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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VASCO GOMES GAMA and CARLOS J. BLASCO REMACHA

Appeal 2019-002094
Application 12/042,641
Technology Center 1700

Before BEVERLY A. FRANKLIN, MARK NAGUMO, and JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant[1] requests our review under 35 U.S.C. § 134(a) of the Examiner's decision to finally reject claims 1, 2, 5, 6, 8, and 10–24.[2] We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We REVERSE.

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[1] We use the word "Appellant" to refer to the "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Robert Bosch, GmbH as the real party in interest. Appeal Brief filed June 27, 2018 ("Appeal Br.") at 2.

[2] Final Office Action entered February 5, 2018 ("Final Act.") at 1.

CLAIMED SUBJECT MATTER

Appellant claims a component for a fuel filter (independent claim 1) and a fuel filter (independent claim 20). Claims 1 and 20 illustrate the subject matter on appeal and are reproduced below with emphasis added to highlight subject matter of particular relevance to the present appeal:

> 1. A component for a fuel filter having a housing supporting a filter element therein, the filter element configured to filter water from the fuel and convey the water to a reservoir within the housing, the component comprising
>
> a heating device for heating the fuel within the housing,
>
> a detection device for detecting a level of the water in the reservoir of the housing separate from said component,
>
> an outlet conduit for conveying the water,
>
> a water inlet disposed in fluid communication with the reservoir of the housing when the component is supported within the housing and integrally joined to the outlet conduit, for carrying the water from the reservoir to the outlet conduit, and
>
> a water outlet separate from said water inlet and integrally joined to the outlet conduit, for carrying the water away from the outlet conduit, the water outlet configured to direct the water outside the housing when the water inlet is in communication with the reservoir, and
>
> a fuel conduit for flowing the fuel in a first flow direction to the heating device and then to the filter element within the housing,
>
> wherein the component is a one-piece component separate from the filter element and sized and configured to extend through the fuel filter when the filter element is supported within the housing, in which the heating device, the detection device, and the outlet conduit are integrally formed into one-piece, and
>
> wherein *the water inlet is provided on a lower end of the one-piece component* for direct fluid communication with the reservoir when the component extends through the fuel filter, and *the water outlet is provided on an upper end of the one-piece component, such that the water flows through the outlet*

conduit from the lower end to the upper end of the one-piece component in an opposite flow direction relative to the first flow direction of the fuel flowing through the fuel conduit of the component.

20. A fuel filter comprising:

a housing defining a reservoir;

a filter element supported within said housing separate from said reservoir; and

a component supported by said housing and extending through the filter element, said component comprising;

a heating device for heating a fuel within the housing,

a detection device for detecting a level of water located in said reservoir of the housing,

an outlet conduit for conveying the water,

a water inlet in direct fluid communication with said reservoir and integrally joined to the outlet conduit, for carrying the water from the reservoir to the outlet conduit, and

a water outlet separate from said water inlet and integrally joined to the outlet conduit, for carrying the water away from the outlet conduit, the water outlet configured to direct the water outside the housing when the water inlet is in communication with the reservoir, and

a fuel conduit for flowing the fuel in a first flow direction to the heating device and then to said filter element within said housing,

wherein the component is a one-piece component separate from the filter element and sized and configured to extend through the fuel filter supported within the housing, in which the heating device, the detection device, and the outlet conduit are integrally formed into one-piece, and

wherein *the water inlet is provided on a lower end of the one-piece component* for direct fluid communication with the reservoir when the component is supported by said housing, and *the water outlet is*

> *provided on an upper end of the one-piece component, such that the water flows through the outlet conduit from a lower end to an upper end of the one-piece component* in an opposite flow direction relative to the first flow direction of the fuel flowing through the fuel conduit of the component.

App. Br. 22–23, 25–26 (Claims Appendix) (emphasis and spacing added).

