



# 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.
14/697,086	04/27/2015	Cheryl Margaret SURMAN	10553-013US1	4850
152404	7590	09/12/2019	EXAMINER	
Suez Water Technologies & Solutions c/o Meunier Carlin & Curfman LLC 999 Peachtree Street NE Suite 1300 Atlanta, GA 30309			MERCADO, ALEXANDER A	
			ART UNIT	PAPER NUMBER
			2856	
			NOTIFICATION DATE	DELIVERY MODE
			09/12/2019	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):

docteting@mcciplaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

*Ex parte* CHERYL MARGARET SURMAN, JON ALBERT DIERINGER,  
and RADISLAV ALEXANDROVICH POTYRAILO

---

Appeal 2019-000310  
Application 14/697,086  
Technology Center 2800

---

Before ROMULO H. DELMENDO, LINDA M. GAUDETTE, and  
DEBRA L. DENNETT, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), the Appellant appeals from the Primary Examiner’s decision to reject claims 1–5, 7–13, and 15–22.<sup>1,2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

## BACKGROUND

The subject matter on appeal relates to a sensor having a sampling cell, a bottom winding disposed around the sampling cell, and a top winding disposed around the bottom winding (Specification filed April 27, 2015 (“Spec.”), ¶ 12). The sensor further includes a resonant transducer, which is configured to determine a composition of the sample (e.g., a stationary or flowing fluid such as oil or water—i.e., an emulsion or other dispersion) (*id.* ¶¶ 11–12).

An exemplary resonant transducer is illustrated in Figure 22 (annotated), which we reproduce from the Drawings filed April 27, 2015, as follows:

---

<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. The record indicates that the Applicant is “BL Technologies, Inc.” (Application Data Sheet filed July 2, 2019, 6). The Appeal Brief, however, identifies the real party in interest as “GENERAL ELECTRIC COMPANY” (Appeal Brief filed March 8, 2018 (“Appeal Br.”), 4).

<sup>2</sup> Appeal Br. 11–22; Reply Brief filed October 15, 2018 (“Reply Br.”), 3–9); Final Office Action entered June 12, 2017 (Final Act.”), 2–10; Examiner’s Answer entered August 15, 2018 (“Ans.”), 2–7).

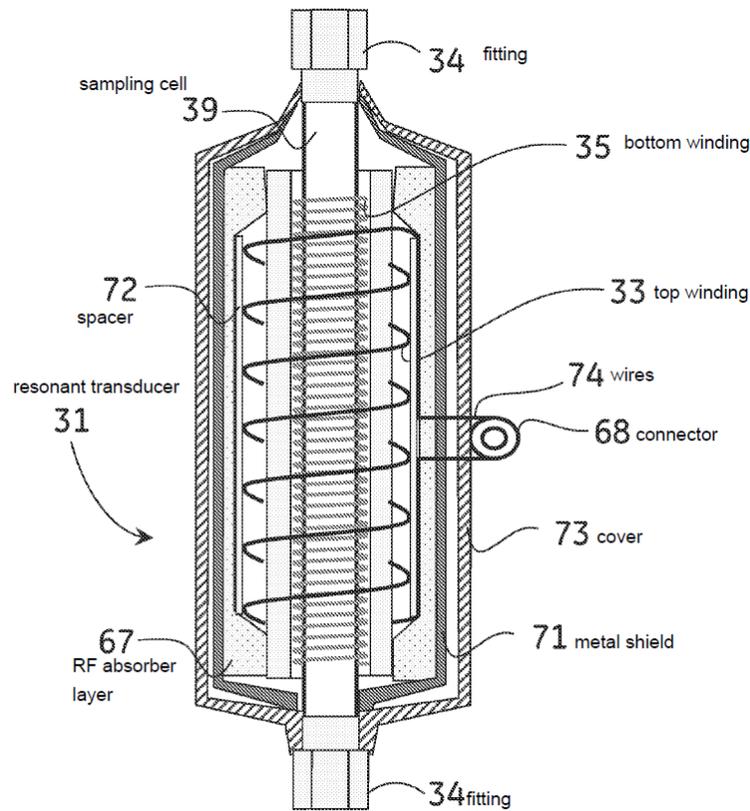


FIG. 22

Figure 22 above depicts a three-dimensional resonant transducer **31** including, *inter alia*, a sampling cell **39**, a bottom winding **35** located around the sampling cell **39**, and a top winding **33** located around the bottom winding **35** (*id.* ¶ 59).

Representative claim 1 is reproduced from the Claims Appendix to the Appeal Brief, as follows:

1. A sensor comprising:  
a resonant transducer, wherein the resonant transducer comprises:  
a sampling cell;  
a bottom winding disposed around the sampling cell; and  
***a top winding disposed around the bottom winding,***  
wherein the bottom winding is floating and ***the bottom winding is excited by an electro-magnetic field created by a power wave***

***flowing through the top winding*** such that the bottom winding generates a second electro-magnetic field that is altered by its interaction with an emulsion or other dispersion in the sampling cell and ***the second electro-magnetic field is sensed by the top winding***.

(Appeal Br. 23 (reformatted and emphases added)). Claim 8, the only other independent claim on appeal, recites the same key limitations highlighted in claim 1 reproduced above (*id.* at 23–24).

### REJECTIONS ON APPEAL

The claims on appeal stand rejected under AIA 35 U.S.C. § 103,<sup>3</sup> as follows:

- A. Claims 1–5, 7–13, and 15–20 as unpatentable over Hammer<sup>4</sup> (“Hammer I”), Julius,<sup>5</sup> and Eberheim et al.<sup>6</sup> (“Eberheim”); and
- B. Claims 21 and 22 as unpatentable over Hammer I, Julius, Eberheim, and Hammer<sup>7</sup> (“Hammer II”).

(Ans. 2; Final Act. 5–10).

---

<sup>3</sup> Claim 8 was also provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that recited in claim 34 of Application 15/305,664 (“’664 Application”) (Final Act. 2). In addition, claims 1–5, 7–13, and 15–22 were provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over certain claims of the ’664 Application in view of certain prior art references (*id.* at 3, 4). The ’664 Application, however, was abandoned, as indicated in the Notice of Abandonment entered December 5, 2018 in the record of that application. Therefore, these double patenting rejections are moot and no longer before us.

<sup>4</sup> US 2013/0285677 A1, published October 31, 2013.

<sup>5</sup> US 4,887,798, issued December 19, 1989.

<sup>6</sup> US 2010/0295558 A1, published November 25, 2010.

<sup>7</sup> US 6,782,736 B1, issued August 31, 2004.

## DISCUSSION

### 1. *The Examiner's Position*

The Examiner finds that Hammer I describes a sensor including most of the limitations recited in claim 1 (Final Act. 5). The Examiner acknowledges, however, that Hammer I does not disclose two limitations: (1) “a top winding disposed around the bottom winding”; and (2) “the second electro-magnetic field is sensed by the top winding” (*id.*).

With respect to difference (1), the Examiner finds that Julius discloses a two-coil arrangement having a top winding disposed around a bottom winding (*id.* (citing Julius, Figs. 2 and 4); Ans. 4 (citing Julius, Fig. 4)). Based on these findings, the Examiner concludes that “[i]t would have been obvious to one skilled in the art . . . to modify Hammer [I], in view of the teachings of Julius to have . . . the top winding disposed around the bottom winding for the benefit of protection against mechanical stresses and altering electromagnetic fields” (Final Act. 5–6 (citing Julius col. 3, ll. 1–9)).

With respect to difference (2), the Examiner finds that Eberheim discloses a bottom winding  $L_2$  and a top winding  $L_1$ , wherein the bottom winding  $L_2$  is excited by an electro-magnetic field created by a power wave flowing through the top winding  $L_1$  such that the bottom winding  $L_2$  generates a second electro-magnetic field and the second electromagnetic field is sensed by the top winding  $L_1$  (*id.* at 6 (citing Eberheim, ¶¶ 12, 32, 41 and Fig. 2)). The Examiner concludes that “[i]t would have been obvious to one skilled in the art . . . to modify Hammer, in view of Julius, such that . . . the second electro-magnetic field is sensed by the top winding, as taught by Eberheim, for the benefit of determining a state of the bottom winding . . . including a wire break” (*id.* (citing Eberheim ¶ 12, 34)).

2. *The Appellant's Position*

The Appellant contends that Hammer I does not describe using the same coil (i.e., the top winding) for both excitation and detection, as required by claim 1, and that Julius does not cure this deficiency (Appeal Br. 12–16; Reply Br. 4 (“[N]one of the references, alone or in combination, teach that a top winding disposed around a bottom winding is used for both—excitation and sensing.”)). The Appellant argues that Eberheim, too, “fails to correct the deficiencies of Hammer I and Julius” (Appeal Br. 17). While the Appellant acknowledges that Eberheim teaches a sensor with only two coils, the Appellant points out that Eberheim requires the coils to be wrapped around two different cores and, thus, Eberheim fails to teach or suggest “a bottom winding disposed around the sampling cell[] and a top winding disposed around the bottom winding” as recited in claim 1 (*id.*). According to the Appellant, a person having ordinary skill in the art would not have combined Eberheim with Hammer I and Julius in the manner recited in claim 1 because “[b]oth Hammer and Julius teach a device having multiple windings around a single core, while Eberheim teaches a device that has single windings around two separate cores” (Reply Br. 6).

3. *Opinion*

We agree with the Appellant that it has not been shown a person having ordinary skill in the art would have combined Eberheim with Hammer I and Julius in the manner recited in claim 1. Eberheim does disclose using only two coils  $L_1$  and  $L_2$ , where sending coil  $L_1$  (corresponding to the “top winding” recited in claim 1) appears to (i) excite receiving coil  $L_2$  (corresponding to the “bottom winding” recited in claim 1) and (ii) measure (i.e., sense) the total inductance including the inductance at

L<sub>2</sub> (Eberheim, ¶¶ 29–31). Eberheim’s coil L<sub>1</sub>, however, is neither wrapped around coil L<sub>2</sub> nor disposed around a common core as in claim 1 or the Hammer I/Julius combination (*id.*, Figs. 1–2; Hammer, Fig. 1; and Julius, Figs. 1–2). Despite the significant structural differences between Eberheim and the Hammer I/Julius combination, the Examiner does not provide an adequate explanation how Eberheim’s configuration would have been redesigned by a person having ordinary skill in the art and then implemented in the Hammer I/Julius combination. Indeed, it would appear that substantial reconstruction or redesign would have been necessary. *In re Ratti*, 270 F.2d 810, 981 (CCPA 1959) (“[The] suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [one of the references] as well as a change in the basic principles under which [that reference’s] construction was designed to operate.”).

For these reasons, we do not sustain the rejection.

## CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–5, 7–13, 15–20	§ 103 Hammer I, Julius, Eberheim		1–5, 7–13, 15–20
21, 22	§ 103 Hammer I, Julius, Eberheim, Hammer II		21, 22
<b>Overall Outcome</b>			1–5, 7–13, 15–22

Appeal 2019-000310  
Application 14/697,086

REVERSED