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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HENRI PARADOWSKI and SYLVAIN VOVARD

Appeal 2018-008001
Application 12/731,549
Technology Center 3700

Before STEFAN STAICOVICI, MICHAEL L. HOELTER, and
MICHELLE R. OSINSKI, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–26. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Technip France. Appeal Br. 1.

THE CLAIMED SUBJECT MATTER

Claims 1, 12, and 26 are independent. Claim 26 is reproduced below.

26. A method of processing a dried and decarbonated feed natural gas in order to obtain a processed natural gas intended to be liquefied and a cut of C_5^+ hydrocarbons, the method comprising the following steps:

cooling of the feed natural gas in a first heat exchanger to form a pre-cooled feed flow;

introduction of the pre-cooled feed flow into a first separator flask to form a pre-cooled gaseous flow;

dynamic expansion of the pre-cooled gaseous flow in an expansion turbine and introduction of the expanded flow issuing from the expansion turbine into a first purification column;

production at the head of the first column of a purified head natural gas;

recovery at the bottom of the first column of a liquefied bottom natural gas;

introduction of the liquefied bottom natural gas into a second column for elimination of the C_5^+ hydrocarbons;

production, at the bottom of the second column, of the cut of C_5^+ hydrocarbons;

production, at the head of the second column, of a gaseous column head flow and introduction of the gaseous column head flow into a second separator flask to form a liquid bottom flux and a gaseous head flux;

introduction of a first part of the liquid bottom flux in reflux into the second column and introduction of a second part of the liquid bottom flux in reflux into the first column;

injection of at least a part of the gaseous head flux issuing from the second separator flask into the purified head natural gas to form the processed natural gas,

expansion of the liquefied bottom natural gas issuing from the first column before its introduction into the second column, and

compression of the gaseous column head flow in a first compressor and cooling before its introduction into the second separator flask,

wherein during the step of dynamic expansion, the pre-cooled gaseous flow is expanded to a pressure of more than 35 bar,

wherein the step of cooling of the feed natural gas in the first heat exchanger is performed by exchanging heat in the first heat exchanger exclusively with the purified head natural gas issuing from the first column, whereby the purified head natural gas issuing from the first column is heated in the first heat exchanger by heat exchange with the feed natural gas,

wherein the pressure prevailing in the second column is below 25 bar, the purified head natural gas is introduced into the first heat exchanger without the purified head natural gas entering into heat exchange in a heat exchanger with a flow introduced into the first column, the purified head natural gas enters into heat exchange in a heat exchanger exclusively with the feed natural gas in the first heat exchanger, the feed natural gas is cooled down exclusively by the purified head natural gas, without being cooled down by an external refrigeration cycle, and the molar content of C_3^- hydrocarbons in the cut of C_5^+ hydrocarbons is less than 1 %, and

wherein the method further comprises a step of tapping-off a secondary flux in the second part of the liquid bottom flux, before its introduction into the first column, and the introduction of the secondary flux into the flow of purified head natural gas issuing from the first column.

EVIDENCE

The Examiner relied on the following evidence in rejecting the claims on appeal:

Kniel	US 4,012,212	Mar. 15, 1977
Finn	US 2001/0008073 A1	July 19, 2001
Wilkinson '336	US 2002/0166336 A1	Nov. 14, 2002
Wilkinson '722	US 2003/0005722 A1	Jan. 9, 2003
O'Brien	US 2003/0177786 A1	Sept. 25, 2003
Bras '156	US 7,041,156 B2	May 9, 2006
Bras '395	WO 2007/144395 A2	Dec. 21, 2007

REJECTIONS

- I. Claims 1–25 stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Final Act. 2–3.²
- II. Claim 26 is rejected under 35 U.S.C. § 103(a) as unpatentable over Bras ’156, Wikinson ’722, Finn, Wilkinson ’336, Kniel, Bras ’395, and O’Brien. *Id.* at 6–12.

OPINION

Rejection I

The Examiner determines that independent claims 1 and 12 fail to comply with the written description requirement because “[t]he claim(s) contain subject matter which was not described in the [S]pecification in such a way as to reasonably convey to one skilled in the relevant art that . . . the inventor(s), at the time the application was filed, had possession of the claimed invention.” Final Act. 2. The specific subject matter contained in the claim that is the basis for the rejection is

the purified head natural gas is introduced into the first heat exchanger: (1) without the purified head natural gas entering into heat exchange in a heat exchanger with a flow introduced

² The Examiner clarifies in the Answer that “no rejection is present with respect to claim 26 as it [is] understood that only the feed gas into the first column is cooled exclusively as stated in the [S]pecification and as such support is found for excluding a heat exchange with a flow entering the first column.” Ans. 17. The Examiner continues that the broader recitation of the purified head natural gas being introduced into the first heat exchanger with two “conditions being excluded” (i.e., without entering into heat exchange in a heat exchanger with (i) a flow introduced into the first column; and (ii) a flow introduced into the second column) “is not supported.” *Id.* at 17–18. According to the Examiner, “there is no indication of exclusivity with regard to fluids entering the second column.” *Id.* at 18.

