UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MEINHARD SCHWEFER, JOACHIM MOTZ,
and ROLF SIEFERT

Appeal 2007-0280
Application 10/469,392
Technology Center 1700

Decided: February 27, 2007

Before EDWARD C. KIMLIN, THOMAS A. WALTZ, and PETER F. KRATZ, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal from the Primary Examiner's refusal to allow claims 14, 16 through 18, and 20 through 29, as amended subsequent to the final rejection (see the amendment dated Feb. 1, 2006, entered as per the Advisory Action dated Feb. 22, 2006; Br. 2; Answer 2, ¶ (4)). Claims

14, 16-18, and 20-29 are the only claims pending in this application (Br. 2). We have jurisdiction pursuant to 35 U.S.C. § 134.

According to Appellants, the invention is directed to a method of reducing the content of NO_x and N_2O in gases, comprising the steps of adding ammonia as a reducing agent, introducing the gas mixture into a reaction zone containing one or more iron-laiden zeolites with no pores or channels having a width greater than or equal to 7 Angströms, and setting a specified temperature, flow rate, and space velocity to achieve the desired degree of decomposition of N_2O (Br. 2). Independent claim 14 is representative of the invention and is reproduced below:

> 14. A method of reducing the content of NO_x and N_2O in gases, which comprise the steps of:
>
> a) adding ammonia as a reducing agent which can reduce NO_x and is gaseous under the reaction conditions to the NO_x- and N_2O-containing gas in an amount of up to 1.33 (8/6) mol per mole of NO_x,
>
> b) introducing the gas mixture into an apparatus having a reaction zone containing one or more iron-laden zeolites whose crystal structure has no pores or channels having a width greater than or equal to 7 Angström,
>
> c) setting a temperature from 350 to 450ºC in the reaction zone and selecting a flow rate of the gas mixture and/or the amount of catalyst by passing the gas over the catalyst at a space velocity of from 5 000 to 50 000h^{-1}, based on the catalyst volume, so that the desired degree of decomposition of N_2O is achieved and the temperature and flow rate of the gas mixture are set and/or the amount of catalyst is chosen so that at least 50% of the N_2O are decomposed in the reaction zone.

The Examiner has relied upon the following references as evidence of unpatentability:

Audeh	US 5,482,692	Jan. 09, 1996
Swaroop	EP 0 756 891 A1	Feb. 05, 1997

ISSUES ON APPEAL

Claims 14, 16-18, and 20-29 stand rejected under 35 U.S.C. § 102(b) as anticipated by Audeh (Answer 3).

Claims 14, 16-18, 20-24, and 26-29 stand rejected under 35 U.S.C. § 102(b) as anticipated by Swaroop (Answer 4).[1]

Appellants contend that both references disclose only the reduction of NO_x, and even if one assumes an inherent disclosure of an amount of N_2O in these references, there is no disclosure of any process conditions for N_2O removal (Br. 4).

Appellants contend that the evidence submitted shows that the temperature range recited in claim 14 is most important for obtaining the desired results (Br. 5).

Appellants also contend, with regard to claims 17 and 18, that the prior art does not teach or suggest at least 50%, let alone 70% or 80%, of the N_2O is decomposed in the reaction zone (Br. 10).

The Examiner contends that the process gases treated by the references are the same as those treated by Appellants, and thus at least some N_2O must be present in the feed gas (final Office action dated Sep. 16, 2005, pp. 2-3).

[1] The Examiner inadvertently includes claim 25 in the statement of this rejection (Answer 4). However, claim 25 was not included in the corresponding rejection in the final Office action dated Sep. 16, 2005, page 10. In the discussion of page 5 of the Answer, the Examiner does not discuss the rejection of claim 25. Therefore we presume that claim 25 was not included in this ground of rejection.

The Examiner contends that the process conditions taught by the references are the same as those recited in the claims, and thus the % of N_2O removed must also be the same (Answer 5-6).

The Examiner contends that the data submitted by Appellants is not persuasive since the teachings of the prior art anticipate the claimed temperature range (Answer 6-7).

Accordingly, the issues in this appeal are as follows: (1) does either Audeh or Swaroop inherently disclose a process of treating N_2O as well as NO_x?; (2) are the process conditions taught by either reference the same as those recited in the claims on appeal?; and (3) is the evidence submitted by Appellants relevant to the rejections on appeal?

We determine that the Examiner has established a prima facie case of anticipation in view of either Audeh or Swaroop, and Appellants have not adequately rebutted this prima facie case. Therefore we AFFIRM both grounds of rejection in this appeal essentially for the reasons stated in the Answer, as well as those reasons set forth below.

OPINION

We determine the following factual findings from the record in this appeal:

(1) Audeh discloses an exhaust gas treatment process useful for the removal of nitrogen oxides using an iron impregnated zeolite with pore sizes less than about 7 Angströms as catalyst and ammonia as reducing agent at 0.75 to 1.25 the stoichiometric amount, with the reaction accomplished at temperatures of about 230-350º C and a gas hourly space velocity of about 5000-20,000 hr^{-1} (abstract; col. 2, ll. 60-67; col. 4, ll. 40-45; and col. 5, ll. 3-26; Answer 3-4);

(2) Audeh defines "exhaust gas" as meaning "any waste gas which is formed in an industrial process or operation and which is normally disposed of by discharge to the atmosphere" and teaches that the composition of such a gas varies and depends on the particular process (col. 3, ll. 24-32);

(3) Audeh teaches that exhaust gases treated by his process include gases from coal or gas-fired furnaces, boilers, and incinerators, as well as the manufacture of nitric acid (col. 1, ll. 41-52);

(4) Audeh teaches a conversion of greater than about 80% or more of "the nitrogen oxides and the ammonia" in the exhaust gas to innocuous compounds (col. 9, ll. 44-50); and

(5) Swaroop discloses treatment of gases such as those from power plants, refineries, and boilers, to remove NO_x gases by contacting these gases with an iron-zeolite catalyst with an average pore size of 5-6 Angströms, an ammonia reducing agent in a mole ratio of ammonia to NO_x of about 0.8 to 1.2/1, at a temperature of about 300-600ºC to produce conversions of at least about 90% (abstract; 2:54; and 3:41-51; Answer 5).

Under § 102(b), anticipation requires that the prior art reference disclose, either expressly or under the principles of inherency, every limitation of the claims. *See In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). An inherent disclosure, to be regarded as an anticipation, is a disclosure that is necessarily contained in the prior art, and would be so recognized by a person of ordinary skill in that art. *See Continental Can Co. U.S.A., Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268-69, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991). A statement by applicant that

certain matter is prior art to him is an admission that that matter is prior art for all purposes, including § 102. *See In re Hellsund,* 474 F.2d 1307, 1311, 177 USPQ 170, 173 (CCPA 1973). Disclosure in the prior art of any value within the claimed range is anticipation of the claimed range. *See In re Wertheim,* 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976). A proper rejection under § 102 cannot be overcome by showing new and unexpected results within a critical range, since this factor is only relevant to an obviousness rejection. *See In re Malagari,* 499 F.2d 1297, 1302-03, 182 USPQ 549, 553 (CCPA 1974).

Applying the preceding legal principles to the factual findings in this record, we determine that the Examiner has established a prima facie case of anticipation. Claim 14 on appeal places no limit on the amount of N_2O in the gas mixture of the method, thus reading on infinitesimal amounts (such as parts per million or billion). Appellants admit that many processes such as "combustion processes or the industrial production of nitric acid" result in an offgas including NO_x and N_2O (Specification 1: 10-13). Both Audeh and Swaroop disclose treatment of an offgas from the same sources as taught by Appellants (see findings 2, 3 and 5 above). Furthermore, Audeh teaches in general the treatment of "nitrogen oxides" or "noxious nitrogen compounds," thus implicitly including N_2O (abstract; col. 1, ll. 15-16; and col. 2, ll. 11-14). Additionally, Audeh calculates the conversion of all noxious nitrogen in the feed to form innocuous nitrogen gas (N_2) (col. 9, ll. 44-52, and the heading for each Table in the Examples). Accordingly, we determine that there is a reasonable belief that the exhaust gases used as feeds in the processes of Audeh and Swaroop necessarily possess some amount of N_2O.

We also determine that both Audeh and Swaroop disclose Examples in their disclosures that set forth values for every reaction condition within the scope of the values recited in claim 14 on appeal. See Audeh, col. 10, Example 4, where the process exemplified employs temperatures within the claimed range (e.g., 400° C), equal amounts of ammonia and NO_x, a GHSV of 12,000 hr^{-1}, an iron-impregnated zeolite catalyst with the claimed pore size, and a conversion of 98% for all nitrogen in the feed (*see* Table 2). See Swaroop, the example described on page 5, ll. 15-22, testing the ZSM-5 catalyst with a pore size within the claimed range, impregnated with iron, at various temperatures within the claimed range, at a space velocity of 5800 hr^{-1}, with equal amounts of ammonia and NO, and a conversion of greater than 80% (e.g., *see* Figure 4). Disclosure in the prior art of any value within the claimed range is an anticipation of that range. *See Wertheim*, *supra.*

With regard to Appellants' evidence (Br. 5-10), we note that such a showing is not relevant to a proper rejection under § 102. *See Malagari, supra.*

For the foregoing reasons and those stated in the Answer, we determine that the Examiner has established a prima facie case of anticipation in view of the reference evidence. We also determine that Appellants' arguments and evidence have not adequately rebutted this prima facie case. Therefore we affirm the rejections under § 102(b) of claims 14, 16-18, and 20-29 over Audeh and claims 14, 16-18, 20-24, and 26-29 over Swaroop.

OTHER ISSUES

We note the extremely relevant admitted prior art discussed on pages 1-4 of the Specification. In the event of further prosecution before the

Examiner in this or a continuing application, the Examiner and Appellants should consider the prior art showing the individual methods of reducing NO_x and N_2O, and determine if the combination of methods would have been obvious to one of ordinary skill in this art. As admitted by Appellants (Specification 2:35-3:4), this combination of treatments for the joint reduction of NO_x and N_2O "is particularly desirable for reasons of simplicity and economics." Furthermore, Appellants should cite the "literature" sources supporting this statement (Specification 3:2-3).

SUMMARY

The decision of the Examiner is affirmed.

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)(2006).

AFFIRMED

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