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D E C I S I O N
of 13 October 1998

Case Number: T 1221/97 - 3.4.2
Application Number: 93200497.1
Publication Number: 0551164
IPC: G01B 5/00
Language of the proceedings: EN

Title of invention:
Touch probe

Patentee:
Renishaw plc

Opponent:
Marposs Societa Per Azioni

Headword:
-

Relevant legal provisions:
EPC Art. 100(b), (c), 76(1)

Keyword:
"Amendments - added subject-matter (main request, first auxiliary request - yes; second auxiliary request: no)"

Decisions cited:
G 0005/91; T 0331/87, T 0260/85, T 0527/88, T 0514/88,
T 0189/94, T 0396/95

Catchword:
-



Case Number: T 1221/97 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 13 October 1998

Appellant: Renishaw plc
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Respondent: Marposs Societa Per Azioni
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 2 December 1997
revoking European patent No. 0 551 164 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: R. Zottmann
V. Di Cerbo

Summary of Facts and Submissions

- I. The appellant (patentee) lodged an appeal against the decision of the Opposition Division revoking the patent No. 0 551 164 granted on the basis of the divisional application No. 93 200 497.1.

The opposition was based on the grounds of opposition laid down in paragraphs (a), (b) and (c) of Article 100 EPC.

The Division held that the claims did not fulfil the requirements of Article 76(1) EPC.

- II. The following documents were among others cited during the appeal procedure:

DI: US-A-4 153 998;
DII: US-A-4 451 987.
DIII: US-A-4 763 421;
DIV: WO-A-86/03829;
DV: EP-A-0 242 747; and
DVI: US-A-4 477 976.

Documents DI to DVI are cited in the parent application as originally filed (hereinafter called *parent application* or simply *application*).

- III. The oral proceedings of the present case and case T 434/97 were held on the same day, since the patents of both cases had been granted on the basis of divisional applications of the same parent application No. 91 301 477.5, now patent EP-B-0 445 945.

- IV. At the end of oral proceedings, which were held at the same day as those of case T 434/97, was announced the decision of the Board.

The appellant requested that the decision under appeal be set aside, that the patent be maintained in amended form on the basis of a main request or two auxiliary requests and that, in case of remittal to the first instance for further prosecution, a different Opposition Division should be designated.

The respondent requested:

- (a) that the appeal be dismissed;
- (b) apportionment of the costs of the oral proceedings.

V. The independent claims of the main request read as follows:

"1. A touch probe for position determining apparatus, comprising:

- a fixed housing member (10,88) having an axis;
- a movable member (12,96) for carrying a workpiece contacting stylus (14);

- bias means (24,94,98) for biasing the movable member into a rest position relative to the fixed member, the movable member being movable out of the rest position against the action of the bias means when a force is applied to the stylus;

- a pair of axially confronting annular surfaces (20,22,102), one on the fixed member and one on the movable member, the annular surfaces extending around the axis and being engageable such that one annular surface tilts to permit tilting of the movable member when the stylus contacts a workplace while the other annular surface does not tilt;

- a lateral constraint, separate from said annular surfaces, and including a support element (34,56,92,110) connected to the movable member and a seat (36,58,90,106) connected to the fixed member, the

seat having a surface which is inclined to the axis and the support element being axially biased by the bias means into the seat in contact with said inclined surface, to provide lateral constraint of said annular surface of the movable member in all directions perpendicular to the axis, the lateral constraint permitting tilting of the movable member with the support element still seated in the seat, the seat and the support element thereby providing said lateral constraint of said annular surface of the movable member in all directions simultaneously with the tilting; and

a detector (42,44,46) which is separate from the support element and the seat, for detecting deflection of the movable member out of the rest position."

