Decision on Opposition

Opposition No. 2017-701223

Patentee	Wacker Chemie Aktiengesellschaft
Patent Attorney	NAGAI, Hiroshi
Patent Attorney	NAKAMURA, Yukitaka
Patent Attorney	SATO, Yasukazu
Patent Attorney	ASAKURA, Satoru
Patent Attorney	ASANO, Makoto
Patent Attorney	KOJIMA, Kazumasa
Patent Attorney	KASHIWA, Nobuyuki
Opponent	HOSHI, Masami

The case of opposition to grant of Patent No. 6154074, entitled "POLYCRYSTALLINE SILICON FRAGMENTS AND PROCESS FOR COMMINUTING POLYCRYSTALLINE SILICON RODS " has resulted in the following decision.

Conclusion

Correction of claims [1-11] of Patent No. 6154074 shall be approved as described in the corrected claims attached to the amended written request for correction.

The patents according to Claims 1 to 4, 8, and 11 of Patent No. 6154074 shall be revoked.

The opposition to grant of patent according to Claims 5 to 7, 9, and 10 of Patent No. 6154074 shall be dismissed.

Reason

No. 1 History of the procedures

The application for Claims 1-11 of Patent No. 6154074 is filed on August 7, 2014

which is accorded as an international filing date (priority claim under the Paris Convention received by the foreign receiving office, Deutschland [DE], on August 21, 2013), of which the establishment of the patent right was registered on June 9, 2017, and a gazette containing the patent was pubshihed on June 28, 2017. Thereafter, the patent opponent HOSHI Masami (hereinafter, referred to as "Opponent") filed a request for opposition to grant of patent dated on December 22, 2017. Reasons for revocation was notified on February 14, 2018. A written opinion and a written request for correction were submitted by the Patentee on May 21, 2018. A written opinion was submitted by the Opponent on July 5, 2018. A notice of reasons for rejecting a request for correction was servicedon August 8, 2018. A written opinion was submitted and an amendment was made to the written request for correction by the Patentee on September 27, 2018. Reasons for revocation (advance notice of decision) was notified on October 22, 2018. A written opinion was submitted by the Patentee on January 17, 2019.

No. 2 Determination of whether or not the correction is appropriate

1 Contents of the correction

The details of the correction (hereinafter referred to as "the correction") are as follows. It is noted that Corrections 11 and 20 were deleted by the above-mentioned amendment. Note that underlines indicate the corrected portions.

(1) Correction 1

The recitation "at least one comminuting tool" in Claim 1 of the scope of claims is corrected to "at least two comminuting tools".

(2) Correction 2

The recitation "%" in Claim 1 of the scope of claims is corrected to "weight %".

(3) Correction 3

The recitation "median grain size … is 0.8 μm or more" in Claim 1 of the scope of claims is corrected to "median grain size … is 1.3 μm or more".

(4) Correction 4

The recitation "the tungsten carbide content on the surface of the tool is … (omitted) … μm or more, or the tungsten carbide content on the surface of the tool is … (omitted) … μm or less" in Claim 1 of the scope of claims is corrected to "the at least two comminuting tools comprise a first comminuting tool in which the tungsten carbide content on the surface of the tool is … (omitted) … μm or more, and a second comminuting tool in which the tungsten carbide content on the surface of the tool is … (omitted) … μm or less".

(5) Correction 5

The recitation “at least one comminuting step of the at least two comminuting steps is a comminuting step with the comminuting tool in which the grain size of the tungsten carbide particles is 0.8 μm or more or the comminuting tool in which the grain size of the tungsten carbide particles is 0.5 μm or less” in Claim 1 of the scope of claims is corrected to “the at least two comminuting steps include a comminuting step with the first comminuting tool and a comminuting step with the second comminuting tool”.

(6) Correction 6

The recitation “grain size” in Claim 2 of the scope of claims is corrected to “the median grain size”.

(7) Correction 7

The recitation “at least one comminuting step of the at least two comminuting steps is a comminuting step with the comminuting tool in which the grain size of the tungsten carbide particles is 1.3 μm or more or” in Claim 2 of the scope of claims is deleted.

(8) Correction 8

The recitation “is performed by means of a comminuting step with the comminuting tool in which the grain size of the tungsten carbide particles is 0.2 μm or less” in Claim 2 of the scope of claims is corrected to “the median grain size of the tungsten carbide particles of the second comminuting tool is 0.2 μm or less”.

