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D E C I S I O N
of 11 July 2003

Case Number: T 0825/00 - 3.5.2

Application Number: 94102700.5

Publication Number: 0612139

IPC: H02K 15/095

Language of the proceedings: EN

Title of invention:
Methods and apparatus for making stators for electric motors and the like, and improved terminal boards therefor

Patentee:
AXIS S.p.A.

Opponent:
I. Black & Decker Inc.
II. ATOP S.p.A.
III. Globe Products Inc.

Headword:
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Relevant legal provisions:
EPC Art. 76(1), 54, 56, 123(2)

Keyword:
"Appellant adversely affected by decision under appeal (yes)"
"Added subject-matter (no)"
"Novelty, inventive step (yes)"

Decisions cited:
T 0123/85, T 0155/88, T 0368/98

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0825/00 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 11 July 2003

Appellant: (Proprietor of the patent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 25 May 2000 concerning maintenance of European patent No. 0612139 in amended form.

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: J.-M. Cannard
B. J. Schachenmann

Summary of Facts and Submissions

I. The proprietor appealed against the decision of the opposition division concerning the maintenance of European patent No. 0 612 139 in amended form in accordance with the proprietor's auxiliary request filed on 27 January 2000 during oral proceedings before the opposition division.

II. The following documents:

D1: WO-A-89/01257,

D2: GB-A-1 209 682,

D3: JP-A-57-34744,

D6: Affidavits by Mr David G. Peot dated 12 November 1999 and 13 January 2000 in support of an alleged prior use with drawings D4 and D5 and exhibits A, B, C, D, E and F,

considered during the proceedings before the opposition division remain relevant to the present appeal.

Further documents:

D7: an affidavit by Mr David G. Peot dated 14 January 2003,

D8: a statement by Mr Gianfranco Straticó dated 24 April 2003 with exhibit A,

D9: a Polymotor's drawing with photographs 1 to 5 filed with the opponent II's letter dated 23 April 2003, and

D10: an affidavit by Dale K. Wheeler dated 19 May 2003 received per fax on 20 May 2003,

were referred to during the appeal proceedings.

III. Claims 1 and 3 according to the sole request filed on 27 May 2003 during oral proceedings before the Board of appeal read as follows:

Claim 1:

"The method of making a stator comprising the steps of providing an annular stator body having a plurality of radially inwardly projecting poles (14a,14b), wherein adjacent poles define a longtudinal channel therebetween; lining the surface of such channel with an insulating member (30a); winding a coil of wire around each pole, the method being characterized in that it further comprises the step of mounting on each axial end of said stator body a terminal board (20) having an edge with a bead portion (40) which overhangs an adjacent axial end of said insulating member (30a) and ensures that the wire being wound bears on the terminal board and not on the axial end of the insulating member as the wire is drawn in a circumferential direction around the poles of the stator."

Claim 3:

"A terminal board incorporated in a stator, the stator comprising a hollow annular stator body (12) having a plurality of radially inwardly projecting poles (14a,14b) and an insulating member (30a) disposed in longitudinal channels defined by adjacent poles, wire coils being disposed around said poles in the longitudinal channels said terminal board being at an axial end of the stator body and being characterized in that it is provided with a bead (40), which extends from the remainder of the terminal board (20), transverse to the longitudinal axis of the stator body by an amount sufficient to cover an axial end of the insulating member (30a), the wire wound around the poles bearing on the terminal board and not on the axial end of the insulating member."

Claim 2 is dependent on claim 1 and claims 4 to 6 are dependent on claim 3.

IV. The arguments of the appellant proprietor can be summarised as follows:

(i) The appeal was admissible as the appellant proprietor was adversely affected by the refusal of its main request by the opposition division. Claim 1 of the main request submitted with the statement of grounds of appeal corresponded to claim 1 as granted and claim 5 of this main request was in substance the same as claim 5 of the auxiliary request (24 December 1999) filed during the opposition proceedings. The patentee did not pursue these requests during the oral

proceedings before the opposition division, because the opposition division made it clear that they would be rejected if pursued and invited the patentee to reconsider its position in the interest of "procedural economy". However at no time during those oral proceedings was it stated or implied that the patentee accepted the position of the opposition division or irrevocably abandoned any request. The situation was very similar to those considered in decisions T 123/85 and T 155/88 which represented established practice of the Boards of appeal. The appellant proprietor could thus reinstate claims broader than those held allowable by the opposition division.

