Decision on Opposition

Opposition No. 2018-700497

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The case of an opposition to grant a patent for Patent No. 6249564 titled "METHOD FOR EVALUATING QUALITY OF FLY ASH, CONCRETE FLY ASH AND METHOD FOR MANUFACTURING CEMENT MIXED WITH FLY ASH" has resulted in the following conclusion:

Conclusion

The correction of the scope of claims of Patent No. 6249564 shall be accepted with respect to Claims 4 to 5 after the correction as per the corrected scope of claims attached to the correction request.

The patents according to Claims 4 to 5 of Patent No. 6249564 shall be maintained.

Reason

No. 1 History of the procedures

The application for the patents according to Claims 1 to 5 of the Patent No. 6249564 was filed on March 28, 2014, and a patent right was registered on December 1, 2017, and a gazette containing the patents was issued on December 20 of the same year. Thereafter, the Opponent, Hama Toshihiko (hereinafter referred to as "Opponent"), made an opposition to the grant of the patents according to Claims 4 and 5 on June 19, 2018, and the body issued a notice of reasons for revocation on August 16 of the same year. Patentee submitted a written opinion on October 18 of the same year, within a designated time limit (hereinafter referred to "Patentee's written opinion") and made a request for correction, and in response to the request for correction, the Opponent submitted a written opinion on December 10 of the same year (hereinafter referred to as "the Opponent's written opinion").

No. 2 Judgment on Propriety of Correction

1. Contents of correction

(1) Correction A

"Obtained by taking an optical microscopic image in the following measurement condition and analyzing the image by use of 'Morphologi G3' manufactured by Malvern and the image , with each particle of fly ashes being dispersed"is added, before "a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle" of Claim 4.

(2) Correction B

"1.4% or more for the number proportion" of Claim 4 is corrected to "1.4% to 3.5% for the number proportion".

(3) Correction C

"10.2 vol.% or more for the volume proportion" of Claim 4 is corrected to "10.2 to 19.4 vol.% for the volume proportion".

(4) Correction D

"[Measurement conditions]
Magnification: 20 times and 50 times
Number of measured particles: 50000"is added to the last of Claim 4.

(5) Correction E

"Obtained by taking an optical microscopic image in the following measurement condition by use of 'Morphologi G3' manufactured by Malvern and analyzing the image, with each particle of fly ashes being dispersed"is added between "cement" and "a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle" of Claim 5.

(6) Correction F

"1.4% or more for the number proportion" of Claim 5 is corrected to "1.4% to 3.5% for the number proportion".

(7) Correction G

"10.2 vol.% or more for the volume proportion" of Claim 5 is corrected to "10.2 to 19.4 vol.% for the volume proportion".

(8) Correction H

"[Measurement conditions]
Magnification: 20 times and 50 times
Number of measured particles: 50000"is added to the last of Claim 5.

2 The propriety of the object of the correction, presence or absence of new matter, and whether the scope of the claims is expanded or changed

(1) Regarding Corrections A, D, E, and H

A Propriety of the object of correction

Corrections A and D specify "a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle" as the one "obtained by taking an optical microscopic image and analyzing the image" in "[Measurement condition]" of "magnification: 20 times and 50 times and the number of measured particles: 50000" "by use of 'Morphologi G3' manufactured by Malvern with each particle of fly ashes being dispersed". Therefore, Corrections A and D are intended to "restrict the scope of the claims" as specified in the item (i) of the proviso to Article 120-5(2) of the Patent Act.

Similarly, Corrections E and H are intended to restrict the scope of the claims as specified in the item (i) of the proviso to Article 120-5(2) of the Patent Act.

B The presence or absence of new matter

Further, the specification, the scope of claims, or the drawings attached to the application of the Patent (hereinafter referred to as "the patent specification, etc.") describe that:

"[0021]

3. Quality Assessment of Fly ash A to D

(A) Measurement of envelope boundary length and boundary length of fly ash particle

An optical microscopic image was taken and the image was analyzed with each particle being dispersed, using a dry classification apparatus by use of fly ash A to D. Additionally, for the acquisition and analysis of the image, 'Morphologi G3' manufactured by Malvern was used.

Additionally, the aforesaid measurement conditions and the items measured are set forth below:

Magnification: 20 times and 50 times were used.

Number of measured particles: 50000 particles per one kind of fly ash were measured.

Items measured: boundary length, envelope boundary length, and sphere equivalent volume". Corrections A, D, E, and H do not introduce new technical matter.

Therefore, Corrections A, D, E, and H conform to the provision of Article 126(5) of the Patent Act as applied mutatis mutandis pursuant to Article 120-5(9) of the Patent Act.

C Whether the scope of the claims is expanded or changed

Corrections A, D, E and H neither expand nor change the scope of the claims, and thus comply with the provision of Article 126(6) of the Patent Act as applied mutatis mutandis to Article 120-5(9) of the Patent Act.

