BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 12 January 2012

Case Number: T 0032/10 - 3.2.03

Application Number: 01300670.5

Publication Number: 1122007

IPC: B22F 7/06, B23K 20/10, B23K 33/00

Language of the proceedings: EN

Title of invention:
Process for preparing a powder metal body having a hermetic seal

Patentee:
SPRAYING SYSTEMS CO.

Opponent:
Lechler GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 84, 54, 56, 117(1)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Admissibility of documents cited but relevance not explained (no)"
"Admissibility of witness evidence to establish knowledge of skilled person (no)"
"Late-filed request for accompanying person to make submissions (no)"
"Clarity (yes)"
"Novelty (yes) - features not directly and unambiguously derivable from prior art document"
"Inventive step (yes)"

Decisions cited:
G 0004/95, T 0311/01, T 1511/06

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0032/10 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 12 January 2012

Appellant: (Opponent)
Lechler GmbH
Ulmer Strasse 128
D-72555 Metzingen (DE)

Representative:
Dauster, Katja
Patentanwälte
Ruff, Wilhelm, Beier, Dauster & Partner
Kronenstrasse 30
D-70174 Stuttgart (DE)

Respondent: (Patent Proprietor)
SPRAYING SYSTEMS CO.
North Avenue at Schmale Road
P.O. Box 7900
Wheaton
Illinois 60189-7900 (US)

Representative:
Makovski, Priscilla Mary
Barker Brettell LLP
100 Hagley Road
Edgbaston
Birmingham B16 8QQ (GB)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 5 November 2009 concerning maintenance of European patent No. 1122007 in amended form.

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
K. Garnett

Summary of Facts and Submissions

I. European patent EP-B1-1 122 007 concerns a process for making a hollow body, in particular a fluid flow nozzle, via the powder metallurgy route, in which a hermetically sealed joint is formed between the component halves. The granted patent was opposed for lack of novelty and inventive step (Article 100(a) EPC). The opposition division decided that the patent could be maintained on the basis of a set of claims filed as the second auxiliary request during the opposition proceedings. The decision was posted on 5 November 2009.

II. The opponent (the appellant) filed notice of appeal on 5 January 2010, paying the appeal fee on the same day. A statement containing the grounds of appeal was filed on 5 March 2010.

III. In accordance with the Rules of Procedure of the Boards of Appeal (RPBA), the Board issued a preliminary opinion of the case, together with a summons to attend oral proceedings.

In response both the appellant and the respondent (the patent proprietor) filed further submissions (letters dated 9 December 2011 and 5 January 2012 respectively). In particular, the appellant submitted an affidavit ("Eidesstattliche Versicherung") from Mr Thomas Schenk, and requested that Mr Schenk be heard as a witness.

IV. Oral proceedings were held on 12 January 2011.

V. Requests

The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.

The respondent (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of the amended main request filed during the oral proceedings.

VI. Claims

Claim 1 of the amended main request reads as follows:

"1. A process for preparing a hermetically sealed hollow metal fluid flow nozzle (20) comprising the steps of:

providing a first green component part (31) comprising a moulded powder material;

providing a second green component part (41) comprising a moulded powder material;

placing said first and second component parts (31,41) together; ultrasonically welding said first component part (31) to said second component part (41) to form an ultrasonic weld (53) located between surfaces thereof to thereby form a green assembly (50);

debinding said green assembly (50); and

sintering said green assembly (50)

characterized by

said second component part (41) being of a molded metal powder material having a perimeter area comprising contact surfaces (46,47,48), said first

component part (31) being of molded metal powder material having a complimentary perimeter area comprising ultrasonic energy director surfaces (32,33,34) that can be positioned into contacting relation with said contact surfaces (46,47,48) of said second component part (41),

said ultrasonic energy director surfaces being ribs (32,33,34) of said first component part (31) and said contact surfaces being wall portions (61) of the second component part (41), or said ultrasonic energy director surfaces being interfering portions (60) of the first component part (31') and said contact surfaces being wall portions (61) of the second component part (41'),

positioning the ultrasonic energy director surfaces (32,33,34) of said first component part (31) in contact with contact surfaces (46,47,48) of the second component (41'), carrying out said ultrasonic welding step with said ultrasonic energy director surfaces (32,33,34) in contacting relation with said contact surfaces (46,47,48) to form said ultrasonic weld (53) along each of the perimeter areas, and

carrying out said debinding and sintering steps to form a metal part (20) with a hermetically sealed joint along a juncture between said ultrasonic energy director surfaces (32,33,34) with said contact surfaces (46,47,48) formed by said ultrasonic weld."

