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D E C I S I O N
of 20 January 1995

Case Number: T 0605/93 - 3.5.1

Application Number: 86904369.5

Publication Number: 0229849

IPC: G06F 15/60

Language of the proceedings: EN

Title of invention:

Method and apparatus for designing three-dimensional container

Applicant:

DAI NIPPON INSATSU KABUSHIKI KAISHA

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 52(1), (2), (3), 56, 111(1), 123(2)

Keyword:

"Exclusion from patentability (no) - no aesthetic creation as such, no mental acts as such, no programs for computers as such, no presentations of information as such - technical contribution"

"Inventive step (yes) - unobvious feature"

"Remittal for further prosecution - remaining deficiencies"

"Content of application as filed in case of international (PCT) application"

Decisions cited:

T 0208/84

Catchword:

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Chambres de recours

Case Number: T 0605/93 - 3.5.1

DECISION
of the Technical Board of Appeal 3.5.1
of 20 January 1995

Appellant:

DIA NIPPON INSATSU KABUSHIKI KAISHA
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Decision under appeal:

Decision of the Examining Division of the European
Patent Office dated 15 February 1993 refusing
European patent application No. '86 904 369.5
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: W. B. Oettinger
G. Davies

Summary of Facts and Submissions

I. The appeal contests the Examining Division's decision to refuse the European patent application No. 86 904 369.5 (publication number 0 229 849), which had been filed, claiming seven JP priorities, on 5 July 1986 as an international application (no. PCT/JP 86/00347) under the PCT (publication number WO 87/00320).

II. The reason given for the refusal was that the subject-matter of Claim 1 filed on 21 October 1992 did not involve an inventive step, having regard to the following prior art documents:

D1: Computers & Graphics, vol.8 (1984) no.2, pages 149-161;

D2: Computer, vol.17 (1984) no.12 (December), pages 14-21.

The same conclusion was drawn for the dependent claims filed on the same day.

III. The decision under appeal was issued on 15 February 1993.

The appeal was lodged, with a request that the decision be reversed and a patent granted, on 23 April 1993. The appeal fee was paid on the same day.

On 25 June 1993, the Appellant filed a Statement of Grounds.

IV. In response to a Communication from the Board, pointing out a number of problems with the application documents on file, including Claim 1 filed with the Statement of Grounds, the Appellant filed, on 16 November 1994, complete new application documents comprising:

- description pages 1, 1a, 2, 3, 3a, 3b, 9 and 11-18,
- Claims 1-10,
- drawings sheets 1-5,

page 10 and all other parts of the original documents being deleted.

V. The independent claim reads as follows (with a clerical error in line 18 being corrected):

"1. An apparatus for designing a three-dimensional receptacle comprising:
an input unit for inputting data to design a receptacle, said input unit comprising a coordinate input unit (102);
a processing unit (101) for performing a predetermined computation on the basis of data inputted from the data input unit to provide designed data defining a three-dimensional receptacle;
an output unit for outputting an image of the three-dimensional receptacle defined by said designed data, said output unit comprising a hard copy unit (106) to output a two-dimensional projected image of a designed three-dimensional receptacle;
a display unit (104) for displaying information necessary for an operator;
a label input unit (103) to input a picture data of a label to be attached on a surface of said designed three-dimensional receptacle; and

a line drawing output unit (105) for outputting a line drawing image of said designed three-dimensional receptacle;

characterized in that

said coordinate input unit (102) inputs both of a longitudinal cross-section containing a central axis of the receptacle and a plurality of lateral cross-sections perpendicular to said central axis as two-dimensional coordinate data, and segment data indicating designated ranges along said central axis to which said respective lateral cross-sections are applied, thus to define a receptacle having a non-revolutional body;

wherein the processing unit (101) provides;

a function for computing a first three-dimensional representation of a three-dimensional receptacle based on said longitudinal cross-section, said lateral cross-sections and said segment data;

a function for computing a second three-dimensional representation of a three-dimensional receptacle, on which said label is attached, based on said first three-dimensional representation and said picture data;

a function for computing a line drawing image, which is outputted by said line drawing output unit, based on said first three-dimensional representation; and

a function for computing a two-dimensional projected image, which is outputted by said hard copy unit, based on said second three-dimensional representation."

- VI. In support of this claim, the Appellant submitted that even a combination of the teachings of D1 and D2 would not lead to the teaching of the essential feature of the claimed invention, namely the inputting of three elements, viz. a longitudinal cross-section, lateral cross-sections and segment data indicating the range for the respective lateral cross-section.

Reasons for the Decision

1. The appeal (cf. point III) is admissible.
2. In the course of examination of the appeal, it was noted that the published European application (EP-A-0 229 849) as well as the EPO's bibliographic database and, consequently, the decision under appeal (paragraph I.1), contain an obvious clerical error where they indicate the number "1465/85" of the first priority claimed.

From the number "60-146585" indicated in the published international application (WO-A-87/00320) as being the number of the respective priority application, as well as from the respective priority document filed, it is immediately apparent that the correct number should read "146585/85".

In the event that a patent is granted on the application-in-suit, the text should be amended accordingly.

3. *Amendments*

- 3.1 When examining amendments as to their admissibility under Article 123(2) EPC, these may not extend beyond the content of the "application as filed".

In the present case, where the application documents of the European application as filed are a translation of the international application as it was filed in Japanese, the content of the "application as filed" is that of the international application as it was filed. That application is available to the Board in form of the published international application, WO-A-87/00320.

In all normal circumstances, it should however be assumed that the published European application, EP-A-0 229 849, is identical in content with the published international application.

Therefore, in the following considerations, any reference to "original" application documents (description, claims, drawings) is to be understood as meaning the published European application, **unless stated otherwise.**

- 3.2 Claim 1 (cf. V) is based, in principle, on the original Claim 8 with the obviously erroneous word "cubic" having been corrected, in accordance also with the original description (e.g. page 13 line 1), into "three-dimensional" and with the particular kind of receptacle to be designed being restricted to having a non-revolutional body as disclosed, for instance, on page 12 lines 2 ff. with reference to Figures 3 and 5.

Furthermore, the functions of the individual "units" (102, 101, 106, 104, 103, 105) are now more specifically defined as disclosed in the description of the claimed apparatus (pages 14-18, Figs. 7, 8).

- 3.3 Dependent Claims 2, 4 and 6 to 9 are based on the original Claims 9, 11 and 13 to 16, respectively.

- 3.4 Claim 3 is based on the original Claim 10 with the exception of "light pen" replacing the original "write pen".

This amendment stems from an assumption expressed by the Primary Examiner in his final Communication before refusal.

The Board agrees with this assumption, given that "write pen" was obviously wrong and that, for the coordinate input unit (102), a "light pen" would appear to be one, or even the only, obvious alternative to the other examples mentioned (digitizer, tablet, mouse).

It is therefore accepted that the amended term (and not the one used in the original application documents) is a correct translation of the term used in the text of the international application for the respective example of the coordinate input unit (102) and that, therefore, no objection of lack of disclosure in the application documents constituting the really original ones (cf. point 3.1) would be justified.

- 3.5 Claim 5 is based on the original Claim 12 with the exception of "keyboard" replacing "word processor".

This amendment was also made in the examination procedure, following an objection, in said Communication, that the scope of the latter term was not clear.

In the decision under appeal, it was not discussed whether by the amended term the objection of lack of clarity was met in an admissible way. But, however this may be, given that any word processor includes a keyboard and that the inputting of character codes from whatever text processor will normally involve the use of a keyboard, it is accepted that no objection based on lack of disclosure would be justified.

- 3.6 The features added to the subject-matter of Claim 1 by Claim 10 are based on the original Claim 20.

Their combination with the subject-matter of any of the claims to which Claim 10 refers back is considered to be implicit in the original description, for instance on page 13 first paragraph when read in conjunction with other parts of section "Best mode in regard to the designing method" or of section "Best mode in regard to the designing apparatus".

- 3.7 In so far as the description has been amended, this was in accordance with Article 84 ("support") and Rule 27, in particular (1)(b) and (c), EPC, and no objection arises out of these amendments.

Where the description has not been amended, this is not a matter of Article 123(2) EPC and will therefore be dealt with later (point 7.2).

4. *Patentability*

- 4.1 Following the reason given, in the decision under appeal, for the refusal of the application, the issue now to be decided is whether the subject-matter of Claim 1 involves an inventive step.

- 4.2 However, since the claimed invention is concerned with "designing" and the apparatus claimed performs its functions by means of a processor controlled by programs and by means of a display unit presenting information, the question also arises whether the claimed invention is an "invention" within the meaning of Article 52(1), i.e. not excluded from patentability by Article 52(2) and (3) EPC. This question, raised by the Board, was commented on by the Appellant.

- 4.3 The other requirements for patentability (Article 52(1) EPC), viz. novelty and industrial application, were never, and are not now, in doubt.

5. *Non-exclusion from patentability*

5.1 In defining a designing act, the claimed subject-matter might involve "aesthetic creations".

5.2 In defining the claimed apparatus as comprising input, processing, output and display units, the claimed subject-matter comprises conventional computer hardware.