(9) Correction 9

The recitation “the at least one comminuting tool is a manual hammer, a hammer mill, or a machine impact tool, and the grain size of the tungsten carbide particles is 0.8 μm or more” in Claim 3 of the scope of claims is corrected to “the first comminuting tool is a manual hammer, a hammer mill, or a machine impact tool”.

(10) Correction 10

The recitation “the at least one comminuting tool is a jaw crusher, a roll crusher, or a ball mill, and the grain size of the tungsten carbide particles is 0.5 μm or less” in Claim 4 of the scope of claims is corrected to “the second comminuting tool is a jaw crusher, a roll crusher, or a ball mill”.

(11) Correction 12

Claim 5 of the scope of claims is deleted.

(12) Correction 13

Claim 6 of the scope of claims is deleted.

(13) Correction 14

Claim 7 of the scope of claims is deleted.

(14) Correction 15

The recitation "%" in Claim 8 of the scope of claims is corrected to "weight %".

(15) Correction 16

The recitation "at least one comminuting step of the at least two comminuting steps is performed with the comminuting tool in which the tungsten carbide content is less than 90 %, and at least one comminuting step of the at least two comminuting steps is performed with the comminuting tool in which the tungsten carbide content is more than 90 %" in Claim 8 of the scope of claims is corrected to "the tungsten carbide content of the first comminuting tool is less than 90 weight %, and the tungsten carbide content of the second comminuting tool is more than 90 weight %".

(16) Correction 17

The recitation "any one of Claims 1 to 7" in Claim 8 of the scope of claims is corrected to "any one of Claims 1 to 4".

(17) Correction 18

Claim 9 of the scope of claims is deleted.

(18) Correction 19

Claim 10 of the scope of claims is deleted.

(19) Correction 21

The recitation "500°C" in Claim 11 of the scope of claims is corrected to "800°C".

(20) Correction 22

The recitation "any one of Claims 1 to 10" in Claim 11 of the scope of claims is corrected to "any one of Claims 1 to 4 and 8".

2 Determination of requirements for the corrections

(1) Regarding Corrections 1, 4 and 5

Corrections 1, 4 and 5 restrict the recitation "at least one comminuting tool" in Claim 1 before the correction to "at least two comminuting tools" and clarify the correspondence between these at least two comminuting tools and at least two comminuting steps. Therefore,

Corrections 1, 4 and 5 are intended for restriction of the scope of claims and clarification of an ambiguous description.

Paragraphs [0036] and [0037] of the statements in the description attached to the application include the descriptions “the process includes at least two comminuting steps, at least two comminuting tools used therein having different WC grain sizes selected from a group consisting of a WC grain size of less than 0.5 μm, a WC grain size of 0.5 to 0.8 μm, and a WC grain size of more than 0.8 μm” and “it is particularly preferred that the process includes at least one comminuting step with at least one comminuting tool in which the grain size of tungsten carbide particles is 0.8 μm or more, and a comminuting step with at least one comminuting tool in which the grain size of tungsten carbide particles is 0.5 μm or less”. Furthermore, the correction to recite “first comminuting tool” and “second comminuting tool” is merely clarification for distinguishing the different tools, which would not introduce new technical matters. Therefore, Corrections 1, 4 and 5 are made within the scope of the matters described in the description or the scope of claims attached to the application, and would not substantially broaden or modify the scope of claims.

(2) Regarding Corrections 2 and 15

Corrections 2 and 15 make corrections to recite “weight %” that is a standard for weight where the standard for the unit of the tungsten carbide content indicated by “%” recited in Claims 1 and 8 before the corrections is not clear. Corrections 2 and 15 are thus intended for clarification of an ambiguous description.

It can be said that it is common technical knowledge in the subject technical field to indicate the unit of the tungsten carbide content on a hard metal surface as “weight %” or to indicate the unit as “%” by abbreviating “weight %,” in view of the description in paragraph 0019 of Patentee's Evidence B No. 1 (the specification of U.S. Unexamined Patent Application Publication No. 2006/0088970), the tungsten carbide content on the hard metal surface in “weight %”; and the description in paragraphs 0033 and 0193 of Patentee's Evidence B No. 2 (the specification of U.S. Unexamined Patent Application Publication No. 2003/0159647), that the unit “%” of WC or Co content of a WC/Co sintered body is the standard for weight; and furthermore, the description in pages 17-20 of Patentee's Evidence B No. 3 (COMPLETE PROGRAMME WEAR PARTS 2015, CERATIZIT GROUP), the unit of Co contents in carbides as “weight %” or “%.”

Therefore, Corrections 2 and 15 would not introduce new technical matters, and thus Corrections 1, 4 and 5 are made within the scope of the matters described in the description attached to the application or the scope of claims.