Dependent claims 2 to 7 concern preferred embodiments of the process of claim 1.

Claim 1, as maintained by the opposition division, referred to "a process for preparing a hermetically sealed hollow metal body…". This claim formed the basis

of the main request before the Board at the outset of the oral proceedings.

VII. Prior Art

The following documents cited in the contested decision were referred to in the grounds of appeal:

E1: US-A-4 722 824
E2: "Joint Designs for Ultrasonic welding", 1999, Sonics and Materials Inc, Newtown, CT06470 USA.
E3: US-A-4 618 516
E4: US-A-5 426 411
E6: JP-A-11 315 564
E6': Machine translation of E6 into English.
D1: US-A-4 364 783

In addition, the following documents were mentioned in the grounds of appeal:

D2: US-A-3 056 192
D3: US-A-4 853 053

VIII. Submissions of the Parties

(a) Admissibility of Documents D2 and D3

These documents were cited in the grounds of appeal without any explanation as to their significance. In the letter of 9 December 2011, the appellant emphasised that they had already been cited in the grounds of opposition and were also mentioned in the introduction to the disputed patent. The documents had been submitted as evidence of the general knowledge of the

skilled person and, as the documents were already known to the respondent, they could be readily assessed. The purpose of referring to the documents was to ensure that the decision of the Board would be based on a proper assessment of all available facts.

The respondent submitted that no arguments based on D2 or D3 had been presented in either the grounds of opposition or the grounds of appeal, and therefore the documents are not *prima facie* relevant. The respondent did not have time to respond to new arguments based on these documents, and in appeal proceedings a party's case should not be changed at such a late stage. The Board should therefore exercise its discretion not to admit D2 and D3.

(b) Admissibility of the Witness Evidence of Mr Schenk

The appellant submitted with the letter dated 9 December 2011 an affidavit from Mr Schenk and requested that he be heard as a witness. The purpose of Mr Schenk's testimony was to establish the general knowledge of the skilled person, in particular that it is only the properties of the binder that are of importance when considering bonding green metal compacts. Since this merely supports arguments that have already been put forward in the proceedings, the appellant submitted that Mr Schenk's testimony should be admitted into the proceedings.

Should the Board decide not to hear Mr Schenk as a witness, the appellant requested that he be allowed to make submissions as an accompanying person.

The respondent submitted that the points to be addressed by Mr Schenk were not clear, and his qualifications and experience were not known. The affidavit could have been filed with the grounds of appeal, as it relates to an argument put forward in the opposition proceedings and Mr Schenk is an employee of the appellant. In addition, it is not clear if the affidavit reflects the views held at present or at the date of filing of the disputed patent.

The affidavit and the request to hear Mr Schenk were filed shortly before Christmas and, in view of the holiday period, there was insufficient time to fully respond to the change in case presented by the appellant. Should the Board consider hearing the evidence of Mr Schenk, the respondent requested postponement of the oral proceedings to allow time to prepare a response to the issues raised.

For these reasons the Board should exercise its discretion not to call Mr Schenk as a witness, or hear him as an accompanying person, or admit the affidavit into the proceedings.

(c) Clarity (Article 84 EPC)

At the start of the oral proceedings, the appellant raised the objection that the expression "hermetically sealed hollow metal body" in claim 1 of the appellant's main request lacked clarity, as the disputed patent relates to the manufacture of fluid flow nozzles which, having an inlet and outlet, cannot be said to be "hermetically sealed".

In light of this objection the respondent amended claim 1 to read "A process for preparing a hermetically sealed hollow metal fluid flow nozzle…".