REJECTIONS

The Examiner maintains the following rejections in the Examiner's Answer entered December 6, 2018 ("Ans."):

I. Claims 1, 2, 5, 6, 8, 10–19, and 21–23 under 35 U.S.C. § 112, second paragraph as indefinite for failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention;

II. Claims 1, 2, 5, 6, 11–13, 18–21, 23, and 24 under 35 U.S.C. § 103(a) as unpatentable over Davis[3] in view of Mowbray[4];

III. Claims 8, 10, and 14 under 35 U.S.C. § 103(a) as unpatentable over Davis in view of Mowbray and Girondi[5];

IV. Claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over Davis in view of Mowbray and Harris[6];

V. Claim 17 under 35 U.S.C. § 103(a) as unpatentable over Davis in view of Mowbray, Girondi, and Harris; and

[3] US 4,680,110, issued July 14, 1987.
[4] GB 2 129 329 A, published May 16, 1984
[5] WO 20055118102 A1, published Decrmbrt 15, 2005.
[6] US 4,476,028, issued October 9, 1984.

VI. Claim 22 under 35 U.S.C. § 103(a) as unpatentable over Davis in view of Mowbray and Bohlender[7].

FACTUAL FINDINGS AND ANALYSIS

Upon consideration of the evidence relied upon in this appeal and each of Appellant's contentions, we reverse the Examiner's rejection of claims 1, 2, 5, 6, 8, 10–19, and 21–23 under 35 U.S.C. § 112, second paragraph, and the rejections of claims 1, 2, 5, 6, 8, and 10–24 under 35 U.S.C. § 103(a), for the reasons set forth in the Appeal Brief and below.

I. Rejection of Claims 1, 2, 5, 6, 8, 10–19, and 21–23 under 35 U.S.C. § 112, second paragraph

Claim 1 recites, in part, "[a] component for a fuel filter having a housing supporting a filter element therein, the filter element configured to filter water from the fuel and convey the water to a reservoir within the housing, the component comprising . . . a heating device . . . a detection device for detecting a level of the water in the reservoir of the housing separate from said component . . . an outlet conduit . . . a water inlet . . . a water outlet . . . and a fuel conduit . . . "

The Examiner determines that "[i]t is unclear whether the component includes the housing, the filter element, or the reservoir." Final Act. 4. The Examiner also determines that "[i]t is unclear whether the component is separate from the detection device, the reservoir, the housing, or some combination." *Id*.

Contrary to the Examiner's assertions, as Appellant argues (Appeal Br. 7), one of ordinary skill in the art would understand that the

[7] US 6,402,943 B1, issued June 11, 2002.

"component" recited in claim 1 does not include the recited "housing," "filter element," or "reservoir," and also would understand that the "detection device" recited in claim 1 is part of the "component," when the plain language of claim 1 is considered in light of the description provided in Appellant's Specification. *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971) (explaining that "the definiteness of the language employed must be analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art.").

Appellant's Specification explains that "a fluid filter according to the invention" includes a housing in which a filter element is disposed, a water reservoir, and "a component . . . according to the invention." Spec. ¶ 26. The Specification explains that the "component" includes, among other things, a detection device "for detecting the water level" in the reservoir. Spec. ¶¶ 9, 16. Figure 1 illustrates exemplary fluid filter 10 and shows that housing 11, filter element 12, water reservoir 13, and component 14 are elements of fluid filter 10, and Figures 1, 2, and 3 show that detection device 16 is an element of component 14.

Considering the description provided in Appellant's Specification and the illustrations provided in Figures 1, 2, and 3, and in view of the explicit recitation in claim 1 of "[a] *component for* a *fuel filter having a housing supporting a filter element therein*, the filter element configured to filter water from the fuel and convey the water to *a reservoir within the housing*," and the recitation in claim 1 of numerous elements included in the "component," which include a "detection device" ("the component comprising . . . a detection device . . . "), one of ordinary skill in the art

would understand that the fuel filter recited in claim 1 includes a housing, a filter element, a reservoir, and a component, and would further understand that the component includes a detection device.

Furthermore, consistent with the description provided in the Specification discussed above, one of ordinary skill in the art would understand that the recitation in claim 1 of "a detection device for detecting a level of the water in the reservoir of the housing separate from said component" simply indicates that the reservoir is separate from the component.

Thus, the Examiner does not establish that the recitation in claim 1 of a "[a] component for a fuel filter having a housing supporting a filter element therein, the filter element configured to filter water from the fuel and convey the water to a reservoir within the housing, the component comprising . . . a detection device for detecting a level of the water in the reservoir of the housing separate from said component . . ." lacks the requisite degree of clarity, when these phrases are considered in light of Appellant's Specification and Figures 1, 2, and 3. *In re Packard*, 751 F.3d 1307, 1313 (Fed. Cir. 2014) (stating "the statutory language of 'particular[ity]' and 'distinct[ness]' indicates [that] claims are required to be cast in clear—as opposed to ambiguous, vague, indefinite—terms.").

We, accordingly, do not sustain the Examiner's rejection of claims 1, 2, 5, 6, 8, 10–19, and 21–23 under 35 U.S.C. § 112, second paragraph.

II–VI. Rejections of Claims 1, 2, 5, 6, 8, and 10–24 under 35 U.S.C. § 103(a)

As set forth above, independent claims 1 and 20 each recite a fuel filter including a housing, a filter element supported in the housing, a

reservoir, and a one-piece component comprising, in part, an outlet conduit, a water inlet integrally joined to the outlet conduit, and a water outlet integrally joined to the outlet conduit. Claims 1 and 20 each require the water inlet to be provided on a lower end of the one-piece component for direct fluid communication with the reservoir, and require the water outlet to be provided on an upper end of the one-piece component, such that the water flows through the outlet conduit from the lower end to the upper end of the one-piece component.

The Examiner finds that Davis discloses a fuel filter having all the features recited in claims 1 and 20, including a one-piece component comprising drain valve 76 (outlet conduit) having an outlet and an inlet in direct fluid communication with a reservoir, except Davis does not disclose providing the outlet of drain valve 76 on an upper end of the one-piece component, such that water flows through drain valve 76 (outlet conduit) from the lower end to the upper end of the one-piece component. Final Act. 7–11. The Examiner finds that, instead, Davis "discloses the water is drained from the reservoir by flowing downward." Final Act. 11. The Examiner finds, however, that Mowbray discloses a fuel treatment device including intake pipe 24, valve housing 25, ball valve 26, and float 28, which the Examiner finds together correspond to a drain valve. Final Act. 17. The Examiner finds that Mowbray discloses that its fuel treatment device separates water from fuel, coveys the water to reservoir 22, and then drains the water from reservoir 22 by flowing it upward through intake 24 (water outlet conduit) connected to throat 23 of a venturi, by the flow of air through the venturi. Final Act. 11.

In view of these disclosures in Mowbray, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to replace drain valve 76 in Davis' fuel filter with intake pipe 24, valve housing 25, ball valve 26, and float 28 (drain valve) of Mowbray's fuel treatment device because (1) "[l]ike Davis, Mowbray discloses a fuel filter that separates water into a reservoir from which it is drained via a drain valve," (2) Davis discloses that manually operated drain valve 76 can be replaced by "an automatic drain valve," and (3) Mowbray discloses "the following advantages" of the "drain valve" disclosed in the reference (i) "[t]he operator is no longer required to 'perform the act of draining the water,'" and (ii) "[t]he valve uses already existing air flow from the air filter to the engine, as the source of air flow to the venturi to set up a low enough pressure 'to draw the water contained in space 22 out of the casing,' and as a source of air flow from the venturi to carry away the water when the 'water becomes entrained with air flowing to the engine.'" Final Act. 17–18 (citing Mowbray Abstr., pg. 1, ll. 13–28, 44–60, 72–121, Fig. 1).

On the record before us, however, the Examiner does not provide a reason having rational underpinning "that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," for reasons expressed by Appellant (Appeal Br. 12–21) and discussed below. *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Davis discloses fuel processor device 36 for use in internal combustion engines and other fuel consuming devices to separate water and other impurities, such as waxes, paraffins, and particulate matter, from diesel fuel supplied to such engines and fuel consuming devices. Davis col. 1, ll.

41–46; col. 3, ll. 49–52; col. 7, ll. 53–55; Fig. 4. Davis discloses that fuel processor device 36 includes housing 38 in which filter media element 52 is "[d]isposed internally." Davis col. 4, ll. 3–8; Fig. 4. Davis discloses that the lower end of housing 38 is enclosed by lower plate 46, and discloses that water sensor 74 and drain valve 76 are mounted to lower plate 46. Davis col. 4, ll. 5–6, 28–36; Figs. 3 and 4. Figure 4 of Davis shows that the outlet of drain valve 76 extends below lower plate 46. Davis discloses that in operation, fuel travels into the area within housing 38 surrounding filter media element 52, and "water and heavy particulate matter collects with the lower portion of housing 38." Davis col. 5, ll. 41–45; Fig. 4. Davis discloses that drain valve 76 can be "manually" actuated to drain water or other contaminants from housing 38 once they collect above a predetermined level. Davis col. 4, ll. 36–41. Davis discloses that alternatively, the drain valve can be "an automatic drain to remove water or other impurities from the lower portion of the filter housing when the level therein accumulates to a predetermined level" based on a signal from water sensor 74. Davis col. 2, ll. 28–32; col. 4, ll. 42–48.

