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For Creativity and Innovation

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30 June 2008

PATENTS ACT 1977

APPLICANT Komatsu Ltd.

ISSUE Whether patent application number GB 0725290.1 complies with section 1

HEARING OFFICER J Elbro

DECISION

Introduction

1 This is a divisional application of application no GB 0601393.2. GB 0601393.2 derives from Patent Cooperation Treaty Application PCT/JP2004/010920, filed on 30 July 2004 claiming priority from an earlier Japanese application dated 31 July 2003. It was published in Japanese as WO 2005/012585 A1 on 10 February 2005, and entered the national phase in the UK on 31 January 2006. It was re-published as GB 2419892 A on 10 May 2006.

2 An examination report was issued on 6 November 2006, and rounds of correspondence followed between the examiner and the applicant's agents. During this correspondence, applications GB 0721401.8, GB 0721403.4, GB 0725290.1, GB 0725291.9, and GB 0725292.7 were divided out from the original application and published as GB 2440856 A, GB 2440857 A, GB 2442385 A, GB 2441481 A, and GB 2441482 A respectively. This decision concerns only application GB 0725290.1.

3 The examiner has maintained throughout objection that the claims of the application do not clearly define the matter for which the protection is sought and are not supported across their full width, contrary to Section 14(5) of the Patents Act 1977 (the Act); that the application does not disclose sufficient information to enable the invention to be performed, contrary to Section 14(3) of the Act; and that the invention as claimed lacks novelty and inventive step, contrary to Section 1(1) of the Act. An objection of added matter, contrary to Section 76(2), was also made to a proposed claim 4.

4 These matters therefore came before me at a hearing on 30 April 2008 at which the applicant was represented by its patent attorneys, Mr Nigel Hackney and Mr Graeme Moore of Messrs Newburn Ellis. The examiner, Mr Matthew Lawson,

also attended. The agents submitted revised claims two days before the hearing which addressed some of the examiner's clarity objections. This decision relates only to the remaining objections not addressed by the revised claims.

The invention

5 The invention claimed in the application relates to a double-layered sintered sliding member used for a connecting device, such as a thrust bearing, of a construction machine. In particular, it can be a component of a bucket connecting device of an excavator. Such sliding members need to be wear- and heat- resistant under high-stress conditions. The object of the invention is to provide a sintered sliding member excellent in abrasion resistance, seizing resistance, and heat crack resistance.

6 The sintered sliding member of the claimed invention is made of a ferrous alloy characterised by its composition. Claim 1 (as proposed with the agent's letter of 28 April) reads as follows:

> A sintered sliding member comprising a back metal and a ferrous sintered sliding body which is combined to the back metal,
>
> wherein said ferrous sintered sliding body contains carbon of 1.5 to 3.2wt%, Cr of 7 to 25wt%,
>
> either P of 0.1 to 1.5wt% or both P of 0.1 to 1.5wt% and B of 0.01 to 0.2wt%, Mo of 3.5wt% or more, Mo and W of 5 to 15wt% and at least one of V or Ti in a total amount of 3 to 8 wt%, and has martensite phase,
>
> in which said martensite phase, having a solid soluble carbon concentration of 0.2 to 0.45wt%, contains Cr_7C_3-type carbide in a content of 5 to 20% by volume, an M_6C-type carbide in a content of 5 to 20% by volume, an MC-type carbide in a content of 5 to 15% by volume dispersed therein with a total content of said carbides being 15 to 50% by volume, and either [*sic*]
>
> wherein a content of carbon in said ferrous sintered sliding body satisfies the following equation:
>
> 0.043x(Mo(wt%)+0.5xW(wt%))+8.5xCr_7C_3-type carbide (volume fraction)+14*MC-type carbide (volume fraction)≤Carbon(wt%)≤0.038x(Mo(wt%)+0.5xW(wt%))+0.33+8.5xCr_7C_3-type carbide (volume fraction)+14*MC-type carbide (volume fraction), or
>
> wherein said ferrous sintered sliding body contains one or more compounds selected from the group consisting of Fe_3P, Cr_2F, FeMoP, and V_2P dispersed therein in a content of 10% or less by volume.

