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Muncy, Geissler, Olds & Lowe, P.C. 4000 Legato Road Suite 310 Fairfax, VA 22033			TREMARCHE, CONNOR J.	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YUAN-CHUAN LIU and CHIH-HUA LIN

Appeal 2019-005081
Application 14/755,660
Technology Center 3700

Before JILL D. HILL, LEE L. STEPINA, and ARTHUR M. PESLAK,
Administrative Patent Judges.

HILL, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–18, 22, and 23. *See* Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Delta Electronics, Inc. Appeal Br. 2.

BACKGROUND

Appellant's invention relates to a ventilation fan with speaker. Claims 1, 11, and 18 are independent. Claim 1, reproduced below, illustrates the claimed subject matter, with certain limitations italicized:

1. A ventilation fan, comprising:
 - a fan unit having an air inlet and an air outlet;
 - a cover disposed on the air inlet, wherein the cover has an opening disposed corresponding to the air inlet;
 - a speaker directly and detachably disposed on the cover, and disposed beside and outside the air inlet; and
 - an outer cap disposed on the air inlet, wherein the cover is located between the fan unit and the outer cap, and the outer cap has a plurality of through holes, wherein *each of the through holes is configured as both of an output channel of the speaker and a ventilation channel, and the through holes communicate with each other.*

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Liu	US 5,448,495	Sept. 5, 1995
Waynick	US 6,083,016	July 4, 2000
Li	US 8,073,182 B2	Dec. 6, 2011
Massini	US 9,508,337 B2	Nov. 29, 2016
Park	US 2003/0235186 A1	Dec. 25, 2003
Slapak	US 2010/0028134 A1	Feb. 4, 2010
Berkman	US 2014/0177900 A1	June 26, 2014
Homewerks Worldwide, <i>Bluetooth Bath Fan Installation Video</i> "Homewerks"	https://www.youtube.com/watch?v=OxnLxuEYLJY	July 24, 2013

REJECTIONS

- I. Claims 1–4 and 7–10 stand rejected under 35 U.S.C. § 103 as unpatentable over Massini, Liu, and Berkman. Final Act. 2.
- II. Claim 5 stands rejected under 35 U.S.C. § 103 as unpatentable over Massini, Liu, Berkman, and Homewerks. Final Act. 6–7.
- III. Claim 6 stands rejected under 35 U.S.C. § 103 as unpatentable Massini, Liu, Berkman, Homewerks, and Waynick. Final Act. 8.
- IV. Claims 11, 12, and 14–17 stand rejected under 35 U.S.C. § 103 as unpatentable over Slapak and Berkman. Final Act. 9.
- V. Claim 13 stands rejected under 35 U.S.C. § 103 as unpatentable over Slapak, Berkman, and Homewerks. Final Act. 12.
- VI. Claims 18, 22, and 23 stand rejected under 35 U.S.C. § 103 as unpatentable over Berkman, Li, Liu, and Park. Final Act. 14.

ANALYSIS

Rejection I – Claims 1–4 and 7–10

Appellant argues claims 1–4 and 7–10 as a group. Appeal Br. 6–7. We select independent claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv)(2018). Claims 2–4 and 7–10 stand or fall with claim 1.

The Examiner finds that Massini discloses most of the limitations of claim 1 including a fan unit, a cover disposed on the air inlet of the fan unit, and a speaker directly disposed on the cover, but does not disclose that the speaker is detachably disposed on the cover. Final Act. 3. The Examiner finds that Liu discloses a speaker detachably disposed on a cover, and concludes that it would have been obvious to modify the speaker connection of Massini to be detachable “to allow for easy removal and replacement of the speaker.” *Id.* The Examiner also finds that Massini does not disclose an

outer cap having a plurality of through holes, but finds that Berkman discloses such an outer cap. *Id.* at 3–4. The Examiner concludes that it would have been obvious to modify Massini’s cover to have an outer cap “to prevent larger debris from entering the fan unit and causing damage to the fan.” *Id.* at 4.

Analogous Art

Appellant argues that the Examiner’s proposed modification based on Liu is improper because “Liu is related to a personal computer rather than a ventilation fan. A personal computer is not analogous art of a ventilation fan.” Appeal Br. 6.

Appellant’s argument is not persuasive. The Specification discloses that the invention relates to “a ventilation fan with a speaker.” Spec. ¶ 2. Liu discloses that its “invention relates to a multifunctional frame assembly of a personal computer, particularly to an assembly having a frame on which a ventilating fan and a speaker can be held without using screws.” Liu 1:7–10. The “field of endeavor” prong asks if the structure and function of the prior art is such that it would be considered by a person of ordinary skill in the art because of the similarity to the structure and function of the claimed invention as disclosed in the application. *In re Bigio*, 381 F.3d 1320, 1325–27 (Fed. Cir. 2004). Given that Liu relates to a specific use for the ventilation fan and speaker, i.e., for a computer, whereas the present invention broadly relates to a ventilation fan with a speaker that could be used for various applications, a person of ordinary skill in the art would consider Liu to be in the same field of endeavor because Liu has the same structure (ventilating fan and speaker) and function (ventilating). We therefore agree with the Examiner that Liu is analogous art. *See* Ans. 16.

Principle of Operation/Purpose

Appellant argues that the rejection is improper because “[t]he purpose of Massini is to eliminate the drawbacks of the prior art by devising a low-noise fume extractor hood provided with active noise suppression system that does not obstruct the air extraction flow and at the same time allows for directivity of sound beam.” Appeal Br. 7. According to Appellant, Massini achieves this purpose by having a conduit that is free and by arranging the sound transducers in a particular arrangement. *Id.* Appellant asserts that the Examiner’s proposed modification requires changes to Massini’s chamber 44 and also requires transducer 5 of Massini to have an output channel which is contrary to Mancini’s purposes. *Id.*

The Examiner responds that the proposed modification would “prevent larger foreign objects from entering the air inlet while allowing for the speaker to have a more direct sound path.” Ans. 17. The Examiner notes that a grille (outer cap) as in Berkman is commonly used on air inlets and do not obstruct airflow into the fan unit. *Id.*

The Examiner has the better position. Massini discloses that positioning a speaker within a hood flow conduit creates drawbacks, including turbulence and a build-up of dirt. Massini 1:58–67. Although a grille as in Berkman might create some turbulence, the associated fan would still operate as a ventilation fan. Thus, the Examiner’s proposed modification would not render the ventilation fan of Massini unsatisfactory for its intended purpose, nor change the principle of operation of the ventilation fan.

Appellant’s assertion that the Examiner’s proposed modification requires Massini’s transducer 5 to have an output channel, which is contrary

to Massini's purposes (*see* Appeal Br. 7), is also unavailing. Massini's disclosure that it is "impossible to generate a sound beam with directivity towards the outside of the conduit," is when $\theta=0^\circ$. Mancini 4:65–5:3. However, Mancini discloses that "the range of angle (θ) from 0 to 40° was excluded because with such an inclination of the loudspeaker, the sound pressure did not come out properly from the conduit of the hood." *Id.* at 5:8–11. Rather, Massini discloses that "the sound emission surface (50) of loudspeaker must be advantageously inclined with respect to axis (A) of the conduit by an angle (θ) comprised in the range from 40° to 65° ," preferably approximately 45° . *Id.* at 5:25–30. The Examiner's proposed modification keeps the angle of Massini's loudspeakers, but places a grille in front of the air inlet, so that the sound beam from the loudspeakers is emitted out of the holes in Berkman's grille instead of directly out of the conduit (*see* Ans. 17), which is consistent with the purpose of Massini's invention. We are not apprised of Examiner error on this point.

For these reasons, we sustain the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Massini, Liu, and Berkman. Claims 2–4 and 7–10 fall therewith.

Rejections II and III – Claims 5 and 6

Claims 5 and 6 depend from claim 1. Appellant makes no argument that claims 5 and 6 would be patentable if claim 1 is not patentable. Appeal Br. 9–10. We therefore sustain these rejections for the reasons set forth above.

Rejection IV – Claims 11, 12, and 14–17

Independent claim 11 differs from independent claim 1 in reciting that the fan unit has a volute casing. The Examiner finds that Slapak discloses most of the limitations of claim 11 including a fan unit, a volute casing, and a speaker directly and detachably disposed outside of the volute casing, but does not disclose an outer cap disposed on the air inlet having a plurality of through holes. Final Act. 9. The Examiner finds that Berkman discloses a grille unit (outer cap) disposed on the air inlet having a plurality of through holes. *Id.* The Examiner concludes that it would have been obvious to modify Slapak’s fan inlet to have an outer cap “to prevent larger debris from entering the fan unit and causing damage to the fan.” *Id.* at 10.

Appellant argues that the rejection is improper because Slapak requires that “each speaker is disposed in a speaker chamber (enclosure) which is adjacent to the respective inlet or outlet duct of the fan system ... to prevent noise from being emitted to the wrong side of the speaker, and hence to produce noise.” Appeal Br. 8 (citing Slapak ¶ 218). According to Appellant, modifying Slapak as “proposed by the Examiner actually changes the configuration or the relations of the speaker, the chamber and inlet/outlet duct, and requires the speaker of Slapak to have an output channel which is contrary to his purposes and change the operation principle of Slapak.” *Id.*

The Examiner responds that “[t]he speaker in the combination of Slapak and Berkman will be focused downward thus directing the sound toward the air inlet and out into the upstream area of the fan unit.” Ans. 17. According to the Examiner, “[t]he speaker and position taught by Berkman are fully capable of emitting a sound to cancel out the operation sound of Slapak’s fan.” Ans. 17–18.