(ii) Claims 1 and 3 of the present request were respectively based on claims 6 and 1 of the parent application and have been amended to specify that the terminal board has a bead portion ensuring that the wire being wound did not bear on the axial end of the insulating member. These amendments were supported by the parent application as well as by the application for the patent in suit. A continuous bead was not described in these applications as an essential feature of the invention. The claims did not contravene Article 76(1) EPC or Article 123(2) EPC.

(iii) The method according to claim 1 and the terminal board according to claim 3 were novel and involved an inventive step over document D1. The only portion of the terminal board disclosed in D1

(cam 166) which could overhang the slot liner extended from the terminal board at a point where the slot liner was not present. This appeared clearly from figures 10 and 11 of D1 which did not show any undercut in the cam element to accommodate an axial end of the slot liner extending beyond the stack. There was no disclosure or suggestion in D1, and more specifically in the figures 12 to 14 or in claim 25 of D1, of a cam which could ensure that the wire did not bear on the axial end of the slot liner during the coil winding operation.

(iv) The affidavits by David Peot were merely statements offered without any supporting evidence that the terminal boards according to exhibits A to F were sold before the priority date of the patent in suit, and did not prove prior use. Moreover, the drawings and samples according to these exhibits merely showed localized clips which held the slot liner in place, but did not prevent the wire from damaging the slot liner during coil winding.

(v) The late-filed affidavit by Mr Wheeler and polymotor's drawings filed by opponent II should not be admitted in the proceedings because the affidavit was a mere statement of opinion, and the drawings did not prove prior use.

V. The arguments of the respondents/opponents can be summarised as follows:

(i) The proprietor's appeal was inadmissible. The proprietor merely sought to reinstate claims, and in particular method claim 1 as granted, which were abandoned during the opposition proceedings and were broader than the claims of the main request which was the subject of the decision of the opposition division. As far as the product claims were concerned, the proprietor was not adversely affected at all by the decision of the opposition division which maintained product claims identical to those of the main request presented during the oral proceedings.

(ii) The descriptions of the parent application and the application as filed (see the corresponding passages of the patent in suit, column 3, line 54 to column 4, line 29) explained that several portions of a continuous peripheral bead overhung an axial end of the slot liner and contributed to ensuring that the wire did not run on the edge of the insulating slot liner. The subject-matter of claims 1 and 3, according to which only a bead portion overhung an end of the slot liner and achieved the protection of the slot liner that the described embodiment achieved only by means of a continuous bead, contravened Articles 76(1) and 123(2) EPC.

(iii) Claims 1 and 3 did not involve an inventive step.

In the embodiment of figures 12 to 14 of D1 a slot liner (88) was shown that extended circumferentially beyond the free ends of the pole pieces (80) and therefore passed beneath the cam element (186) of the shroud support (168). Since the cam element (166) in figures 10 and 11 and the cam element (186) of figures 12 to 14 functioned in the same way (page 20, lines 27 to 30), the cam element (166) in figures 10 and 11 formed a bead portion which overhung an axial end of the slot liner. Moreover, a liner cut short so that it did not extend under the cam element would not protrude "in an area at the lower left edge of the retainer member 164", contrary to what was explained in D1 (pages 19 and 20, the bridging sentence). Slot liners were not necessarily longer than the stator stack (see the patent, column 3, lines 17 to 19) and according to common practice in the relevant art extended beyond the circumferential ends of the pole pieces. The function of the cam in D1 was to protect the upper end of the slot liner and to prevent the wire falling behind it. Thus it was obvious for the skilled person to apply this teaching also to other areas of the terminal board, if it was found that the wire could damage the slot liner not only in the area of the cam element (166), and to provide them with an extended cam element.

Claim 25 of D1 which related to a stator having a means formed on a terminal board for positioning the coil wire in a location spaced from the slot liner disclosed the function of protecting the axial end of the slot liner.

(iv) The drawings and samples according to Mr Peot's exhibits showed localized clips formed on the edge of the terminal board to hold the slot liner in place. It would be obvious for the skilled person to replace these clips by a continuous bead to prevent the wire from damaging the axial end of the slot liner during the winding operation.

VI. In the event the appeal would be found admissible, Opponent III requested that the following question be put to the Enlarged Board of Appeal:

"If a patent proprietor puts forward an amended claim as a main request during opposition proceedings, can that proprietor seek to maintain the claim as granted in an appeal against a decision refusing the main request when the omission of a feature included in the amended claim and not in the claim as granted is not necessitated by the reasons for the decision refusing the main request."

VII. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of claims 1 to 6 filed in the oral proceedings; columns 1 and 2 of the description filed in the oral proceedings; columns 3 and 4 of the description and the drawings of the patent specification.