(d) Novelty with respect to E1

The appellant argued that E1 discloses a method for making complex shapes from metal powders by ultrasonically welding component green bodies together, and that the skilled person would readily understand that complex shapes include hollow bodies. According to E1 the final sintered product shows no lines of demarcation denoting joints between the green bodies, and this is an indication that the joints are hermetically sealed. This is evidenced by D1, which explicitly discloses hermetically sealed joints, but which also describes such joints as having no lines of demarcation. The bumps mentioned in E1 are used for aligning the green bodies, but also have the function of ultrasonic energy director surfaces. Since there is no requirement in the claim that the ultrasonic energy director surfaces are along the entire perimeter area, all the features of the claimed process are known from E1.

The respondent submitted that E1 teaches that the green bodies are joined primarily by spot welding, and ultrasonic welding is used only as an additional measure. The bumps are for aligning the green parts and for providing points for spot welding, but they do not function as ultrasonic energy director surfaces. The statement that there is no visible line of demarcation does not necessarily mean that there is a hermetically sealed joint, as there can be defects in the joint that

are not apparent when just looking at the surface. Consequently, E1 does not disclose a perimeter area having ultrasonic energy director surfaces, there is no ultrasonic welding step using such surfaces, and there is no unambiguous disclosure of a hermetically sealed body.

(e) Inventive Step

Both parties see E6, which discloses a tap made by sintering component halves together, as being the closest prior art. The claimed process differs in that the component parts are ultrasonically welded together prior to sintering. Starting from E6, the appellant formulated the problem to be solved as merely improving the quality of the joint, whereas the respondent saw the problem as providing a hermetic seal.

(i) E6 with E2, E3 and E4

According to the appellant, the solution to the objective problem can be found in documents E2, E3 and E4, which describe the ultrasonic welding of thermoplastics and resins. The appellant argued that in context of ultrasonic welding it is just the material properties of the binder that are important. Since the binder is usually a plastic material, the skilled person would consult E2, E3 and E4. A combination of E6 with one of these documents leads the skilled person to the claimed invention.

The respondent submitted that the skilled person would not consider the disclosures E2, E3 and E4,

as plastics have completely different characteristics and properties from green metal powder moulded bodies.

(ii) E6 and D1

Document D1 describes a method of ultrasonically end-capping a tubular green body so that after sintering a hermetic bond is created. The appellant argued that, although the joint between the end-cap and the tube of D1 does not require energy director surfaces, the use of such surfaces to enhance ultrasonic welding is common knowledge in the art (see E2, E3 and E4).

D1 is concerned with a product made from sintered ceramic powder, nevertheless the skilled person would consider its teaching because, when ultrasonically welding a green compact, it is the binder that is welded together and not the particles. Hence, as stated above, it is the material properties of the binder and not of the ceramic powder that are important. It thus irrelevant whether the green compact is based on metallic or ceramic powders. In addition, the general formulation of claim 1 of D1 indicates that it is not the intention that the process of D1 be limited just to ceramic powders.

The skilled person is instructed by D1 that the bond between sintered parts is improved by ultrasonically welding the green components, and in applying this teaching to the joining process of E6 would derive the claimed process.

The respondent submitted that D1 is not from the same technical field as E6 because it is only concerned with the problems of sintering ceramic materials, in particular beta alumina compositions. Here the binder is of utmost importance and hence selection of a suitable material is dealt with in detail in the document. D1 teaches that the quality of the bond is also affected by the shape of the cap, correct mixing of the precursor materials, application of pressure and rotation of the green parts during welding. Hence ultrasonic welding is only one factor in achieving a satisfactory bond between the particular compacts described in D1. It is also noted that the teaching of D1 is to use smooth surfaces for the joint and there is no mention of the need for ultrasonic energy director surfaces.

The skilled person would therefore not consult D1 in expectation of finding a solution to the problem of improving the bond of E6, and even if he did so, he would not arrive at the claimed subject-matter.

(iii) E6 and E1

The appellant submitted that E1 teaches that the joint between sintered metal parts is improved by ultrasonically bonding the parts together in the green state, which implicitly leads to the creation of a hermetic seal. Applying this teaching to the process of E6 results in the claimed process.

The view of the respondent is that E1 is not concerned with improving the quality of a sealed joint, but with building items of complex shapes. Spot welding is the primary method of bonding, with ultrasonic welding used only as a secondary technique. The bumps are for aligning the green parts and provide points for spot welding, but do not function as ultrasonic energy directors. Consequently E1 does not provide a solution to the problem of creating a hermetic seal.

Reasons for the Decision

1. The appeal is admissible.

2. Admissibility of Documents D2 and D3

These documents were mentioned on the European search report drawn up during examination of the application for the disputed patent. They were cited by the appellant both in the grounds of opposition and the notice of appeal, but no indication was given of the relevance of these documents. D2 and D3 were also not considered by the opposition division in its decision.

In the letter dated 9 December 2011 the appellant stated that D2 and D3 provide evidence of the general knowledge in the art, but no reason was given for referring to these documents at such a late stage in the proceedings.

A document cited in the search report is not automatically in opposition or opposition appeal proceedings (see Case Law of the Boards of Appeal of the European Patent Office, 6th Edition, 2010, page 717, VII.C.1.7). Although the appellant had cited the documents with the grounds of appeal, their significance was not known until shortly before the oral proceedings in appeal. D2 and D3 are therefore considered as being filed late, and since their content could have been discussed earlier and there is no good reason for the late filing, they are not admitted into the proceedings.

3. Admissibility of the Evidence of Mr Schenk

3.1 The appellant put forward Mr Schenk as a witness to provide evidence of the knowledge of the skilled person.

3.2 Article 117(1) EPC provides examples of various means of giving evidence before the European Patent Office, and these include:

(d) hearing of witnesses;

(e) opinions by experts.

There is thus a distinction between the hearing of witnesses and the hearing of opinions by experts.

It has been established by the case law of the Boards of Appeal that a witness is put forward to establish facts of which he has personal knowledge. So, for example, in T 311/01 the offer of witness testimony on the skilled person's knowledge and understanding of a

prior art document was refused, as this was not evidence of specific facts but of the knowledge and ideas of the skilled person. Likewise, in T 1511/06 the Board refused to hear a witness who had been offered, not to provide evidence of the circumstances of a specific non-disclosure agreement, but on the general practice of non-disclosure agreements between car and part manufacturers.

3.3 In the present case, Mr Schenk has been offered to provide evidence that the skilled person would be aware that, when bonding green components made of a powder and a binder, it is only the properties of the binder that are important. However, this evidence does not relate to a specific fact, but rather it is an opinion concerning the extent of knowledge of the skilled person. The appellant was therefore offering an expert opinion rather than a witness, and consequently the Board decided not to hear Mr Schenk as a witness.

3.4 Nevertheless an expert accompanying the professional representative may make submissions at the discretion of the Board, and the appellant requested that Mr Schenk be allowed to speak before the Board in this capacity. Criteria for exercising the discretion are set out in the decision of the Enlarged Board of Appeal G 4/95 (see the Headnote). Of particular relevance is that:

- the request should be made sufficiently in advance of the oral proceedings so that all opposing parties are able properly to prepare themselves in relation to the proposed oral proceedings; and

- a request which is made shortly before or at the oral proceedings should in the absence of exceptional circumstances be refused, unless each opposing party agrees to the making of the oral submissions requested.

3.5 In the present case oral proceedings were appointed for 12 January 2012 and the appellant offered submissions from Mr Schenk in the letter dated 9 December 2011, which was received at the European Patent Office on the 12 December 2011. Hence the request was made late, namely one month before the oral proceedings, and with the Christmas holiday taking place in that month.

The Board agrees with the submission of the respondent that the request was filed too late for an adequate response to be prepared, and also noted that for this reason the respondent did not agree at the oral proceedings to Mr Schenk making submissions.

In addition, the issue of the significance of the properties of the binder was already known during the opposition proceedings which means, given that Mr Schenk is an employee of the appellant, that the request could have been made much earlier in the proceedings.

3.6 Therefore the Board exercised its discretion not to allow Mr Schenk to make submissions during the oral proceedings. For the same reasons, the affidavit tendered by Mr Schenk with the letter of 9 December 2011 was also not admitted into the proceedings.

4. Clarity (Article 84 EPC)

4.1 Claim 1, as maintained by the opposition division and which formed the basis of the main request before the Board at the start of oral proceedings, was directed to a process for preparing a hermetically sealed hollow metal body.

The appellant raised the objection that there was a lack of clarity in the expression "hermetically sealed", since much of the disputed patent is directed to the manufacture of a fluid flow nozzle, which has inlet and outlet passages, meaning that it is not hermetically sealed.

4.2 The Board agreed with the submission of the appellant, as a lack of clarity arises from the discrepancy between the claims and the description. However, the objection was raised late, ie at the start of the oral proceedings, hence the Board saw fit to give the respondent an opportunity to amend its main request to define the body as being a "hermetically sealed hollow metal fluid flow nozzle".

The skilled person would realise that it is the joints between the component parts of the metal fluid flow nozzle that are hermetically sealed, and not the nozzle itself. This definition meets the requirements of Article 84 EPC.

5. Novelty (Article 54 EPC)

5.1 The appellant contests novelty on the basis of E1. This document discloses a process whereby complex shaped

parts are moulded from a plurality of green compacts that are joined together. There is no explicit mention of making hollow bodies that are hermetically sealed, but according to the appellant these features are readily derivable from E1 by a skilled person using his general knowledge.

5.2 E1 merely refers to "complex shapes", but these need not necessarily be hollow. Whether or not the skilled person would understand that the reference to complex shapes is intended to include hollow parts is more appropriate to the assessment of inventive step. The test for lack of novelty is strict: the feature of a hollow body must be directly and unambiguously derivable from the statement that the shape is complex, and that is not the case.

5.3 Likewise, the statement that no line of demarcation between the original compacts can be observed in the final product does not inevitably mean that a hermetic seal exists. As submitted by the respondent, further defects may exist in the region of the joint that render the seal less than hermetic, but such defects may not be visible to the naked eye.

5.4 The appellant refers to D1 as evidence that the fact of no line of demarcation must mean a hermetically sealed joint. However, D1 makes it clear that there is both no line of demarcation between the parts joined by the process of D1 and that the joint is hermetically sealed. There is no teaching in D1 that lack of a visible indication of the joint inevitably means that there is a hermetic seal.

5.5 Consequently the claimed process is novel over E1.

6. Inventive Step (Article 56 EPC)

6.1 Claim 1 of the amended main request concerns the preparation of a hollow fluid flow nozzle by moulding metal powders into two component green parts which are joined together prior to sintering. Document E6 also describes a powder metallurgical process for making a hollow fluid flow nozzle, namely a tap, in which the halves of the tap are produced separately and then joined together during the sintering process. Both parties and the opposition division considered E6 as being the closest prior art, and the Board sees no reason to depart from this view.

6.2 The claimed process differs from that of E6 in that the green halves are ultrasonically welded together in a process using energy director surfaces prior to sintering, and this creates a joint that is hermetically sealed.

6.3 According to the patent specification (see paragraph [0003]) a process of the type described in E6 cannot reliably be used to obtain a hermetic seal. The respondent therefore sees the objective problem starting from E6 as providing a hermetic seal. The appellant formulates the problem as merely improving the quality of the joint. However, in the present case, there is no significant difference between the two definitions of the objective problem.

E6 combined with E2, E3 and E4

6.4 Starting from E6, the appellant submits that the solution is to be found in any one of the documents E2, E3 and E4. Document E2 describes joint designs for ultrasonic welding of polymers and resins. E3 discloses a method for ultrasonic welding of thermoplastic work pieces. E4 concerns a housing for a fuse, whereby the housing is made by ultrasonically welding together two parts made of thermoplastic material.

6.5 None of the documents E2, E3 or E4 relates to manufacture of parts by the powder metallurgy route, and it is for this reason that the opposition division recognised an inventive step. The appellant argues that in the context of ultrasonic welding it is the material properties of the binder that are important. Since the binder is usually a plastic material, the skilled person would consult E2, E3 and E4.