(2) Regarding Corrections B, C, F, and G

A Propriety of the object of correction

Corrections B and C further restrict "the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4% or more for the number proportion and 10.2 volume% or more for the volume proportion" to "the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% or more for the volume proportion". Therefore, Corrections B and C are intended to "restrict the scope of the claims" as specified in item (i) of the proviso to Article 120-5(2) of the Patent Act.

Similarly, Corrections F and G are intended to "restrict the scope of the claims" as specified in item (i) of the proviso to Article 120-5(2) of the Patent Act.

B The presence or absence of new matter

The patent specification, etc. describes the following Table 4 as a result of quality assessment of fly ash.

[Table 4]

フライアッシュ	包絡周囲長／周囲長比が0．8未満の粒子の割合		［参考］コンクリートの流動性
	個数割合（%）	体積割合（体積%）	
A	1.0	7.4	×
B	2.0	10.2	○
C	1.4	12.3	○
D	3.5	19.4	◎

注）体積割合は各粒子の球相当体積が、全粒子の総体積に占める割合を示す。

フライアッシュ　Fly ash
包絡周囲長／周囲長比が０．８未満の粒子の割合　　A content of particles with a ratio of envelope boundary length to boundary length of less than 0.8
個数割合　　Number proportion
体積割合（体積%）　　Volume proportion (Vol.%)
［参考］コンクリートの流動性　　[Reference] Fluidity of concrete
注）体積割合は各粒子の球相当体積が、全粒子の総体積に占める割合を示す。
Note) Volume proportion shows a proportion of a sphere equivalent volume of each particle on a total volume basis of all the particles.

Referring to the above table, it describes fly ash D, in which a content of particles with a ratio of envelope boundary length to boundary length of less than 0.8 is 3.5% for the number proportion and 19.4 vol.% for the volume proportion. Thus it is not the incorporation of new technical matter to correct the proportion of "1.4% or more for number proportion and 10.2 vol.% or more for the volume proportion" to "1.4% to 3.5% for the number proportion and 10.2 vol.% to 19.4 vol.% for the volume proportion."

Therefore, Corrections B, C, F, and G conform to the provision of Article 126(5) of the Patent Act as applied mutatis mutandis pursuant to Article 120-5(9) of the Patent Act.

C　Whether the scope of the claims is expanded or changed

Corrections B, C, F, and G neither expand nor change the scope of the claims, and thus comply with the provision of Article 126(6) of the Patent Act as applied mutatis mutandis to Article 120-5(9) of the Patent Act.

3 Summary

As described above, the correction by the request for correction is aimed at the matter specified in the item (i) of the proviso to Article 120-5(2) of the Patent Act, and complies with the provision of Article 126(5) and (6) of the Patent Act as applied mutatis mutandis pursuant to Article 120-5(9) of the Patent Act.

Therefore, Claims 4 and 5 after the correction may be accepted.

No. 3 The Invention after Correction

The inventions according to Claims 4 to 5 (Hereinafter referred to as "Invention 4" and "Invention 5") corrected by the request for correction are specified by the matters recited in Claims 4 to 5 of the corrected scope of claims as in the following:

"[Claim 4]

A fly ash for concrete, wherein the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion, which the ratio is obtained by taking an optical microscopic image in the following measurement condition and analyzing the image by use of 'Morphologi G3' manufactured by Malvern, with each particle of fly ashes being dispersed.

[Measurement conditions]

Magnification: 20 times and 50 times

Number of measured particles: 50000

[Claim 5]

A method of producing a fly ash-mixed cement, comprising the step of mixing a cement and a fly ash, wherein the content of which particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion, which the ratio is obtained by taking an optical microscopic image in the following measurement condition and analyzing the image by use of 'Morphologi G3' manufactured by Malvern, with each particle of fly ashes being dispersed.

[Measurement conditions]

Magnification: 20 times and 50 times

Number of measured particles: 50000".

No. 4 Reasons for revocation described in the notice of reasons for revocation

1 Summary of reasons for revocation

The gist of reasons for revocation of which the Patentee was notified by the body on August 16, 2018 with respect to the patents according to Claims 4 and 5 before the correction (hereinafter referred to as "Claims 4 and 5") was as follows:

(1) As for Article 29(1)(iii) of the Patent Act

The inventions according to Claims 4 and 5 are the inventions described in Evidence A No. 1, which had been distributed in Japan or any other foreign countries before the filing. Thus these inventions are not patentable under the provision of Article 29(1)(iii) of the Patent Act. Therefore, the patents according to Claims 4 to 5 were granted in violation of the provision of Article 29(1) of the Patent Act.

