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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN MARTIN MCNAMARA, JULIA MARGARET ROWE,
STEPHEN POULSTON, RAJ RAO RAJARAM, ROBERT IAN CRANE,
CONSTANTINE ARCOUMANIS, and LAURETTA RUBINO

Appeal 2014-005196
Application 13/155,224¹
Technology Center 3700

Before JOSEPH A. FISCHETTI, MICHAEL C. ASTORINO, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the rejection of claims
1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ According to Appellants, the real party in interest is Johnson Matthey
Public Limited Company. Appeal Br. 1.

BACKGROUND

According to Appellants, “[t]he present invention relates to an exhaust system for treating exhaust gases from a gasoline engine, and in particular it relates to an exhaust system for trapping and combusting fine particulate matter in the exhaust gas.” Spec. 1, ll. 15–17.

CLAIMS

Claims 1–20 are on appeal. Claim 1 is illustrative of the appealed claims and recites:

1. A system comprising a three-way catalyst (TWC) adapted for simultaneously oxidizing CO and HC and reducing NO_x of an exhaust gas from a gasoline engine, means for trapping particulate matter (PM) of <100 nm from the exhaust gas and a catalyst for catalysing the oxidation of the PM by at least one of carbon dioxide (CO₂) and water (H₂O) in the exhaust gas, which catalyst consists essentially of a supported alkali metal, wherein the supported alkali metal is disposed downstream of the TWC and is disposed relative to the means for trapping in order to effect contact between the supported alkali metal and the particulate matter.

App. Br. 11.

REJECTIONS

1. The Examiner rejects claims 1–20 under 35 U.S.C. § 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement.

2. The Examiner rejects claims 1–3, 5–7, 10–16, 18, and 20 under 35 U.S.C. § 103(a) as unpatentable over Maus² in view of Stobbe³ and Domesle.⁴
3. The Examiner rejects claims 4, 8, 9, 17, and 19 under 35 U.S.C. § 103(a) as unpatentable over Maus in view of Stobbe, Domesle, and Inoue.⁵

DISCUSSION

Written Description

The Examiner rejects claims 1–20 as failing to comply with the written description requirement because the claim limitation “which catalyst consists essentially of a supported alkali metal” in both independent claims 1 and 14 is not supported in the original disclosure. Final Act. 2.

Appellants raise two arguments with respect to this rejection: 1) that the original claim uses the transitional term “comprising,” which is broader than, and thus includes, the more limited term “consisting essentially of;” and 2) that all of the examples in the Specification “utilize the simple catalysts of K/Al₂O₃, K/CeO₂, or K/ZrO₂ and the current application does not teach the use of other elements added to the supported alkali metal that materially affect the basic characteristic(s) [of the] supported alkali metal.” Appeal Br. 3.

For the reasons set forth below, we are not persuaded of error by Appellants’ arguments.

² Maus et al., US 2002/0011069 A1, pub. Jan. 31, 2002.

³ Stobbe et al., US 7,179,430 B1, iss. Feb. 20, 2007.

⁴ Domesle et al., US 4,515,758, iss. May 7, 1985.

⁵ Inoue et al., US 6,110,860, iss. Aug. 29, 2000.

Regarding Appellants' first argument, we agree with the Examiner that the term "comprising" does not support the more limited transitional phrase "consisting essentially of." Ans. 2. "Adequate written description means that the applicant, in the specification, must 'convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the [claimed] invention.'" *Agilent Techs., Inc. v. Affymetrix, Inc.*, 567 F.3d 1366, 1379 (Fed. Cir. 2009), *reh'g en banc denied* Sept. 18, 2009. Although the original claims include the open ended transitional phrase "comprising," that fact alone does not show that Appellants were in possession of an invention including a catalyst consisting essentially of a supported alkali metal. The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551–52, (CCPA 1976). Thus, to support the phrase "consisting essentially of" the written description must show that Appellants were in possession of an invention including a catalyst of a supported alkali metal with no other materials that materially affect the action of the catalyst on the oxidation reaction of the particulate matter as claimed. The open-ended transitional phrase "comprising" by itself does not show that Appellants were in possession of such a catalyst at the time the Specification was filed.