In addition, Corrections 2 and 15 would not substantially broaden or modify the scope of claims.

(3) Regarding Correction 3

Corrections 3 restricts the median grain size "0.8 μm or more" recited in Claim 1 before the correction to "1.3 μm or more" and thus is intended as a restriction of the scope of claims.

Paragraph [0033] of the description attached to the application includes a description "the coarser grains preferably have a grain size of 1.3 μm or more, and the tungsten carbide content is less than 95%, preferably less than 90%, more preferably 65-80%", and thus Correction 3 is made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(4) Regarding Correction 6

Correction 6 clarifies the correspondence between the recitation "grain size" in Claim 2 before the correction and the recitation "median grain size" in Claim 1, and thus is intended as an explanation of the unclear recitation.

As paragraphs [0026] and [0041] to [0043] of the description attached to the application include a description that the grain size is the "median grain size," Correction 6 is made within the scope of the matters described in the description or the scope of claims attached to the application, and would not substantially broaden or modify the scope of claims.

(5) Regarding Correction 7

Correction 7 deletes one of the specifying matters as alternatives recited in Claim 2 before the correction, and thus is intended as a restriction of the scope of claims and is made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(6) Regarding Corrections 8-10

Regarding the recitation "comminuting tools" in Claims 2 to 4 before the correction, Corrections 8 to 10 clarify the correspondence between the recitation "first comminuting tool" and the recitation "second comminuting tool" in Claim 1 corrected in Corrections 4 and 5, and thus intend for explanation of the unclear recitations. Corrections 4 and 5 are therefore made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(7) Regarding Corrections 12 to 14, 18, and 19

Corrections 12 to 14, 18, and 19 delete Claims 5 to 7, 9, and 10 before the corrections, and thus intend for restriction of the scope of claims. Therefore, Corrections 12 to 14, 18, and 19 are made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(8) Regarding Correction 16

Correction 16 eliminates the recitation in Claim 8 before the correction that duplicates the specifying matter "the at least two comminuting steps include a comminuting step with the first comminuting tool and a comminuting step with the second comminuting tool" recited in Claim 1 corrected by Corrections 4 and 5. In addition, regarding the recitation "comminuting tools" in Claim 8 before the correction, Correction 16 clarifies the correspondence between the recitation "first comminuting tool" and the recitation "second comminuting tool" in Claim 1 after the correction, and thus is intended as an explanation of the unclear recitations. Correction 16 is therefore made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(9) Regarding Corrections 17 and 22

Corrections 17 and 22 delete some of the selectively cited claims in Claims 8 and 11 before the corrections in accordance with the deletion of the claims, and thus are intended for a restriction of the scope of claims. Therefore, Corrections 17 and 22 are made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(10) Regarding Correction 21

Correction 21 restricts the recitation "more than 500°C" to "more than 800°C" as to the temperature of thermal treatment of the chunks performed between the at least two comminuting steps recited in Claim 11 before the correction, and thus is intended as a restriction of the scope of claims.

Paragraphs [0063] and [0064] of the description attached to the application describe the process for comminuting into chunks by means of manual breaking, breaking with a large jaw crusher, two comminuting processes with a small jaw crusher, and a final breaking process with a jaw crusher (Example 3b) "with a thermal pretreatment at 800°/1h after the second breaking process." Therefore, Correction 21 is made within the scope of the matters described in the description attached to the application or the scope of claims, and would not substantially broaden or modify the scope of claims.

(11) Regarding a group of claims

As Claims 2 to 11 before the corrections referred to Claim 1 before the correction, the corrections of the scope of claims by the corrections of the case are requested for the group of Claims 1 to 11.

3 Summary

As stated above, the corrections of the present case are intended for the matters listed

in provisos (i) and (iii) to the Patent Act Article 120-5(2), and comply with the provisions in the Patent Act Article 120-5(4), and Article 126(5) and (6) as applied mutatis mutandis in Article 120-5(9). Therefore, corrections shall be approved for the corrected claims [1 to 11].

No 3 Regarding opposition to grant of patent

1 The patented invention

The inventions according to Claims 1-4, 8, and 11 as corrected by the corrections of the present case are specified by the following matters recited in Claims 1-4, 8, and 11 of the corrected scope of claims.

