Appeal Decision

Appeal No. 2016-16112

Osaka, Japan
Appellant LIGNYTE CO., LTD.

Shiga, Japan
Patent Attorney MORI, Atsuo

The case of appeal against the examiner's decision of refusal for Patent Application No. 2015-60381, titled "METHOD FOR PRODUCING COMPOSITION FOR REFRACTORY BRICK AND METHOD FOR PRODUCING REFRACTORY BRICK" [Unexamined Patent Application Publication No. 2015-131762 published on July 23, 2015] has resulted in the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The application was filed on March 24, 2011 as a divisional application of Patent Application No. 2011-551740 based on an international application filed on January 14, 2011 (priority date: January 26, 2010, Japan Patent Office) (hereinafter referred to as "parent application"). A notice of reasons for refusal dated December 15, 2015 was notified, a written opinion and a written amendment were submitted on February 15, 2016, a notice of reasons for refusal dated May 11, 2016 was notified, a written opinion and a written amendment were submitted on June 14, 2016, and a decision of rejection dated July 28, 2016 was issued, and in response, an appeal against the decision for refusal was filed on October 28, 2016, together with a written amendment. Then, a notice of reasons for refusal dated June 8, 2017 was notified by the body, and a written opinion and a written amendment were submitted on August 8, 2017.

No. 2 The Invention of the application

It is recognized that the invention according to Claim 1 of the application should be specified by the following matters recited in Claim 1 that have been amended by the written amendment submitted on August 8, 2017:

"A method for producing a composition for refractory bricks, comprising the steps of: coating a solid coating layer consisting of a binder for coating on a surface of a refractory aggregate to prepare a coated refractory aggregate; and compounding and mixing a liquid binder for binding with said coated refractory aggregate, wherein said coating layer consisting of said binder for coating is made of an uncured thermosetting resin with thermosetting property, and said binder for coating reacts with said binder for

binding to bind." (hereinafter referred to as "Invention 1")

No. 3 The gist of reasons for refusal notified by the body

The reasons for refusal dated June 8, 2017, which was notified by the body, include the following reason:
"3) The inventions according to Claims 1 to 3, 6 to 12 (hereinafter referred to as 'Inventions 1 to 3, 6 to 12') were easily conceivable by a person skilled in the art who had ordinary knowledge in the field of art to which the invention belonged on the basis of the invention described in the following publication that had been distributed in Japan or a foreign country before the filing or had been available to public via a telecommunication line. Thus these inventions are not patentable under the provision of Article 29(2) of the Patent Act."

Cited reference 1: Japanese Patent Application Unexamined Publication No. S55-10476

No. 4 Examination on Invention 1

1. Matters described in Cited reference 1

Cited reference 1 has the following descriptions:
(A) "A method for producing a refractory material for the production of pig iron, comprising the steps of: adding a binder consisting of phenol-based resin and optionally a small amount of solvent to an inorganic refractory aggregate such as aluminum or magnesia; adding a graphite powder, and kneading in a high-speed mixer for a short time to form a coated layer consisting of graphite and a partially-cured binder on a surface of said aggregate." (the scope of claims)

(B) "[Example 1-1] While heating and stirring at 100°C, 141 g of phenol, 118 g of formalin (37% aqueous solution), and 2 g of oxalic acid were subjected to reaction for three hours and dehydration at a normal pressure, and condensed up to 180°C. The obtained novolac resin had an average molecular weight of 720." (page 1, right column, line 17 to page 2, left upper column, line 2)

(C) "[Example 2-2] To a whirl mixer 40 kg alumina heated at 150°C was fed, followed by coating with 1.2 kg of the binder obtained in Example 1-1. Subsequently, 2 kg of graphite was added to coat on an alumina surface, and further 120 g hexamine and 200 g water were fed and taken out at a degraded portion. Heating the resultant graphite-coated refractory material at 150°C resulted in a strong hardened material." (page 2, left bottom column, lines 5 to 12)

(D) "The second feature of the present method lies in taking out from a mixer a thermosetting binder in a state that is not completely cured by kneading with the aforementioned high-speed mixer for a short time. The resultant graphite-coated refractory material comprises a binder in a semi-cured state, and is a dried porous particulate having a smooth surface whose graphite-coating layer is strongly adhered to a surface of an aggregate." (page 2, right bottom column, lines 11 to 18)

(E) "Further, the addition of graphite powder and resin varnish to the material and kneading them in a low-speed mixer allows for the formation of a refractory product with a large amount of graphite at a lower pressure than ever, as well as a large contact area with graphite powder while saving a graphite powder and a solvent to be used. Thus the method allows for a resultant refractory product with a smaller porosity rate, and provides a significant improvement in working environment and takes a shorter kneading time.