7 There are clearly some drafting errors; however, these can be resolved at a later stage if necessary; I shall not consider them here. In particular, I note that the alternatives presented by the various "or" clauses are not clear.

The law

8 Section 14 of the Act sets out the requirements for an application. In particular, Section 14(3) states:

> The specification of an application shall disclose the invention in a manner which is clear enough and complete enough for the invention to be performed by a person skilled in the art.

9 Section 14(5) is concerned with the claims:

> The claim or claims shall -
> (a) define the matter for which the applicant seeks protection;
> (b) …
> (c) be supported by the description;
> …

10 Further, section 1(1) defines the requirements for a patentable invention, namely that:

> *1.-(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –*
> *(a) the invention is new;*
> *(b) it involves an inventive step;*
> *…*

11 Novelty and inventiveness are dealt with in sections 2 and 3:

> *2.-(1) An invention shall be taken to be new if it does not form part of the state of the art.*
> *(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.*
> *…*
> *3. An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above…*

Definition and Support of Claims

12 Claim 1, as quoted above, defines the ferrous sintered sliding member in terms of its composition, the various components of the alloy satisfying the given equation and percentage presence, and certain percentages being present in a martensite phase. The examiner accepts that, given a sintered sliding member, it would be possible to analyse it to determine whether it meets the various requirements of the claim. There is therefore no issue regarding clarity of the claim insofar as determining whether a given item would infringe (or not) the claim.

13 The examiner's objection is twofold: that the claims are defined in terms of unusual parameters (particularly the requirements on the martensite phase), and that the claim is unduly broad and speculative.

<u>Definition by unusual parameters</u>

14 The equation given is undeniably not straightforward. The examiner faces considerable difficulty in identifying prior art - with the large number of parameters and a complex interaction between them, it is difficult for the examiner to determine if a given prior art disclosure would actually anticipate the claim. The examiner points out paragraph 14.121 of the Manual of Patent Practice which rightly warns against the use of unusual parameters to disguise a lack of novelty or inventive step:

> Where the invention relates to a chemical compound it may be characterised in a claim in various ways, eg by its chemical formula, or, exceptionally, by its parameters or as a product of a process. Characterisation of a chemical compound solely by its parameters should, as a general rule, be allowed only in those cases where the invention cannot be adequately defined in any other way, for example in the case of macromolecular chains. In such cases however only parameters usual in the art should be employed to characterise the compound, since use of unusual parameters may disguise lack of novelty…

15 The above quotation is, however, referring to chemical compounds. The present case concerns alloys, which are mentioned in the Manual at paragraph 14.123:

> The extent to which the ingredients of a composition need to be specified in order adequately to define the invention depends greatly on the subject-matter concerned. Thus a claim to "a pharmaceutical composition containing compound X together with a diluent or carrier" is allowable, X being a medically active compound which characterises the composition, and the diluent or carrier being any material suitable for the purpose and being choosable by knowledge of the art or by non-inventive experiment. In the field of alloys, sufficient of the constituents should be specified such that the claim is not speculative and is adequately supported by the disclosure.

16 The examiner maintains that the way claim 1 is defined renders it unclear, as the vast majority of patent documents which disclose ferrous sintered bodies do not disclose eg the amounts of carbide and phosphide compounds present, even though they are present in such alloys. Furthermore, the reference to the different percentages present in the martensite phase are, although not unknown in the art, unusual.

17 In response, Mr Moore argues that the parameters are in no sense “unusual”. Percentages of composition are standard for alloys - the only potentially “unusual” parameter is the use of the equation. But Mr Moore argues that this equation is in fact the heart of the invention - it defines an area within which the alloys possess the desired characteristics. He argues it is simply not possible to define the invention in a different way.

18 I accept this. It may make the tasking of searching prior art a difficult one, but one key to the applicant’s alleged invention is that alloys falling within the given area in the diagram and meeting the other constraints possess desirable qualities not found in alloys falling outside it. As the examiner and the applicant agree that a person skilled in the art is capable of assessing the relevant parameters for a given alloy, I do not think that the claim can be said to use unusual parameters – even if the percentages in the martensite phase are not usually given. It may be that the applicant’s inventive insight lies in specifically recognizing the importance of the percentages of the components, and in particular in the martensite phase. I therefore do not uphold this objection. I note, however, that I am making no decision about the overall clarity of the claim – merely the objection of principle that the examiner made.

