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| 13/617,320  | 09/14/2012  | William Charles Ruona | 83249985               | 9204             |
| 36865   | 7590        | 07/02/2020            | EXAMINER               |                  |
| MCCOY RUSSELL LLP<br>806 S.W. BROADWAY, SUITE 600<br>PORTLAND, OR 97205 |             |                       | PICON-FELICIANO, RUBEN |                  |
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* WILLIAM CHARLES RUONA,  
GOPICHANDRA SURNILLA, and DAVID KARL BIDNER

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Appeal 2018-005828  
Application 13/617,320  
Technology Center 3700

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Before MICHAEL L. HOELTER, BRANDON J. WARNER, and  
LISA M. GUIJT, *Administrative Patent Judges*.

WARNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 3, 9–12, and 16–32, which are all the pending claims. *See* Appeal Br. 9–26; Non-Final Act. 1 (Office Action Summary). We have jurisdiction over the appeal under 35 U.S.C. § 6(b). An oral hearing was held on March 17, 2020.

We REVERSE.

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<sup>1</sup> We use the word “Appellant” to refer to the “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Ford Global Technologies, LLC. Appeal Br. 3.

### CLAIMED SUBJECT MATTER

Appellant's disclosed invention relates to a charge air cooler for an internal combustion engine, and to reducing entry of condensation (e.g., water droplets) into the combustion chambers of the engine. *See Spec.*, p. 1, ll. 3–16. Claims 3, 9, and 17 are independent. Claim 3, reproduced below with emphasis added, is illustrative of the subject matter on appeal.

3. A charge air cooler, comprising:
  - an inlet to admit charge air;
  - a plurality of heat exchange passages to remove heat from the charge air;
  - an outlet opening positioned at a charge air exit discharging charge air from the heat exchange passages to a downstream intake passage upstream of an engine intake manifold; and

*a dispersion element including a mesh-like screen positioned at and extending fully across the outlet opening, the dispersion element uniformly patterned fully across the outlet opening, wherein the screen is positioned below all heat exchange passages.*

### EVIDENCE

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

|         |                    |               |
|---------|--------------------|---------------|
| Kennedy | US 7,011,080 B2    | Mar. 14, 2006 |
| Steurer | US 2010/0300647 A1 | Dec. 2, 2010  |
| Palm    | US 2011/0094219 A1 | Apr. 28, 2011 |
| Wenzel  | US 2011/0173954 A1 | July 21, 2011 |

## REJECTIONS

The following rejections are before us for review:

- I. Claims 17–20, 23, and 25–31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Palm, Steurer, and Wenzel. Non-Final Act. 3–9.
- II. Claims 3, 9, 16, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Steurer and Wenzel. *Id.* at 9–13.
- III. Claims 10–12, 21, 22, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Steurer, Wenzel, Palm, and Kennedy. *Id.* at 13–15.

## ANALYSIS

All the claims recite an engine’s charge air cooler comprising an inlet opening to admit charge air, a plurality of heat exchange passages, an outlet opening to expel charge air, and a dispersion element that extends fully across the outlet opening, where both the outlet opening and the dispersion element extending thereacross are “positioned below all heat exchange passages.” Appeal Br., Claims App. Resolution of this appeal turns on whether this positioning—the outlet opening and the dispersion element being located below the heat exchange passages—is accounted for in the prior art cited by the Examiner. Upon review of Appellant’s arguments, we agree with Appellant that it is not. *See* Appeal Br. 15–16; Reply Br. 2–4.

In all the rejections on appeal, the Examiner relies on a combination of Steurer and Wenzel to teach an engine’s charge air cooler with an outlet opening and a mesh screen (i.e., a dispersion element) that could extend fully across the outlet opening. The Examiner indicates that Steurer includes

“an outlet configured to discharge the charge air from the heat exchange passages” and “a dispersion element extending at least partially across the outlet.” Non-Final Act. 9. The Examiner acknowledges that Steurer does not disclose the limitation that the dispersion element includes a “mesh-like screen” that “extends fully across the outlet.” *Id.* at 11 (emphasis omitted). But, citing Wenzel’s use of a mesh filter “to collect particulates, debris and/or condensate from . . . exhaust gases,” the Examiner concludes that “it is well-known in the art to have a mesh-like screen that extends fully across an outlet opening of a heat exchanger.” *Id.* at 12 (emphasis omitted).

