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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/932,379	11/04/2015	Wilfried WEISS	PET-3048	1069
23599	7590	02/08/2022	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			STEIN, MICHELLE	
			ART UNIT	PAPER NUMBER
			1771	
			NOTIFICATION DATE	DELIVERY MODE
			02/08/2022	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WILFRIED WEISS and ISABELLE MERDRIGNAC

Appeal 2021-001322
Application 14/932,379
Technology Center 1700

Before JEFFREY T. SMITH, BRIAN D. RANGE, and
SHELDON M. MCGEE, *Administrative Patent Judges*.

McGEE, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the
Examiner's decision to reject claims 1–21. We have jurisdiction.

35 U.S.C. § 6(b).

We reverse.

¹ Appellant” refers to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as IFP ENERGIES NOUVELLES.
Appeal Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to processes for treating heavy hydrocarbon fractions containing sulfur-based impurities. Spec. 1:8–9; Claims 1, 21.²

Claim 1 is illustrative of the claimed subject matter and is reproduced below with the key limitations on appeal italicized:

1. A process for treatment of a heavy hydrocarbon-containing feedstock having a sulphur content of at least 0.5% by weight, an initial boiling temperature of at least 350°C and a final boiling temperature of at least 450°C, to obtain at least one liquid hydrocarbon-containing fraction having a sulphur content less than or equal to 0.5% by weight, said liquid hydrocarbon containing fraction being a fuel of the heavy fuel type that can optionally become a marine fuel, said process comprising the following successive stages:

a) a fixed-bed hydrotreatment stage wherein said hydrocarbon-containing feedstock and hydrogen are brought into contact with a hydrotreatment catalyst,

b) a separation stage wherein effluent obtained from said hydrotreatment stage (a) is separated into at least one first light fraction and at least one first heavy fraction,

c) a hydrocracking stage wherein at least a part of said at least one first heavy fraction obtained from separation stage (b), alone or in a mixture with other residual or fluxing cuts, is subjected to hydrocracking in at least one reactor operating as an ebullating bed with a *supported catalyst combined with a dispersed catalyst* constituted by very fine particles of catalyst present as a suspension with said at least a part of said at least one first heavy fraction which is to be treated in said hydrocracking stage, *wherein said supported catalyst is in the form of extrudates having a diameter between 0.8 and 1.2 mm and*

² We refer to the claims listed in the “Claims Index” filed August 26, 2020 in the Supplemental Appeal Brief (“Supp. Appeal Br.”).

the particles of said dispersed catalyst have a size between 10 and 150 microns,

d) a further separation stage for separating effluent originating from hydrocracking stage (c) wherein said effluent originating from hydrocracking stage (c) is separated to obtain at least one second light fraction and at least one second heavy fraction,

e) a sediment treatment stage for reducing the sediment content of the at least one second heavy fraction originating from the further separation stage d), wherein said sediment treatment stage comprises (i) a maturation stage wherein potential sediments are converted to existing sediments, and (ii) subsequent steps of solid-liquid separation for removal of the existing sediments and catalyst residues, and recovery of dispersed catalyst, wherein the steps of the solid-liquid separation for removal of the existing sediments and catalyst residues, and the recovery of dispersed catalyst are carried out simultaneously,

f) a final separation stage for separating the second heavy fraction effluent from sediment treatment stage e) in order to obtain said at least one liquid hydrocarbon containing fraction having a sulphur content less than or equal to 0.5% by weight wherein said at least one liquid hydrocarbon-containing fraction has a sediment content of less than 0.1 % by weight.

Suppl. Appeal Br. 2–3 (emphases added).

REJECTIONS

The Examiner maintains the following rejections under
35 U.S.C. § 103:

- I. Claims 1, 2, 6, 8–12, and 17–21 over Jung,³ Mukherjee,⁴ Rispoli,⁵ and Solari Martini⁶;
- II. Claim 7 over Jung, Mukherjee, Rispoli, Solari Martini, and Rahbe⁷;
- III. Claims 3–5 over Jung, Mukherjee, Rispoli, Solari Martini, and Chabot⁸;
- IV. Claim 13 over Jung, Mukherjee, Rispoli, Solari Martini, and Renard⁹;
- V. Claims 14–16 over Jung, Mukherjee, Rispoli, Solari Martini, and Charon.¹⁰

OPINION

The dispositive issue on appeal is whether the Examiner’s findings that Rispoli’s disclosure of dispersed catalyst particles having “micronic” dimensions overlaps with the claimed dispersed catalyst size of “between 10

³ US 5,968,346 issued October 19, 1999.

⁴ US 2006/0196809 A1, published September 7, 2006.

⁵ US 2011/0005976 A1, published January 13, 2011.

⁶ US 4,732,664 issued March 22, 1988.

⁷ US 4,676,886 issued June 30, 1987.

⁸ US 2010/00065473 A1, published March 18, 2010.

⁹ US 5,417,846, issued May 23, 1995.

¹⁰ US 2011/0230688 A1, published September 22, 2011.

and 150 microns,” and Rispoli’s disclosure of a supported catalyst of “millimetric” dimensions overlaps with the claimed supported catalyst diameter of 0.8 to 1.2 mm. Final Act. 4. Because those findings lack sufficient evidentiary support on this record, we do not sustain the rejections.

“Micronic”

Both independent claims 1 and 21 require the particles of a dispersed catalyst to “have a size between 10 and 150 microns.” The Examiner finds that Rispoli’s dispersed catalyst particles have “micronic” dimensions, and thus overlap with the claimed range. Final Act. 4 (citing Rispoli ¶ 18). The Examiner asserts that Rispoli’s “‘micronic’ dimensions would be reasonable units of measure in the ranges of approximately .001–1000 microns” and “[o]utside these ranges, one of ordinary skill in the art . . . would reasonably use millimeters or nanometers instead.” Ans. 10.

Appellant disputes the Examiner’s finding, urging that “[n]o basis or support for this position is cited,” and that the finding is rooted in hindsight. Appeal Br. 8–9. Appellant argues that the proffered definition of “micronic” spans “an order of magnitude of 6” and overlaps with 1 millimeter and the Examiner’s proffered definition of “millimetric.” Reply Br. 4.

We agree with Appellant that the Examiner’s definition for the term “micronic” is not supported by evidence. The Examiner points to no definition of the term “micronic”—within Rispoli or otherwise—that would have taught or suggested to the skilled artisan that Rispoli’s dispersed catalyst particles have a size overlapping the claimed range of 10–150 microns.

Notably, Rispoli teaches that its “nano-dispersed hydrogenation catalyst” contains particles of “micronic” dimensions and/or “sub-micronic”

dimensions. Rispoli ¶ 18. Thus, Rispoli’s “nano-dispersion” may contain only “micronic” particles. *Id.* This is significant because Rispoli’s use of the term “nano” in describing its dispersion suggests the inclusion of nanoparticles.

Therefore, on this record, it is speculative at best to assert that Rispoli’s “micronic” particles overlap with the claimed range of 10–150 microns. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) (“The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not . . . resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies” in the cited references.).

“Millimetric”

The Examiner finds that Rispoli’s disclosure of a supported heterogeneous catalyst with “millimetric” dimensions overlaps with the claimed supported catalyst “having a diameter between 0.8 and 1.2 mm” Final Act. 4 (citing Rispoli ¶ 3). Appellant makes similar arguments against this finding as it did with respect to the Examiner’s finding regarding Rispoli’s disclosure of “micronic” dimensions. Appeal Br. 8–10. Appellant also urges that the claimed range of 0.8–1.2 millimeters is very narrow vis-à-vis the unknown “and seemingly infinite” scope of the term “millimetric” and, thus, is not fairly taught or suggested by Rispoli. *Id.* at 11. Appellant contends that if the Examiner’s definition in the Answer that “millimetric” encompasses .001–1,000 millimeters was accepted, such a broad disclosure would not teach or suggest the narrow claimed range of 0.8–1.2 mm. Reply Br. 5.

We agree with Appellant. The Examiner provides no evidence that Rispoli’s use of the term “millimetric” evinces an overlap with the claimed

range. Rather, the Examiner's proffered definition of this term appears to be based on hindsight, and furthermore overlaps with the Examiner's definition of "micronic." Ans. 10-11. *In re Warner*, 379 F.2d at 1017.

For these reasons, we do not sustain the rejections.

CONCLUSION

The Examiner's rejections are reversed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s) / Basis	Affirmed	Reversed
1, 2, 6, 8-12, 17-21	103	Jung, Mukherjee, Rispoli, Solari Martini		1, 2, 6, 8-12, 17-21
7	103	Jung, Mukherjee, Rispoli, Solari Martini, Rahbe		7
3-5	103	Jung, Mukherjee, Rispoli, Solari Martini, Chabot		3-5
13	103	Jung, Mukherjee, Rispoli, Solari Martini, Renard		13
14-16	103	Jung, Mukherjee, Rispoli, Solari Martini, Charon		14-16
Overall Outcome				1-21

REVERSED