Mowbray discloses fuel treatment device 13 used in compression ignition engine 10 that includes air inlet manifold 15 connected to air filter 16. Mowbray pg. 1, ll. 3, 46–61; Fig. 1. Mowbray discloses that fuel treatment device 13 further includes casing 17 "in which is located annular paper filter element 18," and Mowbray explains that the upper portion of casing 17 defines fuel inlet 19. Mowbray pg. 1, ll. 61–65; Fig. 1. Mowbray discloses that "[d]efined in the casing below the filter element 18, is a space 22 with which the lower end of the [filter] element communicates." Mowbray pg. 1, ll. 72–74; Fig. 1. Mowbray discloses that [a]s the flow of

fuel takes place," water contained in the fuel collects in space 22, while "[s]olid contaminants are retained by the filter element." Mowbray pg. 1, ll. 79–83.

Mowbray discloses that pump means in the form of a venturi having throat 23 is disposed in the upper portion of casing 17, and intake pipe 24 is connected to throat 23. Mowbray pg. 1, ll. 84–87; Fig. 1. Mowbray discloses that intake pipe 24 extends downwardly to the bottom of space 22, and valve housing 25 including ball valve 26 is disposed at the lower end of intake pipe 24. Mowbray pg. 1, ll. 87–91; Fig. 1. Mowbray discloses that the upstream portion of the venturi is connected by way of valve 27 to engine air inlet manifold 15. Mowbray pg. 1, ll. 91–96; Fig. 1. Mowbray discloses that when valve 27 is opened by float-operated switch 28, air flows through the throat of the venturi, which reduces the air pressure, and results in water contained in space 22 being drawn out of casing 17 through intake pipe 24 to inlet manifold 15, where "water becomes entrained with the air flowing to the engine" through inlet manifold 15. Mowbray pg. 1, ll. 96–106; Fig. 1.

Mowbray's fuel treatment device is thus designed to retain solid fuel contaminants in a filter element, and draw water removed from fuel upward into the air inlet manifold of an engine. In contrast, Davis' fuel processor device collects water, impurities, and particulate matter in the lower portion of a housing, and removes the water, impurities, and particulate matter from the housing by manual or automatic opening of an outlet in a drain valve that extends below the lower portion of the housing.

As discussed above, the Examiner proposes replacing Davis' drain valve 76 with Mowbray's tube 24, valve housing 25, ball valve 26, and float

28, because this "drain valve" assembly uses existing air flow through inlet manifold 15 and air filter 16 as the source of air flow to a venturi that creates low pressure to draw water contained in space 22 out of the casing through intake pipe 24, where it becomes entrained with air flowing to the engine through inlet manifold 15. Final Act. 17–18. The Examiner, therefore, implicitly proposes disposing intake pipe 24, valve housing 25, ball valve 26, and float 28 in Davis' fuel processor device as disclosed in Mowbray so that intake pipe 24 is connected through a venturi to an engine inlet manifold. Otherwise, the assembly would not be able to use existing air flow through an inlet manifold (and filter) as the source of air flow to the venturi in Davis' modified fuel processor device, which the Examiner asserts to be an advantage of the proposed combination.

In Davis' fuel processor device, however, impurities and particulate matter collect in the lower portion of housing 38 along with water, rather than being retained in the filter, as occurs in Mowbray's fuel treatment device. The Examiner does not propose modifying the filter of Davis' fuel processor device to retain impurities and particulate matter. Accordingly, modifying Davis' device as proposed by the Examiner would result in not only water being entrained with air flowing to the engine, but would also likely result in impurities and particulate matter also being included in the flow of water and air to the engine. Davis discloses, however, that such impurities and particulate matter "are very disruptive to the proper operation of fuel oil using devices." Davis col. 1, ll. 41–46.

Consequently, on the record before us, the Examiner's assertion that one of ordinary skill in the art would have replaced Davis' drain valve 76 with Mowbray's tube 24, valve housing 25, ball valve 26, and float 28 lacks

rational underpinning, because the proposed modification would result in particulate matter and other contaminants, along with water, either being fed into an engine downstream of Davis' modified fuel processor device, or collecting with no means of removal in the lower portion of the housing of the modified device, if the particulate matter and other contaminants were not included with the water in the air flow to the engine. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness") (cited with approval in *KSR*, 550 U.S. at 418); *In re Ratti*, 270 F.2d 810, 813, (CCPA 1959) (reversing an obviousness rejection because the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.")

Although the Examiner also asserts that it would have been obvious to one of ordinary skill in the art to replace Davis' drain valve 76 with Mowbray's intake pipe 24, valve housing 25, ball valve 26, and float 28 (drain valve) because doing so would eliminate the need for an operator to manually open drain valve 76 (Final Act. 17–18), Davis already discloses an alternative embodiment of drain valve 76 that automatically opens when the water level in the lower portion of housing 38 accumulates to a predetermined level based on a signal from water sensor 74. Davis col. 2, ll. 28–32; col. 4, ll. 42–48. Consequently, the "advantage" of eliminating the need for manually draining water from Davis' housing the Examiner asserts would be achieved by the proposed modification of Davis' fuel processor device is already achieved with Davis' existing device, and, therefore, would

not have led one of ordinary skill in the art to modify Davis' device as proposed.

Furthermore, as Appellant points out (Appeal Br. 15–16; Reply Br. 12–13), even if one of ordinary skill in the art would have found it useful to modify Davis' fuel processor device as proposed by the Examiner, the water inlet in the modified device would not be provided on the lower end of a one-piece component as recited in claims 1 and 20. More specifically, the Examiner finds that lower plate 46, bolt 66, spring 68, washer 70, ring seal 55, stanpipe 58, baffle 166, ring seal 56, electric heating element 82, temperature sensor 80, water sensor 74, and drain valve 76 of Davis' fuel processor device together correspond to the one-piece component recited in claims 1 and 20.[8] Final Act. 10. The lower side of plate 46 that faces outside of housing 38 constitutes the lower end of this asserted "one-piece component." Davis Fig. 4. If Davis' drain valve 76 were replaced with Mowbray's intake pipe 24, valve housing 25, ball valve 26, and float 28, the inlet at the bottom of intake pipe 24 would need to be located inside housing 38 above and offset from plate 46 in order for water to be drawn from housing 38 through intake pipe 24. Consequently, the water inlet at the end of intake pipe 24 would not be provided on the lower side of plate 46 that faces outside of housing 38—the lower end of the asserted "one-piece component." Therefore, Davis' drain valve 76 modified as proposed by the

[8] We need not determine whether the Examiner errs in determining that lower plate 46, bolt 66, spring 68, washer 70, ring seal 55, stanpipe 58, baffle 166, ring seal 56, electric heating element 82, temperature sensor 80, water sensor 74, and drain valve 76 correspond to a "one-piece component" as recited in claims 1 and 20 for disposition of this appeal.

Examiner would not include a water inlet provided on the lower end of a "one-piece component" as recited in claims 1 and 20.

We, accordingly, do not sustain the Examiner's rejection of independent claims 1 and 20, and rejections of claims 2, 5, 6, 8, 10–19, and 21–24, which each depend from either claim 1 or claim 20, under 35 U.S.C. § 103(a).

CONCLUSION

Claims	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 2, 5, 6, 8, 10–19, 21–23	112, second paragraph	indefiniteness		1, 2, 5, 6, 8, 10–19, 21–23
1, 2, 5, 6, 11–13, 18–21, 23, 24	103(a)	Davis, Mowbray		1, 2, 5, 6, 11–13, 18–21, 23, 24
8, 10, 14	103(a)	Davis, Mowbray, Girondi		8, 10, 14
5, 6	103(a)	Davis, Mowbray, Harris		5, 6
17	103(a)	Davis, Mowbray, Girondi, Harris		17
22	103(a)	Davis, Mowbray, Bohlender		22
Overall Outcome				1, 2, 5, 6, 8, 10–24

REVERSED