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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YUNG-CHENG LIN

Appeal 2019-001756
Application 14/864,849
Technology Center 2800

BEFORE DONNA M. PRAISS, CHRISTOPHER L. OGDEN, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–4, 6, 7, and 9–11.³ We affirm.

¹ The appeal record includes the following: Specification, Sept. 24, 2015 (“Spec.”); Final Office Action, Feb. 8, 2018 (“Final Action”); Appeal Brief, July 5, 2018 (“Appeal Br.”); Examiner’s Answer, Oct. 30, 2018 (“Answer”); and Reply Brief, Dec. 24, 2018 (“Reply Br.”).

² Appellant is Wistron NeWeb Corp., which is the applicant as defined in 37 C.F.R. § 1.42. Appellant also identifies this entity and the named inventor as the real parties in interest. *See* Appeal Br. 1.

³ The Examiner states that pending claim 8 would be allowable if rewritten in independent form. Final Action 14.

BACKGROUND

According to Appellant, the invention at issue “is directed to a wireless sensing device.” Appeal Br. 2; *see also* Spec. ¶ 1. This device includes an “energy harvesting circuit” that generates electrical energy in response to vibration of a vibration plate. *Id.* ¶ 4. Representative of the invention is claim 1, the sole independent claim:

1. A wireless sensing device, comprising:
 - a vibration plate;
 - an antenna, disposed on the vibration plate;
 - a sensor, disposed on the vibration plate and generating a sensing data according to the vibration of the vibration plate;
 - an energy harvesting circuit, directly facing the vibration plate, and generating an electrical energy *in response to the collision between the energy harvesting circuit and the vibration plate caused by the vibration of the vibration plate*;
 - and
 - a data processing circuit, coupled to the sensor and the antenna, and comprising:
 - a transceiver, electrically connected to the antenna;
 - a switching element, receiving the electrical energy; and
 - a controller, wherein the wireless sensing device enables the controller through the electrical energy, thereby allowing the data processing circuit to be switched between a detection mode and a transmission mode, wherein under the detection mode, the controller drives the switching element to transmit the electrical energy to the sensor, and the controller stores the sensing data from the sensor, whereas under the transmission mode, the controller drives the switching element to transmit the electrical energy to the transceiver transmitting the sensing data through the antenna.

Appeal Br. 12 (emphasis of key phrase added). Claims 2–4, 6, 7, and 9–11 depend from claim 1. *Id.* at 12–14.

The Examiner rejects claims 1–3 and 6 under 35 U.S.C. § 103 as being unpatentable over Loomis⁴ in view of Belov,⁵ and rejects other dependent claims in further combination with either Soma’⁶ (claim 4), Silva⁷ (claim 7), Greetis⁸ (claim 9), Arms⁹ (claim 10), or Setiadi¹⁰ (claim 11). Final Action 5–14.

DISCUSSION

Appellant argues the claims together. *See* Appeal Br. 4–11. Therefore, we focus our decision on independent claim 1. The remaining claims fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

⁴ Loomis et al., US 2009/0259411 A1 (published Oct. 15, 2009) (“Loomis”).

⁵ Belov et al., US 2011/0248846 A1 (published Oct. 13, 2011) (“Belov”).

⁶ Soma’ et al., US 2014/0000373 A1 (published Jan. 2, 2014) (“Soma”).

⁷ Silva et al., US 2006/0033616 A1 (published Feb. 16, 2006) (“Silva”).

⁸ Greetis et al., US 2015/0280311 A1 (published Oct. 1, 2015) (“Greetis”).

⁹ Arms et al., US 2005/0017602 A1 (published Jan. 27, 2005) (“Arms”).

¹⁰ Setiadi et al., US 2009/0303076 A1 (published Dec. 10, 2009) (“Setiadi”).