VIII. The respondents requested that the appeal be dismissed.

Reasons for the Decision

1. *Admissibility of the appeal*

1.1 According to Opponents I and II the appellant proprietor was not adversely affected by the decision under appeal as far the independent product claim was concerned. Even if this claim was contained in the refused main request, it had been accepted by the opposition division as the proprietor's auxiliary request. With respect to this claim the proprietor was therefore not adversely affected by the decision under appeal. According to Article 107 EPC the proprietor was therefore prevented in the appeal proceedings from pursuing product claims broader than those allowed the opposition division.

According to the submissions of the Opponents II and III the present appeal was inadmissible since the main and auxiliary requests filed by the appellant proprietor with the statement of grounds corresponded to requests which have been abandoned in the opposition stage and did not contain essential features introduced into the requests on which the opposition division had decided. In this connection opponent III raised the legal question referred to in paragraph VI, supra.

1.2 The issue of the ***admissibility*** of the appeal raised by the opponents is to be distinguished from the question of whether a request filed by the proprietor in the appeal stage is inadmissible for procedural reasons. According to Rule 65 EPC an appeal has to be rejected as inadmissible if it does not comply with Articles 106

to 108 EPC and with Rule 1(1) and Rule 64(b) EPC. In the present case the only issue raised by the opponents in this context is whether the appeal complied with Article 107 EPC, i.e. to which extent the appellant proprietor was adversely affected by the decision under appeal.

According to the constant jurisprudence of the Boards of Appeal a party to the proceedings is adversely affected if the decision under appeal did not accede to his main request or to an auxiliary request preceding the allowed auxiliary request (see the decisions cited the Case Law of the Boards of Appeal, 4th edition, page 523).

In the proceedings before the opposition division the main request of the proprietor which contained three method claims and four product claims was refused on the ground that the first method claim did not fulfil the requirements of Articles 76 and 100(c) EPC. The auxiliary request which only contained the four product claims was considered acceptable. Thus, by the decision under appeal the proprietor was granted less than he had wished to obtain by his main request, namely protection not only for the claimed product but also for the claimed method. In order to determine whether a party is adversely affected within the meaning of Article 107 EPC the refused (main) request and the decision under appeal have to be compared as a whole. A piecemeal comparison of what was requested and what was granted, e.g. on a claim by claim basis, should be avoided in this context since the EPC does not provide for partial inadmissibility of an appeal. The appellant proprietor was therefore adversely affected by the

decision of the opposition procedure within the meaning of Article 107 EPC and the appeal cannot be rejected as inadmissible under Rule 65 EPC.

Furthermore, as follows from the above, the admissibility of an appeal under Rule 65 EPC in view of Article 107 EPC depends on a comparison of the requests of the appellants filed in the *first instance* proceedings with the decision of the *first instance* rather than on later requests filed by the appellant in the appeal stage. Such later requests therefore have no influence on the question of the admissibility of the appeal.

1.3 As to the question of the admissibility of the present request of the appellant proprietor, in particular claims 1 to 6 filed at the oral proceedings, it has first to be considered that refused method claim 1 was amended on appeal by deleting a feature which had been objected to by the opposition division as not having been disclosed in the parent application. This feature was replaced by a corresponding feature defining the function of the bead portion in view of the winding of the wire coils on the poles. As this amendment is clearly a reaction to the decision of the first instance it cannot be objected to for procedural reasons.

Concerning present product claim 3 the feature of "the bead extending continuously around the periphery of the channel" indeed has been deleted from the version accepted by the first instance and replaced by the same functional feature as in claim 1. However, even if claim 3 might have been broadened in this respect this

does not make it inadmissible. In this context the Board concurs with the findings of decision T 368/98 of 28 March 2000 according to which a proprietor who abandoned in the opposition stage a broader claim and continued the proceedings on the basis of a restricted claim did not thereby abandon any subject matter extending beyond the limited claim. He therefore is allowed to broaden such a limited claim on appeal within the limits of Articles 76 and 123 EPC unless it would constitute abuse of the proceedings. These conclusions reflect the constant jurisprudence of the Boards of Appeal as summarized in T 368/98 referred to above. The Board has therefore no reason to refer a question of law to the Enlarged Board of Appeal as requested by opponent III (see point VI., supra).

In the present case the Board considers that during the opposition proceedings the proprietor always defended a broad method claim without the limitation referred to above. Thus, the proprietor never surrendered the position of obtaining a broad claim without this limitation. Against this background the proprietor's attempt to obtain an equally broad product claim on appeal cannot be seen as an abuse of the procedure.