"3. A touch probe for position determining apparatus, comprising:

a fixed housing member (10,60) having an axis;

a movable member (12,62) for carrying a workpiece contacting stylus (14);

bias means (24,70,76) for biasing the movable member into a rest position relative to the fixed member, the movable member being movable out of the rest position against the action of the bias means when a force is applied to the stylus;

a pair of axially confronting annular surfaces (20,22,72,74), one on the fixed member and one on the movable member, the annular surfaces extending around the axis and being engageable such that one annular surface tilts to permit tilting of the movable member when the stylus contacts a workpiece while the other annular surface does not tilt, said annular surfaces comprising an axially projecting skirt (18,72) on the movable member and a flat surface (20,74) on the fixed member;

a lateral constraint, separate from said annular surfaces, and including a support element (34,56,66,110) connected to the movable member and a seat (36,58,68,106) connected to the fixed member, the seat having a surface which is inclined to the axis and the support element being axially biased by the bias means into the seat in contact with said inclined surface, to provide lateral constraint of the movable member in all directions perpendicular to the axis, the lateral constraint permitting tilting of the movable member with the support element still seated in the seat, thereby providing said lateral constraint in all directions simultaneously with the tilting; and

a detector (42,44,46) which is separate from the support element and the seat, for detecting deflection of the movable member out of the rest position."

The independent claims of the first auxiliary request read as follows:

"1. A touch probe for position determining apparatus, comprising:

a fixed housing member (10,88) having an axis;

a movable member (12,96) for carrying a workpiece contacting stylus (14);

a pair of axially confronting annular surfaces (20,22,102), one on the fixed member and one on the movable member, the annular surfaces extending around the axis and being engageable such that one annular surface tilts to permit tilting of the movable member when the stylus contacts a workpiece while the other annular surface does not tilt;

a support element (34,56,92,110) connected to the movable member and a seat (36,58,90,106) connected to the fixed member, the seat having a surface which is inclined to the axis, the support element and the seat being separate from said annular surfaces;

first and second springs which co-operate with the annular surfaces, the support element and the seat to retain the movable member in a rest position relative to the fixed member;

the support element being axially biased by at least one of the springs into the seat in contact with said inclined surface, to provide lateral constraint of said annular surface of the movable member in all directions perpendicular to the axis, and the movable member being movable out of the rest position against the action of the at least one spring when a force is applied to the stylus, wherein the lateral constraint permits tilting of the movable member with the support element still seated in the seat, the seat and the support element thereby providing said lateral constraint of said annular surface of the movable member in all directions simultaneously with the tilting; and

a detector (42,44,46) which is separate from the support element and the seat, for detecting deflection of the movable member out of the rest position."

"3. A touch probe for position determining apparatus, comprising:

a fixed housing member (10,60) having an axis;
a movable member (12,62) for carrying a workpiece-contacting stylus (14);

a pair of axially confronting annular surfaces (20,22,72,74), one on the fixed member and one on the movable member, the annular surfaces extending around the axis and being engageable such that one annular surface tilts to permit tilting of the movable member when the stylus contacts a workpiece while the other annular surface does not tilt, said annular surfaces comprising an axially projecting skirt (18,72) on the movable member and a flat surface (20,74) on the fixed member;

a support element (34,56,66,110) connected to the movable member and a seat (36,58,68,106) connected to the fixed member, the seat having a surface which is inclined to the axis, the support element and the seat being separate from said annular surfaces;

first and second springs which co-operate with the annular surfaces, the support element and the seat to retain the movable member in a rest position relative to the fixed member;

the support element being axially biased by at least one of the springs into the seat in contact with said inclined surface, to provide lateral constraint of the movable member in all directions perpendicular to the axis, and the movable member being movable out of the rest position against the action of the at least one spring when a force is applied to the stylus, wherein the lateral constraint permits tilting of the movable member with the support element still seated in the seat, thereby providing said lateral constraint in all directions simultaneously with the tilting; and

a detector (42,44,46) which is separate from the support element and the seat, for detecting deflection of the movable member out of the rest position."

The independent claims of the second auxiliary request differ from the independent claims of the first auxiliary request only in that the following passage is inserted at the end of claim 1 and claim 3:

"the annular surfaces being biased into mutual engagement by the other spring with a lower force than the biasing of the support element into the seat, whereby upon deflection of the movable member the annular surfaces disengage, against the lower bias force, and then subsequently the support element disengages from the seat."

The remaining claims 2, 4 and 5 of all requests are dependent on claim 1 and/or claim 3 of the respective request.

VI. The arguments of the appellant with respect to the points on which the decision is based are summarized as follows:

As to the argument of the respondent put forward with regard to the ground of opposition laid down in Article 100(b): the skilled person would be able to realize the lateral constraint, above all in view of the teachings of the prior art cited in the description. The parts of the claims which are not amended are not open to an objection under Article 84 EPC.

With regard to the grounds of opposition laid down in Article 100(c): the feature of two bias means is presented in the *parent application* as merely incidental, not as essential. The *parent application* contains three problems, namely to reduce lobing and hysteresis and to provide greater overdrive of the stylus without damaging the planar spring. The latter is the problem underlying the patent-in-suit.

The touch probes of all documents cited in the *parent application* have only one bias means.

All three conditions of the headnote of "landmark" decision T 331/87, which, when fulfilled, allow the removal of a feature, are met. Such a removal would also not be in contradiction with the conditions set out in decisions T 260/85, T 527/88, T 189/94, T 396/95 and T 514/88.

Moreover, a feature may be inessential even if it was incidentally but consistently presented in combination with other features of the invention. The very general statement about the nature of the invention (page 4 lines 26 to 29) forms an ideal basis for a reservoir of claims to other inventive concepts, including those of the patent-in-suit.

The paragraph bridging pages 16 and 17 describes how hysteresis can be reduced, in *all* embodiments, simply because of the effect of the planar spring such that two bias means are completely incidental to said effect. Moreover, as described on page 8 line 18 to page 9 line 5, hysteresis caused by friction between the cylinders and balls is greatly reduced due to the effect of the planar spring 30, this effect being independent of the prestressing of the planar spring.

The removal of feature of two bias means in the claims is not contrary to the findings of the decisions T 260/85, T 527/88, T 514/88, T 189/94 and T 396/95.

The appellant was treated in an unfair manner during the oral proceedings before the Opposition Division. Therefore, in case of remittal to the first instance for further prosecution, a different Opposition Division should be designated.

VII. The arguments of the respondent with respect to the points on which the decision is based are summarized as follows:

The claims of the first and second auxiliary requests cannot be admitted since they have been submitted too late and are not immediately allowable.

As to the ground of opposition laid down in Article 100(b): an arrangement including only one support element and one seat does not give lateral constraint in all directions.

Two problems arise from prior art, namely reduction of lobing and of hysteresis, the latter being much more important than lobing. Any problem of the patent-in-suit must comprise hysteresis. In order to reduce hysteresis, two bias means are indispensable. If one of the two bias means is missing there is no defined rest position. As a consequence, none of the conditions of decision T 331/87 is met.

Since above all the arrangement and function of the first and second springs are not clear, claims 1 and 3 of the first auxiliary request do not satisfy the requirements of Article 84 EPC.

Reasons for the Decision

1. The appeal is admissible.
2. *Admittance of late-filed claims*

The claims of the first auxiliary request were filed within the time limit set by the Board.

With the amendments of the claims of the second auxiliary request the appellant tries to take account of the objection on which the revocation of the patent and the arguing of the respondent was based, namely that the claims did not contain the essential feature (b) of the *parent application* as originally filed (two bias means and a difference in bias force of said bias means).

The oral proceedings were interrupted for one hour to give the respondent time to study said claims. Therefore, though an earlier presentation of said claims would have been desirable, the respondent could not be surprised by the content of the late-filed claims.

3. *Main request and first auxiliary request*

3.1 A divisional application has to meet - *inter alia* - both the requirements of Article 76(1) and those of Article 123(2) EPC: it has neither to extend beyond the *parent application* nor be amended after filing in such a way that it contains subject-matter which extends beyond the content of the divisional application as filed. These requirements are grounds of opposition as laid down in Article 100(c) EPC.

3.2 The objection which leads to the attacked decision is based on the allegation that the independent claims (of the single request maintained at the end of the opposition proceedings) extend beyond the content of the *parent application* because of the omission of a further bias means which is seen as an essential feature of the subject-matter of the *parent application*.

The Board shares said objection. The touch probes according to the independent claims of the main request comprise indeed only one bias means (for axially biasing the movable member into a rest position relative to the fixed member), those of the independent claims of the first auxiliary request, due to the wording "the support element being axially biased by at least one spring ...", contain an alternative of a touch probe with only one bias spring. Moreover, the arrangement and function of one of the two springs is

unclear since only the one indicated in the expression "at least one (of the) spring(s)" is explained in said claims. It is a logical outcome of the above considerations that, none of said claims of both said requests comprises the feature that the two bias means bring about different biasing forces.

