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**Datasheet for the decision
of 24 April 2018**

Case Number: T 1950/14 - 3.2.07

Application Number: 07105035.5

Publication Number: 1839809

IPC: B24B1/00, B24B5/01, B24B5/04,
B24B5/42

Language of the proceedings: EN

Title of invention:
Grinding method and grinding machine

Patent Proprietor:
JTEKT Corporation

Opponent:
EMAG Holding GmbH

Headword:

Relevant legal provisions:
EPC Art. 56, 123(2), 111(1), 114(2)
RPBA Art. 13(1), 13(3)

Keyword:

Late-filed document - admitted (yes)

Late-filed argument - justification for late filing (no)

Amendments - added subject-matter (no)

Inventive step - (yes)

Decisions cited:

T 0002/89

Catchword:



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Case Number: T 1950/14 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 24 April 2018

Appellant: EMAG Holding GmbH
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 16 July 2014
rejecting the opposition filed against European
patent No. 1839809 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman I. Beckedorf
Members: V. Bevilacqua
G. Patton

Summary of Facts and Submissions

- I. The appellant (opponent) filed in the prescribed form and within the prescribed time limits an appeal against the decision to reject the opposition against European patent No. 1 839 809, requesting that the appealed decision be set aside and that the patent be revoked.
- II. With the reply letter, the respondent (patent proprietor) defended the patent as granted and in amended form on the basis of 21 auxiliary requests. These were subsequently replaced with 42 auxiliary requests with letter of 9 May 2016.
- III. In the annex to the summons to oral proceedings the Board provided the parties with its preliminary opinion on the above requests.
- IV. When responding to this preliminary opinion, the respondent filed five auxiliary requests replacing all previously submitted auxiliary requests.
- V. Oral proceedings were held on 24 April 2018. For the further course of the oral proceedings, in particular the issues discussed with the parties and the parties' requests, reference is made to the minutes.

The appellant confirmed its original request that the patent be revoked.

The respondent finally requested that, when setting aside the decision under appeal, the patent be maintained in amended form on the basis of the (new) auxiliary request 1 filed during oral proceedings.

VI. The present decision was announced at the end of oral proceedings and is based on the following prior-art documents:

D3: US 4 337 599;

D4: DE 195 11 881 A1;

D9: English abstract of JP 2001-246535 A;

D9': JP 2001-246535 A.

VII. Independent **claim 1** of the request on the basis of which the present decision is taken (new 1st auxiliary request, hereinafter: claim 1) reads as follows:

"A method of grinding a rotating workpiece (20) having a cylindrical part (20) and a pair of end faces (21) at the sides of the cylindrical part (20), comprising the steps of:

providing a grinding wheel (10) whose grinding stone is narrower than a finishing width between the end faces (21), wherein the rotational axis of the grinding wheel (10) is parallel to a rotational axis (C) of the workpiece (W) and can move relatively to the workpiece (W);

a first grinding step of feeding the grinding wheel relatively to the cylindrical part (20) in a direction crossing the rotational axis (C) of the workpiece (W) until the grinding wheel (10) reaches the cylindrical part (20); and

a second grinding step of traversing the grinding wheel (10) from one of the end faces (21) to the opposite end face (21) on the cylindrical part (20), wherein said

second grinding step serves to finish at least the end faces (21) to a predetermined width,

wherein

during feeding in said first grinding step, the grinding wheel (10) is shuttled along the rotational axis (C) of the workpiece (W) at least one time within the finishing width between the end faces so that the grinding wheel zigzags toward the cylindrical part (20),

characterized in that, in the first grinding step, a shuttling width of the grinding wheel (10) along the rotational axis (C) of the workpiece (W) gradually increases."