As a preliminary matter, we—like Appellant—question whether Wenzel teaches a dispersion element as claimed. We agree with Appellant that Wenzel discloses cylindrical screen 30 positioned where exhaust gas enters an engine’s air intake. On appeal, Appellant argues that the Examiner has not adequately explained *why* one of ordinary skill in the art would modify Wenzel’s cylindrical screen to extend fully across an outlet opening. *See* Appeal Br. 13–14, 16. The Examiner’s only explanation on this point is that “it would have been obvious . . . to have modified the charge air cooler of Steurer to further include a mesh-like screen as part of a dispersion element extending fully across the outlet opening.” Non-Final Act. 12–13. Appellant argues that the Examiner’s rationale is not sufficiently articulated to support the rejections before us. We need not discuss this question further, however, because we conclude that we cannot sustain the rejections for another reason.

In particular, Appellant persuasively argues that the rejections on appeal do not account for a limitation in each of the claims before us—that the mesh-like screen and the outlet opening are both located *below* the heat

exchange passages. We agree with Appellant that the Examiner's rejections fail to discuss this claimed limitation and that Steurer does not disclose the positioning of an outlet (or discharge) opening and a dispersion element extending thereacross below the heat exchange passages.

In the Answer, the Examiner summarily dismisses this portion of the claims, noting that "the charge air cooler of Steurer can be positioned at different orientations with respect to the engine system." Ans. 21. But Appellant correctly notes that the claimed limitation does not relate specifically to the placement of the cooler within the engine, but rather to "the relative positioning of the mesh-like screen to the heat exchange passages." Reply Br. 3.

Moreover, contrary to the Examiner's statement in the Answer, our review of Steurer shows that the orientation of Steurer's drawings and placement of the outlet is not arbitrary. Instead, the various embodiments of dispersion elements taught in Steurer demonstrate that they were aimed at placing the outlet opening above the heating elements, thus preventing the very arrangement of structure claimed here—an outlet near liquid condensation under the heating coils. *See* Steurer ¶¶ 5–13; Figs. 1, 5–14. Indeed, it is Appellant's disclosure that observes that it is the positioning recited, whereby the outlet opening is below the heat exchange passages, which creates the challenge presented by condensation being close to the outlet—namely, that "water droplets may be blown out of the charge air cooler and into the combustion chambers of the engine resulting in increased potential for engine misfire, loss of torque and engine speed, and incomplete combustion, for example." Spec., p. 1, ll. 12–16; *see id.* at p. 1, l. 17 – p. 2, l. 17; p. 9, l. 3 – p. 10, l. 16; Fig. 2.

We note that any consideration of whether it may have been obvious to one of ordinary skill in the art to locate the outlet opening and dispersion element below the heat exchange passages (and thereby encompass the claimed teaching)—for example, if there are placement or orientation challenges in designing the structural arrangement—is outside the scope of the rejections before us for review. It may be possible that such positioning would be obvious, but that conclusion is not supported by the objective evidence before us.

Rejections based on obviousness must rest on a factual basis. In making such a rejection, the Examiner has the initial burden of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions, or hindsight reconstruction to supply deficiencies in the factual basis. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). For the reasons discussed herein, we agree with Appellant that the Examiner has not supplied a sufficient factual basis that either Steurer or Wenzel teaches a charge air cooler where the outlet opening and the dispersion element extending thereacross are positioned below the heat exchange passages.

We find that the rejections relying on Steurer and Wenzel are premised on a finding not supported by a preponderance of the evidence. Accordingly, we do not sustain them.

#### DECISION

We REVERSE the Examiner's decision rejecting claims 17–20, 23, and 25–31 under 35 U.S.C. § 103(a) as being unpatentable over Palm, Steurer, and Wenzel.

We REVERSE the Examiner's decision rejecting claims 3, 9, 16, and 32 under 35 U.S.C. § 103(a) as being unpatentable over Steurer and Wenzel.

We REVERSE the Examiner's decision rejecting claims 10–12, 21, 22, and 24 under 35 U.S.C. § 103(a) as being unpatentable over Steurer, Wenzel, Palm, and Kennedy.

### CONCLUSION

In summary:

| <b>Claim(s)<br/>Rejected</b> | <b>35 U.S.C. §</b> | <b>Reference(s)/Basis</b>         | <b>Affirmed</b> | <b>Reversed</b>      |
|------------------------------|--------------------|-----------------------------------|-----------------|----------------------|
| 17–20, 23,<br>25–31          | 103(a)             | Palm, Steurer, Wenzel             |                 | 17–20,<br>23, 25–31  |
| 3, 9, 16, 32                 | 103(a)             | Steurer, Wenzel                   |                 | 3, 9, 16,<br>32      |
| 10–12, 21,<br>22, 24         | 103(a)             | Steurer, Wenzel, Palm,<br>Kennedy |                 | 10–12,<br>21, 22, 24 |
| <b>Overall<br/>Outcome</b>   |                    |                                   |                 | 3, 9–12,<br>16–32    |

REVERSED