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**D E C I S I O N**  
**of 2 May 2006**

**Case Number:** T 0723/04 - 3.4.02

**Application Number:** 99125939.1

**Publication Number:** 1014215

**IPC:** G03G 15/08

**Language of the proceedings:** EN

**Title of invention:**

Developing roller

**Applicant:**

NITTO KOGYO CO., LTD.

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 52(1), 54(3), 83, 84

EPC R. 29(6)

**Keyword:**

"Clarity (yes - after amendment) - reference in claim to description and drawing"

"Sufficiency of disclosure (yes)"

"Novelty (yes) - product-by-process feature resulting in distinguishing structural feature"

**Decisions cited:**

T 0519/91

**Catchword:**

-



Case Number: T 0723/04 - 3.4.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.02  
of 2 May 2006

**Appellant:**

NITTO KOGYO CO., LTD.  
5-12, Shiba 1-chome  
Minato-ku  
Tokyo 105-0014 (JP)

**Representative:**

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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 27 November 2003  
refusing European application No. 99125939.1  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** A. G. Klein  
**Members:** F. J. Narganes-Quijano  
M. J. Vogel

## Summary of Facts and Submissions

- I. The appellant (applicant) has lodged an appeal against the decision of the examining division to refuse European patent application No. 99125939.1 (publication No. 1014215) claiming a priority of 24 December 1998.

In the decision under appeal the examining division referred to document

D1: EP-A-0926571

and found that the subject-matter of claim 1 of the different requests then on file was not novel within the meaning of Articles 52(1) and 54(3) and (4) EPC with regard to the disclosure of document D1. The examining division held in particular that the claimed range of values of the dynamic friction coefficient was inherently anticipated by the disclosure of document D1. In its decision the examining division also held that the invention was not sufficiently disclosed within the meaning of Article 83 EPC, and that the claimed subject-matter was not clear (Article 84 EPC) in that it failed to specify the method of measurement of the dynamic friction coefficient.

- II. With the grounds of appeal the appellant submitted an amended claim 1 and requested setting aside of the decision under appeal and the grant of a patent.

In response to a telephone consultation with the rapporteur the results of which were dispatched with a communication dated 19 December 2005 together with attached sheets showing, by way of example only,

amendments to description pages 4, 5, 8 and 10 to 17 and amendments to the claims resulting in a set of claims 1 to 8, the appellant expressed with its letter dated 10 February 2006 its agreement to the amendments. By a subsequent letter dated 3 April 2006 the appellant submitted further amendments to claim 1.

III. Claim 1 amended according to the present request of the appellant is worded as follows:

"A developing roller (10) comprising a core bar (12), an electrically conductive layer (14) formed on the circumferential surface of the core bar, and a covering layer (16) formed on the circumferential surface of the conductive layer, characterized in that, the covering layer consists of the reaction product produced by subjecting a reaction mixture consisting of a polyol, an isocyanate compound and a silicone oil reactive at the both terminals in a solvent, and optionally an electrical conductivity-imparting agent and/or a filler to a reaction condition for the polyol, the isocyanate compound and the reactive silicone oil, and has a dynamic friction coefficient against paper of 0.9 or more and less than 1.2, measured according to the method described in the description with reference to figure 2."

The appellant's request includes dependent claims 2 to 8 all referring back to claim 1.

IV. The arguments submitted by the appellant in support of its requests can be summarised as follows:

Unlike document D1 which relates to porous covering layers, the covering layer of the developing roller defined in claim 1 is a non-porous layer that can be obtained by avoiding any volatilization during the manufacture of the same. For this reason, the invention differs in structure and constitution from the disclosure of document D1 and is therefore novel over document D1.