The refractory product thus obtained exhibits a much stronger binding force between a graphite and an aggregate as compared to conventional products, and good wetting between a secondary binder and a graphite-coated surface, and thus exhibits a strong bonding between graphite particulates with a very small additive amount of the secondary binder. The refractory product also has a good filling rate in molding, and particularly has an advantage of achieving a significant improvement in strength at a high temperature due to the formation of carbon bond in sintering." (page 3, left upper column, lines 6 to 20)

(F) "[Example 3-2] ... Improved products Graphite-coated fused alumina ... (Obtained in Example 2-2): 72 weight parts, fused alumina ... : 25, Natural graphite ... :3, Thermosetting powder resin (novolac-type phenol resin hexamine addition):5, ethylene glycol: 4

The above formulation was kneaded in a Simpson mixer at an ambient temperature, and formed into a mold with a shape of 65*114*230 mm by a vibration press, and then heated at 100°C for 24 hours, and baked at 300°C for 15 hours." (page 3, right bottom column, line 1 to page 4, left upper column, line 2)

2. Cited invention 1

According to the described matters (A) to (D) and (F), it is recognized that Cited reference 1 regarding Example 3-2 discloses

"a method for producing a material for the formation of refractory products, comprising the steps of: coating a novolac resin on a surface of a refractory aggregate of fused alumina heated at 150°C; subsequently adding graphite; coating graphite on a surface of alumina to obtain a semi-cured graphite-coated fused alumina; and mixing and kneading this graphite-coated fused alumina with fused alumina, natural graphite, a thermosetting powder resin of novolac-type phenol resin, and ethylene glycol." (hereinafter referred to as " Cited invention 1").

3. Difference between Invention 1 and Cited invention 1

Invention 1 is compared to Cited invention 1.

"Novolac resin" coated on a surface of refractory aggregate of Cited invention 1 corresponds to "a binder for coating" of Invention 1, and in a similar manner, "graphite-coated fused alumina in which novolac resin is semi-cured" corresponds to "coated refractory aggregate," "after obtaining" corresponds to "prepare," "thermosetting powder resin of novolac-type phenol resin" corresponds to "binder for binding," and "kneading" corresponds to "mixing," and the "material for the formation" corresponds to "a composition."

Further, a coated novolac resin of Cited invention 1 is a thermoset resin in a

"semi-cured" condition that is not completely cured. Thus it corresponds to "an uncured thermoset resin having thermosetting property" of Invention 1.

Furthermore, a novolac resin coating a refractory aggregate of fused alumina and novolac-type phenol resin to be mixed into a material for the formation are both thermosetting phenol resin. Thus they correspond to "the one to be reacted and bound" of Invention 1.

Therefore, Invention 1 and Cited invention 1 have a common feature in that they are
"methods for producing a composition, comprising the steps of: coating a binder for coating on a surface of a refractory aggregate to prepare a coated refractory aggregate; and compounding and mixing a binder for binding with said coated refractory aggregate, wherein said binder for coating is an uncured thermoset resin with thermosetting property, and said binder for coating reacts with said binder for binding to bind."

Invention 1 differs from Cited invention 1 in the following features 1-3,

[Different feature 1]: Invention 1 has "a coating of a solid coating layer consisting of a binder for coating," whereas Cited invention 1 has "a coating of a semi-cured novolac resin and graphite";

[Different feature 2]: Invention 1 "compounds a liquid binder for binding with said coated refractory aggregate," whereas Cited invention 1 "compounds thermosetting powder resin and ethylene glycol with graphite-coated fused alumina"; and,

[Different feature 3]: Invention 1 is used “for refractory bricks," whereas Cited invention 1 is used “for refractory products").

4. Examination on the Different features

(i) Regarding Different feature 1

Cited invention 1 has a coating layer of semi-cured novolac resin and graphite. According to the described matter (D), "the resultant graphite-coated refractory material" is "a porous dried particulate with smooth surface." Thus it can be said that a semi-cured novolac resin is a solid coating layer.

