent II, i.e US-A-2 711 901 and C.D. Mee, the Physics of Magnetic Recording, 1964, pp. 212 ff. respectively, would describe a particle orientation based on shearing forces during the coating process. According to (X2) an orientation ratio of 1.3 was obtained by physical orientation of the particles. As regards the

reference to excellent orientation property and erasability on page 4, lines 17/18 in (1), it was clear from the foregoing paragraphs that these properties arose from the nature of the particles and had nothing to do with the way in which the tape was made. In this context orientation would mean the ability to reproduce the sound. Furthermore, the squareness ratios given in the working examples of (1) did not support the view that a magnetic field must have been applied. In comparative Example 1 the squareness ratio was only 0.7, i.e. on the borderline in the table submitted by the Respondent during oral proceedings before the Opposition Division, and in comparative Example 4 the squareness ratio was 0.64. Since according to Respondent I this latter value clearly implied that no magnetic field was used, there was no reason to conclude that it was applied in Example 6.

Moreover, T 194/84 (OJ EPO 1990, 59) contained the statement that the same standard should apply when examining novelty or the allowability of amendments. Since it would not have been allowable to insert into Claim 1 of document (1) a reference to the use of a magnetic field, there could be no question of this document destroying the novelty of the subject-matter presently claimed.

In reply to the question of the Board concerning documents disclosing orientation methods not based on magnetic fields, the Appellant answered that he was aware only of (Z1) and (X2).

The Appellant also filed four alternative sets of Claims, A to D, and experimental data in order to show the advantages provided by the use of a titanate coupling agent.

V. The Respondents contended that the Appellant's interpretation of the term "orientation property" used in (1) was not correct. This term clearly related to the step of orientation of particles on the tape carried out immediately after the coating procedure when the particles were still movable. In the Respondent's opinion it was generally known before the priority date that the preparation of magnetic recording media included the step of orienting the anisotropic particles by application of a magnetic field. Respondent II cited twelve further documents in support of this argument, in particular (X2) and (Z1) mentioned above, (Z4) "Handbuch für Hochfrequenz- und Elektro-Techniker", 1980, pages 327-328; and (Z6) "The Complete Handbook of Magnetic Recording", January 1981, F. Jorgensen, pages 197-198. He pointed out that although according to earlier publications (published in the fifties) the orientation of the particles in a magnetic field was advantageous in comparison to an orientation resulting for example from the coating procedure, all of the later documents made reference only to orientation in a magnetic field. Furthermore, the Appellant's comments based on the comparison of the values of the squareness ratio mentioned in the comparative examples of (1) and in the Respondent's table were not acceptable. The squareness ratio did not depend only on the application of a magnetic field but also upon the intensity of this field and upon the dispersibility of the particles. Since one of the aims of document (1) was to improve the dispersibility of the particles, the comparative examples would show lower squareness ratios because of the lower dispersibility of the particles. It was self evident that a tape having a squareness ratio of about 0.8 as set out in Example 6 of (1) could only be prepared by applying a magnetic field. Moreover, all commercial magnetic tapes would show anisotropic magnetic behaviour. Therefore, it was implicit from the reference to the preparation "in a usual manner"

in (1) that the magnetic particles were oriented by a magnetic field.

- VI. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request dated 17 May 1989 or on the basis of the auxiliary request A, filed 4 June 1990; B, filed 9 June 1990; C, dated 8 June 1992 and D, filed during oral proceedings.

The Respondents requested that the appeal be dismissed.

#### Reasons for the Decision

1. The appeal is admissible.
2. There are no formal objections under Article 123(2) and (3) EPC to Claim 1 of the main request since it is supported by the original disclosure and manifestly does not extend the protection conferred. Thus, Claim 1 is based on Claim 1 as originally filed and on the original description, page 17, lines 12 to 15 and 19 to 21; page 18, lines 12/13; page 19, last paragraph.
3. Document (1), which was filed before the priority date of the disputed patent, belongs to the state of the art according to Article 54(3) EPC for all the Contracting States designated in the patent. The question to be investigated is whether the magnetic recording medium as defined in Claim 1 of the main request is new with respect to the disclosure of this document.
  - 3.1 Document (1) describes a magnetic recording medium, for example a magnetic tape, which comprises, on a support, a magnetic layer containing ferromagnetic powder. The latter