Since the claimed invention is novel, the arguments of the examining division in support of the objection under Article 83 EPC do not apply any longer.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Amendments - Article 123(2) EPC*

After due consideration of the amendments made to the claims and to the description, the Board is satisfied that the application documents amended according to the appellant's request comply with the formal requirements of the EPC, and in particular with those set forth in Article 123(2) EPC. More particularly, the developing roller defined in claim 1 is based on claim 1 as originally filed and the passages on page 5, lines 14 to 16 and page 11, line 25 to page 12, line 10 of the application as originally filed together with figure 2 and the corresponding passage of the description on page 8, lines 10 to 19. In addition, dependent claims 2 to 8 are respectively based on claims 4 to 9 and 11 as originally filed.

Furthermore, the description has been appropriately amended and brought into conformity with the invention as defined in claim 1 (Article 84 EPC, second sentence and Rule 27(1)(c) EPC). In particular, the embodiments involving the use of volatile silicone oils are now specified as not constituting embodiments of the invention.

3. *Clarity - Article 84 and Rule 29(6) EPC*

Claim 1 as presently amended defines the method of measurement of the values of the dynamic friction coefficient specified in the claim and consequently overcomes the objection raised by the examining division under Article 84 EPC in the decision under appeal (point I above).

The Board notes that the amended claim 1 specifies the method of measurement of the dynamic friction coefficient by explicit reference to "the method described in the description with reference to figure 2". Nonetheless, in the circumstances of the present case, this formulation is exceptionally considered to be allowable under Article 84 and Rule 29(6) EPC. Rule 29(6) EPC stipulates that the claims shall not rely on references to the description or drawings "except where absolutely necessary", thus explicitly allowing a reference to the description and/or the drawings in exceptional circumstances (see e.g. T 519/91, not published in OJ EPO, point 3.1 of the reasons). In addition, although the description of the method of measurement of the dynamic friction coefficient on page 8, lines 10 to 19 of the

application is relatively short and could have been included in the claim without unduly impairing the clarity and the conciseness of the claim (see paragraphs 4.10 and 4.10a of the Guidelines for examination, section C-III cited by the examining division during the examination procedure), the method of measurement is described with reference to the specific arrangement represented in Figure 2 of the application. A clear and complete description of the arrangement represented in Figure 2 complying with the requirements of Articles 84 and 123(2) EPC together with the description of the method of measurement on page 8, lines 10 to 19 of the application would, however, have negatively affected the clarity and the conciseness of the claim (Article 84 EPC and T 519/91, *supra*). For this reason, in the Board's view a clear and complete definition of the method would in any case require an explicit reference in the claim to Figure 2.

In view of these considerations, the Board is satisfied that the present formulation of the subject-matter of claim 1 achieves a balanced compromise between the requirements of clarity and conciseness set forth in Article 84 and the provisions of Rule 29(6) EPC.

4. *Sufficiency of disclosure - Article 83 EPC*

The examining division held that the application failed to disclose all the features essential to manufacture developing rollers including a covering layer having a dynamic friction coefficient within the claimed value range (Article 83 EPC). As far as the Board understands it, the examining division's objection was based on its finding that the examples of document D1 and those of

the application were identical, and that consequently the appellant's contention that the claimed values of the dynamic friction coefficient were not anticipated by the disclosure of document D1 would, in accordance with the Guidelines for examination in the EPO, Part C, Chapter IV, point 7.5, cast doubt on the sufficiency of disclosure of the invention within the meaning of Article 83 EPC.

However, the application has been amended so as to exclude from the invention the embodiments involving the use of volatile silicone oils (see present claim 1 and point 2 above, last paragraph), and the content of the amended application and the disclosure of document D1, although close to each other, are not similar or identical. In addition, the relevant passage of the Guidelines cited by the examining division presupposes that, apart from the values of the parameter(s), "the known and the claimed products are identical in all other respects (which is to be expected if, for example, the starting products and the manufacturing processes are identical)" (Guidelines, C-IV, 7.5). Nonetheless, as will become apparent from the discussion on the issue of novelty of the claimed subject-matter (point 5.2 below), in the present case, and regardless of the claimed values of the dynamic friction coefficient (point 5.3 below), there is no identity between the product as presently claimed and the different products disclosed in document D1, or between the starting products used in the manufacture of the claimed product and those used in the manufacturing processes disclosed in document D1. Thus, as the claimed subject-matter is novel over the disclosure of document D1 regardless of the claimed parameter values



(point 5.3 below), the objection tactically raised by the examining division under Article 83 EPC as an alternative ground for refusal of the application in the event that the claimed subject-matter were to be found novel only on the grounds that the claimed parameter values were not implicitly anticipated by the disclosure of document D1 cannot be maintained any longer.