Independent **claim 4** of the request on the basis of which the present decision is taken (new 1st auxiliary request, hereinafter: claim 4) reads as follows:

"A grinding machine for grinding a workpiece (W) having a cylindrical part (20) and a pair of end faces (21) at the sides of the cylindrical part (20), comprising:

a grinding stone of a grinding wheel (10) having a predetermined finishing width in a dimension between the end faces (21);

a head stock adapted to support the workpiece (W) rotatably about a rotational axis (C);

a wheel head adapted to support the grinding wheel (10) rotatably about a rotational axis parallel to the rotational axis (C) of the workpiece (W);

a drive unit (8) adapted to move the head stock and the wheel head relatively perpendicular to the rotational axis (C) of the workpiece (W);

a controller (18) configured to feed the grinding wheel to the cylindrical part (20) in a first grinding step, and to move the grinding wheel (10) from one of the end faces (21) to the opposite end face (21) on the cylindrical part (20) in a second grinding step,

wherein a drive unit (6) is provided which is adapted to move the head stock and the wheel head relatively parallel to the rotational axis (C) of the workpiece (W); and

said controller (18) is configured to shuttle the grinding wheel (10) during the feeding in said first grinding step at least one time within the finishing width between the end faces (21) so that the grinding wheel zigzags toward the cylindrical part (20),

characterized in that a shuttling width of the grinding wheel (10) along the rotational axis (C) of the workpiece gradually increases in the first grinding step."

- VIII. The appellant essentially argued that the subject-matter of claims 1 and 4 lacked inventive step in view of the teaching of D4, taken as closest prior art, in combination with the teaching of D9. Irrespective of the respondent's reservation, D9 was to be taken into account because it had already been submitted during the opposition proceedings, was not complex and was, in combination with D4 and based also on the content of the drawings of the corresponding Japanese patent (D9'), *prima facie* detrimental to inventive step.

The distinguishing features, which were to be found in the characterising portion of claims 1 and 4 (uncontested by the respondent), led to the objective technical problem of how to prevent grinding burn.

As D9 and D9' were not discussed in the appealed decision, the present case was to be remitted to the opposition division for further prosecution in order to give proper consideration to their teaching.

The subject-matter of claims 1 and 4 also lacked inventive step over the combination of the teachings of documents D4 and D3. This new line of attack on inventive step was to be admitted as it started from the same closest prior art (D4) and the teaching of document D3 had been discussed during written proceedings, although not in combination with D4.

In addition, claims 1 and 4 contained an unallowable intermediate generalisation because the added feature "zigzags toward the cylindrical part" had been isolated from the context of the particular embodiment (see page 7, line 4 of the original description) in which it was originally disclosed.

Claims 2, 3, 5 and 6 also contravened the requirements of Article 123(2) EPC, as they related to combinations of features which were neither originally claimed nor mentioned in the originally filed description.

IX. The respondent defended the patent essentially by arguing that, starting from the teaching of D4, the objective technical problem stemming from the uncontested distinguishing feature was how to improve grinding accuracy. However, there was no reason to take D9/D9' into consideration, as this document was not

relevant at all for the purpose of discussing inventive step. None of those documents disclosed the distinguishing features and the skilled person would not have combined the teaching of D4 with the teachings of D9-D9' to solve the above mentioned problem. The request for remittal submitted by the appellant was not to be allowed as it would delay the proceedings.

The new inventive step attack (D4+D3) was inadmissible as it was raised for the first time during the oral proceedings before the Board without justification.

Support for the added feature "zigzags toward the cylindrical part" was to be found in figure 5. In addition, as the second grinding step already started from one of the end faces this feature was not claimed in isolation from the context to which the appellant referred. Basis for the features of dependent claims 2, 3, 5 and 6 was to be found at page 10, lines 7-13 of the originally filed description.

Reasons for the Decision

1. *Inventive step*

1.1 Closest prior art - difference - effect

Both parties agree on considering D4 as the closest prior art, as this document only fails to disclose the characterizing features of independent claims 1 and 4. They also agree on their technical effect, which is, as explained in paragraph [24] of the patent in suit, reducing grinding heat in the early part of the first grinding step. The Board agrees with the parties.

1.2 Problem to be solved

Based on the above effect, the parties formulate the objective technical problem differently (i.e. "how to avoid grinding burn" - appellant / "how to improve grinding accuracy" - respondent).

The Board notes that the problem formulated by the appellant is in accordance with the requirements set by the jurisprudence (see the Case Law of the Boards of Appeal, 8th Edition 2016, I.D.4.4), in particular because it can be deduced from the patent in suit (see for example paragraph [19], line 31). As a consequence of that the Board does not see any reason to deviate from this problem ("how to avoid grinding burn") for the discussion of inventive step.

1.3 D9

1.3.1 D9 has been filed late during opposition proceedings, i.e. with the opponent's letter dated 31 January 2011. In this letter (see point 4 thereof) a reference to D9' is also made.

As no discretionary decision to exclude D9 and/or D9' from the opposition proceedings was taken by the opposition division, the Board is in the position to consider this issue for the first time pursuant to Articles 111(1) EPC and 114(2) EPC.

1.3.2 The respondent argues that none of these documents is *prima facie* relevant, and should not be admitted. This is because they clearly relate to a situation in which material is removed with a tool moving **only** in a direction parallel to the tool rotational axis, which

is a situation in which grinding occurs on one lateral face of the grinding tool, which is different from what is claimed in the patent in suit and shown in D4, where grinding also occurs at the bottom face of the tool because the tool is moved along a trajectory inclined with respect to said axis.

- 1.3.3 The Board, however, concurs with the appellant that D9 and D9' are *prima facie* relevant as D9 explicitly mentions, and figures 1-4 of D9' clearly show, measures aimed at limiting the development of grinding heat in a method and machine very similar to those known from D4. The Board is therefore satisfied that the skilled person would *prima facie* recognise that this teaching is of relevance to the inventive step discussion.

As a consequence of that D9 and the drawings of D9', to which the appellant refers, are admitted, together with the related inventive step objection.

In exercising its discretion, the Board took into consideration the respondent's argument that the appellant had only filed a copy of D9 during the opposition proceedings. However, the Board notes, as already mentioned, that the appellant's letter of 31 January 2011 contained a reference to D9'. By this reference, the respondent was in a position to identify and immediately retrieve that document. Hence the requirements set out in T 2/89 (OJ EPO 1991, 51, headnote I), i.e. that facts put forward in support of an opposition must be sufficiently detailed to enable the EPO and the patent proprietor to understand the opponent's case without further investigation, are considered met under the specific circumstances of the case at hand.

1.4 Discussion of inventive step

The appellant acknowledges that D9-D9' fails to disclose the features distinguishing the subject-matter of claims 1 and 4 from the method and machine disclosed in D4, but argues that when the skilled person applies the teaching thereof he inevitably arrives at the subject-matter of these claims.

This is because, according to the appellant, D9-D9' teach that, in order to avoid grinding burn (which is a problem mentioned in the first paragraph (PROBLEM TO BE SOLVED) of D9, grinding should be performed in such a manner as to keep the grinding amount relatively small in an early part of the grinding process, and to progressively increase it; this was taught in the second paragraph (SOLUTION) of D9 and shown in figures 2 and 3 of D9'.

The Board disagrees. According to the first paragraph of D9 it is possible to reduce grinding time without causing grinding burning if the the grinding resistance is kept low.

This is done by a plurality of grinding steps during which the tool exclusively moves parallel to the rotational axis of the tool, so that grinding occurs at the side surface of the grinding wheel, as shown in figures 2 and 3 of D9'. A closer look at D9 (see in particular the end of the paragraph "SOLUTION") even shows that this document does not really suggest that the grinding amount should be kept relatively small in an early part of the grinding process, and should be progressively increased, as put forward by the appellant, but rather that the tool should not be pressed against the workpiece in the feeding direction.

The direct and straightforward application of this teaching to the method and machine disclosed in D4 would have led to limiting the feeding of the tool in the direction crossing the rotational axis of the workpiece to a minimum. Such an approach clearly did not correspond to the distinguishing features, i.e. the features of the characterizing portions of claims 1 and 4.

As a consequence of that the Board concludes that the combination of the teachings of documents D4 and D9-D9' is not suitable to cast doubts on inventive step of claims 1 and 4.

2. *Need for a remittal of the case*

According to the established case law (supra, IV.E. 7.2.3) remittal to the department that issued the decision under appeal is particularly desirable when a new citation puts the maintenance of the patent at risk. As this is presently not the case with D9-D9', the Board does not see a need or justification for remittal of the case to the opposition division instead of dealing with the matter in the appeal proceedings in the interest of procedural economy.

3. *Further attacks on inventive step*

The appellant introduces a new line of attack on inventive step based on the combination of documents D4 and D3, to which the respondent objected.

The Board, following the arguments of the respondent, decides to exercise its discretionary power according to Articles 13(1) and 13(3) RPBA by not admitting this

new line of attack on inventive step. The introduction of the new line of attack was clearly not occasioned by a procedural development. The subject-matter of claims 1 and 4 was already under discussion during the opposition proceedings, as granted claims 5 and 11 respectively correspond to present claims 1 and 4. The same is true in respect of the written phase of the appeal proceedings, as claims 1 and 5 of the 33rd auxiliary request submitted with letter dated 9 May 2016 also correspond to present claims 1 and 4. The appellant failed in both occasions to rely on the combination D4+D3 to attack inventive step.

4. *Amendments to independent claims 1 and 4*

- 4.1 The Board concurs with the appellant that a shuttling motion of the grinding wheel along the rotational axis of the workpiece combined with a feeding movement of the same in a direction crossing such rotational axis, as claimed in originally filed claim 1, did not necessarily correspond to a zigzag motion, as claimed in claims 1 and 4, but could also lead to a trajectory without abrupt changes in direction (e.g. parabolic, circular, sinusoidal).

Based on that the appellant concluded that the now claimed zigzag movement was only originally disclosed where the feature "zigzags towards the cylindrical part" was explicitly mentioned, namely at page 7, line 4 of the originally filed description. This passage related to an embodiment in which when the grinding wheel reaches the finished dimension of the cylindrical part, one of its sides also reaches the finished dimension of one of the end faces. As this was, in the eyes of the appellant, clearly an essential feature of

this embodiment, and is missing from claims 1 and 4, the requirements of Article 123(2) were contravened.

The Board disagrees and concurs with the respondent that a zigzag motion, which is, according to the dictionary extract submitted by the appellant, a movement characterized by abrupt changes in direction, is also disclosed at figure 5, related to the presently claimed second embodiment mentioned in the description, which clearly displays series of short lines of gradually increasing length inclined at angles in alternate directions.

The Board also concurs with the position of the respondent according to which claims 1 and 4 **contain** the feature that, when the grinding wheel reaches the finished dimension of the cylindrical part, one of its sides also reaches the finished dimension of one of the end faces. This is because the second grinding step consists in traversing the grinding wheel **from** one of the end faces to the opposite end face on the cylindrical part, and serves to finish the end faces to the predetermined width.

- 4.2 The appellant argued in writing that the zigzag shape shown in figure 5 was an arbitrary detail of a schematic representation which was not meant to correspond to a technical feature of the method described in the original description. In other words, the imprecision of figure 5 made it impossible to identify the shape of the trajectory as a feature of the second embodiment.

This line of argument is not convincing, because the zigzag trajectory shown in figure 5 is not at odds, but rather corresponds to the other parts of the disclosure

of the originally filed documents. According to the jurisprudence (see Case Law of the Boards of Appeal, *supra*, ch. II.E.1.12.1), the EPC does not prohibit the amendment of claims to include features from drawings, provided the structure and the function of such features are, like in the present case, clearly, unmistakably and fully derivable from the drawings by the skilled person.

- 4.3 The appellant further argued that a further essential feature, mentioned at the bottom of page 9 of the original description, was that the grinding wheel contacts the workpiece in an arc as seen in the direction of the Z-axis. Based on this they argued that as this feature was missing from claims 1 and 4, the requirements of Article 123(2) are contravened. The same applies to the formation of the R-parts, also mentioned at the end of page 9 of the original description.

The Board disagrees again, because the appellant did not explain that (and why) these features are inextricably linked to the "zigzag" movement. To the contrary, the skilled person can in the present case recognise without any doubt from the application as filed that the zigzag trajectory is not closely related to the above mentioned characteristics of the second embodiment.

5. *Amendments, dependent claims*

The Board acknowledges that, as argued by the appellant, dependent claims 2, 3, 5 and 6 relate to combinations of features which were not originally claimed, but concurs with the respondent that basis for the additional features of dependent claims 2, 3, 5 and

6 is to be found at page 10 lines 7-13 of the originally filed description.

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 in amended form on the basis of the following documents:

claims

1 to 6 filed as (new) auxiliary request 1
during the oral proceedings

description

columns 1 to 7 filed during the oral proceedings

figures

1 to 6(b) of the patent specification.

The Registrar:

The Chairman:



G. Nachtigall

I. Beckedorf

Decision electronically authenticated