Evidence A No. 1: Takashi KUBOTA et al., "A nature of rebar corrosion in a low-quality fly ash-containing mortar in an environment of salt spray", collection of papers of cement and concrete, No. 55, 2001, published on February 1, 2002, pp. 471-477

(2) Article 36(6)(ii) of the Patent Act

"Boundary length", "envelope boundary length", and "volume proportion" of the inventions according to Claims 4 and 5, [0021] of the patent specification, etc. are described as pointed out in the above No. 2, 2(1)B, but the patent specification, etc. fails to explain what kind of image analysis was carried out to measure "boundary length", "envelope boundary length", and "sphere equivalent volume" of fly ash particle. Further, these values vary depending on the measurement method. Thus the content and the volume proportion of fly ash particles with a ratio of envelope boundary length to boundary length of the fly ash particles of less than 0.8 cannot be definitely determined. Particularly regarding "volume proportion", it is calculated by measuring a sphere

equivalent volume with the above apparatus. In the meantime, the necessary particle size can be measured generally by a number of methods as shown in Evidence A No. 2 and Evidence A No. 3 and varies depending on a method, and thus the sphere equivalent volume differs. However, the patent specification, etc. fails to describe how to calculate particle size, which results in the failure to determine "volume proportion" definitely.

Therefore, the inventions according to Claims 4 and 5 cannot be definitely specified. Thus the patents according to Claims 4 and 5 before the correction have been granted to the patent application that does not conform to the requirements as provided in Article 36(6)(ii) of the Patent Act.

Evidence A No. 2: Takashi TAKEBAYASHI, "Profiles of powder particles", Journal of Japan Society of Colour Material, Introductory course of colour material (Part XI) 68[1](1995), pp.52-58

Evidence A No. 3: Edited by Powder technology collegium, "Powder particle size measurement method", February 20, 1965, published by Yokendo Ltd. Publishers, pp. 26-29

(3) Article 36(4)(i) of the Patent Act (enablement requirement)

The Detailed Description of the Invention fails to describe how to screen (select) fly ash in which "the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4% or more for the number proportion and 10.2 volume% or more for the volume proportion" of the inventions according to Claims 4 and 5.

Therefore, it cannot be said that the Detailed Description of the Invention describes definitely and sufficiently to the extent that allows a person skilled in the art to work the inventions according to Claims 4 to 5, and thus a patent was granted to the patent application that does not conform to the requirement of Article 36(4)(i) of the Patent Act.

(4) Article 36(4)(i) of the Patent Act (Ministerial Ordinance Requirement)

The Detailed Description of the Invention discloses a result of fluidity of concretes as per Table 4 pointed out in the above No. 2, 2(2)B. These concretes are blended with materials in the following proportions of Table 2. Here, referring to Table 2 and Table 4, A with less content of AE agent has poor fluidity of concrete, and B to D with greater content of AE agent have good or excellent fluidity of concrete. Further, as the proportion of AE agent is increased in preparing a concrete, the fluidity is improved, and workability is improved, which was a matter of common general knowledge of a person skilled in the art as of the filing of the Patent (see Evidence A No. 4 and Evidence A No. 5).

[Table 2]

フライアッシュ	W/C (%)	s／a (%)	単位量 (kg/m³)						
			水	普通セメント	フライアッシュ	細骨材	粗骨材	高性能AE減水剤	AE剤
A	55	46	168	244	61	810	976	0.763	0.09
B	55	46	168	244	61	812	979	0.763	0.21
C	55	46	168	244	61	811	978	0.763	0.15
D	55	46	168	244	61	812	979	0.763	0.18

フライアッシュ Fly ash

単位量　Unit amount
水　　water
普通セメント　　normal Portland cement
細骨材　fine aggregate
粗骨材　coarse aggregate
高性能ＡＥ減水剤　　High-performance Air Entraining water-reducing agent
ＡＥ剤　Air Entraining Agent

Consequently, it is indefinite as to whether a large unit amount of AE agent, or the use of the fly ash where "the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4% or more for the number proportion and 10.2 volume% or more for the volume proportion" might be attributed to the improvement on fluidity of fly ash cement prepared by use of fly ash B to D compared to the fly ash cement prepared by use of fly ash A.

Therefore, it cannot be said that the specification of "the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4% or more for the number proportion and 10.2 volume% or more for the volume proportion" for fly ash would cause the improvement in fluidity of concrete. Thus it cannot be said that these numerical values have technical meaning.

Therefore, the Detailed Description of the Invention fails to describe as provided in an Ordinance of the Ministry of Economy, Trade and Industry for Inventions 4 and 5, and thus the patent was granted for a patent application that does not conform to the requirements as provided in Article 36(4)(i) of the Patent Act.