Thus, the independent claims or, respectively, at least one alternative of the independent claims do(es) not contain

feature (b): two bias means [24, 30/54; 70, 76; 94, 98] each suitable for biasing two pairs of engageable elements [20/22, 34/36; 72/74, 66/68; 96/102, 90/92] of a first and, respectively, second support means into engagement, the first pair of [20/22; 72/74; 96/102] elements being biased into engagement with a lower force than said pair of second elements [34/36, 66/68, 90/92].

The numbers between square brackets are the reference numerals of the three embodiments of the *parent application* schematically illustrated in Figures 1/2/4/10; Figures 5/6; and Figure 7.

3.3 Though the *parent application* nowhere explicitly discloses that feature (b) is an essential feature of the invention, it is nowhere disclosed that it is inessential. Moreover, it is clear and follows e. g. from decisions T 331/87 and T 514/88 that the skilled person must consider the *application* as a whole to ascertain whether feature (b) is implicitly essential.

In the Board's opinion, when examining the "essentiality" of feature (b), the problem underlying said application and the question whether said feature is necessary to solve said problem have to be considered (according to criteria no. 2 of the headnote of decision T 331/87, see section 3.4 below). On page 4 paragraph 2 the description of the prior art ends with the statement: "Whilst this may reduce the lobing effect, the hysteresis problem remains and may even be worse.". One of the problems the *parent application* aimed to solve is the problem of reducing the hysteresis. This can be clearly inferred by the fact that in the whole *application* it is also disclosed that hysteresis of the probe is to be reduced and that said hysteresis is a disadvantage of the prior art (see page 3 last paragraph, page 4 paragraphs 1 and 2, page 7 first paragraph, page 8 first paragraph, page 13 lines 4 to 17, page 14 lines 4 to 17, page 15 lines 23 to 34 and page 17 lines 4 to 21). Since feature (b) provides a sufficient reduction of the hysteresis of the probe it is clear that in the *parent application* said feature (b) is not incidental, as the appellant alleges, but essential (see page 7 first paragraph, page 8 first paragraph, page 13 lines 4 to 17, page 14 lines 4 to 17, page 15 lines 23 to 34 and page 17 lines 10 to 21).

The disadvantages of the prior art disclosed in DI to DIII and DVI cited in the introductory part of the *parent application* are the starting point for the invention. Therefore, it is unimportant for the "essentiality" of feature (b) whether the probes of said prior art have only one bias means or already two. DIV and DV are cited only in connection with the detector.

The statements contained in the paragraph bridging pages 16 and 17 (in substance: the planar spring can in each embodiment be made substantially stiffer eventually resulting in further reductions in the hysteresis of the frictional contact between the annular surfaces) can only be true if the probe comprises two bias means providing proper seat of the cylinders on the balls. In addition, the clause "further reductions in the hysteresis" indicates that this effect is of considerably less importance with respect to that obtained by feature (b).

With reference to the passage of the paragraph bridging pages 8 and 9, it is pointed out that the presence of a planar spring is necessary and that the hysteresis cannot be reduced without the counter-biasing function of the planar spring, because if said function were missing, the cylinders would not be properly seated on the balls. Moreover, the independent claims of the main request and first auxiliary request do not comprise a planar spring, let alone a prestressed planar spring.

- 3.4 The "landmark" decision T 331/87 gives three criteria it being necessary that all of them have to be fulfilled if a removal of a feature is allowable: The skilled person is able to recognize directly and unambiguously that (1) the feature is not explained as 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 requires not real modification of other features to compensate for the change. From the foregoing follows that at least criteria (2) is not met.

The case law cited by the appellant does not seem to be in contrast with said conclusion. The decisions T 260/85 and T 189/94 concern only cases where the original applications present expressis verbis the removed feature as being an essential feature of the invention. These decisions thus relate only to criterion (1) of decision T 331/87; they do not state that in a case where the removed feature is not expressis verbis presented as essential, said feature can be removed without taking into account the criteria (2) and (3) of decision T 331/87. In T 527/88 and T 514/88 the boards take the view that a broadening of a claim must be directly and unambiguously derivable from and not in contradiction with the original disclosure. T 0396/95 follows decision T 331/87.

The appellant further argued that the very general statement about the nature of the invention on page 4 lines 26 to 29 (title: "Summary of the invention"; text: "Preferred embodiments of the present invention incorporate advantageous features of both types of prior art probe discussed above, while minimizing their respective disadvantages.") forms an ideal basis for a reservoir of claims to other inventive concepts, including those of the patent-in-suit.