[Claim 1]

A process of comminuting polycrystalline silicon rods into chunks by means of at least two comminuting tools having surfaces comprising tungsten carbide, wherein the at least two comminuting tools including a first comminuting tool in which the tungsten carbide content on the surface of the tool is 95 weight % or less and in which the median grain size weighed by a mass of tungsten carbide particles is 1.3 μm or more, and a second comminuting tool in which the tungsten carbide content on the surface of the tool is 80 weight % or more and in which the median grain size of the tungsten carbide particles is 0.5 μm or less, wherein the process includes at least two comminuting steps, wherein the at least two comminuting steps include a comminuting step with the first comminuting tool and a comminuting step with the second comminuting tool.

[Claim 2]

The process according to Claim 1, wherein the median grain size of the tungsten carbide particles of the second comminuting tool is 0.2 μm or less.

[Claim 3]

The process according to Claim 1, wherein the first comminuting tool is a manual hammer, a hammer mill, or a machine impact tool.

[Claim 4]

The process according to Claim 1, wherein the second comminuting tool is a jaw crusher, a roll crusher, or a ball mill.

[Claim 5] (deleted)

[Claim 6] (deleted)

[Claim 7] (deleted)

[Claim 8]

The process according to any one of Claims 1 to 4, wherein the tungsten carbide content of the first comminuting tool is less than 90 weight %, and the tungsten carbide content of the second comminuting tool is more than 90 weight %.

[Claim 9] (deleted)

[Claim 10] (deleted)

[Claim 11]

The process according to any one of Claims 1 to 4, and 8, wherein between the at least two comminuting steps, a thermal treatment of the chunks at a temperature more than 800°C is followed by quenching in a colder medium.

2 Outline of reasons for revocation (advance notice of decision)

The summary of reasons for revocation (advance notice of decision) of the patent according to Claims 1 to 4, 8, and 11, of which the Patentee was notified on October 22, 2018, is as follows.

(1) Reason for revocation 1 (Patent Act Article 36(6)(ii))

a. Reason for revocation 1-1

Claim 1 defines the median grain size of the tungsten carbide particles of the comminuting tool as "median grain size of the tungsten carbide particles weighed by a mass of tungsten carbide particles." As is clear from the manner in which Claim 1 is recited, the "median grain size of the tungsten carbide particles weighed by a mass of tungsten carbide particles" indicates the "median grain size weighed by a mass" of the tungsten carbide particles on the comminuting tool surface, whereas the detailed description of the invention does not specifically describe any process for measuring the grain size distribution based on mass of the tungsten carbide particles on the surface of the comminuting tool.

In addition, the process for measuring that the Patentee argues in the written opinion dated May 21, 2018 is not capable of directly measuring the grain size distribution based on mass of the tungsten carbide particles on the surface of the comminuting tool. Moreover, even if it is possible to measure the grain size distribution based on mass of the tungsten carbide particles at the raw material stage by means of the said process for measuring the grain size of tungsten carbide particles after sintering significantly changes from the grain size of tungsten carbide particles at the raw material stage, as described in Table 1 of Opponent's Evidence A No. 3 (Japanese Unexamined Patent Application Publication No. H9-125185). It is therefore impossible that the grain size of tungsten carbide particles on the comminuting tool surface that is a sintered tungsten carbide is directly derived from the grain size of tungsten carbide particles measured at the raw material stage.

Thus, even if the process for measuring the grain size distribution or the process for

calculating the median grain size that the Patentee argues is common technical knowledge, the process for measuring the grain size distribution based on tungsten carbide particles on the comminuting tool surface is still unclear. Hence, it is unclear what kind of process for measuring the value of the "median grain size weighed by the mass of tungsten carbide particles" "on the "surface of the tool" is based on.

Therefore, the invention according to Claim 1, and the inventions according to Claims 2 to 4, 8, and 11 referring to Claim 1 are not clear, and thus the patent has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36(6)(ii).

b. Reason for revocation 1-2

Claim 1 recites, regarding the tungsten carbide content, "the tungsten carbide content on the surface of the tool is 95 weight % or less" or "the tungsten carbide content on the surface of the tool is 80 weight % or more", whereas the detailed description of the invention does not specifically describe the process for measuring the tungsten carbide content on the surface of the tool. Hence, it is unclear what kind of process for measuring the value of the "tungsten carbide content on the surface of the tool" is based on.

Therefore, the invention according to Claim 1, and the inventions according to Claims 2 to 4, 8, and 11 referring to Claim 1 are not clear, and thus the patent has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36 (6)(ii).