Evidence A No. 4: "New concrete admixture Technology and Market", June 3, 1988, published by CMC Publishing Co., Ltd., pp. 11-17
Evidence A No. 5: Yoshio KASAI and others, "Admixture for Cement and Concrete", September 30, 1993, published by Gijyutu Shoin Ltd. publishers, pp. 26-29

2 Evidence A No. 1
(1) The described matter of Evidence A No. 1 (hereinafter referred to as "A1")
(1A) "In recent years, from the viewpoint of utilizing untouched natural resources, consideration is given to the effective utilization of fly ash for concrete materials produced in a large amount from thermal plants. The study produced a rebar-embedded mortar sample in which a low-quality fly ash was mixed using ordinary portland cement and ecocement, and considered how the quality and the substitution rate of fly ash have effects on the nature of rebar corrosion in mortar in an environment of salt spray, through electrochemical measurements." (page 471, Abstract)

(1B) "On the other hand, the increase in a use amount of coal from abroad results in more production of JIS irregular 2) fly ash. The utilization of such low-grade fly ash for concrete materials has been desired." (page 471, left column, lines 4 to 7)

(1C) "2. Experimental overview

2. 1 Material used and mortar mixing

Cement used is Ordinary Portland Cement (OPC) and Eco cement (ECO). ... The chemical components and physical properties of two kinds of low-quality fly ashes are shown in Table 2. Fly ash used includes Type IV equivalent of a coal-burning thermal plant (Fly ash A) and JIS irregular product (Fly ash B). ... Particle profiles of fly ash A and B are shown in Fig. 1. It can be seen that fly ash A has a more spherical particle profile compared to fly ash B, but fly ash B has a more irregular and porous particle profile.

2. 2 Production and exposure condition of mortar sample

The blend of cement mortar is shown in Table 3. Cement mortars had a water-binder ratio of 55%, a cement/sand ratio of 1/2, and a mass substitution ratio of fly ash on a cement basis of 20% and 40%." (page 471, left bottom column, line 18 to the same page, right bottom column, line 19)

(1D) The following drawing (picture) is disclosed as Fig. 1:

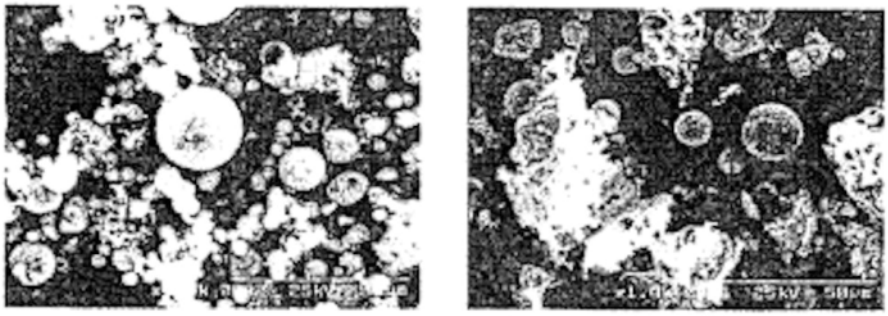


Fig. 1 SEM micrographs of fly ash A (left) and B (right)

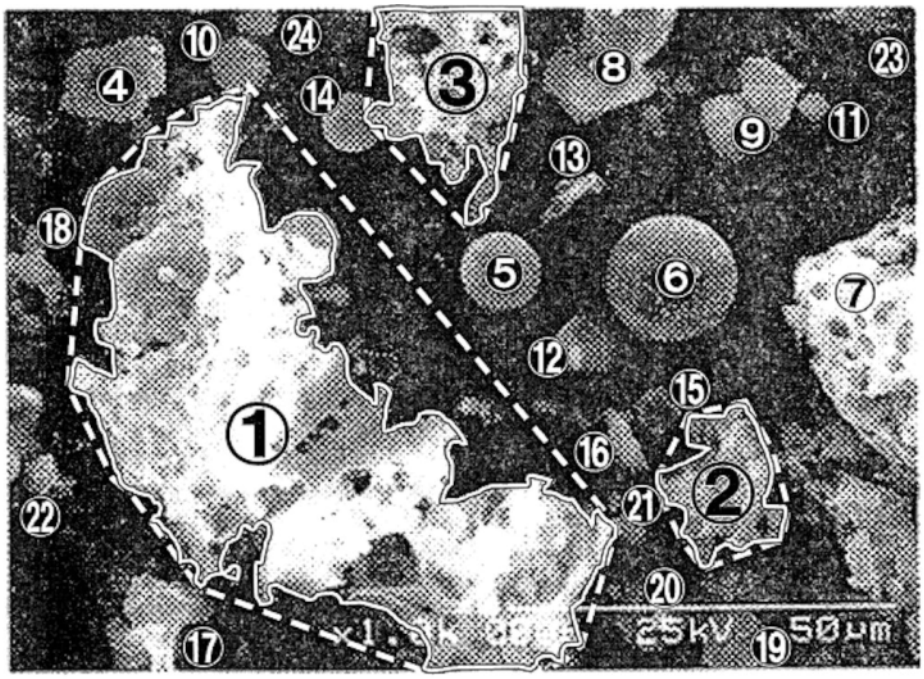
(2) Evidence A No. 1 Invention

A Fly ash B

Fly ash B is for concrete in view of the point (1A) and (1C), and it is mixed with cement.