2. *Admissibility of the amendments*

The Board is satisfied that the claims according to the sole request satisfy the requirements of Article 84 EPC and do not contravene Article 76(1) EPC or Article 123(2) or (3) EPC. More specifically:

2.1 Claim 1 is based on claim 6 of the earlier (parent) application amended so that the step of mounting a terminal board "so that a portion of said terminal board overhangs the adjacent axial end of said insulator member" has been restricted to mounting "a terminal board having an edge with a bead portion which overhangs an adjacent axial end of said insulating member and ensures that the wire being wound bears on the terminal board and not on the axial end of the insulating member as the wire is drawn in a circumferential direction around the poles of the stator".

2.2 This amendment is supported by the descriptions of the earlier (parent) application (see the published parent application EP-A-0 411 275, column 3, lines 9 to 13 and column 6, lines 13 to 20) and the patent application (see the published application, column 2, lines 9 to 12 and column 4, lines 30 to 37) which more specifically recite a bead in region B of the edge of the terminal board "overhanging and thereby protecting the axial end of the insert (30)" which has the function of ensuring "that the wire contacts a smooth, hard surface which facilitates the motion of the wire along edge B".

2.3 Claim 3 results in substance from the incorporation in claim 1 of the earlier (parent) application of the feature "the wire wound around the poles bearing on the terminal board and not on the axial end of the insulating member" which is supported by the descriptions of the parent application and the application of the patent in suit (see the passages cited above in paragraph 2.2).

2.4 As shown in figure 1 of the earlier (parent) application the beads extend continuously through regions A, C and B along the inner periphery of the terminal board. However, according to the passages of the description corresponding to this figure (column 5, line 13 to column 6, line 31) the only peripheral regions of the terminal board in which the beads have the function of protecting the axial ends of the slot liners are the regions A where the wire is emerging and the re-entrant regions B. There is no disclosure or hint that the beads in the regions C, which lie between adjacent poles, play any role in protecting the liner. The skilled person would thus directly and unambiguously recognise that a bead in region C is not disclosed as essential in the parent application, that omitting the bead from region C would have no effect on the protection of the liner during coil winding and requires no real modification to other features to compensate for the change. Accordingly, the amended patent does not contain subject-matter which extends beyond the content of the earlier (parent) application as filed, or, for the same reasons, beyond the content of the application for the patent in suit as filed.

3. *Novelty*

3.1 Document D1 discloses with reference to figures 2 to 14 three alternative embodiments of realisation of a stator. In each embodiment a terminal board is incorporated in a stator which comprises an annular hollow stator body having a plurality of radially inwardly projecting pole pieces (80), an insulating member (slot liner 88) disposed in longitudinal channels defined by adjacent poles, the terminal board

being mounted at an axial end of the stator body. The Board is however satisfied that the terminal board according to claim 3 is novel compared with D1.

3.2 In the first (figures 2 to 9) and third (figures 12 to 14) embodiments, the terminal board (66) does not extend to the tip ends of the pole pieces (80) and does not cover an axial end of the slot liner (88) in such a manner that the wire around the poles bears on the terminal board and not on the slot liner.

3.3 In the second embodiment (figures 10 and 11; page 19, lines 14 to 31), the terminal board is provided with a shroud (162) formed with a retainer member (164) which may extend to the left and right extremities of the pole piece and completely covers the underlying pole piece (80). The radially-outwardly facing surface of the retainer member adjacent the longitudinal channel is provided at its left edge with a cam element (166) which protrudes outwardly from the member. According to page 19, line 32 to page 20, line 4 of D1, during a coil winding operation, the corner edge of slot liner (88) tends to protrude into the path of the magnet wire in an area at the lower left edge of the retainer member (164). However, a slot liner is not shown in figures 10 and 11. The passages of the description relating to the second embodiment, and D1 in general, do not indicate that the slot liner extends to the end of the retainer member so as to be overhung or covered by the cam element (166). Moreover, the wire during the winding process is not prevented from bearing on the axial end of the insulating member since the cam member is exclusively formed at the left edge of the shroud.

3.4 Claim 25 of D1, in combination with claim 13 to which it refers, relates to a stator subassembly having a stator end bell equipped with a shroud which supports end turns of a coil winding. A means (166) is formed on said shroud (162) for positioning adjacent portions of the coil windings in a location spaced from an insulating liner located between said coil winding and the stator core. However claim 25 does not specify that said means overhangs an adjacent axial end of the insulating member such that the wire around the poles bears on the terminal board and not on the axial end of the insulating liner.

