UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/055,851	02/29/2016	Markus HANSCH	467603US99DIV	5844

22850 7590 09/02/2020

OBLON, MCCLELLAND, MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
OLADAPO, TAIWO

ART UNIT	PAPER NUMBER
1771	

NOTIFICATION DATE	DELIVERY MODE
09/02/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OBLONPAT@OBLON.COM
iahmadi@oblon.com
patentdocket@oblon.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARKUS HANSCH, HARALD BOEHNKE, LUDWIG VOELKEL, WOLFGANG GRABARSE, and JAN STRITTMATTER

Appeal 2019-006611
Application 15/055,851
Technology Center 1700

Before CATHERINE Q. TIMM, DONNA M. PRAISS, and CHRISTOPHER C. KENNEDY, *Administrative Patent Judges.*

TIMM, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1, 2, 4, 6, 8, 10, and 11.[2] We have jurisdiction under 35 U.S.C. § 6(b).

---

[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as BASF SE. Appeal Br. 2.

[2] The Examiner's and Appellant's listings of the claims contain typographical errors. Final Act. 1; Appeal Br. 2. We base our listing of the pending claims filed in the Amendment of March 17, 2017, which presents

We AFFIRM.

CLAIMED SUBJECT MATTER

The claims are directed to the use of quaternized alkylamines as additives in fuels and lubricants. Spec. 1:17–14; claim 1. Particularly, the claims are directed to adding a diesel or biodiesel fuel containing the additive to a direct injection diesel engine. *Id.* The additive is said to reduce or prevent internal diesel injector deposits (IDID) in particular parts of the injectors, such as at the nozzle needle, at the control piston, at the valve piston, at the valve seat, in the control unit, and in the guides of these components. Spec. 2:29–3:3. Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A method for reducing and/or preventing internal diesel injector deposits in a direct injection diesel engine under conditions that lead to the internal injector deposits, the method comprising
>
> adding, to the direct injection diesel engine which is affected or is at risk of being affected by conditions that lead to the internal injector deposits, a diesel or biodiesel fuel comprising a reaction product comprising a quaternized nitrogen compound, or a fraction of said reaction product which comprises the quaternized nitrogen compound and which is obtained from the reaction product by purification, in an amount effective for reducing and/or preventing internal diesel injector deposits,
>
> wherein said reaction product is obtained by

---

claims 1–11, and the Amendment of October 2, 2018, which identifies claims 3, 5, 7, and 9 as canceled. Although neither the Amendment of October 2, 2018 nor the Claims Appendix to the Appeal Brief reproduce claim 11, it has not been canceled and the Examiner maintains a rejection of it. Ans. 4.

> reacting a quaternizable alkylamine comprising at least one quaternizable tertiary amino group with a quaternizing agent which converts the at least one quaternizable tertiary amino group to a quaternary ammonium group,
>
> wherein the quaternizable alkylamine comprises at least one compound of the following formula 3
>
> $$R_aR_bR_cN \quad (3)$$
>
> in which
>
> at least one of the R_a, Rb [sic] and R_c radicals is a straight-chain or branched, saturated or unsaturated C_8-C_{40}-hydrocarbyl radical and the remaining radicals are identical or different, straight-chain or branched, saturated or unsaturated C_1-C_6-hydrocarbyl radicals; or
>
> in which all R_a, Rb [sic] and R_c radicals are identical or different, straight-chain or branched, saturated or unsaturated C_8-C_{40}-hydrocarbyl radicals, and
>
> the quaternizing agent is the alkyl ester of a cycloaromatic or cycloaliphatic mono- or polycarboxylic acid, or of an aliphatic polycarboxylic acid, a hydrocarbyl epoxide, optionally in combination with a free acid, or a dialkyl carbonate.

Appeal Br. 23–24

REFERENCE

The prior art relied upon by the Examiner is:

Name	Reference	Date
Fang	US 9,574,149 B2	Feb. 21, 2017

REJECTIONS

The Examiner maintains the following rejections:

Claims 1, 2, 4, 6, 8, 10, and 11 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Fang. Final Act. 4.

Claims 1, 2, 4, 6, 10, and 11 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 21–35, and 38 of copending Application No. 15/022,681[3] and in view of Fang.

OPINION

Obviousness over Fang

Appellant opens the arguments against the Examiner's rejection of claims 1, 2, 4, 6, 8, 10, and 11 as obvious over Fang with general arguments not directed to any particular claim. Appeal Br. 6–17.[4] We select claim 1 as representative to decide the issues presented in these generalized arguments.