In the Board's view said argument is not relevant. First, the case law has not followed the so-called "reservoir" theory set up in decision T 190/83 and stating that generally the omission of features from an independent claim does not infringe Article 123(2) EPC, but has followed the general line of decision T 331/87. Second, just because said statement is very general and

not related to the invention as defined in the independent claim but to its embodiments, the skilled person would not consider said passage as important for the definition of the essential features of the invention.

3.5 Therefore, claims 1 and 3 of the main request and the first auxiliary request do not comply with Article 76(1) EPC. As a consequence, said requests are not allowable.

4. *Second auxiliary request*

4.1 Sufficiency (Article 100(b) EPC)

The respondent argued that an arrangement including only one support element and one seat does not give lateral constraint in all directions which falls under the ground of opposition laid down in Article 100(b) EPC. Said arrangement is part of all independent claims.

As a preliminary remark the Board points out that an insufficiency attack against the patent under Article 100(b) EPC is, of course, based on Article 83 EPC, which requires that the disclosure of the invention - the latter being defined by an independent claim - must be "sufficiently clear and complete for it to be carried out by the person skilled in the art". It is consistent case law of the boards of appeal that sufficiency of disclosure must be assessed on the basis of the application as a whole - including the description, the claims and the drawings. In the present case description and the drawings give sufficient instructions to realize an arrangement showing lateral constraint with respect to the vertical axis of the touch probe and the other parts of the

touch probe; a suitable arrangement is for example that of Figure 1 with three cylinders (34) and three corresponding pairs of balls (36) and an axial bias means (30). Therefore, the lateral constraint arrangement - and possibly other parts of the touch probe - may be not sufficiently described in the independent claims but the patent specification shows the skilled person at least one way to carry out the invention.

4.2 Requirements of Article 123(2) and (3) EPC

The claims were not amended in such a way that they contain subject-matter which extends beyond the content of the (divisional) application (No. 93 200 497.1) as filed. Moreover, the claims are not amended after grant in such a way as to extend the protection conferred by the claims as granted. Since these points were not in dispute, it is not necessary to give a detailed reasoning for these findings. Therefore, the claims do not infringe paragraphs (2) and (3) of Article 123 EPC.

4.3 Requirements of Article 76(1)

The amended claims now contain feature (b) being essential to the subject-matter of the *parent application*. Therefore, said claims meet also the requirements of Article 76(1) EPC.

5. Since the patent was revoked only on the basis of Article 76(1) EPC which is a ground of opposition laid down in Article 100(c) EPC and novelty and inventive step has not been examined in the opposition and appeal proceedings, the Board makes use of its powers under Article 111(1) EPC to remit the case to the Opposition Division for further prosecution.

For the sake of clarity, it is pointed out that the Board of Appeal has decided only that claims not comprising feature (b) (i.e. claims 1 and 3 of the main request and the first auxiliary request) do not comply with Article 76(1) EPC and therefore are not allowable, that the objection raised with respect to Article 100 b) EPC does not call in question the sufficiency of the patent (see section 4.1 above) and that the claims of the second auxiliary request comply with Articles 76(1) and 123(2) and (3) EPC.

6. *Request to designate a different Opposition Division*

Said request is based on the appellant's allegation that he was treated in an unfair manner during the oral proceedings before the Opposition Division.

Apart from the fact that the appellant did not substantiate the alleged unfair behaviour of the Opposition Division - in particular, no suspected partiality of one of its members has been even alleged (Article 13(2) EPC and Article 24 EPC as interpreted in decision G 5/91 (OJ 1992, 617) - the Board considers not to have any power concerning the designation of the Opposition Division responsible for the further prosecution of the case. Therefore the request has to be rejected.

7. *Apportionment of costs*

The request submitted by the respondent is substantially based on the allegation that the oral proceedings requested by the appellant are superfluous. The Board cannot see any abuse of the proceedings by the appellant which would justify the apportionment of costs. In particular, the oral proceedings would have been taken place even if the claims of the second auxiliary request were not submitted during the oral

proceedings or within the time limit set by the Board (at least one month before the oral proceedings). Moreover, the oral proceedings were very helpful for the decision.

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 claims 1 to 5 of the second auxiliary request.
3. The request of apportionment of costs is rejected.

The Registrar:

The Chairman:

P. Martorana

E. Turrini

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