3.5 The Board decided not to take account of the affidavit of Mr Dale K. Wheeler (D10) which was filed only seven days prior to the oral proceedings and merely states, fifteen years after the date of priority of this document and without providing any evidence, that not showing a slot liner and a cam with an undercut in figures 10 and 11 of D1 was an obvious drafting error.

3.6 Accordingly, D1 does not disclose a terminal board "provided with a bead which extends from the remainder of the terminal board (20), transverse to the longitudinal axis of the stator body by an amount sufficient to cover an axial end of the insulating member (30a), the wire wound around the poles bearing on the terminal board and not on the axial end of the insulating member" as recited in the characterizing part of claim 3. Nor does D1 disclose a method including a step as defined in the characterizing part of claim 1.

4. The other documents cited by the opponents are less relevant. Mr David Peot's affidavits (D6) and (D7) asserting that the terminal boards according to drawings exhibits A, B and E and samples exhibits C, D and F were sold before the priority date of the patent in suit, are merely statements by Mr Peot offered without any supporting evidence, and fail to prove that these terminal boards were the subject of a prior use. Moreover, the exhibits A to F merely show terminal boards which have localized clips disposed on an edge of the boards outside the radially-outwardly facing surface of the channels formed by the poles to help hold the slot liner in place both axially and radially and are thus less relevant than the terminal boards disclosed in D1. The Polymotor's drawing (D9) was filed on the 28 April 2003 without any evidence that a corresponding motor has been sold.

5. D2 and D3 do not disclose a terminal board having a bead, or any other part, which overhangs an adjacent axial end of an insulating member disposed in longitudinal channels defined by adjacent poles of a stator.

6. Accordingly, the opponents have not shown that the terminal board according to claim 3 lacks novelty in view of the cited prior art. The same considerations apply to claim 1 which relates to a method of making a stator comprising a step of mounting on each axial end of the stator a terminal board which is similar to the terminal board according to claim 3.

7. *Inventive step*

7.1 Starting from D1 the objective problem addressed by the present invention can be seen as providing a terminal board which better protects the insulating member and more particularly its axial end during winding of the coil. This problem corresponds to the problem mentioned in the patent in suit (column 1, lines 32 to 37).

7.2 The problem is solved by providing the terminal board with a bead as recited in the characterizing part claim 3.

8. The cam element (166) according to the second embodiment of D1 which is formed on the left edge of the radially-outwardly facing surface of the shroud has the purpose of forcing the wire away from this surface of the shroud and from the slot liner to avoid the wire being wound falling behind the liner or causing it to buckle (page 20, lines 4 to 15). Nowhere in D1 is it mentioned that the function of the cam element (166) is to protect the axial end of the liner along all that part of its edge which is vulnerable during coil winding, nor is it suggested that this cam element could be adapted to cover an axial end of the slot liner such that the wire around the pole bears on the terminal board and not on the axial end of the slot liner. Therefore the skilled man faced with the problem of the invention would not consider the second embodiment of D1, which is concerned with a different problem and teaches a solution which does not solve the problem addressed by the invention.

9. According to the third embodiment of D1 (figures 12 to 14), a shroud support (168) is positioned behind a shroud (110) formed integrally with the terminal board. This shroud support provides a wire camming facility in the manner of the shroud (162) of the second embodiment (figures 10 and 11) to guide the magnet wire away from the slot liner (88) for the same reasons as in the second embodiment (page 20, lines 16 to 30). There is no disclosure or suggestion that the means (166) formed on the shroud could be extended so that they overhang and protect the vulnerable part of the insulating member during coil winding. Furthermore, the shroud support (168) is removed after completion of the winding operation, see page 23, lines 7 to 10, so that the cam element (186) cannot be regarded as part of the terminal board per se. The skilled man would thus have no good reason to consider the combination of isolated features of various different embodiments of D1.

10. Neither D2 nor D3 remotely suggests a terminal board overhanging an axial end of an insulating member to protect it during the winding of the coil.

11. Accordingly, the arguments of the opponent respondents have not convinced the Board that the subject-matter of claim 3 was obvious to the person skilled in the art at the priority date of the patent. The same is true for claim 1. The Board therefore concludes that the subject-matter of the independent claims 1 and 3 involves an inventive step within the meaning of Article 56 EPC.

12. In the Board's judgement, taking into account the amendments according to the sole request the patent in suit and the invention to which it relates satisfy the requirements of the Convention.

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 maintain the patent in amended form in the following version:

   - claims: 1 to 6 filed in the oral proceedings;

   - description: columns 1 and 2 filed in the oral proceedings; columns 3 and 4 of the patent specification,

   - drawings of the patent specification.

The Registrar: The Chairman:

D. Sauter W. J. L. Wheeler