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Paper No. 35
Entered: November 30, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

JOHNSON MATTHEY INC., and JOHNSON MATTHEY PLC,
Petitioners,

v.

BASF CORPORATION,
Patent Owner.

Case IPR2015-01266
Patent 9,039,982 B2

Before CHRISTOPHER L. CRUMBLEY, JO-ANNE M. KOKOSKI, and JEFFREY W. ABRAHAM, *Administrative Patent Judges.*

ABRAHAM, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318 and 37 C.F.R. § 42.73

I. INTRODUCTION

Johnson Matthey Inc., and Johnson Matthey Plc (collectively "Petitioner") filed a Petition seeking *inter partes* review of claims 1–27 of U.S. Patent No. 9,039,982 B2 (Ex. 1001, "the '982 patent"). Paper 1 ("Pet."). BASF Corporation ("Patent Owner") filed a Preliminary Response to the Petition. Paper 7. On December 4, 2015, we instituted an *inter partes* review of claims 1–27. Paper 8 ("Dec. on Inst.").

After institution, Patent Owner filed a Patent Owner Response (Paper 20, "PO Resp."), and Petitioner filed a Reply (Paper 23, "Reply"). An oral hearing was held on August 23, 2016, and a transcript of the hearing has been entered into the record of the proceeding as Paper 34 ("Tr.").

Patent Owner filed a Motion to Exclude certain paragraphs of the Declaration of Dr. David L. Tennent (Ex. 1003, "the Tennent Declaration"). Paper 27. Petitioner filed an Opposition (Paper 29), and Patent Owner filed a Reply (Paper 31).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has failed to show by a preponderance of the evidence that claims 1–27 are unpatentable.

II. BACKGROUND

A. Related Proceedings

Petitioner identifies pending *inter partes* review Cases IPR2015-01265 and IPR2015-01267, pertaining to U.S. Patent No. 8,899,023 ("the '023 patent") and U.S. Patent No. 9,032,709 ("the '709 patent"), respectively.

Petitioner indicates that the '982 patent issued from Application No. 14/497,454, which was a continuation of Application No. 13/274,635 (issued as the '023 patent), which itself was a continuation of Application No. 11/676,798 (issued as the '709 patent), itself a divisional of Application No. 10/634,659 (now issued as U.S. Patent No. 7,229,597). Pet. 2. Petitioner also identifies pending *inter partes* reexamination proceedings pertaining to U.S. Patent No. 7,229,597 (Reexam No. 95/001,745) and another patent in the same family, U.S. Patent No. 7,902,107 (Reexam No. 95/001,744). *Id.*

B. The '982 Patent

The '982 patent, titled "Catalyzed SCR Filter and Emission Treatment System," issued on May 26, 2015. Ex. 1001, (54), (45). The '982 patent discloses "a catalyst article for simultaneously remediating the nitrogen oxides (NOx), particulate matter, and gaseous hydrocarbons present in diesel engine exhaust streams." *Id.* at (57).

The '982 patent teaches that several filter structures effective in physically removing particulate matter from diesel exhaust were known in the art. *Id.* at 2:13–29. According to the Specification, these filters were capable of removing over 90% of the particulate matter from diesel exhaust. *Id.* One example of these known filters, also suitable for use in the claimed invention, is a wall flow filter. *Id.* A wall flow filter is illustrated in Figures 2 and 3 of the '982 patent, reproduced below.

Figure 2

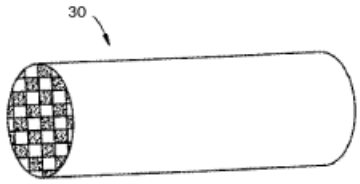

Figure 3

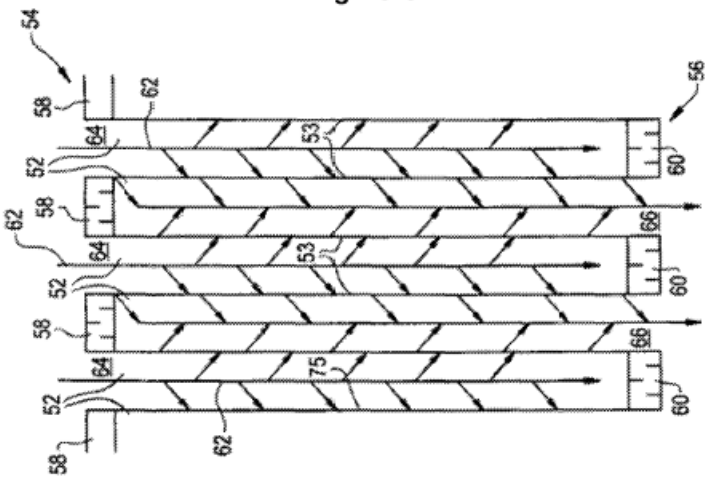

Figure 2 shows a "perspective view" of wall flow filter substrate 30, and Figure 3 shows a cross sectional view of the substrate shown in Figure 2. *Id.* at 5:64–67, 9:10–20. As shown in these figures, substrate 30 has inlet end 54, outlet end 56, and a plurality of fine, substantially-parallel gas flow passages extending along the longitudinal axis of the substrate. *Id.* at 8:62–65, Figs. 2, 3. Alternate passages are plugged at the inlet end with plugs 58, and at the outlet end with plugs 60. *Id.* at 9:13–16. This forms a checkerboard pattern (as depicted in figure 2) at inlet end 54 and outlet end 56. *Id.* In this configuration, a gas stream cannot enter and exit the substrate through the same passage. *Id.* at 9:16–20. Instead, a gas stream entering through an unplugged channel inlet (e.g., 64) is stopped by outlet plug 60 in

that passage, and must diffuse through a porous channel wall (e.g., 53) in order to exit out of channel outlet 66. *Id.* As the gas passes through the porous channel wall, particulate matter in the gas is trapped therein.

The '982 patent teaches that as particulate matter accumulates on the filter, the back pressure from the filter on the engine increases. *Id.* at 2:21–24. Therefore, these particles must be continuously or periodically burned out of the filter to maintain an acceptable back pressure. *Id.* at 2:24–26. This is referred to as filter regeneration. *Id.* at 2:38–39. Typically, a temperature in excess of 500 °C is required to burn the carbon soot particles, which is above the temperature normally present in diesel exhaust. *Id.* at 2:26–29. Therefore, provisions, such as a catalyst, are generally introduced to lower the soot burning temperature to those present under normal diesel engine operating conditions. *Id.* at 2:30–39.

The '982 patent also describes Selective Catalytic Reduction ("SCR"), a process wherein NOx is reduced with ammonia to nitrogen in the presence of a catalyst typically composed of base metals, as a "proven NOx abatement technology applied to stationary sources," and discloses that SCR is under development for mobile applications. *Id.* at 1:19–20, 2:40–50.

The '982 patent explains that a sufficient loading of SCR catalyst composition is required to achieve NOx reduction goals on a coated soot filter, but cautions that higher catalyst coatings can lead to unacceptable back pressure within the exhaust system. *Id.* at 3:4–6. The Specification also teaches that a durable SCR catalyst, e.g., one that maintains catalytic activity after exposure to high temperatures and has a wider operating temperature range, is desirable. *Id.* at 3:13–25.

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