In a bolded portion of a paragraph, Appellant refers to claims 4, 6, 9, and 10 as separately argued. Appeal Br. 17. Appellant further refers to claim 2 as separately argued. Appeal Br. 20. We note that claim 9 has been canceled. Thus, we do not consider any arguments against claim 9. To the extent the arguments identify sufficiently specific separate errors in the Examiner's rejection of claims 2, 4, 6, and 10, we consider the rejections of those claims separately.

---

[3] Application No. 15/022,681 issued as US 10,370,610 on August 6, 2019. The Examiner also provisionally rejected these claims over claims 2–15 of Application No. 14/628,421 along with Fang, but Application No. 14/628,421 has been abandoned. Thus, the provisional rejection relying on Application No. 14/628,421 is moot.

[4] Appellant's listing of the rejected claims contains a typographical error. Appeal Br. 6 ("20" should be "10").

Claim 1

The Examiner's obviousness conclusion is based on a finding that Fang teaches adding, to a direct injection diesel engine, a diesel fuel containing a quaternized alkylamine additive of a genus that overlaps with the genus recited in claim 1 and in amounts within the range used by Appellant to solve injector deposit problems. Final Act. 3–4; Ans. 9. Appellant contends that (1) the Examiner has failed to consider the full claim in assessing obviousness, and, particularly, the Examiner has failed to properly consider the objective of the claim and the problem Appellant's additive is solving and (2) Fang's genus of compounds is too broadly set forth to provide a reasonable expectation of success. Appeal Br. 6–20.

Appellant's arguments are not persuasive of reversible error.

Fang is directed to fuel additives that improve the performance of direct fuel injected engines. Fang col. 1, ll. 7–12. Fang discloses that "fuel compositions for direct fuel injected diesel engines often produce undesirable deposits in the engines" and that those in the art desire "improved compositions that can prevent deposit build up, maintaining 'as new' cleanliness for the vehicle life." Fang col. 1, ll. 51–55. Fang uses a quaternary ammonium salt having a thermogravimetric analysis (TGA) weight loss of greater than 50% at 350 °C as the additive for accomplishing the desired cleaning effect. Fang col. 1, l. 60–col. 2, l. 6.

Like Appellant's quaternized alkylamine additive, Fang's additive is the reaction product of tertiary amine (Appellant's alkylamine of formula 3) with quaternizing agent. Fang col. 2, l. 66–col. 3, l. 30. Fang's tertiary amine has three hydrocarbyl groups (i.e., alkyl or alkenyl) chains with chain lengths of 1 to 50 carbon atoms. *Id.* Fang teaches using the tertiary amine and quaternizing agent to form a reaction product having at least one group

with 8 to 50 carbon atoms and from one to three groups with 1 to 4 carbon atoms. Fang col. 2, l. 66–col. 3, l. 30. These ranges overlap greatly with those of claim 1, which requires at least one hydrocarbyl group with 8 to 40 carbon atoms and remaining groups with 1 to 6 carbon atoms. There is no dispute that Fang teaches using a quaternizing agent meeting the requirements of claim 1. *Compare* Final Act. 4, *with* Appeal Br. 6–20.

There is no dispute that Fang teaches adding the additive in concentrations (5–200 ppm) within the concentration range Appellant specifies (10–5000 ppm) for their additive. *Compare* Appeal Br. 6–20, *with* Final Act. 3, and Ans. 9; *compare also* Spec. 24:27–30 ("This effective content (dosage) is generally 10 to 5000 ppm by weight, preferably 20 to 1500 ppm by weight, especially to 1000 ppm by weight, in particular 30 to 750 ppm by weight, based in each case on the total amount of fuel."), *with* Fang col. 2, ll. 9–15 ("from about 5 to about 200 ppm").

Given that Fang teaches a genus of quaternary ammonium salts greatly overlapping with those of claim 1 as a diesel fuel additive used in direct injection diesel engines (Fang col. 1, ll. 7–12) for cleaning the fuel injectors, and using the additive in amounts within the range Appellant states the additive would reduce and/or prevent internal diesel injector deposits, a preponderance of the evidence supports the Examiner's conclusion of obviousness.