In addition, in view of the disclosure of the application, and in particular in view of the examples of starting materials, composition ratios, and reaction processes disclosed in the description of the application, the Board has no reason to doubt that the application provides enough information enabling the skilled person to carry out the claimed invention and in particular to achieve the claimed values of the dynamic friction coefficient within the meaning of Article 83 EPC.

5. *Novelty - Articles 52(1) and 54(3) EPC*

- 5.1 The examining division's finding of lack of novelty within the meaning of Articles 52(1) and 54(3) and (4) EPC was based on the disclosure of European application D1 published on 30 June 1999 and claiming priorities of 26 December 1997 and 27 October 1998. This document D1 discloses a developing roller (abstract and Figure 1) comprising a cylindrical, bar-shaped shaft core (page 4, line 52 and page 8, line 8 together with Figure 1), an electrically conductive layer formed on the circumferential surface of the core, and a covering layer formed on the circumferential surface of the conductive layer (page 4, lines 51 to 54).

According to the disclosure of the document, the whole covering layer or at least its surface region is formed of a porous or microporous body (page 3, lines 3 to 9 and page 5, lines 13 to 17), and the material of the covering layer is formed by subjecting a mixture containing a polyol, an isocyanate compound and a pore-forming agent comprising a volatile silicone oil in a solvent to a reaction condition of the polyol with the isocyanate compound in such a way that the volatile silicone oil is volatilized during the reaction to render the reaction product porous (page 5, lines 24 to 30, and page 6, lines 21 to 39).

The document further specifies that the reaction mixture may comprise, in addition to the volatile silicone oil, a reactive silicone oil (page 6, line 43 to page 7, line 36) of the type considered in the present application, i.e. a silicone oil reactive at both terminals of the oil chain (page 5, lines 7 to 30 and page 10, line 14 to page 11, line 24 of the application as filed).

- 5.2 The subject-matter of claim 1 is also directed to a developing roller comprising an electrically conductive layer formed on the surface of a core bar, and a covering layer formed on the surface of the conductive layer. However, the covering layer of the claimed invention is required to "consist of" the reaction product produced by subjecting a reaction mixture "consisting of" a polyol, an isocyanate compound and a silicone oil reactive at the both terminals in a solvent. Thus, apart from an electrical conductivity-imparting agent and/or a filler specified in the claim

as optional, the formulation of the claim excludes any other additional compound in the reaction mixture, and in particular excludes any pore-forming agent comprising a volatile silicone oil.

Document D1, however, requires the presence of the volatile silicone oil as a pore-forming agent in the reaction mixture used in the formation of the covering layer. The volatile silicone oil is not only described consistently in the disclosure of the document, and in particular in each of the examples, as a constituent of the reaction mixture, but constitutes also the sole mechanism described in document D1 for achieving one of the features disclosed in the document as essential, i.e. the provision of the covering layer as a porous layer (abstract, page 3, lines 3 to 6, lines 16 to 20 and lines 26 to 31, page 5, line 13 *ff.*, and the independent claims).