Regarding Appellants' second argument, we are not persuaded that the examples recited in the Specification provide adequate written description support for the claim limitation at issue. The Specification describes the preparation of the example catalysts:

A 10wt%.K/Al₂O₃, 10wt%.K/CeO₂ and 10wt%.K/ZrO₂
(as the elemental alkali metal based on the total weight of the

catalyst) was prepared by wet impregnation. In each case the impregnation medium was an aqueous solution of KNO_3 . A mixture of the correct amounts of the support and impregnation solution was heated to evaporate the water and the material was calcined at 500°C for 2 hours. Three alumina supports were used: alpha-, theta- and gamma-. We understand that the alkali metal is present as K_2O in each catalyst, although some residual KNO_3 may be present post-calcination.

Spec. 11, ll. 14–20. However, the Specification does not indicate that other materials that do not affect the oxidation reaction are not present, and the Specification does not provide a reason to exclude other materials from the catalyst. *See Santarus, Inc. v Par Pharmaceutical, Inc.*, 694 F.3d. 1344, 1351 (Fed Cir. 2012) (“Negative claim limitations are adequately supported when the specification describes a reason to exclude the relevant limitation.”). Thus, we agree with the Examiner that the examples provided in the Specification do not show that Appellants were in possession of a catalysts that consists essentially of a supported alkali metal when the Specification was filed. *See Ans. 3.*

On this issue we also note that the claims were amended to change the catalyst from “comprising a supported alkali metal” to “consisting essentially of a supported alkali metal” in response to a rejection over art allegedly showing a catalyst including other material elements beyond the supported alkali metal. *See Appellants’ Amendment and Request for Reconsideration* (filed Sept., 14, 2012) (*see Amendment to Claims at 2; and Remarks at 5–8*). Appellants remarks indicate only that the Amendment was made to avoid certain art, and Appellants neither indicate how the Specification supports the Amendment nor provide any reason why excluding the use of other materials would have been desirable. Thus, we find that the Amendment does not provide support for Appellants’ position

that the Specification shows they were in possession of the claimed invention, as amended, at the time the Specification was filed.

Based on the foregoing, we sustain the rejection of claims 1–20 as failing to comply with the written description requirement.

Obviousness

With respect to independent claims 1 and 14, the Examiner finds that Maus discloses a three-way catalyst, means for trapping particulate matter, and a catalyst for catalyzing the oxidation of particulate matter. Final Act. 3. More specifically, the Examiner finds that element 4 (Maus, Fig. 1) includes both a means for trapping and a catalyst. Final Act. 3. (citing Maus ¶ 9). The Examiner finds that “Maus does not disclose that the means for trapping (42) traps particulate matter of less than 100 nm, that the particulate matter is oxidized at temperatures in excess of 500 degrees C, and that the catalyst consists essentially of a supported alkali metal.” Final Act. 4. The Examiner relies on Stobbe only to the extent that Stobbe discloses a soot particle filter for trapping particles of less than 100 nm. *Id.* With respect to the catalyst, the Examiner relies on Domesle and concludes:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the filter of [Domesle] to the system and method of Maus, as both references are directed towards exhaust emission treatment devices. One of ordinary skill would have recognized that the filter of [Domesle] would reduce fuel consumption due to regeneration. (See [Domesle], Column 1, Lines 41-44).

Id.

Appellants argue that nothing in the art “would suggest the use of a catalyst that consists essentially of a supported alkali metal in place of the storage coating in Maus.” Appeal Br. 6. More specifically, Appellants

argue that “[d]ue to the differences between Maus and Domesle, one of ordinary skill in the art would have not been motivated to combine these two references to make Appellants’ claimed invention.” *Id.* at 7.