comprises ferromagnetic iron oxide particles which possess a surface layer with cobalt adsorbed thereon (cf. page 8, line 23 up to page 9, line 1; page 9, lines 16 to 18 and page 19, Example 6, Claims 8 and 10). The particle size, the acicular ratio and the coercive force of the particles used in Example 6 fall within the ranges defined in Claim 1 of the patent-in-suit. This was not disputed by the parties. Therefore, novelty of the magnetic recording medium only depends upon whether or not the teaching of document (1) explicitly or implicitly contains the feature that "the magnetic layer is formed on the support with the application of a magnetic field."

3.2 Document (1) does not expressly mention that a magnetic field is applied directly after the coating operation in order to orient the particles. It is indicated at page 11 that a magnetic recording medium is prepared "in a usual manner". For example the particles are mixed with a binding resin, an organic solvent and conventional additives to prepare a paint composition, the paint is applied to a base by conventional means and then the product is dried (cf. page 11, lines 14 to 24). In the examples of (1), which all relate to the manufacture of magnetic tapes, there is no mention of an orientation step by means of a magnetic field directly after the coating step. However, in the Respondent's opinion this feature is implicit to a skilled person in view of the reference to a "usual manner" of preparing a magnetic recording medium in (1) since, in the case of magnetic tapes, the usual process involves passing the coated support through a magnetic field in order to orient or align the particles.

3.3 When assessing novelty, it is not permissible to "combine" separate items of prior art together. Only the actual content of a prior document as it would have been understood by a skilled person on its effective date can



destroy novelty. In the case of a prior document according to Article 54(3), the effective date is the date of filing or the priority date of the said document. However, in a case such as the present, where the document according to Article 54(3) refers to "a usual manner" of preparing a product, it is permissible to use documents of reference such as handbooks, encyclopaedia or dictionaries in order to determine what the skilled person would have understood by such a reference on the effective date of the prior document. Concerning document (1), it is questionable whether the priority date can be allocated to the combination of Example 6 with the general statement on page 11, lines 14 to 18 referring to a usual manner of preparing a magnetic recording medium. Under these circumstances the filing date of document (1) is taken into consideration for the part of (1) relating to this combination of features. Thus, it is the usual manner(s) of manufacturing magnetic tapes on this date, i.e. on 29 September 1982, which should be taken into account when reading (1).

The Appellant has admitted that orientation of the particles by a magnetic field before the drying step was usual in the case of magnetic tapes. Indeed documents (3), (Z4) and (Z6) which are handbooks or encyclopaedia illustrating the common general knowledge and which were published in 1978, 1980 and 1981 respectively, show that from 1978 to 1981 the process of manufacturing magnetic tapes actually included the step of guiding the coated support through an orientation magnetic field immediately after coating, while the binder was still wet, whereby the particles were aligned (cf. (Z6) page 196, second paragraph, (Z4) page 328, lines 15 to 18 and Figure 13; (3) page 364, Figure 2, paragraph 3.2, the two last lines and page 365, right-hand column, lines 8 to 13). Under these circumstances, the Board has no reason to doubt that

it was a customary practice on the filing date of document (1) to orient the particles by means of a magnetic field when preparing magnetic tapes.

The Appellant has alleged that there existed other methods for orienting the particles during the preparation of magnetic tapes and has referred to documents (Z<sub>1</sub>) and (X<sub>2</sub>). It is true that according to (Z<sub>1</sub>) some orientation of the particles occurs due to the longitudinal shearing effects during the coating process (cf. page 218, lines 12 to 14). Document (X<sub>2</sub>) also mentions a slight orientation of the particles in the lengthwise direction due presumably to a physical orientation of physically anisotropic particles during the coating operation (cf. column 4, lines 58 to 63). However it also derives from these documents that this orientation is very small (according to (X<sub>2</sub>) the orientation ratio  $Br_{\parallel} / Br_{\perp}$  is much lower than 1.3) and that the desired substantial increase in orientation was already achieved by means of a magnetic field at the date of publication of (X<sub>2</sub>) and (Z<sub>1</sub>), i.e. 1955 and 1964. Even if it were assumed to the Appellant's benefit that both the orientation by shearing forces and the orientation by application of a magnetic field were usual at that time, i.e. 18 and 27 years respectively before the filing date of document (1), this would not be relevant in the present case since these two documents do not illustrate what was the usual manner of manufacturing magnetic tapes on the filing date of (1).