(2) Reason for revocation 2 (Patent Act Article 36(6)(i))

a. Reason for revocation 2-1

The invention according to Claim 1 is an invention including, as a matter specifying the invention, in a "process for comminuting polycrystalline silicon rods into chunks", a "first comminuting tool in which the tungsten carbide content on the surface of the tool is 95 weight % or less and in which the median grain size of the tungsten carbide particles weighed by a mass of tungsten carbide particles is 1.3 μm or more" and a "second comminuting tool in which the tungsten carbide content on the surface of the tool is 80 weight % or more and in which the median grain size of the tungsten carbide particles is 0.5 μm or less" are used.

Regarding this, paragraphs [0061] to [0066] in the detailed description of the invention describe specific examples of comminuting polycrystalline silicon rods into chunks as embodiments, whereas, although the median grain size of tungsten carbide particles on the surface of the comminuting tool as shown in the embodiments should have been essentially one numerical value for each comminuting tool, the grain sizes of the comminuting tools actually listed are values indicated by numerical ranges such as "coarse grains (2.5 to 6.0 μm)" or "ultrafine grains (0.2 to 0.5 μm)". It is therefore unclear whether or not the grain sizes indicated by the numerical ranges correspond to the "median grain size of the tungsten carbide particles

weighed by a mass” on the “surface of the tool” described in Claim 1.

Hence, it is impossible for a person skilled in the art to recognize the process for comminuting polycrystalline silicon rods into chunks described in paragraphs [0061] to [0066] in the detailed description of the invention as an embodiment of the invention according to Claim 1.

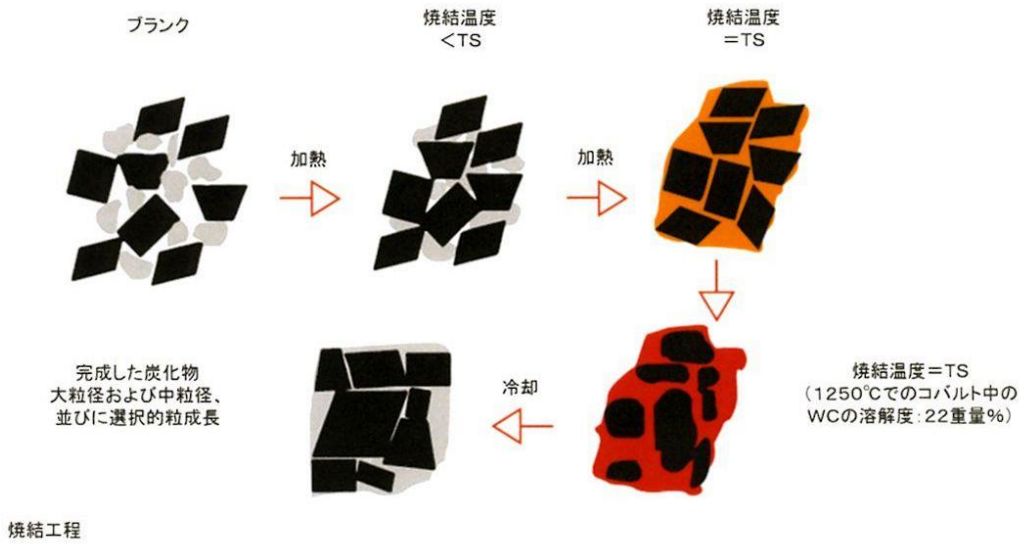
Therefore, it cannot be said that the invention according to Claim 1, and the inventions according to Claims 2 to 4, 8, and 11 referring to Claim 1 are substantially the inventions described in the detailed description of the invention, and thus the patent has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36 (6)(i).

3 Determination by the panel

(1) Regarding Reason for Revocation 1 (Patent Act Article 36(6)(ii))

a. Regarding Reason for Revocation 1-1

(a) The Patentee argues, in “a. Reason for Revocation 1-1” in “(1-1) Regarding Reason for Revocation 1 (requirement for clarity)” in “(1) Opinions regarding the respective reasons for revocation” of the written opinion dated January 17, 2019 (line 17 on page 2 to line 4 on page 4), based on descriptions in Patentee's Evidence B No. 4 (Carbide is a matter of confidence, CERATIZIT GROUP) and Evidence B No. 3 (COMPLETE PROGRAMME WEAR PARTS 2015, CERATIZIT GROUP): ‘in the drawing of the sintering step on page 12 of Patentee's Evidence B No. 4 (see the translation drawing below), ‘completed large grains and medium grains of carbide, and selective grain growth’ (that the grain size of sintered particles of carbide is achieved by selective grain growth) is described.