Accordingly, while present claim 1 excludes volatile silicone oils in the reaction mixture used in forming the covering layer, document D1 fails to disclose covering layers formed from a reaction mixture not comprising pore-forming agents such as volatile silicone oils, i.e. fails to disclose covering layers having the features of the covering layer defined in claim 1. The Board is aware that the material of the covering layer is only defined in claim 1 as a product-by-process feature, and that since the volatile silicone oil used in document D1 is volatilized during the reaction of the mixture (page 5, lines 24 to 29 and page 6, lines 2 to 9), the composition of the covering layers of document D1 - in particular in the case of the embodiments referred to in the last paragraph of

point 5.1 above - may anticipate the composition of the covering layer defined in present claim 1. However, as is apparent from document D1 (page 5, lines 24 to 30 and page 6, lines 29 to 39) and as also acknowledged in the present application (page 12, line 31 *ff.*), the use of a volatile silicone oil in the reaction mixture of a polyol, an isocyanate compound and a reactive silicone oil in a solvent causes the resulting reaction material to be "microporous as a whole" (page 12 of the application, lines 31 to 36). As the formulation of the present claim excludes the use of additional compounds other than those explicitly specified in the claim and none of these compounds would have the same effect as the use of the volatile silicone compound in the reaction mixtures disclosed in document D1, the reaction product defined in claim 1 would not be porous, or at least would not exhibit the degree of porosity of the reaction products disclosed in document D1.

It follows from the above considerations that the covering layer defined in claim 1 in terms of a product-by-process feature differs from the covering layers disclosed in document D1, if not by its composition, at least by its inner structure, and in particular by the lack of porosity or at least by a relatively low degree of porosity in comparison with the porosity of the covering layers disclosed in document D1.

It is noted at this point that document D1 discloses a comparative example in which no volatile silicone oil is used (page 8, lines 21 to 26). However, in this example the reaction mixture does not comprise reactive silicone oil components either (page 8, lines 11 to 20).

Thus, the resulting material would not comprise linkages derived from reactive silicone oil components (page 6, lines 43 to 50 of document D1 and page 10, lines 14 to 23 of the application) and, consequently, the comparative example would not anticipate the composition of the covering layer of the claimed developing roller.

In view of the above, none of the covering layers disclosed in document D1 would anticipate simultaneously the composition and the inner structure of the covering layer of the developing roller defined in claim 1. For this reason at least, the subject-matter of claim 1 is novel over the disclosure of document D1 within the meaning of Articles 52(1) and 54(3) and (4) EPC.

- 5.3 In view of the above conclusion, the question of whether or not the range of values of the dynamic friction coefficient specified in the claim is inherently anticipated by the covering layers of document D1 as held by the examining division is immaterial to the issue of the novelty of the claimed subject-matter over document D1 and does not need to be considered by the Board.
6. The issue of novelty of claim 1 over the remaining documents on file as well as the issue of inventive step was not addressed by the examining division in the decision under appeal. Notwithstanding, after due consideration of the documents on file, the Board is satisfied that the subject-matter of claim 1 according to the present request is novel and involves an inventive step within the meaning of Articles 52(1), 54

and 56 EPC with regard to the available prior art. In particular, document D1 is not to be considered in the assessment of inventive step (Article 56 EPC, second sentence), and none of the remaining documents discloses or suggests the features of the covering layer of the claimed developing roller.

7. Dependent claims 2 to 8 of the appellant's request concern particular embodiments of the subject-matter of claim 1. Thus, also these claims define patentable subject-matter under Articles 52(1), 54 and 56 EPC.
  
8. In view of the above, the decision under appeal is to be set aside. In addition, being satisfied that the patent application as amended according to the present request of the appellant and the invention to which it relates meet the requirements of the EPC (Article 97(2) EPC), the Board, in accordance with Article 111(1) EPC, considers it appropriate to exercise favourably the power within the competence of the examining division to order grant of a patent.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
  
2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the following application documents:
  - claim 1 filed by letter dated 3 April 2006 and claims 2 to 8 as annexed to the official communication of the Board dated 19 December 2005;
  
  - description pages 1 to 3, 6, 7, 9 and 18 to 22 as originally filed, and pages 4, 5, 8 and 10 to 17 as annexed to the official communication of the Board dated 19 December 2005; and
  
  - drawing sheet 1/1 as originally filed.

The Registrar:

The Chairman:

M. Kiehl

A. G. Klein