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into the first column and (2) without the purified head natural gas entering into heat exchange in a heat exchanger with a flow introduced into the second column.

Appeal Br. 32, 34 (Claims App.). The Examiner takes the position that although Appellant's "drawings show[] a condition in which the purified head gas does not exchange heat with a flow introduced into the first or second column[,] this does not provide support to exclude such a recitation."

Final Act. 2.

The fundamental factual inquiry for ascertaining compliance with the written description requirement is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). "This inquiry . . . is a question of fact," and "the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology." *Id.* "[T]he specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Id.*

In this case, the drawings show the purified head natural gas being introduced into the first heat exchanger without entering into heat exchange in a heat exchanger with a flow introduced into either the first column or the second column, as claimed. Spec. Fig. 1 (illustrating purified head natural gas 70 at the head of first fractionating column 26 being introduced into first heat exchanger 20 without undergoing any intermediate processing with the two recited flows of any sort); Final Act. 2 (Examiner acknowledging same). It is well established that drawings alone may provide a written description

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of the invention. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1565 (Fed. Cir. 1991); *see also In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983) (citing *In re Barker*, 559 F.2d 588 (CCPA 1977) (“The content of the drawings may also be considered in determining compliance with the written description requirement.”)).

In addition to pointing to Figures 1–3 of the Specification, Appellant also points to the disclosure in the Specification that “after the tapping-off of the purified head natural gas 70 at the head of the column 26, the purified head natural gas 70 is then introduced into the first heat exchanger 20 where it is placed in a heat exchange relationship with the feed natural gas 12.”

Appeal Br. 11 (citing Spec. 11:27–12:8). Appellant asserts that this disclosure in the Specification

indicates that there was no intermediate heat exchange between the time of the tapping-off of the purified head natural gas 70 at the head of the column 26 and the time when it is placed in a heat exchange relationship with the feed natural gas 12 and the first heat exchanger 20.

Id.

We agree with Appellant that the present application provides support for the limitation in question sufficient to satisfy the written description requirement of 35 U.S.C. 112, first paragraph. Given the depiction of purified head natural gas 70 in Figures 1–3 of the Specification and the corresponding textual description, the present application conveys with reasonable clarity that, as of the filing date of the present application, Appellant was in possession of a method in which

the purified head natural gas is introduced into the first heat exchanger: (1) without the purified head natural gas entering into heat exchange in a heat exchanger with a flow introduced into the first column and (2) without the purified head natural

gas entering into heat exchange in a heat exchanger with a flow introduced into the second column.

Appeal Br. 37 (Claims App.).

Accordingly, for the above reasons, we do not sustain the Examiner's rejection of claims 1–25 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Rejection II

The Examiner finds that Bras '156 teaches most of the limitations of independent claim 26, including *inter alia*, “cooling of the feed natural gas in a first heat exchanger to form a pre-cooled feed flow.” Final Act. 6. More specifically, the Examiner points to “stream 1 [being] cooled in heat exchanger 2 to form partially condensed natural gas 3.” *Id.* (citing Bras '156 3:19–20); Bras '156 Fig. 2. The Examiner also finds that Bras '156 teaches “production at the head of the first column of a purified head natural gas.” Final Act. 7. Specifically, the Examiner points to “overhead stream 12 [exiting scrub column 6] which has a reduced content of natural gas liquids.” *Id.* (citing Bras '156 3:38–39).

The Examiner also finds that Bras '156 teaches “the step of cooling of the feed natural gas in the first heat exchanger is performed by exchanging heat in the first heat exchanger exclusively with the purified head natural gas issuing from the first column.” *Id.* Specifically, the Examiner points to “stream 20 [being] formed of the purified head natural gas 12 . . . and [being] heat exchanged in heat exchanger 2 against the stream 1.” *Id.* (citing Bras '156 3:40–45; 4:55–58). Thus, the Examiner identifies stream 12 as the purified head natural gas produced at the head of first column 6 (Final Act. 7), but the Examiner then relies on stream 20 as the purified head

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natural gas issuing from the first column that exchanges heat in first heat exchanger 2 with feed natural gas 1 (*id.*; Bras '156 Fig. 2).

Appellant argues that “[t]he overhead stream removed through conduit 12 does not enter into heat exchange with the feed gas supplied by conduit 1 to a heat exchanger 2, . . . as required by claim 26.” Appeal Br. 14. Appellant further argues that “[a]lleged overhead stream 12 of Bras [’156] is not equivalent to alleged stream 20.” *Id.* at 13. Appellant argues that Bras ’156 “teaches that, ‘. . . overhead stream [12] is partly condensed in heat exchanger 14, and separated in separation vessel 17 into a liquid stream and a gaseous product stream. The gaseous product stream is removed from the separation vessel 17 through conduit 20.’” *Id.* (underlining omitted) (quoting Bras ’156 3:38–46). Appellant asserts that “the overhead stream removed through the conduit 12 does not have the same components as the stream passing through conduit 20.” Reply Br. 9. In particular, Appellant asserts that “the overhead stream removed through conduit 12 has natural gas liquids, as well as natural gas, whereas [the] stream removed from the separation vessel 17 through conduit 20 is a gaseous product stream.” *Id.* at 9–10 (underlining omitted). Appellant additionally argues that “the gaseous product stream moving through conduit 20 originates at the separation vessel 17, not scrub column 6.” Appeal Br. 13 (underlining omitted).