Broad and speculative claim

19 In essence, the examiner doubts that the benefits of the invention are to be found in all the alloys satisfying the requirements of claim 1. Specifically, the alleged benefits of the invention derive from the particular microstructure which the application indicates is formed when the appropriate composition is used. The

examiner points out that the application does not show that every possible composition falling within claim 1 has been checked to see if it does indeed possess this microstructure. In particular, the alloy of claim 1 is not fully specified – the percentages do not add up to 100 – and so there is a wide variety of possibilities for additional constituents.

20 In response, Mr Moore asserts that all the alloys falling within the parameters do indeed possess this quality. He further argues that the approach taken by the claim is the clearest and most reasonable approach to take - clearly marking off the boundaries within which the claimed advantage is said to occur. Further, it would be unreasonably limiting to require the claim to be fully specified, although there were some obvious limitations – a ferrous sintered member had to contain iron, and some materials (chocolate was canvassed at the hearing) were clearly unsuitable.

21 In my view, Mr Moore is right as a matter of general principle. The claim clearly identifies the necessary characteristics of alloys required to gain the alleged advantage. Furthermore, I have no evidence to suggest that the applicant's assertion that alloys within this region do possess the advantage is incorrect (allowing for reasonable interpretation of the claim limiting it to sensible materials). Therefore I do not uphold this objection.

Enablement

22 The examiner has objected that the amounts of carbide and phosphide compounds present and the amounts of certain constituents present in the martensite phase can only be determined after the alloy has been made. Therefore the examiner considers there is not enough information on how to ensure the correct proportions in the martensite phase, and thus the application does not enable the invention to be made.

23 Mr Moore pointed to various embodiments describing how to create appropriate sintered alloys and then analyzing the resulting alloy to check the composition of the martensite phase. He therefore argued that a skilled person could use this disclosure to produce an alloy falling within the scope of claim 1.

24 The examiner's concern is essentially that the skilled person may be being asked to take "pot luck" and it may require an unreasonable number of trials for the skilled person to eventually come up with something falling within claim 1. I can see the force of this submission, but ultimately there is a dearth of evidence as to how difficult it may be. In the absence of such evidence, and with the application appearing on its face to show a way of producing an alloy according to the invention, I do not uphold this objection.

Novelty

25 The examiner has cited JP 1-275642 as showing claim 1 is not novel. It discloses sintered alloys used as sliding bodies on a metallic backing. The alloys meet the compositional requirements of the first part of claim 1 but do not disclose the percentage of constituents in the martensite phase. The examiner

argues that implicitly, these latter conditions must be met, as claim 1 does not specify further restrictions on how to achieve them, and further than in any event at least some of the alloys disclosed will in fact meet the requirements. The applicant argues, simply, that there is no disclosure of the required percentage compositions in the martensite phase and thus, no anticipation.

26 The examiner's argument was essentially deployed as a "squeeze" argument with his sufficiency objection, dealt with above: if all alloys meeting the first part of the claim meet the second part (which the applicant might argue to show sufficiency), then the alloy in JP 1-275742 must anticipate. However, as I note above, I do not consider this to necessarily be the case, and therefore the squeeze argument fails. In the absence of clear indication of the carbide and phosphide phases, or the amounts of the other elements, and the general lack of evidence as to whether the second conditions follow from the first, I do not consider that anticipation has been made out.

Inventive Step

27 No argument was made that claim 1 lacks inventiveness if it is novel, and given the advantages alleged by the applicant for this particular composition, I am willing to accept the it is inventive over JP 1-275742. As the examiner's objections to the dependent claims were premised on claim 1 lacking novelty or inventiveness, I similarly do not uphold those objections.

Conclusion and next steps

28 I do not uphold the examiner's objections on sufficiency of disclosure, clarity and scope of claims, and novelty and inventive step. I therefore remit the application to the examiner for further processing in the light of my findings, in particular further consideration of the clarity of claim 1.

Appeal

29 Under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal must be lodged within 28 days.

J ELBRO
Deputy Director acting for the Comptroller