Contrary to Appellant's arguments (Appeal Br. 7–17), that Fang does not expressly state that the deposits are *internal* deposits does not defeat the rejection. There is no persuasive evidence on this record that the objective of "for reducing and/or preventing internal diesel injector deposits" recited in claim 1 confers a further limitation on the method over and above the step of

adding, to the direct injection diesel engine, the additive-containing fuel required by claim 1.

First, the direct injection diesel engine need only be "at risk of being affected by conditions that lead to the internal injector deposits." *See* claim 1 (adding step). The claim does not require the engine be operated in a manner that results in internal injector deposits.

Second, the Specification provides evidence that it is the chemical composition of the additive that results in the reduction and/or prevention of internal deposits. Spec. 4:32–36 ("Surprisingly, the inventive additives, as illustrated more particularly by the appended use examples, are surprisingly effective in common rail diesel engines and are notable for their particular suitability as an additive for reducing power loss resulting from external deposits and cold start problems resulting from internal deposits."). In other words, the objective, in fact, does not impose an additional requirement on the claimed invention, i.e., does not narrow the claim, but is a property necessarily present due to other aspects of the claimed invention, namely, the additive composition. As such the objective cannot confer patentability. *See In re Kubin*, 561 F.3d 1351, 1357 (Fed. Cir. 2009); *Alcon Research, Ltd. v. Apotex Inc.*, 687 F.3d 1362, 1369 (Fed. Cir. 2012).

Nor do we agree with Appellant that Fang's genus of compounds is too broadly set forth to provide a reasonable expectation of success as a fuel additive that reduces deposits in direct injection diesel engines and improves power recovery as taught by Fang. Fang col. 2, ll. 43–47. Although Fang's genus of compounds is somewhat broader than claim 1's genus, the fact that a reference "discloses a multitude of effective combinations does not render any particular formulation less obvious." *Merck & Co., Inc. v. Biocraft Labs*, 874 F.2d 804, 808 (Fed. Cir. 1989) (*citing In re Corkill*, 771 F.2d

1496, 1500 (Fed. Cir. 1985) (obviousness rejection of claims affirmed in light of prior art teaching that "hydrated zeolites will work" in detergent formulations, even though "the inventors selected the zeolites of the claims from among 'thousands' of compounds")); *see also, In re Susi*, 440 F.2d 442, 445 (CCPA 1971) (obviousness rejection affirmed where the disclosure of the prior art was "huge, but it undeniably include[d] at least some of the compounds recited in appellant's generic claims and it is of a class of chemicals to be used for the same purpose as appellant's additives").

Appellant has not identified a reversible error in the Examiner's conclusion of obviousness.

Claims 4, 6, and 10

Appellant purports to argue claims 4, 6, and 10 separately on the basis that each of these claims defines more specifically the quaternizing agent. Appeal Br. 17–18. First, claim 6 does not further limit the quaternizing agent. Claim 6 further limits the quaternizable tertiary amine. Last, the argument is the same as that advanced for claim 1. Appellant does not discuss the limitations of claim 4 with the specificity required for us to review the rejection for error. Appellant has not identified a reversible error in the rejection of these claims.

Claim 2

Claim 2 recites that the adding step of claim 1 "further reduces and/or prevents valve sticking in the direct injection diesel engine."

Appellant contends that Fang does not address this problem. Appeal Br. 20. But just as the reduction and/or prevention property of claim 1 is not

an additional limitation on the claim, nor is the property of claim 2. The effect is the result of the composition of the additive.

Appellant has not identified a reversible error in the rejection of claim 2.

Non-Statutory Double Patenting

Appellant's sole argument against the provisional rejection of claims 1, 2, 4, 6, 10, and 11 on the ground of nonstatutory double patenting over claims 21– 35 and 38 of copending Application No. 15/022,681 and in view of Fang is that Fang fails to teach the use of a similar fuel composition in direct injection engines. Appeal Br. 20–21. For the reasons discussed above, we do not find this argument persuasive of reversible error.

CONCLUSION

The Examiner's decision to reject claims 1, 2, 4, 6, 8, 10, and 11 is AFFIRMED.

DECISION SUMMARY

Claim(s) Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**
1, 2, 4, 6, 8, 10, 11	103(a)	Fang	1, 2, 4, 6, 8, 10, 11	
1, 2, 4, 6, 10, 11		Provisional Non-statutory Double Patenting over S.N. 15/022,681, Fang	1, 2, 4, 6, 10, 11	
Overall Outcome			1, 2, 4, 6, 8, 10, 11	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED