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EXAMINER

WARD, THOMAS JOHN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WESLEY W. WANG

Appeal 2018-003557
Application 13/792,462¹
Technology Center 3700

Before BIBHU R. MOHANTY, MICHAEL C. ASTORINO, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

ASTORINO, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), the Appellant appeals from the Examiner's decision rejecting claims 1, 2, 4, 11, 13, and 20 under (pre-AIA) 35 U.S.C. § 103(a) as unpatentable over Sakai et al. (US 4,571,480, issued Feb. 18, 1986) ("Sakai") in view of Henderson et al. (US 3,134,924, issued May 26, 1964) ("Henderson"). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ According to the Appellant, "[t]he real party in interest in the present appeal is The ESAB Group, Inc." Appeal Br. 3.

STATEMENT OF THE CASE

Claimed Subject Matter

Claims 1, 11, and 20 are the independent claims on appeal. Claim 11, reproduced below, is illustrative of the subject matter on appeal.

11. A flux composition for a cored welding electrode, the flux composition comprising, in weight percent based on the total weight of the flux cored welding electrode:

2.0 – 3.0 aluminum;

1.0 – 2.0 manganese; and

0.001 – 0.11 rare earth metal, wherein the rare earth metal comprises a rare earth metal oxide, and wherein the rare earth metal oxide comprises Cerium (Ce), Lanthanum (La), Neodymium (Nd) and Praseodymium (Pr).

ANALYSIS

The Examiner finds Sakai teaches the flux composition of independent claim 11, except for “a combination of using a rare earth metal oxide comprising Cerium, Lanthanum, Neodymium and Praseodymium.” Final Act. 3. The Examiner relies on Henderson to remedy the deficiency of Sakai with regard to the subject matter of claim 11. *Id.* The Examiner finds that “Henderson . . . teaches emissive materials of a metal matrix having an electrode with an oxide mixture comprising Cerium oxide, Lanthanum oxide, Neodymium oxide and Praseodymium oxide (col 3, lines 38-40).” *Id.*

In combining the teachings of Sakai’s flux cored wire electrodes for self-shielded arc welding and Henderson’s emissive materials of metal matrix with molecularly dispersed additives, the Examiner concludes:

It would have been obvious to modify the fluxed core wire of Sakai . . . with the oxide mixture of Henderson . . . to provide Cerium oxide, Lanthanum oxide, Neodymium oxide and Praseodymium oxide in combination in an electrode to provide a

high electron emitting capacity with a low evaporation rate thus providing for high electrical efficiency and long life in a severe type of service.

Final Act. 3–4. The motivating benefit expressed by the Examiner is taken from Henderson’s teachings. *See, e.g.*, Henderson, col. 9, ll. 30–34 (“An advantage of the present electrodes for thermionic generation is the high electron emitting capacity concomitant with a low evaporation rate, thus providing for high electrical efficiency and long life in this severe type of service.”).

The Appellant argues “that it would not have been obvious to modify the fluxed core wire of Sakai with the oxide mixture of Henderson to provide Cerium oxide, Lanthanum oxide, Neodymium oxide and Praseodymium oxide in combination in an electrode as alleged in the [F]inal Office Action.” Appeal Br. 11. The Appellant points out that Henderson teaches using rare earth oxides as refractory materials to create thermionic electrodes with superior refractory properties (i.e., thermal stability, creep strength and resistance to corrosion) and emissivities, whereas Sakai uses rare earth oxides for improving arc stability during the welding process.² *See id.* at 10 (citing Henderson, col. 3, ll. 21–28, col. 7, ll. 28–33, col. 10, ll. 6–9; Sakai, col. 5, ll. 43–45). The Appellant contends that the motivating

² “Thermionic emission, as set forth in a standard dictionary (see, e.g., *Collins English Dictionary Complete & Unabridged 10th Edition*, [http://dictionary.reference.com/browse/thermionic emission](http://dictionary.reference.com/browse/thermionic%20emission)), refers to the emission of electrons from very hot solids or liquids (e.g., used for producing electrons in valves, electron microscopes, X-ray tubes, etc.)” Appeal Br. 10. For example, Henderson’s Figures 11 and 12 “show a specific embodiment of the invention as an electron tube or gas discharge device.” Henderson, col. 10, ll. 20–22; *see* Appeal Br. 8.

benefit expressed in the Examiner's rejection is directed to highly stable electrodes for use in thermionic devices and does not apply to Sakai's consumable electrodes for use in welding. *See id.*

The Examiner responds to the Appellant's argument by explaining, "Applicant argued against the use of Henderson [because Henderson] does not teach a consumable electrode, however the claims are not directed to a specifically consumable electrode, therefore does not need to be part of the rejection." Ans. 7. However, this response fails to appreciate the substance of the Appellant's argument. *See Reply Br. 3.*

The Appellant's argument contests the merits of the Examiner's rejection by questioning the reason why one of ordinary skill in the art would have viewed the benefits of highly stable electrodes for use in thermionic devices, as taught by Henderson, as benefits for Sakai's consumable electrodes for use in welding. *Id.* In this case, we determine that the reasoning provided by the Examiner lacks rational underpinning. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds . . . [require] some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.") (cited with approval in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

Based on the foregoing, we do not sustain the Examiner's rejection of independent claim 11 and dependent claim 13. Further, we do not sustain the Examiner's rejection of independent claims 1 and 20, which include similar subject matter as claim 11, and dependent claims 2 and 4 because the rejection of these claims is based on the same reasoning as discussed above. *See Final Act. 4–5.*

Appeal 2018-003557
Application 13/792,462

DECISION

We REVERSE the Examiner's decision rejecting claims 1, 2, 4, 11, 13, and 20.

REVERSED