B Expansion of Fig. 1B

An enlarged view of the drawing of the above Fig. 1B is shown as in the following.



In the above enlarged view, boundary lengths and envelope boundary lengths of particles as shown in the solid line and dotted line of the above drawing were measured for three fly ash particles (1), (2), and (3) (circled numbers in the drawing) by use of a commercially available string, and the size was converted in method I of the following Table A. The boundary lines and the envelope boundary lines of particles as shown in solid lines and dotted lines of the above drawing were read by the image analysis software "image J" to measure the respective lengths in the method II of the following Table A.

【表A】

	周囲長（μm）		包絡周囲長（μm）		包絡周囲長/周囲長	
	方法 I	方法 II	方法 I	方法 II	方法 I	方法 II
粒子①	290.4	340.5	197,9	225,7	0.68	0.66
粒子②	75	77	58.6	61.5	0.78	0,79
粒子③	75.7	114	57,1	846	0,75	0.74

表A　Table A
周囲長　Boundary length
包絡周囲長　Envelope boundary length
包絡周囲長／周囲長　Envelope boundary length/Boundary length
方法　Method
粒子　Particle

As shown in Table A, at least three fly ash particles (1), (2), and (3) among 24 fly ash particles shown in Fig. 1B have a ratio of envelope boundary length to boundary length of less than 0.8. Therefore, it can be said that A1 describes fly ash in which the number proportion of fly ash particles having a ratio of envelope boundary length to

boundary length of less than 0.8 is at least 12.5% (=3/24). Subsequently, a projected area of each of 24 fly ash particles in Fig. 1B was measured by image J, and a diameter of a circle with equal projected area was calculated, and a sphere volume was calculated on the basis of the diameter. On the basis of this, a ratio of the total volume of fly ash particles (1), (2), and (3) to the total volume of 24 fly ash particles was calculated as 77.9 volume%.

C Evidence A No. 1 Invention

In view of the above A and B, A1 discloses the following invention:

"A fly ash for concrete, wherein the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 12.5% for the number proportion and 77.9 volume% for the volume proportion." (hereinafter referred to as "the A1α invention".)

"A method for producing fly ash-mixed cement, comprising the steps of mixing a cement and a fly ash, wherein the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 12.5% for the number proportion and 77.9 volume% for the volume proportion." (hereinafter referred to as "the A1β invention".)

3 Judgment by the body

(1) Article 29(1)(iii) of the Patent Act

A Invention 4

(A) Comparison

Comparing Invention 4 and the A1α invention, they have the following corresponding features:

(Corresponding Features)

"A fly ash for concrete, wherein the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is a value (%) for the number proportion and a value (volume%) for the volume proportion."

but have the following different feature:

(Different Feature)

"The number proportion" and "the volume proportion" of "The content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8"

were "1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion", which was "obtained by taking an optical microscopic image and analyzing the image" in "[Measurement conditions]" of "magnification: 20 times and 50 times and the number of measured particles: 50000" "by use of 'Morphologi G3' manufactured by Malvern with each particle of fly ashes being dispersed" in Invention 4, whereas

"12.5% for the number proportion and 77.9 volume% for the volume proportion" in the A1α invention, while it cannot be said to be those values obtained in the above measurement apparatus and the measurement conditions.

(B) Judgement on Different Feature

The fly ash of A1α invention has the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 of 12.5% for the number proportion and 77.9 volume% for the volume proportion, which vastly differs from "1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion" of Invention 4, and even in view of the difference in the measurement apparatus and measurement conditions, it is still a substantial different feature.

(C) Summary

Therefore, it cannot be said that Invention 4 is the A1α invention, and thus it does not correspond to an invention of Article 29(1)(iii) of the Patent Act.

B Invention 5

(A) Comparison

Comparing Invention 5 and the A1β invention, they have the following corresponding features:

(Corresponding Features)

"A method for producing fly ash-mixed cement, comprising the steps of mixing a cement and a fly ash, wherein the content of a fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is a value (%) for the number proportion and a value (volume%) for the volume proportion."

but have the following different feature:

(Different Feature)

"The number proportion" and "the volume proportion" of "The content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8"

were "1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion", which was "obtained by taking an optical microscopic image and analyzing the image" in "[Measurement conditions]" of "magnification: 20 times and 50 times and the number of measured particles: 50000" "by use of 'Morphologi G3' manufactured by Malvern with each particle of fly ashes being dispersed" in Invention 5, whereas

"12.5% for the number proportion and 77.9 volume% for the volume proportion", in the A1β invention, while it cannot be said to be those values in the above measurement apparatus and measurement conditions.

(B) Judgement on Different Feature

The Different Feature in the above (A) is the same as the Different Feature discussed in the above A(A). Thus, as discussed in the above A(B), it is a substantial different feature.

(C) Summary

Therefore, it cannot be said that Invention 5 is the A1β invention, and thus it does not correspond to the invention of Article 29(1)(iii) of the Patent Act.

C The Opponent's opinion

The Opponent submitted the following Evidence A No. 6 (hereinafter referred to as "A6") in the Opponent's written opinion, and alleges that A6 discloses that "Coal from abroad generally has a high melting point, and thus fly ash with a good particle profile is reduced compared to the case of domestic coal." (page 19, left column, lines 6 to 5 from the bottom), and the point (1B) of A1 discloses that " the increase in a use amount of coal from abroad results in more production of JIS irregular 2) fly ash", and thus the fly ash of A1 satisfies the requirements of the above Inventions 4 and 5. There is no evidence, however, that the fly ash of coal from abroad satisfies the Different Features in the above A(A) and B(A), and thus the judgement on about Article 29(1)(iii) of the Patent Act is not changed.

A6: Tsutomu KANETSU, "Fly ash JIS revision", August 1, 1999, Concrete Engineering, Vol. 37, No. 8, pp. 19-25

D Summary

Inventions 4 and 5 are not the inventions described in A1. Thus the patents according to Inventions 4 and 5 were not granted in violation of the provision specified in Article 29(1) of the Patent Act.

(2) Article 36(6)(ii) of the Patent Act

A As described in No. 3, the Correction makes "boundary length", "envelope boundary length", and "sphere equivalent volume" be specified as those "obtained by taking an optical microscopic image and analyzing the image" in "[Measurement conditions]" of "magnification: 20 times and 50 times and the number of measured particles: 50000" "by use of 'Morphologi G3' manufactured by Malvern with each particle of fly ashes being dispersed" for automatic measurement. These are unambiguously measured by a specification, calculation method, and condition that the apparatus adopts.

Therefore, the values of "number proportion" and "volume proportion" of "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8" of Inventions 4 and 5 have become unambiguous by specifying that the values are "obtained by taking an optical microscopic image and analyzing the image" in "[Measurement conditions]" of "magnification: 20 times and 50 times and the number of measured particles: 50000" "by use of 'Morphologi G3' manufactured by Malvern with each particle of fly ashes being dispersed, and thus it cannot be said as indefinite.

In addition, the Opponent has not at all presented any counterargument about this point in the Opponent's written opinion.

B Summary

Therefore, it cannot be said that the patents according to the Inventions 4 and 5 have been granted to a patent application that does not conform to the requirements under Article 36(6)(ii) of the Patent Act.

(3) Article 36(4)(i) of the Patent Act (enablement requirement)

A It is sufficient to sample 50000 fly ash particles as a lot (aggregation), take an optical microscopic image with a magnification of 20 times and 50 times, and analyze the image

using 'Morphologi G3' manufactured by Malvern with each particle being dispersed, and select a lot that satisfies "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion" as "fly ash for concrete" or "fly ash" in "a method of producing fly ash-mixed cement" "comprising the step of mixing with a cement". It cannot be said that "undue trial and errors that go beyond the expectation of a person skilled in the art, and complicated experimentation" as the Opponent alleges in the Opponent's written opinion are required.

B Summary

Therefore, it can be said that the Detailed Description of the Invention describes definitely and sufficiently to the extent that allows a person skilled in the art to work Inventions 4 to 5, and thus it cannot be said that a patent for Inventions 4 to 5 was granted to the patent application that does not conform to the requirement of Article 36(4)(i) of the Patent Act.

(4) Article 36(4)(i) of the Patent Act (Ministerial Ordinance Requirement)

A Patentee explains in the Patentee's written opinion that

"'a ready-mixed concrete" of JIS A 5308 (Evidence B No. 1) described in line 4 of paragraph [0018] of the specification determines a range of air amount described in Table 3 of the JIS. A person skilled in the art controls an air amount in concrete by setting a target air amount within the range, and adjusting an additive amount of AE agent so as to fall within the target air amount (Evidence B No. 2, page 94, right column, lines 5 to 6, page 95, right column, lines 12 to 9 from the bottom). As a result, as shown in Table 3 of page 96 of Evidence B No. 2, the additive amount of AE agent varies.

Further, even if there is excessive AE agent, the fluidity of fly ash concrete is not always high. For example, as shown in Table 2 of page 333 of Evidence B No. 3, the amount of AE agent of B is 40 times as much as B (=0.435/0.0011). Nevertheless, the fluidity of B (slump) is only 0.88 (=9.4/10.6) times the fluidity (slump) of A. Therefore, even a large amount of AE agent does not always lead to a large amount of air, nor good fluidity, as shown in Table 2. Meanwhile, it is widely known to a person skilled in the art that this fact stems from the adsorption of AE agent by unburned carbon in fly ash.

Table 2 of paragraph 0019 adjusts the additive amount of AE agent while maintaining the additive amount of high-performance AE water-reducing agent (this is why the additive amounts of AE agent in Table 2 are mutually different) to control an air amount in concrete. A person skilled in the art would unambiguously recognize from the term "ordinary cement" in the formulation of Table 2 and the formulation of Table 2 that the produced concrete is an ordinary concrete, and thus recognize from Table 4 of the aforesaid JIS that air amounts of ordinary concretes including fly ash A to D fall within 4.5±1.5%.

Evidence B No. 1: JIS A 5308 "Ready-mixed concrete"

Evidence B No. 2: Sadanori KUSU and others, "Study on a simple quality assessment method of fly ash concrete", Journal of JSCE E, Vol. 65, No. 1, pp. 93-102, March 2009

Evidence B No. 3: Takaji SAKAI and others, "Study on an environmental load reducing concrete using a fly ash concrete", Journal of JSCE E, Vol. 65, No. 3, pp. 332-

342, August 2009

Taking the above explanation into account, one can recognize that good "fluidity of concrete" in Table 4 pointed out in the above No. 2, 2(2)B is not attributed to the large unit amount of AE agent, but to the mixture of a fly ash "in which the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 is 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion". Thus it can be said that the above numerical range for the fly ash has technical significance.

In addition, the Opponent has not at all presented any counterargument about this point in the Opponent's written opinion.

B Summary

Therefore, it can be said that the Detailed Description of the Invention is described in compliance with the provision in an Ordinance of the Ministry of Economy, Trade and Industry, and thus it cannot be said that the patents according to Inventions 4 and 5 were granted to a patent application that does not conform to the requirements of Article 36(4)(i) of the Patent Act.

No. 5 Grounds for opposition to the grant of a patent that have not been adopted in the notice of reasons for revocation

There are no grounds for opposition to the grant of a patent that has not been adopted in the notice of reasons for revocation.

No. 6 Reasons for revocation newly alleged in the Opponent's written opinion

The Opponent newly submitted Evidence A No. 7 (hereinafter referred to as "A7") in the Opponent's written opinion and alleged that Inventions 4 and 5 were publicly worked inventions, and thus corresponded to Article 29(1)(ii) of the Patent Act, and were unpatentable inventions, and easily conceivable by a person skilled in the art on the basis of the above publicly worked inventions, and thus were unpatentable inventions under the provision of Article 29(2) of the Patent Act. Therefore, just in case, a consideration is given to these allegations.

A7: JIS HandBook [10] Raw concrete, JIS A 6201 "Fly ash for concrete", published on January 31, 2001

1 Article 29(1)(ii) of the Patent Act

A7 discloses the fly ash Type II as a fly ash for concrete; however, it fails to disclose that the fly ash Type II has "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 of 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion".

The example of the patent specification etc. is set forth as below:

"[0015]

Hereinafter, the present invention is further explained by examples, but is not limited to these examples.

1. Materials used

As shown in Table 1, different brands of fly ash A to D (equivalent to Type II of JIS A 6201) were used.

[0016]
[Table 1]

項目		フライアッシュ				[参考] JIS A 6201 のII種
		A	B	C	D	
二酸化けい素（質量%）		56.7	53.6	66.8	56.8	45.0 以上
湿分（質量%）		0.1	0.1	0.6	0.1	1.0 以下
強熱減量（質量%）		2.0	2.2	2.2	2.5	5.0 以下
密度（g/cm³）		1.98	2.21	2.16	2.27	1.95 以上
粉末度	45μm 残分（%）	39	30	19	16	40 以下
	比表面積（cm²/g）	2510	3210	3460	3420	2500 以上
フロー値比（%）		109	111	114	115	95 以上
活性度指数（%）	材齢 28 日	81	84	82	81	80 以上
	材齢 91 日	92	95	95	92	90 以上
BET 比表面積（m²/g）		1.92	2.51	2.06	2.67	−
n値		1.5	1.2	1.3	1.3	−
ガラス量（%）		62	77	79	74	−

注）二酸化けい素から活性度指数までは、JIS A 6201「コンクリート用フライアッシュ」に準拠して測定した。
注）BET 比表面積は、島津製作所社製のフローソーブ 2305 を用いて測定した。
注）n値は、粒度分布測定結果を用いてロジンーラムラー解析により求めた。
注）粒度分布測定装置は、日機装社製のマイクロトラック HRA を用いた。
注）ガラス量は、下記文献に記載の XRDーリートベルト法により求めた。
星野清一ほか「非晶質混和材を含むセメントの鉱物の定量における X 線回折／リートベルト法の適用」、セメント・コンクリート論文集、第 59 号、pp.14-21(2005)に記載の方法に準拠した。
注）XRD 装置はブルカー・エイエックスエス社製の X 線回折装置 D8 ADVANCE を用いた。
注）リートベルト解析は、ブルカー・エイエックスエス社製の解析ソフトウェア DIFFRAC^{plus} TOPAS (Ver.3)を用いた。

項目　Items
フライアッシュ　Fly ash
【参考】ＪＩＳ　Ａ　６２０１のＩＩ種　[Reference] JIS A 6201 Type II
二酸化けい素（質量%）　Silicon dioxide (mass %)
湿分（質量%）　Humidity (mass%)
強熱減量（質量%）　Ignition loss (mass%)
密度　Density
粉末度　Powder size
４５μm残分　45 um residue
比表面積　Specific surface area
フロー値比　Flow rate ratio
活性度指数　Activity index
材齢２８日　Material age 28 days
材齢９１日　Material age 91 days
ＢＥＴ比表面積　BET Specific surface area
ｎ値　n value
ガラス量　Glass amount
以上　or more
以下　or less
注）二酸化けい素から活性度指数までは、ＪＩＳ　Ａ　６２０１「コンクリート

用フライアッシュ」に準拠して測定した。　Note) From Silicon dioxide to Activity index, the measurements were carried out in compliance with JIS A 6201 "Fly ash for concrete".
注）ＢＥＴ比表面積は、島津製作所社製のフローソープ２３０５を用いて測定した。　Note) BET Specific surface area was measured by use of flow soap 2305 manufactured by Shimadzu Corporation.
注）ｎ値は、粒度分布測定結果を用いてロジンーラムラー解析により求めた。
Note) n value was calculated through the Rosin-Rammler formula by use of a measurement result of particle size distribution.
注）粒度分布測定装置は、日機装社製のマイクロトラックＨＲＡを用いた。
Particle size distribution measurement apparatus was Microtrack HRA manufactured by Nikkiso Co., Ltd.
注）ガラス量は、下記文献に記載のＸＲＤーリートベルト法により求めた。
Note) Glass amount was calculated by XRD-Rietveld method described in the following document.
星野清一ほか「非晶質混和材を含むセメントの鉱物の定量におけるＸ線回折／リートベルト法の適用」、セメント・コンクリート論文集、第５９号、ｐｐ.１４－２１（２００５）に記載の方法に準拠した。　In compliance with the method described in Seiichi HOSHINO et al., "The application of the X-ray diffraction/Rietveld method in the quantification of minerals of cement including amorphous admixture", Collection of Papers on Cement and Concrete, No. 59, pp. 14-21 (2005).
注）ＸＲＤ装置はブルカー・エイエックスエス社製のＸ線回折装置Ｄ８　ＡＤＶＡＮＣＥを用いた。　Note) XRD apparatus was X-ray diffraction apparatus D8 ADVANCE manufactured by Bruker AXS.
注）リートベルト解析は、ブルカー・エイエックスエス社製の解析ソフトウェア　ＤＩＦＦＲＡＣ^{plus}ＴＯＰＡＳ（Ｖｅｒ.３）を用いた。Note)　Rietveld analysis was carried out with the analysis software DIFFRAC plus TOPAS (Ver.3) manufactured by Bruker AXS.

"As per described in Table 4 pointed out in the above No. 2, 2(2)B as the quality assessment of these fly ashes, it cannot be said that all fly ash Type II satisfies "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 of 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion". Thus it cannot be said that a fly ash for concrete that satisfies "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 of 1.4 to 3.5% for the number proportion and 10.2 to 19.4 volume% for the volume proportion" had been publicly worked.

Therefore, Inventions 4 and 5 do not correspond to Article 29(1)(ii) of the Patent Act, and the patents according to Inventions 4 to 5 were not granted in violation of the provision of Article 29(1) of the Patent Act.

2 Article 29(2) of the Patent Act

As pointed out in the above No. 4, 2(1), A1 does not at all mention about the

relationship between the content of fly ash particle having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 (number proportion and volume proportion) and fluidity of concrete mixed with fly ash. In the A1α and β inventions, there is no motivation to adjust the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 to "1.4 to 3.5%" for the number proportion and "10.2 to 19.4" volume% for the volume proportion.

Further, A7 fails to refer to the above relationship. Thus in the publicly worked invention on the basis of A7, there is no motivation to adjust "the content of fly ash particles having a ratio of an envelope boundary length of a fly ash particle to a boundary length of the fly ash particle of less than 0.8 to 1.4 to 3.5% for the number proportion and to 10.2 to 19.4 volume% for the volume proportion."

Therefore, Inventions 4 and 5 were not easily conceivable by a person skilled in the art, and thus the patents according to Inventions 4 to 5 were not granted in violation of the provision of Article 29(2) of the Patent Act.

No. 7 Closing

As described above, the patents according to patent inventions 4 to 5 may not be revoked on the basis of the reasons for revocation described in the notice of reasons for revocation and the grounds for opposition described in the written opposition.

Further, there is no other reason to revoke the patents according to Inventions 4 and 5.

Therefore, a decision shall be made as described in the Conclusion.

December 18, 2018

Chief administrative judge: ITO, Masaya
Administrative judge: MISAKI, Hitoshi
Administrative judge: WATADO, Masayoshi