Under the circumstances set out above and in the absence of evidence showing the contrary, the Board can only conclude that on the filing date of (1) only one usual manner of manufacturing magnetic tapes was available to the skilled person, i.e. a method including an orientation of the particles in a magnetic field. It follows that the skilled person reading the reference to a "usual manner"

of manufacturing a magnetic recording medium in (1) would automatically have carried out an orientation of the particles in a magnetic field in the case of the manufacture of magnetic tapes according to the examples. Thus, he would inevitably have arrived at the claimed product. The Board is convinced that the person skilled in the art would not have departed from this customary practice of preparing magnetic tapes in the absence of instructions clearly specifying that orientation of the particles should be avoided or that a random particle distribution on the support is desired. Therefore, the Board comes to the conclusion that the feature "the magnetic layer is formed on the support with the application of a magnetic field" is implicitly disclosed in document (1).

The outcome of this decision would be the same if the relevant part of document (1) were entitled to the priority date of 1 October 1981 since the preceding reasoning would apply mutatis mutandis.

- 3.4 As regards the table submitted by Respondent I (cf. point IV above), the Board observes that it is neither clear where the values of the squareness ratio ( $B_r/B_s$ ) and orientation ratio ( $B_r//B_r\downarrow$ ) come from nor to what kind of particles they relate. Furthermore, as pointed out by Respondent I himself, the values of the squareness ratio depend not only upon whether or not the particles were oriented by a magnetic field during the preparation of the tape but also upon other factors in particular the dispersibility of the particles and the intensity of the applied field. Under these circumstances none of the contradictory arguments presented by the parties on the basis of the comparison of this table with the squareness ratios indicated in (1) can be followed by the Board.

- 3.5 Contrary to the Opposition Division's view, the Board considers that the statement at page 4 of (1) that the magnetic tape has excellent orientation properties is ambiguous. It might mean that the geometrical orientation of the particles on the support is excellent, that the orientation ratio of the magnetic tape is very high or that the particle magnetization, i.e. the rotation of the magnetization vectors (switching) is excellent during magnetic recording. However, having regard to the reasons given above, this question may remain open since the outcome of the decision does not depend upon the interpretation of this sentence.
- 3.6 Contrary to the Appellant's submissions, the Board's findings are in agreement with the decisions T 194/84 and T 103/86 referred to in the Statement of Grounds of appeal since they are based on the assessment of whether or not the feature in question is directly and unambiguously derivable from document (1) taking into account matter which is implicit to a person skilled in the art in what has been expressly mentioned.
4. It results from the preceding, that document (1) discloses the magnetic recording medium as defined in Claim 1 of the main request. Therefore the subject-matter of the said claim does not meet the requirement of novelty as set out in Articles 52(1) and 54(3).
5. In view of the non-patentability of Claim 1, the main request cannot be allowed. The dependent claims thus fall with this claim.
6. In connection with the auxiliary requests A to D, the Board notes that the main claims of these requests all recite additional features which are clearly not anticipated by the disclosure of document (1). Therefore,

the grounds for revocation given in the appealed decision cannot be maintained for these auxiliary requests and this decision must be set aside. However the question arises whether the amendment in Claim 1 of request A (and the same amendment in the main claim of request C) is in conformity with the provisions of Article 123(2). Furthermore, the Respondents have contended that the subject-matter of the amended claims according to the requests A and B did not involve an inventive step. As these points have not been examined during the opposition proceedings, the Board considered appropriate to remit the case to the Opposition Division for further prosecution on the basis of the auxiliary requests.

**Order**

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The main request is rejected.
3. The case is remitted to the Opposition Division for further prosecution on the basis of auxiliary requests A to D.

The Registrar:

The Chairman:

P. Martorana

P.A.M. Lançon