The Examiner responds that

[t]he same components that make up the purified head natural gas 12 are used to make up 20, thus 20 is a continuation of 12 and it is the stream used in cooling the feed to the system as the part of 12 that makes up the purified head natural gas.

Ans. 18. The Examiner takes the position that “though the purified head natural gas was produced at the top of column 6, it was continued as stream

[20] after [separation vessel 17], [and] there is no restriction in the claims that there is no intermediary steps to the purified head natural gas.” *Id.* at 18–19.

We do not agree with the Examiner that such a position, in which stream 12 is considered equivalent to stream 20 despite there being intermediary steps undertaken with respect to stream 12 so as to form stream 20, is reasonable. Claim 26 describes the step of “production at the head of the first column of a purified head natural gas.” Appeal Br. 37 (Claims App.). Claim 26 further describes “wherein the step of cooling of the feed natural gas in the first heat exchanger is performed by exchanging heat in the first heat exchanger exclusively with the purified head natural gas issuing from the first column.” *Id.* The Specification describes and illustrates the “purified head natural gas 70 . . . [that] is produced and tapped-off at the head of the column 26 . . . is then introduced into the first heat exchanger 20, where it is placed in a heat exchange relationship with the feed natural gas 12.” Spec. 11:27–35; Fig. 1. That is, the Specification illustrates and describes the stream issuing from the head of the first column as the same stream that enters into heat exchange with the feed natural gas, without any intermediary steps.

In Bras ’156, rather than feed natural gas 1 being cooled in first heat exchanger 1 by exchanging heat with the purified head natural gas issuing from scrub column 6 (i.e., the stream in conduit 12), feed natural gas 1 is, instead, cooled in first heat exchanger 1 by exchanging heat with a stream (i.e., the stream in conduit 20) that has undergone several processing steps relative to the stream in conduit 12 by virtue of this stream in conduit 12 first having been partly condensed in heat exchanger 14 (Bras ’156 4:46–49), having the resulting liquid components separated out in separation vessel 17

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(*id.* 3:40–43), having absorbed heat from gaseous overhead stream 40 in heat exchanger 43 (*id.* 4:50–52), and having absorbed heat from liquid bottom stream 10 in heat exchanger 55 (*id.* 4:53–55).

Gaseous product stream 20 exiting separation vessel 17 has a different makeup than overhead stream 12 at least in that overhead stream 12 has been partly condensed in heat exchanger 14 and liquid reflux stream 21 has been separated therefrom. Bras '156 1:46–51, Fig. 2. In our view, the intermediary processing steps between stream 12 issuing from the head of scrub column 6 prior to gaseous product stream 20 issuing from the head of separation vessel 17 preclude a person of ordinary skill in the art from considering stream 20 as merely being “a continuation of 12” as urged by the Examiner. *See* Ans. 18–19. In view of the Specification, a person of ordinary skill in the art would have understood the purified head natural gas issuing from the first column to have been introduced in the first heat exchanger for exchanging heat with the feed natural gas without the purified head natural gas having undergone such intermediary processing steps as are present in Bras '156. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (claims are to be given their broadest reasonable interpretation consistent with the specification, reading claim language in light of the specification as it would be interpreted by one of ordinary skill in the art); Spec. 11:25–12:10, Fig. 1.

Accordingly, the Examiner’s finding that “the step of cooling of the feed natural gas in the first heat exchanger is performed by exchanging heat in the first heat exchanger exclusively with the purified head natural gas issuing from the first column” (Final Act. 7) is not supported adequately by Bras '156 when the claim is given its broadest reasonable interpretation as understood by a person of ordinary skill in the art in light of the

Specification. Consequently, the Examiner's conclusion of obviousness relies on a deficient finding as to the scope and content of Bras '156, and we do not sustain the rejection of claim 26 under 35 U.S.C. § 103 as unpatentable over Bras '156, Wikinson '722, Finn, Wilkinson '336, Kniel, Bras '395, and O'Brien.³

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-25	112	Written Description		1-25
26	103	Bras '156, Wikinson '722, Finn, Wilkinson '336, Kniel, Bras '395, O'Brien		26
Overall Outcome				1-26

REVERSED

³ We have considered Appellant's request that the Board remand the application to the Examiner for further consideration of the rejection of claims 1-25 to determine whether claims 1-25 are unpatentable over the prior art and for the filing of a substitute Examiner's Answer containing any new ground of rejection of claims 1-25. Appeal Br. 29. Although the Board has authority to remand a case to the Examiner when *necessary* (MPEP § 1211; 37 C.F.R. § 41.35(c), (e); 37 C.F.R. § 41.40(a)), we decline to exercise our discretionary authority to remand where the rejections and their bases are clearly stated by the Examiner.