UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL P. GALLIGAN,
ALBERT K. BOND AND
JOSEPH C. DETTLING

Appeal 2007-1018
Application 10/376,782
Technology Center 1700

Decided: May 21, 2007

Before EDWARD C. KIMLIN, CATHERINE Q. TIMM, and LINDA M. GAUDETTE, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 27-29 and 31-37. Claim 27 is illustrative:

27. An exhaust treatment apparatus comprising:

a catalyzed open substrate having a substrate surface, and the substrate selected from the group consisting of at least one of a honeycomb

member, woven mesh, non-woven mesh, wadded fibers and foamed metal, the substrate defining a plurality of structural features selected from the group consisting of apertures, pores and channels and dimensioned and configured to permit the flows of fluid through the substrate, thereby defining fluid flow paths through the substrate, the catalyzed substrate having an electric arc sprayed metal anchor layer located on the substrate surface of the fluid flow paths and a catalytic material located on the anchor layer, the catalytic material comprising a bulk refractory metal oxide having dispersed thereon one or more catalytically active metal components and the anchor layer comprises nickel and aluminum; and

a canister having an inlet opening and an outlet opening and within which the catalyzed substrate is enclosed, the analyzed substrate being disposed between the inlet and outlet openings, whereby at least some of a fluid flowing through the canister between the inlet and outlet openings thereof is constrained to follow the fluid flow paths and thereby contact the catalytic material disposed on the anchor layer.

The Examiner relies upon the following references as evidence of obviousness:

Rondeau	US 4,027,367	Jun. 7, 1977
Ishida	US 4,455,281	Jun. 19, 1984
Fukui	US 5,569,455	Oct. 29, 1996

Appellants' claimed invention is directed to an exhaust treatment apparatus having a catalyzed substrate. An electric arc sprayed metal layer is coated on the substrate before the catalytic material is deposited thereon. The anchor layer comprises nickel and aluminum.

Appealed claims 27-29, 31, 32, 35, and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Rondeau. Claims 33, 34, and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Fukui.

Appellants do not set forth separate arguments for claims 27-29, 31, 32, 35, and 36. Accordingly, these claims stand or fall with claim 27. Also, claims 33, 34, and 37 stand or fall together.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer.

Appellants do not dispute the Examiner's factual determination that Ishida, like Appellants, discloses an apparatus for treating exhaust comprising a catalyzed open substrate comprising a metal honeycomb member (3), which substrate defines a plurality of channels that are dimensioned and configured to permit the flow of fluid through the substrate, wherein the catalyzed substrate is "made by electric arc spraying of molten metal anchor layer and a catalytic material on the anchor layer (see, for example, col. 5, lines 2-13)" (page 3 of Answer, penultimate para.). Also, the apparatus of Ishida comprises "a canister (2) having an inlet opening and an outlet opening and within which the catalyzed substrate (3) is enclosed; the catalyzed substrate (3) being disposed between the inlet and outlet openings …" (page 3 of Answer, last para.). As appreciated by the Examiner, and urged by Appellants, Ishida does not teach that the anchor layer comprises nickel and aluminum, as presently claimed. Ishida teaches that the metal anchor layer may be the same type of material as the metal

substrate, which includes thin steel plates, especially, thin stainless steel plates.

Rondeau, as acknowledged by Appellants, expressly teaches Appellants' electric arc spraying of a metal anchor layer comprising an alloy of nickel and aluminum onto a metal substrate. While Appellants contend that Rondeau provides no mention or suggestion "that such coatings would be desirable as a surface for the deposition of a catalytic material for an exhaust treatment apparatus to improve the adherence of the catalytic material thereon" (page 10 of Brief, second para.), we concur with the Examiner that it would have been obvious for one of ordinary skill in the art to employ the specific, metal anchor layer of Rondeau in the apparatus of Ishida "to obtain a catalyst that is highly resistant to peel-off and has a good adhering property to the surfaces of the metal place [sic, plate]" (page 4 of Answer, third para.).

Also, we find that the admitted prior art found in Appellants' Specification buttresses the Examiner's conclusion of obviousness. In particular, Appellants acknowledge that the US patent to Gorynin et al., US 5,204,302, expressly teaches the flame or plasma spraying of a metal adhesive, or anchor layer, comprising nickel and aluminum to enhance the adhesion to the substrate of a subsequently applied catalyst composition. Hence, the admitted prior art evidences that one of ordinary skill in the art would have had the requisite reasonable expectation of success with respect to the compatibility of a metal anchor layer comprising nickel and aluminum in the exhaust treatment apparatus of Ishida. We note that Appellants have advanced no reason why one of

ordinary skill in the art would have been dissuaded from using an anchor layer comprising nickel and aluminum, which was admittedly known in the art for bonding catalyst compositions to a metal substrate, in the apparatus of Ishida.

We are not persuaded by Appellants' argument that "the disclosure of Ishida teaches away from applicants [sic, applicants'] claimed invention because the stainless steels specifically recited in Ishida do not contain nickel and aluminum" (page 8 of Brief, first full para.). In our view, Ishida's preference for a match between the metal of the substrate plate and the anchor layer is not a teaching away from the claimed anchor layer. The reference disclosure of steel for the substrate is only exemplary, not exclusive, and presumably indicates a preference for optimum adhesion between layers of the same material. We find that one of ordinary skill in the art would have found it obvious to utilize a variety of compositions for the metal anchor layer in Ishida, including the admittedly known composition comprising aluminum and nickel. We note that Appellants have not set forth an argument, let alone objective evidence, with respect to unexpected results attached to the use of an anchor layer comprising aluminum and nickel. Indeed, Appellants' Specification indicates that other compositions for the anchor layer may be used as well, including the steels employed by Ishida.

Regarding the § 103 rejection of claims 33, 34, and 37 over the additional disclosure of Fukui, we completely agree with the Examiner that Fukui establishes the obviousness of using a ceramic or metal material for the catalytic substrate. As noted by the Examiner, Appellants have

presented no objective evidence of unexpected results pertaining to the use of a ceramic substrate instead of the metal substrate of Ishida. While Appellants point out that Fukui "utilizes chemical vapor deposition to form a catalyst bonding layer on the surface of a base material" (page 12 of Brief, last para.), and not the molten metal spraying of Ishida and Rondeau, Appellants have not explained why this difference in the choice of deposition techniques would have rendered nonobvious the use of a ceramic material, a known catalyst substrate, for the substrate of Ishida's apparatus. Contrary to the argument made by Appellants, the Examiner's rejection does not call for an *addition* of a ceramic base material to the metal substrate of Ishida but, simply, the substitution of one known catalyst substrate for another. (*See* para. bridging pages 12 and 13 of Brief).

In conclusion, based on the foregoing and the reasons set forth by the Examiner, the Examiner's decision rejecting the appealed claims 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)(iv)(effective Sept. 13, 2004).

AFFIRMED

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