We are persuaded that the Examiner erred in rejecting independent claims 1 and 14 because the Examiner’s conclusion regarding why it would have been obvious to modify Maus’s system to use Domesle’s catalyst is not supported by a preponderance of the evidence on the record before us. In the rejection, the Examiner concludes that this combination would have been obvious in order to “reduce fuel consumption due to regeneration.” Final Act. 4. However, we agree with Appellants that the Examiner has not shown that fuel consumption would be reduced by the combination because of the differences in exhaust temperature between a diesel engine, as used in Domesle, and a gasoline engine, as used in Maus. *See* Appeal Br. 8–9.

Specifically, Domesle discloses that the exhaust gas temperature for a diesel engine is lower than the typical range of ignition temperatures, 450°–600° C, of particulate matter in the exhaust. Domesle col. 1, ll. 24–30. Domesle discloses that it is desirable to reduce the ignition temperature of particulate matter with the disclosed catalyst rather than using additional fuel to increase the temperature of the diesel exhaust gas, thereby reducing “fuel consumption during the regeneration phase of a filter.” *Id.* at col. 1, ll. 30–51. However, Appellants provide that:

Typically, average exhaust gas temperatures for a stoichiometrically operated gasoline engine are between 600–800°C and for GDI between about 300–550°C, although at high speed, GDI engines can revert to stoichiometric operation and hotter exhaust gas temperatures are reached. Exhaust gas temperatures from diesel engines, however, are much cooler than gasoline engines. Typically, for passenger vehicles using light-duty diesel engines, exhaust gas temperatures are in the range

from 200-350°C and, for a heavy-duty diesel plant, about 200-550°C.

Spec. 3, ll. 1–7. Based on this disclosure, Appellants argue that “there is no need to reduce ignition temperatures on the particulate filter [of Maus].”

Ans. 5; *see also* Appeal Br. 8. We agree that, on the record before us, there is no indication that one of ordinary skill in the art would have found it obvious to reduce the ignition temperature of the particulate matter in a gasoline system, such as in the system taught by Maus, because the Examiner has not pointed to any evidence showing that fuel consumption would be reduced by lowering the ignition temperature of the particulate matter in a gasoline engine.

In response to Appellants’ arguments, the Examiner alternatively concludes that “lowering ignition temperature of particulate matter in a particulate filter . . . will provide a wider range of temperatures of combustion of particulate matter which would ensure a larger percentage of particulate matter reduction.” Ans. 6. Appellants argue that:

Use of a catalyst does not allow soot combustion at a wider range of temperatures. A catalyst merely reduces the (single) temperature at which soot combustion occurs. This is made clear from Domesle e.g. at column 1, lines 45-51, Figure 2 (see column 3, line 64-column 4, line 24); and Example 14.

Reply Br. 6. Without citation to any evidentiary support, we find the Examiner’s conclusion in this regard to be speculative. We find that a preponderance of the evidence, including the portions of Domesle cited by Appellants, does not support the conclusion that a larger percentage of particular matter would be reduced with a lower ignition temperature because the Examiner has not shown that the ignition temperature for any particulate matter would be above the exhaust gas temperature in a gasoline

engine, which would suggest that it would be desirable to lower the ignition temperature as taught by Domesle.

For these reasons and because the Examiner does not rely on the addition of Stobbe to cure the deficiency in the rejection noted above, we do not sustain the rejection of independent claims 1 and 14 or dependent claims 2, 3, 5–7, 10–16, 18, and 20. The Examiner does not rely on Inoue to cure the deficiency in the rejection of independent claims 1 and 14, and thus, we also do not sustain the rejection of claims 4, 8, 9, 17, and 19.

CONCLUSION

For the reasons set forth above, we AFFIRM the rejection of claims 1–20 as failing to comply with the written description requirement; and we REVERSE the rejections of claims 1–20 as obvious.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED