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D E C I S I O N
of 8 January 1997

Case Number: T 0439/96 - 3.4.2

Application Number: 91907121.7

Publication Number: 0521092

IPC: G01B 21/04

Language of the proceedings: EN

Title of invention:
Analogue displacement sensor

Applicant:
GEOTRONICS AB

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2), 84 and 56
EPC R. 88

Keyword:
"Correction of an error: yes"
"Subject-matter unduly extended: no"
"Clarity; inventive step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0439/96 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 8 January 1997

Appellant: GEOTRONICS AB
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 15 November 1995
refusing European patent application
No. 91 907 121.7 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: M. Chomentowski
B. J. Schachenmann

Summary of Facts and Submissions

- I. European patent application No. 91 907 121.7 (publication No. 0 521 092) was refused on the grounds of unallowable extension of subject-matter and of lack of clarity of the claims of the applicant's (appellant's) requests.

The Examining Division took the following view concerning the main claim of each of the applicant's requests A and B, which related to analogue sensors for sensing angular deviation from a normal position in a plane perpendicular to the axis of the sensing unit and for sensing axial deviation in the direction of said axis:

It was derivable from the whole content of the original application and in particular from the statement of the invention in the paragraph bridging pages 2 and 3 that the sensing unit was arranged in order to allow measurement of axial as well as angular displacement of the stylus and that it comprised the (not entirely clearly defined) configuration of electrode plates forming capacitors allowing displacement detection in a plurality of directions, namely at least two, disclosed in original claim 5. The configuration of electrode plates of the submitted claims according to requests A and B featured to measure a displacement in a single (axial) direction, which configuration was presented as additional to, i.e. separate from the main sensing unit measuring angular displacement. The features of original claim 5 had been consistently presented in combination to define the sensing unit in the application as filed; consequently, their omission and their rephrasing in the context of a separate axial

displacement measurement means (in addition to the sensing unit) represented a generalisation respectively a modification of the claimed scope to include configurations which were not originally disclosed, and this represented added subject-matter.

Moreover, the main claims according to the requests A and B failed to identify the specific adaptation of the angular sensing unit that allows axial displacement measurement in addition to angular displacement sensing, and they did not include any detail as to the particular arrangement of the electrodes allowing such separate, independent measurement of the displacement in different directions, so that they lacked clarity.

However, the Examining Division took the view that there might be an inventive step in a new claim comprising the features of original claim 5 having regard to D1 = WO-A-9000717.

- II. The appellant lodged an appeal against this decision. It was requested in particular that an error in the application documents be corrected and, auxiliarily, that oral proceedings take place.
- III. With the communication dated 26 September 1996, the Board of Appeal expressed the opinion that the sets of claims filed with the statement of grounds of appeal appeared to lack clarity, but that a new main claim drafted somewhat as in an example annexed to the communication could meet these objections.
- IV. With letter dated 12 November 1996, the appellant filed a new set of 19 claims with the only independent claim corresponding in substance to the example proposed by the Board and reading as follows:

"1. Analogue sensor for sensing deviation in at least two directions from a neutral position, from which the deviation of a measuring tip is to be indicated, said sensor comprising:

- (a) a mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 3 (read "34"); 51, 52, 54, 55) with the measuring tip (2; 36; 52), which is fixed to one end of a stick (1; 20; 35; 51; 80), said stick having at its other end a sensor portion placed in the sensor, adapted in such a manner that the sensor portion can be displaced from a reference position, which corresponds to the neutral position of the measuring tip (2; 36; 52), essentially about a central point (CM; CM') when an external displacing force acts upon the measuring tip (2; 36; 52);
- (b) a force device (3; 21; 30; 53; 73) returning the sensor portion to the reference position when said measuring tip (2; 36; 52) which has been deviated from its neutral position by a force acting externally on the tip (2; 36; 52) is no longer subject to said force;
- (c) said sensor indicating the displacement from the reference position about the central point (CM; CM') to provide a measure of the deviation, whereby the sensor provides angular sensing for displacement forces on said measuring tip (2; 36; 52) acting in a plane perpendicular to a symmetry axis of the sensor,
- (d) said sensor comprising a moving unit (10; 33; 34; 54; 55; 150) rigidly joined to the sensor portion of the mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 34; 51, 52, 54, 55) , and a stationary arrangement (11; 31, 32; 58, 59; 156, 157), the

measure of the deviation being provided between elements on said moving unit (10; 33; 34; 54; 55; 150) and elements on said stationary arrangement (11; 31, 32; 58, 59; 156, 157),

- (e) suspension means (3, 8, 9; 21; 30; 53; 151, 152, 153, 154) for the mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 34; 51, 52, 54, 55) arranged so that the mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 34; 51, 52, 54, 55) is displaceable and returnable essentially about said central point (CM; CM');

characterised by

- (f) said suspension means (3, 8, 9; 21; 30; 53; 73; 150, 153, 154) in said mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 34; 51, 52, 54, 55) being adapted for suspending said stick (1; 20; 35; 51; 80) freely such that, furthermore, said central point (CM; CM') is axially movable in a third dimension, along said symmetry axis of the sensor, by action of a force acting externally of the tip (2; 36; 52), and is returnable;
- (g) axial displacement sensing means (E, F; E1, G1, I; b, b'; 156 to 172, Bu1, Bu2) sensing, when the central point (CM; CM') is moved axially, the direction and size of displacement in the axial direction from said neutral position."

The appellant requested that a patent be granted according to said request comprising also further amendments in the dependent claims, and submitted the following arguments in support of his request:

The application as originally filed (see page 2, lines 10 to 20) contains a statement (passage 1) that the essential feature of the analogue sensor according to the invention is that one or two electrically insulated but conductive plane(s) is/are arranged, serving as collectors (sensing elements). However, this statement is preceded in the application as originally filed (see page 1, line 29 to page 2, line 8) by information about the main purpose of the invention and, specially, by another statement (passage 2) according to which this purpose is achieved with an analogue sensor with the characterizing feature disclosed in claim 1 and further features and further developments of the invention are disclosed in the subclaims. Thus, since original claim 1 did not contain such conductive plates, there is a contradiction between (passage 2) and (passage 1), so that there was an obvious error and nothing else would have been intended than what is offered as the correction pursuant to Rule 88 EPC stressing that (passage 1) concerns only an embodiment of the invention.

Moreover, the skilled person would directly and unambiguously recognise that 1) the feature of original claim 5 was not explained as being essential in the original disclosure, 2) it is not, as such, indispensable for the function of the invention in the light of the technical problem it serves to solve, and 3) the replacement or removal of it requires no real modification or other features to compensate for the change. Thus, the new claim omitting the features of original dependent claim 5 does not introduce additional subject-matter. This claim involves an inventive step in that it allows to solve the problem

of measuring displacement in the direction of the axis of the sensor, which was not taken into consideration in the known sensor of D1, which only allows to measure angular displacement in a plane perpendicular to said axis.

Reasons for the Decision

1. The appeal is admissible.

2. *Request of correction of error*

2.1 The application as originally filed (see page 2, lines 10 to 20) contains the following statement (passage 1):

"The essential feature of the analogue sensor according to the invention, which, in a manner known per se, has sensing means for dimensions in at least one direction and, for this purpose, has a ball on the tip of a measuring stick, which is spring mounted in such a manner that it can move essentially about a centre, either mounted above a spring or a "gimballed" centre or is free-floating but returnable to a central position by supplying external forces, is that one or two electrically insulated but conductive plane(s) is/are arranged, serving as collectors (sensing elements)".

2.2 As in particular stressed by the appellant, in the application as originally filed (see page 1, line 29 to page 2, line 8), this statement is preceded by information about the main purpose of the invention and, specially, by another statement (passage 2), which

reads as follows: "This purpose is achieved with an analogue sensor with the characterizing feature disclosed in Claim 1. Further features and further developments of the invention are disclosed in the subclaims."

2.3 The appellant has filed a new, amended page 2, wherein the expression (emphasis added) "The essential feature of an embodiment of the analogue sensor according to claim 1...". has been substituted for "The essential feature of the analogue sensor according to the invention...". The appellant has pointed out a contradiction between (passage 2), according to which the purpose of the invention was achieved with an analogue sensor with the characterizing feature disclosed in Claim 1, on the one hand, and (passage 1), which stressed a characterizing feature, i.e. the electrically conducting plane(s) serving as collectors, which was not comprised in original claim 1, on the other hand. The appellant has further argued that, thus, there was an obvious error, and that nothing else could have been intended than what is offered as the correction.

2.4 Since indeed it is obvious that there is a contradiction between (passage 2) and (passage 1), and since it is evident that the correction offered by the appellant in particular corresponds to the embodiment illustrated by original Figure 4A to 4D and mentioned as being the preferred embodiment (see page 12, line 6 to page 15, line 10, more in particular page 12, lines 6 to 8), the correction can be accepted pursuant to Rule 88 EPC.

3. *Allowability of the amendments*

3.1 Incidentally, it is to be noted that, as convincingly argued by the appellant, the corrected information supplied by the amendment on page 2 merely expresses what a skilled person would already derive from the original application and therefore does not change its content.

3.2 Present claim 1 is based on the combination of claim 1 and dependent claim 4, both as originally filed, and thus defines a sensor allowing also linear axial measurement. Present claim 1 additionally recites specific features comprised in all the embodiments of the original application concerning particular means of the sensor, for instance for defining the suspension means (3, 8, 9; 21; 30; 53; 151, 152, 153, 154) for the mechanical sensing unit (1, 2, 8, 9, 10; 36, 33, 34; 51, 52, 54, 55).

It is to be noted that, in the decision under appeal, which in any case concerned texts of the claims different from the text of present claim 1, the objections that the content of the application had being unduly extended were not directed to such amendments defining more specifically means of the sensor, but to features comprised in original claim 5 and which were omitted in the claims having formed the basis for said decision. According to said decision, original claim 5 defined the sensing unit as a (not entirely clearly defined) configuration of electrode plates forming capacitors allowing displacement detection in a plurality of directions, namely at least two; therein, the configuration of electrode plates was for furthermore measuring an axial displacement, along the axis of the sensor; this configuration was not presented as additional to, i.e. separate from the main sensing unit measuring angular displacement; the

features of original claim 5 had been consistently presented in combination to define the sensing unit in the application as filed; consequently, their omission and their rephrasing in the context of a separate axial displacement measurement means (in addition to the sensing unit) represented a generalisation respectively a modification of the claimed scope to include configurations which were not originally disclosed, and this represented added subject-matter.

- 3.3 However, concerning the particular features which were comprised in original claim 5 and which are not included in present claim 1, the appellant has convincingly argued as follows :

Original claim 5 was a claim dependent on, in particular, original claims 1 and 4. The skilled person reading the original application would be aware of the necessity of correcting the error mentioned on page 2 and stressing the features of said original dependent claim 5, which are not comprised in original claim 1 and which are thus only features of a preferred embodiment. In particular, one feature of original claim 5 concerns the capacitor configuration formed by electrode plates with the adapted alternating voltage supply for sensing the displacements of the sensing unit. The skilled person would directly and unambiguously recognise that 1) the feature was not explained as being essential in the original disclosure, 2) it is not, as such, indispensable for the function of the invention in the light of the technical problem it serves to solve, and 3) the replacement or removal of it requires no real modification or other features to compensate for the change.

3.4 Therefore, the present application and in particular present claim 1, which is based on the combination of original claims 1 and 4, does not contain subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

4. *Clarity*

It is to be noted that, according to the decision under appeal, in particular, the submitted main claims failed to identify the specific adaptation of the angular sensing unit that allows axial displacement measurement in addition to angular displacement sensing, and they did not include any detail as to the particular arrangement of the electrodes allowing such separate, independent measurement of the displacement in different directions, so that they lacked clarity.

Present claim 1 indeed differs from said former claims. It is derivable that said objections in the decision under appeal mainly concern lacking identification of the specific adaptation of the angular sensing unit that allows axial displacement measurement in addition to angular displacement sensing, and the details as to the particular arrangement of the electrodes allowing such separate, independent measurement of the displacement in different directions. Thus, the objection is mainly directed to the lack of information resulting from the features recited in original claim 5 being omitted in the submitted independent claims. However, as already mentioned here above in relation to the allowability of the amendments, the appellant has convincingly argued that the skilled person would directly and unambiguously recognise that 1) the feature of original claim 5 was not explained as being essential in the original disclosure, 2) it is not, as such, indispensable for the function of the invention in the light of the technical problem it serves to

solve, and 3) the replacement or removal of it requires no real modification or other features to compensate for the change. Moreover, it is not apparent that, for the skilled person, the definition of the sensor in present claim 1 is insufficient. It is not apparent either that the specific means recited in original claim 5, i.e. the capacitor configuration formed by electrode plates with the accompanying alternating voltage supply for sensing the displacements of the sensing unit, or equivalent means, are not generally known and would not be directly recognized as well adapted by the skilled person reading present claim 1. Therefore, present claim 1 is clear in the sense of Article 84 EPC.

5. *Novelty and Inventive step*

It is to be noted that novelty was not questioned in the decision under appeal and that the amendments resulting in present claim 1 are not of a nature to change the situation in this respect.

It is also to be noted that, according to a further comment in paragraph 4 on page 6 of the decision under appeal, though the general idea of adapting the sensing unit of D1 to additionally sense axial displacement was not considered as inventive, the specific realization of such an adaptation might be ascribed inventive value, whereby in particular original claim 5 was significant, so that an allowable independent claim could be formulated on the basis of a combination with said original claim 5.

As already mentioned here above, the appellant has convincingly argued as follows: the skilled person would directly and unambiguously recognise that 1) the feature of original claim 5 was not explained as being essential in the original disclosure, 2) it is not, as

such, indispensable for the function of the invention in the light of the technical problem it serves to solve, and 3) the replacement or removal of it requires no real modification of other features to compensate for the change. Thus, since there can be seen no reason to reject the findings of the Examining Division concerning a claim including the features of original claim 5, these findings also apply to present claim 1, containing the same features however worded somewhat more generally. Therefore, the subject-matter of present claim 1 also involves an inventive step in the sense of Article 56 EPC.

6. Thus, a patent can be granted on the basis of the documents on file (Article 97(2) EPC).
7. Oral proceedings, requested auxiliary, are therefore not necessary.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division with the order to grant a patent on the basis of the following documents:

Description: Pages 1 and 3 to 32 as originally filed;
Page 1a filed with applicant's
(appellant's) letter of 27 April 1994;
Page 2 filed with appellant's letter dated
15 March 1996 (statement of grounds of
appeal) and deletion of lines 33 to 35 of
page 31 in accordance with appellant's
letter dated 12 November 1996;

Claims: Nos. 1 to 19 filed with appellant's letter
dated 12 November 1996;

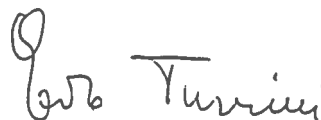
Drawings: Sheets 1/14 to 14/14 as originally filed.

The Registrar:



P. Martorana

The Chairman:



E. Turrini

MCH

B. Sch.