Below is Figure 2 of Loomis:

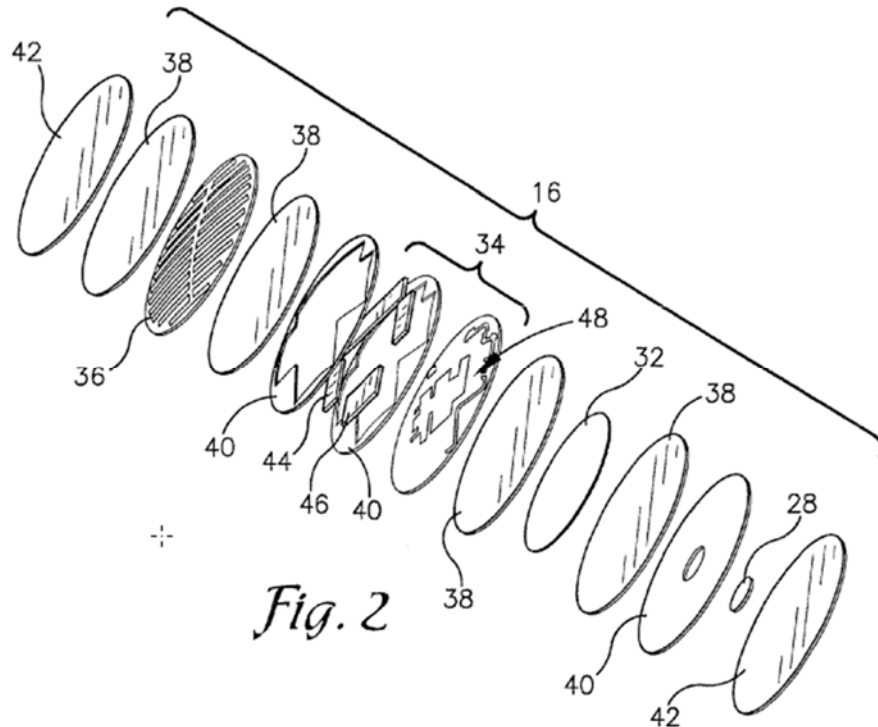


Figure 2 is an exploded view of a sensor wafer (16) of a structural health monitoring (SMH) system to be placed on aircraft parts such as wings. Loomis ¶¶ 18–19; *see also id.* ¶ 18, Fig. 1. The wafer includes power source 32, which “may be a battery, a power generation source, or a power harvesting source.” *Id.* ¶ 39. If 32 is a power-harvesting source, it may “harvest electricity from physical stimulus, *such as vibrations.*” *Id.* (emphasis added). In addition, wafer 16 may include isolation plies, such as outer plies 42, “intermediate isolation plies 38, such as those isolating the power source 32,” and “cutout plies 40 for components that may be coupled to each other and only require portions of the component to be isolated from an adjacent component.” *Id.* ¶ 49. Plies 48, 40, and 42 “may be composite material or other types of non-conductive isolation layers operable to separate various conductive components.” *Id.*

The Examiner finds that Loomis discloses a sensing device as recited in claim 1, except for the recited “switching element” (which, according to the Examiner, Belov teaches). *See* Final Action 5–7. In particular, the Examiner finds that Loomis discloses “generating an electrical energy in response to the collision between the energy harvesting circuit and vibration plate caused by the vibration of the vibration plate.” *Id.* at 5 (citing Loomis ¶ 39, Fig. 2). According to the Examiner, “in order for power source 32 to generate electricity from vibrations, vibrations need to be transferred from the outer plies 42 to power source 32.” *Id.* In other words, the Examiner argues that in Loomis, “it is inherent that vibrations are transferred from the outer ply 42 to the isolation ply 40 to the isolation ply 38, and finally to the power harvesting source 32.” Answer 3–4. The Examiner also finds that “the vibration[] transfer is a collision between the outer plies 42 and the power source 32.” Final Action 5.

Appellant argues that it is physically impossible for plies 42 to collide with power source 32, because “the power source 32 and the outer plies 42 are at least separated by . . . intermediate isolation plies 38 and . . . cutout plies 40.” Appeal Br. 7 (citing Loomis ¶ 49). According to Appellant, a “collision between the energy harvesting circuit and the vibration plate,” as recited in claim 1, requires that the energy harvesting circuit “come together with solid or direct impact,” or have an “encounter” with the vibration plate. *Id.* at 8 (emphasis omitted). To support this interpretation, Appellant cites dictionary definitions of *collide*: “to come together with solid or direct impact,” *id.* (quoting <https://www.merriam-webster.com/dictionary/collide>), and *collision*: “an encounter between particles (such as atoms or molecules)

resulting in exchange or transformation of energy” (quoting <https://www.merriam-webster.com/dictionary/collision>).

In response, the Examiner acknowledges that “power source 32 and the outer plies 42 of Loomis . . . do not have a direct touch or a direct collision.” Answer 4. However, the Examiner argues that, under the broadest reasonable interpretation, claim 1 “does not require a **direct collision** . . . between the energy harvesting circuit and the vibration plate”; the claim merely requires “a collision between the energy harvesting circuit and the vibration plate.” *Id.* According to the Examiner, a collision, even under the dictionary definition that Appellant proposes, “is an encounter between particles (such as atoms or molecules) resulting in exchange or transformation of energy,” and such a transformation of vibrational energy occurs between power harvesting source 32 and outer plies 42. *Id.* at 5.

We agree with the Examiner that in claim 1, the term *collision* does not require a direct collision between the energy harvesting circuit and the vibration plate. We apply to claim terms “the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant’s specification.” *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). The Specification uses the terms *directly colliding* and *directly collides* to describe an interaction between an energy converter (210) and a stamped antenna (120) on a vibration plate (110). *See* Spec. 26–27; *see also* Figs. 6, 7. A person of ordinary skill in the art would understand from this that, according to terminology in the Specification, a collision with the vibration plate can be “direct” or, by implication, “indirect” (e.g., a direct

collision with one object that itself directly collides with another). Thus, the Examiner's interpretation of the term *collision* is consistent with the Specification.

The Examiner's interpretation of the term *collision* is also consistent with the dictionary definitions that Appellant cites. The first definition states that *collide* can mean "to come together with solid *or* direct impact," Appeal Br. 8 (emphasis added and omitted), implying that it could be a solid, *indirect* impact. The second definition states that *collision* can mean "an encounter between particles (such as atoms or molecules) *resulting in* exchange or transformation of energy." *Id.* (emphasis added and omitted). This does not exclude an indirect encounter that results in an energy exchange. *Id.* (emphasis added and omitted).

We also find that the Examiner has made a sufficient prima facie showing that in Loomis, the vibrations will inherently result in a collision (as we interpret the term above) between the energy harvesting circuit and the vibration plate. When the Examiner shows a reasonable basis for why a prior art reference inherently possesses an alleged inherent characteristic, the Examiner can "require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on." *In re Best*, 562 F.2d 1252, 1254–55 (CCPA 1977) (quoting *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971)). We find the Examiner's position reasonable that Loomis's outer plies 42 act as vibration plates, and that their vibration energy inherently results in an indirect collision with power harvesting source 32.

Appellant's arguments do not present any evidence sufficient to rebut this prima facie showing of inherency. In the Reply Brief, Appellant argues

as follows: “Loomis does not disclose that the vibration is from the outer plies 42 to the power source 32.” Reply Br. 2. Rather, “only the power source 32, which is compared as the energy harvest circuit, vibrates.” *Id.* at 3 (citing Loomis ¶ 39). Appellant also argues in the Reply Brief that “[e]ven if the power source 32 can pass the vibration to the nearest isolation plies 38, Loomis does not disclose that any one of the isolation plies 38, circuitry 34 and wireless antenna 36 can transfer the vibration.” Reply Br. 4. Therefore, according to Appellant, “it is impossible for the power source 32 and the outer plies 42 of Loomis to have indirect collision through transfer [of] the vibration.” *Id.*

We do not consider these arguments because Appellant first raised them in the Reply Brief and Appellant has not shown good cause for the delay. *See* 37 C.F.R. § 41.41(b)(2) (“Any argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner’s answer . . . will not be considered by the Board for purposes of the present appeal, unless good cause is shown.”). Thus, Appellant has not raised sufficient arguments or evidence in this appeal to rebut the Examiner’s prima facie showing of inherency.

For the above reasons, and based on the Examiner’s findings and conclusions as a whole, which we find persuasive, the preponderance of the evidence supports the Examiner’s rejection, and Appellant has not shown reversible error. Therefore, we affirm the Examiner’s decision as to all claims.

CONCLUSION

In summary,

Claim(s) Rejected	35 U.S.C. §	References	Affirmed	Reversed
1-3, 6	103	Loomis, Belov	1-3, 6	
4	103	Loomis, Belov, Soma'	4	
7	103	Loomis, Belov, Silva	7	
9	103	Loomis, Belov, Greetis	9	
10	103	Loomis, Belov, Arms	10	
11	103	Loomis, Belov, Setiadi	11	
Overall Outcome			1-4, 6, 7, 9-11	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended. *See* 37 C.F.R. §§ 1.136(a)(1)(iv), 41.50(f) (2018).

AFFIRMED