ブランク	Blank
焼結温度	Sintering temperature

加熱	Heating
（1250℃でのコバルト中の WC の溶解度：22 重量%）	(solubility of WC in cobalt at 1250°C: 22 weight %)
冷却	Cooling
完成した炭化物 大粒径および中粒径、 並びに選択的粒成長	Complete large grains and medium grains of carbide, and selective grain growth
焼結工程	Sintering step

That is, there is a description that it is possible to control the grain size of sintered tungsten carbide particles by factors such as sintering conditions. Thus, it is possible that the grain size of tungsten carbide particles on the comminuting tool surface that is a sintered tungsten carbide is directly derived from the grain size of tungsten carbide particles measured at the raw material stage (in the state of powder before compression and sintering). It is evidence for this that Patentee's Evidence B No. 3 attached to the written opinion dated September 27, 2018 (hereinafter simply referred to as "Patentee's Evidence B No. 3"), which is a catalogue of a manufacturer of sintering tools, describes in the final paragraph in the right column of page 16 "The classification of carbides according to grain size corresponds to the recommendations of the Powder Metallurgy Association" and that the table on the lower left of page 16 of Patentee's Evidence B No. 3 lists the mean grain sizes after sintering classified into "nano", "ultrafine", "submicron", "fine", "medium", "coarse", and "extra-coarse".

As described above, it is possible to derive the grain size of sintered tungsten carbide particles from the grain size measured in powder state. It is therefore possible to measure the grain size of tungsten carbide particles by various processes known to a person skilled in the art. Here, it is possible to assume that all the particles of tungsten carbide particles have extremely similar densities, and thus, even if the median grain size is measured by a grain size distribution based on a volume, such as by laser diffraction, it is possible to assume that the median grain size is the same as a median grain size weighed by a mass measured by a method such as sedimentation. In addition, as another process for measuring, as shown in four photographs (Ultrafine grades, Submicron grain, Fine/medium grain, Coarse grain) on page 20 of Patentee's Evidence B No. 3, it is also possible to measure the grain size by analyzing the grinding patterns". The Patentee further argues that "Therefore, it is clear what kind of process for measuring the value of the "median grain size weighed by a mass of tungsten carbide particles" on the "surface of the tool" is based on, as it is possible to measure the particles in powder state before sintering by various processes known to a person skilled in the art, and it is possible that the grain size of sintered tungsten carbide particles is directly derived from the grain size of tungsten carbide particles in powder state before sintering, and the grain size of

tungsten carbide particles on the surface of a solid is identical to that inside the solid" (lines 13 to 18 on page 4). It is recognized that the "Powder Metalfull Association" and "milling pattens" in the Patentee's argument are clerical errors which should have been "Powder Metallurgy Association" and "grinding patterns", respectively.

The Patentee's argument will now be examined.

On page 12 of Patentee's Evidence B No. 4, a schematic view of sintering process is described. In the table on the lower left of page 16 of Patentee's Evidence B No. 3, classifications of grain sizes of tungsten carbide particles are described. In addition, on page 20 of Patentee's Evidence B No. 3, photographs of ground surfaces of sintered carbides are shown. However, these descriptions do not indicate that it is possible that the grain size or grain size distribution of carbide particles on the surface of the sintered body is directly determined from the grain size or grain size distribution of carbide particles at the raw material stage. Furthermore, neither Patentee's Evidence B No. 3 nor Patentee's Evidence B No. 4 includes any description or suggestion that it is possible that the grain size or grain size distribution of carbide particles on the surface of the sintered body is directly determined from the grain size or grain size distribution of carbide particles at the raw material stage.

Therefore, it cannot be acknowledged from the descriptions in Patentee's Evidence B No. 3 nor Patentee's Evidence B No. 4 that it is common technical knowledge that it is possible that the grain size or grain size distribution of carbide particles on the surface of the sintered body is directly determined from the grain size or grain size distribution of carbide particles at the raw material stage.

In addition, that "it is possible to control the grain size of sintered tungsten carbide particles by factors such as sintering conditions" argued by the Patentee means that, in other words, even if tungsten carbide particles having the same grain sizes are used as raw material, the grain sizes of tungsten carbide particles after sintering will not be the same if the sintering conditions vary. Hence, that "it is possible to control the grain size of sintered tungsten carbide particles by factors such as sintering conditions" argued by the Patentee means that it is impossible that the grain size or grain size distribution of tungsten carbide particles in the sintered tungsten carbide is directly determined from the grain size or grain size distribution of tungsten carbide particles at the raw material stage.

That is, as described in Table 1 of Opponent's Evidence A No. 3 (Japanese Unexamined Patent Application Publication No. H9-125185), the grain size or grain size distribution of tungsten carbide particles after sintering significantly changes from the grain size or grain size distribution of tungsten carbide particles at the raw material stage, and thus it cannot be said that the grain size or grain size distribution of tungsten carbide particles at the raw material stage indicates the grain size or grain size distribution of tungsten carbide particles in the sintered tungsten carbide.

