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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/273,003	10/13/2011	Edward L. Diefenthal	039471-00024	1355
35161	7590	09/13/2019	EXAMINER	
DICKINSON WRIGHT PLLC			STEIN, MICHELLE	
1825 Eye St., NW			ART UNIT	
Suite 900			PAPER NUMBER	
WASHINGTON, DC 20006			1771	
			NOTIFICATION DATE	
			DELIVERY MODE	
			09/13/2019	
			ELECTRONIC	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte EDWARD L. DIEFENTHAL, RICHARD D. JORDAN, and
RICHARD H. SCHLOSBERG

Appeal 2018-000800
Application 13/273,003
Technology Center 1700

Before DONNA M. PRAISS, N. WHITNEY WILSON, and
JEFFREY R. SNAY, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner’s October 19, 2016 decision finally rejecting claims 22, 26, 32, 33, 38, and 60–69 (“Final Act.”). We have jurisdiction over the appeal under 35 U.S.C. § 6(b). An oral hearing was held on July 11, 2019, a transcript of which will be made part of the record.²

We reverse.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Epic Oil Extractors, LLC, as the real party in interest (Appeal Br. 3).

² Appeal No. 2018-000804 is related to this appeal (Appeal Br. 3). The two appeals were argued together at the July 11, 2019 oral hearing.

CLAIMED SUBJECT MATTER

Appellant's disclosure relates to an extraction process for producing a high quality crude oil product from oil sand (Spec. ¶ 20). The process includes supplying oil sand containing bitumen to a contact zone of an extraction vessel, where the oil sand supplied to the contact zone has an average particle size of not greater than 20,000 microns (Spec. ¶¶ 25, 27, 54). The oil sand particles are moved through the contact zone of the extraction vessel, while a light solvent blend of pentane is injected into the extraction vessel (Spec. ¶¶ 25, 32, 54, and 55). The light solvent blend has certain specific properties (Spec. ¶¶ 43–47). The claims also specify details about the steps for contacting the light solvent blend and the oil sand particles. Claim 22 is representative of the invention and is reproduced below from the Claims Appendix to the Appeal Brief (*emphasis added*):

22. A partial extraction process for producing a high quality crude oil product from oil sand, comprising:

a) supplying oil sand containing bitumen to a contact zone of an extraction vessel,

wherein the oil sand supplied to the contact zone has an average particle size of not greater than 20,000 microns;

b) moving the oil sand particles through the contact zone of the extraction vessel;

c) injecting a light solvent blend comprised of pentane into the extraction vessel, wherein the light solvent blend has the following properties:

(i) a Hansen dispersion blend parameter of not greater than 16,

(ii) a Hansen polarity blend parameter of not greater than 2.5, and

(iii) a Hansen hydrogen bonding blend parameter of not greater than 2,

(iv) an ASTM D86 10% distillation point of at least 30°C, and

(v) an ASTM D86 90% distillation point of not greater than 160°C;

d) contacting the oil sand particles moving through the contact zone of the extraction vessel in step b) with the light solvent blend in a contact zone of the extraction vessel, extracting not greater than 80 wt % of the bitumen from the supplied oil sand particles as an extracted crude oil composition, wherein

i) the contact zone is at a temperature and pressure in which at least 20 wt% of the light solvent blend within the contact zone of the extraction vessel during contacting of the oil sand particles is in vapor phase, and

ii) *no water is used in extracting the crude oil composition;*

e) removing the extracted crude oil composition from the vessel, wherein the extracted crude oil composition comprises at least a portion of the light solvent blend; and

f) separating recycle solvent from the extracted crude oil composition removed in step e) to produce the high quality crude oil product, wherein

(i) the high quality crude oil product is defined as having a nickel plus vanadium content of not greater than 150 wppm, an asphaltene content of not greater than 10 wt % and an API gravity of at least 12, and

(ii) the recycle solvent has a Hansen dispersion blend parameter of not greater than 16, a Hansen polarity blend parameter of not greater than 2.5, a Hansen hydrogen bonding blend parameter not greater than 2, an ASTM D86 10% distillation point of at least 30°C and an ASTM D86 90% distillation point of not greater than 160°C.

REJECTIONS

1. Claims 22, 26, 32, 33, 38, 60–64, and 69 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hsieh³ in view of Veatch⁴ and Bowman.⁵

2. Claims 65–68 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hsieh in view of Veatch and Bowman, and further in view of Phillips.⁶

DISCUSSION

The Examiner's findings based on Hsieh are set forth in the Final Action (Final Act. 3–4). The Examiner finds that Hsieh teaches supplying oil sand having an average particle size of not greater than 20,000 microns containing bitumen to a contacting zone of an extraction vessel; moving the oil sand particles through the contact zone of the extraction vessel and injecting a solvent comprised of pentane, hexane, other solvents, or mixtures thereof into the extraction vessel and contacting the solvent with the oil sand particles moving through the contact zone of the extraction vessel; and extracting bitumen from the oil sand as extracted crude oil composition (*id.*).

The Examiner also finds that Hsieh teaches removing the extracted crude oil composition from the vessel wherein the extracted crude oil contains at least a portion of the solvent, and then separating at least a

³ Hsieh et al., US 4,676,889, issued June 30, 1987.

⁴ Veatch et al., US 4,174,263, issued November 13, 1979.

⁵ Bowman, US 3,475,279, issued October 28, 1969.

⁶ Phillips et al., US 7,384,557 B2, issued June 10, 2008.

portion of the solvent from the extracted crude oil composition to obtain high quality crude oil product and recycle solvent (*id.* at 4).

The Examiner further finds that Hsieh teaches that steam (i.e. water) can be used to raise the temperature of the solvent tar sand mixture (Final Act. 4). The Examiner finds that Veatch teaches “a similar process” for solvent extraction of tar sands using a non-steam heating method to obtain the desired solvent vaporization, and that Bowman discloses that moving belt zones provide heating via radiant energy sources (*id.*). Therefore, according to the Examiner, it would have been obvious to a person of skill in the art “to have substituted the Veatch/Bowman moving belt radiant energy heating zone for the water addition of Hsieh, for the benefit of providing an alternate method to vaporize the solvent, since Veatch discloses such is equivalent” (*id.*).

Appellant, argues, *inter alia*, that the claimed invention differs from Hsieh and the asserted combination of Hsieh and Veatch/Bowman in that “no water is used in extracting the crude oil composition.” In particular, Appellant argues that even if a person of skill in the art had substituted the radiant heating of Veatch/Bowman for the steam/water heating of Hsieh, the process still would have required the use of water to extract the crude oil composition (Appeal Br. 20). Appellant relies on the Schlosberg Declaration as evidence of the fact that Hsieh’s process requires the presence of water to be able to function (Appeal Br. 21; *see also* Schlosberg Decl. ¶¶ 11–13).

The Examiner does not dispute that the Hsieh process requires water to extract the crude oil composition (*see, e.g.,* Ans. 8). Instead, the

Examiner finds that Appellant's Specification uses similar tar sands to those used by Hsieh, which contain water (*id.*). Therefore, the Examiner presumes that, to the extent that "no water is used in extracting the crude oil composition" in Appellant's process, Hsieh's process can operate the same way.

The Examiner's presumption is reversibly erroneous. There is no dispute that Hsieh's process requires water to extract the crude oil composition (Hsieh, 2:22–31 (stating that if the amount of water naturally present in the oil sands is high enough, it may not be necessary to add water)). A person of skill in the art would have understood that Hsieh's process requires water to extract the crude oil composition and, therefore, would have had no reason to create a process in which "no water is used in extracting the crude oil composition," much less an expectation that such a process would be successful.

Accordingly, we reverse the rejection of claim 22 and the remaining claims on appeal, each of which depends from claim 22.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
22, 26, 32, 33, 38, 60–64, and 69	§ 103(a) Hsieh, Veatch, and Bowman		22, 26, 32, 33, 38, 60–64, and 69
65–68	§ 103(a) Hsieh, Veatch, Bowman, and Phillips		65–68
Overall Outcome			22, 26, 32, 33, 38, and 60–69

REVERSED