Further, the specification of the present application discloses in [0056] that "Further, as aforementioned, when mixing a binder for coating with a refractory aggregate, if needed, a curing agent, various coupling agents such as silane coupling agent to cause a refractory aggregate and a binder for coating to increase affinity, and a carbonaceous material such as graphite may be mixed therewith." The presence or absence of graphite does not make a difference.

Therefore, Different feature 1 is not substantial.

(ii) Regarding Different feature 3

According to the described matter (F), the material for the formation of refractory products is formed into a mold with a shape of 65*114*230 mm (cuboid) and is to be subjected to baking. Thus it corresponds to a refractory brick.

Therefore, Different feature 3 is not substantial.

(iii) Regarding Different feature 2

According to the described matter (E), Cited reference 1 discloses that "graphite powder and resin varnish are added to the material and then it is kneaded by a low-

speed mixer."

Here, a resin varnish is well-known to be one in which a resin is dissolved into a solvent. Thus ethylene glycol of Cited invention 1 obviously corresponds to a solvent of a resin (novolac-type phenol resin). (In addition, it is a well-known technical matter to use ethylene glycol as a solvent of a phenol resin, as exemplified in paragraph [0014] of Japanese Patent Application Publication No. 2007-204291, stating that "Organic solvents used for dissolving the aforesaid novolac-type phenol resin (A) and the resol-type phenol resin (B) preferably have a high boiling point, and may include, for example, glycols such as ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, and dipropylene glycol, and further may include carbitols and cellosolves where said glycols are subjected to etherification with lower alcohols such as methanol, ethanol, and butanol. Preferably, the organic solvent is ethylene glycol, due to good solubility of the aforesaid novolac-type phenol resin (A) and resol-type phenol resin (B).")

Consequently, it is a matter of workshop modification that a person skilled in the art could perform as necessary on the basis of the technical matters described in Cited reference 1 to preliminarily dissolve a binder of a thermosetting powder resin into a solvent of ethylene glycol to produce a resin varnish, and then compound and knead the resin varnish with a refractory aggregate.

5. Summary

As seen above, Different features 1 and 3 are not substantial, otherwise they could be easily conceivable by a person skilled in the art, and Different feature 2 was easily conceivable by a person skilled in the art on the basis of the technical matters described in Cited reference 1.

Therefore, a person skilled in the art could have easily conceived of Invention 1 on the basis of Cited invention 1 and the technical matter described in Cited reference 1.

No. 5 Appellant's allegation

Regarding the above Different feature 2, in the written opinion submitted on August 8, 2017 in response to the reason for refusal notified by the body, Appellant alleges that Invention 1 uses a binder for binding in a liquid form to cause a small amount of a binder for binding to be uniformly dispersed into a coated refractory product, whereas Cited reference 1 fails to describe dissolving a thermosetting powder into a solvent to be used for a resin varnish for the above purpose, and thus Invention 1 was not easily conceivable by a person skilled in the art on the basis of Cited invention 1 and the technical matters of Cited reference 1.

According to the described matter (E), however, it discloses that "graphite powder and resin varnish are added to the material and then it is kneaded by a low-speed mixer ... exhibits a strong bonding between graphite particulates due to good wetting between a secondary binder and a graphite-coated surface with a very small additive amount of the secondary binder." Thus it is recognized that the secondary binder indicates a resin varnish.

Consequently, Cited reference 1 describes the effects of the ability of a resin varnish to strongly bind a graphite with an aggregate due to good wetting with respect to a graphite-coated surface even if the additive amount of the secondary binder; i.e., binder for binding, should be small, and it can thus be said that the use of resin varnish

is also suggested for the purpose as the appellant argues; i.e., to cause a small amount of the secondary binder to be uniformly dispersed into an aggregate.

Therefore, the above allegation is not acceptable.

No. 6 Closing

As seen above, a person skilled in the art could have easily conceived of Invention 1 on the basis of an invention described in a publication that had been distributed in Japan or a foreign country or available to public via a telecommunication line before the priority date of the present application. Thus the invention is not patentable under the provision of Article 29(2) of the Patent Act.

Therefore, the present application should be rejected without making a determination of the inventions according to the other remaining claims or reasons for refusal.

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

September 25, 2017

Chief administrative judge: OHASHI, Kenichi
Administrative judge: YAMAZAKI, Naoya
Administrative judge: GOTO, Masahiro