Thus, even if the process for measuring grain size distribution based on the grain size or mass of tungsten carbide particles at the raw material stage (in powder state before

compression and sintering) is well-known, the process for measuring the "median grain size of the tungsten carbide particles weighed by the mass of tungsten carbide particles" on the "surface of the tool" recited in Claim 1 is still unclear.

(b) Next, the Patentee argues, in "(1-2) Regarding Reason for Revocation 2 (support requirement)" in "(1) Opinions regarding the respective reasons for revocation" of the written opinion dated January 17, 2019: "analysis of grain size distribution and measurement of grain size of the material can be determined based on milling patterns, and can be defined by an area unit (μm^2), for example. Meanwhile, the ASTM grain size (ASTM: American Society for Testing and Materials) can be obtained in most cases by performing evaluation (ASTM E112 or DIN EN ISO 643) and classification of milling pattern according to the section method and/or the planimetric method." (lines 24 to 28 on page 5)(note by the panel: "milling pattern" is recognized as a clerical error for "grinding surface.") Thus, it will now be examined whether the process for measuring the "median grain size of the tungsten carbide particles weighed by the mass of tungsten carbide particles" on the "surface of the tool" recited in Claim 1 is clarified by the said evaluation process.

The "ASTM E112" or "DIN EN ISO 643" as the process for evaluating the ground surface of the above-mentioned argument is an evaluation process based on microphotographs, whereas the evaluation process based on microphotographs is capable of measuring the grain size of each particle exposed on the surface of the sintered body, but the method is capable of neither directly measuring the mass of each particle nor, because it is not capable of measuring the depth profile of each particle, calculating the volume or mass of the particle only from the cross-sectional area of each particle. Thus, it is not possible to obtain the grain size distribution based on mass by the evaluation method based on microphotographs.

In addition, even if it is possible to calculate the mass of each of the particles by a specific conversion process from the cross-sectional area of each of the particles obtained by the evaluation process based on microphotographs and then calculate the grain size distribution based on the mass, the calculation process is not described in the description at issue, and it cannot be said that such a calculation process is common technical knowledge either.

Thus, even if the evaluation process based on microphotographs such as the "ASTM E112" or "DIN EN ISO 643", it cannot be said that the process for measuring the "median grain size of the tungsten carbide particles weighed by a mass of tungsten carbide particles" on the "surface of the tool" recited in Claim 1 is clear.

(c) As stated above, the process for measuring the "median grain size of the tungsten carbide particles weighed by the mass of tungsten carbide particles" on the "surface of the tool" recited in Claim 1 is unclear, and it is therefore unclear what kind of measuring process the value of the "median grain size weighed by the mass of tungsten carbide particles" is based on.

Therefore, the invention according to Claim 1, and the inventions according to Claims

2 to 4, 8, and 11 referring to Claim 1 are not clear, and thus the patent has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36(6)(ii).

b. Reason for Revocation 1-2b

Reason for Revocation 1-2 being examined, the tungsten carbide particles are uniformly distributed in the comminuting tool, which is a sintered tungsten carbide, and thus it can be said that the tungsten carbide content on the surface of the comminuting tool and the tungsten carbide content inside the comminuting tool are the same. In addition, as the tungsten carbide content will not be affected by sintering, it can be said that the tungsten carbide content before sintering and the tungsten carbide content after sintering are the same. Therefore, it can be recognized that the "tungsten carbide content on the surface of the tool" is a value derived from the tungsten carbide content at the raw material stage measured by means of a known process.

Hence, Reason for Revocation 1-2 has been resolved

(2) Regarding Reason for Revocation 2 (Patent Act Article 36(6)(i))

a. Regarding Reason for Revocation 2-1

The Patentee argues, in "(1-2) Regarding Reason for Revocation 2 (support requirement)" in "(1) Opinions regarding the respective reasons for revocation" of the written opinion dated January 17, 2019: based on the description in the Evidence B No.3 (COMPLETE PROGRAMME WEAR PARTS 2015, CERATIZIT GROUP) and Evidence B No.5 (Specification of U.S. Unexamined Patent Application Publication No. 2009/0120848), "analysis of grain size distribution and measurement of grain size of the material can be measured based on milling patterns, and can be defined by an area unit (μm^2), for example. Meanwhile, the ASTM grain size (ASTM: American Society for Testing and Materials) can be obtained in most cases by performing evaluation (ASTM E112 or DIN EN ISO 643) and classification of milling pattern according to the section method and/or the planimetric method. The ranges shown in the embodiments are scattering values indicating the lower limit and upper limit of the Gaussian distribution measured by this process, and the median grain size weighed by the mass is extremely similar to these grain sizes. In addition, the grain sizes such as the "coarse grains (2.5 to 6.0 μm)" or "ultrafine grains (0.2 to 0.5 μm)" are particle size classifications recommended by the Powder Metallurgy Association, and these classifications give values indicated by the numerical range although each value indicates a average grain size (see the table on the lower left of page 16 of Patentee's Evidence B No. 3).

Furthermore, the mass base distribution is generally known in the bulk material industry (for example, the distribution of stone or gravel in the construction materials industry), and for example, the RETSCH particle measuring apparatus (for example, Camsizer) is capable

of a measured grain size value as a volume or mass base distribution. Regarding this, for example, FIG. 2 and FIG. 3 of Patentee's Evidence B No. 5 indicate "Weight components (%)" on the vertical axis, and the Gaussian distribution weighed by a mass is shown.

Therefore, it is clear that the comminuting tools used in the embodiments of the present application correspond to the first comminuting tool and the second comminuting tool of the corrected patented invention 1, and a person skilled in the art can recognize the process for comminuting polycrystalline silicon rods into chunks described in paragraphs [0061] to [0066] in the detailed description of the invention as an embodiment of Corrected Invention 1 of the present case." (line 24 on page 5 to line 16 on page 6) (note by the panel: the "milling patterns" is recognized as a clerical error which should have been "ground surface").

The Patentee's argument will now be examined.

First, based on the argument, it can be said that the "coarse grains (2.5 to 6.0 μm)", "ultrafine grains (0.2 to 0.5 μm)" and so forth described in paragraphs [0061] to [0066] in the detailed description of the invention are understood as numerical ranges as the grain size distribution of tungsten carbide on the ground surface of the sintered body, which is obtained by means of an evaluation process based on microphotographs, such as the "ASTM E112" or "DIN EN ISO 643".

However, as examined in the above-described (1) a. (b), the evaluation process based on microphotographs regarding the ground surface of the sintered body is not capable of directly obtaining the grain size distribution based on the mass, and the process for converting the grain size distribution obtained by this evaluation process to the grain size distribution is not described in the patent description of the present case, and it cannot be said that the method is common technical knowledge either. Thus, it is impossible to recognize that the "coarse grains (2.5 to 6.0 μm)", "ultrafine grains (0.2 to 0.5 μm)" and so forth described in paragraphs [0061] to [0066] in the detailed description of the invention indicate numerical ranges as the grain size distribution based on the mass of tungsten carbide particles on the ground surface of the sintered body.

In addition, regarding the Patentee's argument that the mass base grain size distribution is generally known, based on the description of mass base grain size distribution of comminuted polycrystalline silicon in the Patentee's Evidence B No. 5, the above description in the Patentee's Evidence B No. 5 merely explains the mass base grain size distribution of granules. Hence, even if the argument is considered, it is impossible to recognize that the "coarse grains (2.5 to 6.0 μm)", "ultrafine grains (0.2 to 0.5 μm)" and so forth described in paragraphs [0061] to [0066] in the detailed description of the invention indicate the grain size distribution range based on the mass of tungsten carbide particles on the ground surface of the sintered body.

Thus, it is impossible for a person skilled in the art to recognize the process for comminuting polycrystalline silicon rods into chunks described in paragraphs [0061] to [0066] in the detailed description of the invention as an embodiment of the invention according to Claim 1.

Therefore, it cannot be said that the invention according to Claim 1, and the inventions according to Claims 2 to 4, 8, and 11 referring to Claim 1 are the inventions described in the detailed description of the invention, and thus the patent has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36(6)(i).

No. 4 Closing

As thus described, the patent according to the claims 1-4, 8 and 11 has been granted on a patent application that does not satisfy the requirement stipulated in the Patent Act Article 36(6)(i) and (ii), and thus the patent falls under the Patent Act Article 113(4) and shall be revoked.

Further, Claims 5 to 7, 9, and 10 were deleted by the corrections, and thus, concerning the opposition to the patent according to Claims 5 to 7, 9, and 10, there exists no claim to be a subject of the opposition.

Therefore, the decision shall be made as described in the conclusion.

February 21, 2019

Chief administrative judge: TOYONAGA, Shigehiro
Administrative judge: MIYAZAWA, Takayuki
Administrative judge: GOTO, Masahiro