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EXAMINER	
KOLB, NATHANIEL J	

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SÉBASTIEN HENTZ and THOMAS ERNST

Appeal 2018-008391
Application 14/519,353
Technology Center 2800

Before DONNA M. PRAISS, LILAN REN, and SHELDON M. McGEE, *Administrative Patent Judges.*

McGEE, *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 1–4 and 6–21. We have jurisdiction. 35 U.S.C. § 6(b).

We reverse.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as COMMISSARIAT Á L'ÉNERGIE ATOMIQUE ET AUX ÉNERGIES ALTERNATIVES. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to micro-electromechanical ("MEMS") or nano-electromechanical ("NEMS") devices useful in gravimetric detection, such as "chemical sensors for the detection of gas, biological sensors in a liquid medium for detection of biological cells," and MEMS- or NEMS-based mass spectrometry. Spec. 1:6–13.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A *micro-electromechanical or nano-electromechanical detection device* comprising:

-a support including a face defining a plane,

-at least one beam with first and second ends, the second end being moveable relative to the support, and

-means of detecting beam displacement, adapted to output a signal that depends on the displacement,

wherein each beam is anchored to the support through its first end and is approximately perpendicular to said plane, and the second end of each beam is provided with a tray comprising a plane face that is approximately perpendicular to the beam and forms a reception zone, that can receive one or several particles that can provoke or modify displacement of the beam in order to determine at least one physical property of the particle(s) from the signal output by the displacement detection means,

wherein the detection means are located between the reception zone and the support.

Appeal Br. 10 (Claims Appendix) (emphasis added).

REFERENCES

Name	Reference	Date
Mariani	US 5,162,691	Nov. 10, 1992
Korpi	US 2006/0086174 A1	Apr. 27, 2006
Adams	US 2006/0257286 A1	Nov. 16, 2006

REJECTIONS

Claims 1–4 and 6–21 are rejected under 35 U.S.C. § 103 as being unpatentable over Korpi in view of Mariani, with or without Adams.

OPINION

Because the dispositive limitation in this appeal, i.e., "micro-electromechanical or nano-electromechanical," is recited in each independent claim, we need only address independent claim 1.

The Examiner finds that Korpi discloses the structural elements recited in claim 1, except that Korpi "does not teach that his device is nano or micro scaled." Final Act. 6 (citing Korpi, Fig. 1). To address this difference, the Examiner turns to Mariani's disclosure of "a deposited thin film device," which the Examiner alleges is a micro-electromechanical ("MEMS") device. *Id.* (citing Mariani, Fig. 3; 1:55–67). The Examiner determines the skilled artisan would have been "motivated to build the device of [Korpi] as a micro-scale device as taught by [Mariani] because they are compact and can be mass produced with integrated circuit fabrication techniques." *Id.* (citing Mariani, 1:26–35).

Appellant argues, *inter alia*, that the Examiner's proffered obviousness "rationale fails to consider the fundamental differences between Mariani and Korpi." Appeal Br. 4. In view of such differences, Appellant asserts there would have been no reasonable expectation of success of modifying Korpi's device to be made at micro-scale. *Id.* Appellant also

contends the Examiner's position that Korpi's device could be manufactured at micro- or nano-scale is unsupported because there is no evidence Mariani's teachings can be applied to Korpi's oscillating element. Reply Br. 3.

We agree with Appellant that the record fails to demonstrate that the skilled artisan would have had a reasonable expectation of successfully modifying the device of Korpi to make it micro- or nano-scale, relying on the disclosure of Mariani as set forth in the rejection. Final Act. 6.

In particular, we note that the Korpi device relied on by the Examiner (Figure 1; Final Act. 5–6) has a specific geometry that is distinct from that set forth in Mariani—namely, Korpi's beam 12a is perpendicular to support 14. *See* Korpi, Fig. 1. A substantial portion of Mariani's beam 18, however, is parallel to support 10. *See* Mariani, Fig. 1. Significantly, the Examiner does not explain sufficiently how Mariani's method of preparing a device at a micro-scale could have been applied to Korpi's device. In fact, Mariani's device is prepared by thin film deposition (Mariani, 1:63–68), and the Examiner expressly finds that Korpi does *not* teach the use of thin film deposition techniques. Final Act. 7.

Further, there is no evidence of record establishing that Korpi's beam is made of the same materials as Mariani's beam. Korpi's oscillating elements 12a and 12b are "made of known materials used in the manufacture of microbalances," or "other materials such as nickel alloys, Ni-Span-C, Ni-Span-D, Inconel, quartz, and quartz-glass alloys." In the Mariani Figure 3 embodiment relied upon by the Examiner, the oscillator beam appears to be constructed of layers of SiO_2 (element 18) and a thin film of a polycrystalline piezoelectric material such as AlN or ZnO (element 28), with

metallic electrodes abutting such layers (elements 26 and 30). Mariani, 2:32–62.

Thus, given the distinct device geometries and manufacturing methods set forth in the relied-upon prior art, as well as the lack of evidence that the beam components are made from the same material, we are not persuaded a skilled artisan would have perceived a reasonable expectation of success in making the claimed device in light of Korpi's device in combination with the teachings of Mariani. Such a reasonable expectation of success is required to properly establish obviousness. *Amgen Inc. v. F. Hoffman-La Roche Ltd*, 580 F.3d 1340, 1362 (Fed. Cir. 2009). Under these circumstances, the obviousness rejections cannot stand.

CONCLUSION

We reverse the rejections of claims 1–4 and 6–21.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 6–13, 15–21	103	Korpi, Mariani		1–3, 6–13, 15–21
4, 14	103	Korpi, Mariani, Adams		4, 14
Overall Outcome				1–4, 6–21

REVERSED