5.3 In defining inputting activities from the operator (user), the claimed invention involves "performing mental acts".

5.4 In defining what is being displayed on the respective unit, it involves "presentations of information".

5.5 In defining functions of the processing unit, it involves "programs for computers".

5.6 All of the aforementioned four kinds (5.1 and 5.3 to 5.5) of subject-matter or activity, except for the hardware features (5.2), would be excluded (Article 52(2)(b), (c) or (d) EPC), as such (Article 52(3) EPC), from patentability (Article 52(1) EPC).

5.7 However, according to the Board's case law, in cases such as thus, where there is a mix of non-excluded matters, such as hardware, with excluded matters, the claimed subject-matter is not excluded from patentability if it makes a contribution to the art in a field outside the field of excluded matters. The excluded matters generally being of an abstract nature, such contribution is generally required to be of a "technical" nature. It may lie in the problem to be solved, in the implementation of the solution, in the function of that implementation, or in its effects.

5.8 In the present case, there are sufficient indications that such a technical contribution is made to conventional computer art.

Firstly, the receptacle to be designed is not just an imaginary design but the representation of a real, concrete, thing which may subsequently be manufactured. It may thus be equated with the "image of a physical (or even, as in CAD/CAM, a simulated) object" of decision T 208/84 (OJ EPO 1987, 14) found there to be a "physical entity" and thus of a technical nature susceptible of being patented.

Second, the input units of the claimed apparatus are to be regarded as differing from "conventional" ones in that they must be so constructed as to allow data of a particular kind to be entered. This applies in particular to the coordinate input unit specifically designed so as to allow (a longitudinal and a plurality of lateral) cross-sections to be inputted, for this function implies that the said unit is prepared to accept, and recognize, the inputted data as coordinate values of said receptacle.

Even though this function will be implemented with the help of computer programs, such programs are, in the circumstances, to be regarded as tools, use of which is made in the designing process performed by the claimed apparatus when being operated by the user.

5.9 It is therefore considered that the matter for which protection is sought is not any of said excluded matters (points 5.1 and 5.3 to 5.5) **as such**, but their **use** within the functions of the apparatus which is claimed.

That apparatus is therefore to be regarded as being an "invention" within the meaning of Article 52(1) EPC.

6. *Inventive step*

6.1 As a preliminary remark before going into the issue of inventive step, it was stated in the decision under appeal that there did not seem to be any prospect of progress towards allowable claims.

Meanwhile, in the appeal, Claim 1 has been restricted to the receptacle to be designed having a non-revolutional body.

Since this feature was not claimed, at least not explicitly, in any of the claims which were rejected in the decision under appeal, said restriction is considered as a progress towards a possibly allowable claim.

6.2 Another progress is seen in the fact that the partitioning of Claim 1, which was deficient as follows from paragraphs 3 and 4 of the decision under appeal, has been amended by the transfer of substantially all of the features known from D1 to the preamble.

6.3 It is still true that the "coordinate input unit" apparatus of D1, i.e. its keyboard, could be used for inputting plural-dimensional coordinates, so that it would be appropriate for inputting cross-section data.

However, no suggestion can be derived from D1 for the inputting of, apart from a longitudinal cross-section (containing a central axis), a plurality of lateral cross-sections (perpendicular to said axis) and segment data indicating designated ranges (along the axis) to which the respective lateral cross-sections are applied, thus defining a **non-revolutional** receptacle body. D1 does not consider any receptacles other than those being a complete body of revolution. For such rotationally

symmetric receptacles there is no need at all for inputting any other cross-section than a longitudinal one.

The first feature in the characterising portion of Claim 1 is thus new against, and not rendered obvious by, D1.

6.4 The second characterising feature, defining particular functions of the processing unit, may not be novel against D1 in so far as the individual functions of computing a first three-dimensional representation of a three-dimensional receptacle, a second three-dimensional representation of such a receptacle, on which said label is attached, a line drawing image, outputted by the respective unit, and a two-dimensional projected image, outputted by the hard copy unit, are concerned.

It is new, however, in so far as the computation of the first three-dimensional representation is based on said longitudinal and lateral cross-sections and on said segment data, and the represented three-dimensional receptacle has, therefore, as a consequence of the first characterising feature, a **non-revolutional** body, the computation of the second three-dimensional representation and that of the line drawing image are both based on the first, and the receptacle represented and outputted is therefore again the one having a **non-revolutional** body, and the computation of the two-dimensional projected image is based on the second three-dimensional representation, so that again the outputted image is that of the receptacle having a **non-revolutional** body.

Therefore, even though a stricter differentiation between known and new elements in the second characterising feature of Claim 1 might appear envisageable, this feature, seen as a whole, is to be regarded as being new and not rendered obvious by D1.

6.5 The claimed apparatus is thus not obvious from D1, if account is taken of that document alone.

6.6 D2 does indicate a technique, the "surface generation", apparently allowing not only surfaces of revolution but also non-revolutional surfaces to be designed. But it does not consider how to generate a surface in a particularly advantageous way in the specific event that the receptacle is very roughly revolutionary (in the sense that a longitudinal central axis can be defined) but not exactly revolutionary, this case appearing to be on the basis of, or implicit in, the claimed invention as is illustrated, for instance, by Figures 3 and 5 of the application.

Even though some of the examples shown in D2 (e.g. Fig. 10) would seem to be "nearly" revolutionary in a similar sense, this document does not suggest, in such a case, the specific inputting of one longitudinal cross-section (cf. Fig. 4 of the application), several lateral cross-sections (Fig. 5(a) and (b)) and several segment data indicating ranges along the axis (e.g. at D) where lateral cross-sections tend to change, this being a particularly suitable measure in the mentioned case of "nearly" revolutionary bodies.

6.7 D2 is therefore not regarded as rendering the claimed apparatus obvious.

6.8 It may be questioned whether the skilled person's general knowledge in the field of receptacle geometry would lead him to consider designing such receptacle forms as claimed by means of measures as defined in Claim 1.

However, in the absence of any incentive in the cited prior art to try to find particularly suitable measures for the design of receptacles having the specific "nearly" revolutionary form (in the aforementioned sense), it appears, on the basis of probability, more reasonable to assume that the claimed invention is based on an inventive step.

6.9 In the decision under appeal, it was stated that Claim 10 then on file was an immediate extension of Claim 1. These features have been incorporated in Claim 1 now on file.

It may well be that said features are obvious once the skilled person has recognized the task of implementing in an optimal way the designing process to be performed by the function of a respective apparatus in the particular event that the receptacle to be designed has the property of being "nearly", but not strictly, rotationally symmetric, as illustrated in Figures 3 and 5, in the sense that a longitudinal central axis can be defined. But, as pointed out before (point 6.8), no incentive leading to such a task is found in the prior art.

6.10 Since Claim 1 has been restricted as pointed out above, the statement made in the decision under appeal on page 6, second paragraph, second and third sentences, no longer applies.

What would still appear relevant is the last sentence stating that, if it was required to generate such objects as shown in Figure 3, it would be clear that it is the task of the user to define "appropriate" required vertices.

While this would, *prima facie*, appear true, the Board arrived at a different view on the basis of the consideration that it is a first step from the prior art to the claimed invention to formulate the task of finding an optimal way (not foreshadowed in any way by what is disclosed in D2) for designing such an object and to recognize the particular geometric properties allowing to decide which cross-sections to input for optimizing the design, and that this two-fold first step is not obvious from either D1 or D2.

6.11 It is therefore concluded that the claimed apparatus should be regarded as involving an inventive step.

7. *Other matters*

7.1 In the decision under appeal, referring to a Communication from the Primary Examiner, Claim 2 was said to be unclear but that it could be understood in the light of the description. In said Communication it was explained why, *inter alia*, the expression "portion of", meaning "part of", was considered to be unclear. The Board agrees with this finding. Why should, for instance, only part of a label picture or part of a character be inputted?

The inputting of only a part of, for instance, a character would, moreover, appear not to be supported by the description.

In the appeal, no amendment was made in this respect and no explanation for non-amendment was given.

7.2 While many of the inconsistencies between the description and the claims have been removed (cf. 3.7), some of them have not. Reference is made, by way of examples, to page 2 line 25, page 9 lines 8 and 13, page 14 line 34.

8. *Conclusions*

8.1 The conclusions drawn for Claim 1 (points 4 to 6) render the Appellant's request that the appealed decision be set aside allowable.

8.2 The remaining deficiencies of the other application documents (points 7.1, 7.2) are such as not to render the request for grant of a patent on the basis of the documents on file allowable.

8.3 In these circumstances, it appears appropriate for the Board to make use of its power under Article 111(1) EPC to remit the case to the Examining Division, referring to the provisions of Article 111(2) EPC, for further prosecution on the basis of the application documents on file.

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 for further prosecution on the basis of the description, claims and drawings filed on 16 November 1994 (cf. points IV and V), reference being made to point 7 and, should the occasion arise, to point 2.

The Registrar:

The Chairman:

M. Kiehl

P. K. J. van den Berg