6.6 The skilled person is well aware that ultrasonic welding of plastic components is commonplace, however the question is whether there is any pointer in the prior art that the quality of the joint between two sintered parts can be improved by ultrasonically welding the green parts together. The disclosures of E2, E3 and E4 are limited to the bonding of plastics and give no indication of either the objective problem or its solution. Therefore the claimed process has an inventive step over this combination of documents.

E6 combined with D1

6.7 Document D1 is concerned with the end-capping of ceramic beta-alumina tubes that are used in sodium-sulphur batteries. The process of D1 achieves a hermetically sealed bond between the sintered parts and includes ultrasonically welding the caps to the tubes (column 1, lines 13 to 22).

6.8 A number of particular problems are identified in D1 that have to be overcome in order to create a hermetic bond between the cap and tube; these are set out in column 1, lines 32 to 54 and are summarised as follows:

- it is generally difficult to ultrasonically weld the thermoplastic elastomer binders used with beta-alumina ceramics;
- the inclusion of waxes and plasticisers in the binder interferes with its ability to transmit ultrasonic vibration energy;
- beta-alumina particles are of a hydroscopic nature and it would be expected that this would to lead to foaming at the joint interface;
- high loading of particles in the binder means that there may be insufficient binder for successful bonding.

These difficulties and the proposed solutions relate to the nature not just of the binder material, as submitted by the appellant, but also of the ceramic powders. There is no indication that the teachings of D1 are of broader relevance and could apply to metal-based sintered components, such as in E6. Of course, with knowledge of the disputed invention it seems obvious in light of D1 to at least try ultrasonic

welding as a means of improving the joint, but assessment of inventive step must be made objectively without the benefit of hindsight.

6.9 According to D1, the tube is cut to give a smooth surface that is in contact with the cap before applying ultrasonic vibrations, hence the respondent argues that there is no teaching of the use of energy director surfaces. Energy directors are generally well known in the art for aiding ultrasonic welding (examples are given in E2, E3 and E4), but nevertheless the inventors of D1 did not consider them necessary for achieving a high quality bond. This is presumably because the size and shape of the tube and cap allow sufficient concentration of energy. D1 does not teach that energy directors should not be used, it is simply that they are not relevant for the components being joined in D1, and is a further indication of particular nature of the problem faced in D1.

6.10 In summary, given the particular material and geometric problems addressed in D1, the Board agrees with the respondent and the opposition division that the skilled person would not look to D1 for a solution to the objective problem.

E6 combined with E1

6.11 The appellant also submits that the claimed solution to the problem of improving the quality of the joint of E6 is provided by E1, which is directed to the formation of complex shaped objects by joining together component parts in the green state.

6.12 The green parts of E1 are provided with bumps and corresponding depressions for assisting alignment (column 1, lines 51 to 55), after which an electrical current is passed through the green parts to spot weld them together (column 1, lines 66 to 68). The respondent is correct in pointing out that ultrasonic welding is only mentioned in E1 as a supplement to enhance particle intermingling during spot welding (column 2, lines 7 to 8). The current density is greater in the region of the bumps, and this causes more heat to be generated and enhanced spot welding at these points (column 2, lines 8 to 15), but there is no indication in E1 that the bumps would function as the ribs or interfering portions of claim 1 to create a hermetically sealed bond.

6.13 It is significant that there is no discussion of the quality of the bond in E1, other than to say that no line of demarcation between the original parts is visible in the final product (column 3, lines 11 to 16). E1 is concerned with a completely different problem to that of the disputed patent, namely the manufacture of complex shaped parts, and there is no teaching of the link between the quality of the bond and ultrasonically welding the green components. The claimed process thus has an inventive step in light of E6 and E1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of:

   (a) claims 1 to 7 according to the amended main request filed during the oral proceedings;
   (b) amended description pages numbered 2 to 5 as filed during the oral proceedings; and
   (c) figures 1 to 15, as granted.

The Registrar: The Chairman:

D. Hampe U. Krause