Appellant’s arguments are persuasive. In the Final Action, the Examiner relies on the proposition that the result of combining Slapak and Berkman “would be such that the speaker (Speaker of Slapak) is located between the fan unit (With in fan housing of Slapak) and the outer cap (808 of Berkman).” Final Act. 9–10. Thus the Examiner appears to be relying on the speaker of Slapak remaining in its intended position. In the Answer, the Examiner refers to the “speaker and position taught by Berkman.” Ans. 17–18. Thus, it is not clear to us whether the Examiner is now relying on the speaker and its position relative to the grille (outer cap) that is depicted in Figure 8 of Berkman. Nonetheless, as Appellant correctly notes, the purpose of Slapak is to provide a noise cancelling system to prevent noise. Slapak ¶¶ 2, 163–164, 218; Appeal Br. 8. Regardless of which speaker and position the Examiner relies on, the Examiner acknowledges that Berkman’s speaker is “fully capable of emitting a sound to cancel out the operation sound of Slapak’s fan.” Ans. 17–18. As such, the Examiner has not adequately established that “each of the through holes is configured as both of an output channel of the speaker and a ventilation channel,” as required by claim 11. That is given that noise cancellation would occur within the device, and thus that no noise may be output, the Examiner’s finding that the through holes are configured as an output channel of the speaker is speculative. Alternatively, if the combination of Slapak and Berkman were to use the through holes as an output channel for the speaker, we agree with Appellant that such a modification is contrary to Slapak’s purpose of noise cancellation and would change the principle of operation of Slapak, i.e., preventing noise from being emitted.

For these reasons, we do not sustain the rejection of claim 11 under 35 U.S.C. § 103(a) as unpatentable over Slapak and Berkman. We do not sustain the rejection of claims 12 and 14–17 depending from claim 11 for the same reasons.

Rejection V – Claim 13

Claim 13 depends from claim 11. The Examiner does not rely on the disclosure of Homewerks in any manner that would remedy the deficiencies of Slapak and Berkman discussed above in Rejection IV. Final Act. 12–13. We therefore do not sustain this rejection for the same reasons.

Rejection VI – Claims 18, 22, and 23

Independent claim 18 differs from independent claim 1 in reciting an indicator lamp and reciting that the outer cap has locking members that engage the speaker.

The Examiner finds that Berkman discloses most of the limitations of claim 18 including a fan unit, an outer cap having through holes, and a speaker on the outer cap, but does not disclose the speaker directly and detachably disposed on the outer cap, or that the outer cap has two locking members. Final Act. 14. The Examiner finds that Li discloses a ventilation unit having a speaker directly and detachably disposed on an outer cap, and the outer cap having two locking members. *Id.* at 15. The Examiner considers that it would have been obvious “to modify the speaker location and mounting structure of Berkman with the teachings of Li to allow for easier access to the speaker while maintaining the correct position.” *Id.* The Examiner also finds that Berkman does not disclose the speaker being

disposed beside and outside of the air inlet, but that Liu discloses such a speaker position. *Id.* The Examiner considers that it would have been obvious to modify the location of Berkman's speaker in accordance with Liu's speaker location "to improve the air flow of the fan by reducing interference caused by the speaker." *Id.* at 16. The Examiner further finds that Berkman does not disclose an indicator lamp configured to provide an indication of the wireless connection state of the speaker, but that Park discloses such an indicator. The Examiner concludes that it would have been obvious to add Park's indicator to Berkman's ventilation fan "to show the state of the connection of the speaker to provide an easy and visible check to ensure the speaker is connected to the transmitting device." *Id.*

Analogous Art

Appellant argues that Li relates to a computer case rather than a ventilation fan, and that Li cannot be used as a basis to reject the claims because "[a] computer case is not analogous art of a ventilation fan." Appeal Br. 8. Appellant makes a similar argument against Liu, asserting that Liu cannot be used as a basis to reject the claims because Liu's "personal computer is not analogous art of a ventilation fan." Appeal Br. 8–9.

Appellant's arguments are not persuasive. Li discloses a connection element for mounting a speaker to a grating of a computer case to reduce assembly time. Li 1:10–14. Although we appreciate that a computer case is not a ventilating fan, a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same

field of endeavor as the claimed invention). *See In re Bigio*, 381 F.3d at 1325. Appellant does not explain why Li is not reasonably pertinent to Appellant's problem. Here, Appellant discloses that "the speaker is detachable, so that it can individually operate after being detached from the ventilation fan." Spec. ¶ 37. Thus, a problem that Appellant addresses is that the speaker in previous ventilation fan/speaker combinations could not be individually operated, a proposed solution being allowing independent detachment of the speaker for independent operation. Li discloses a detachable speaker that can easily be attached/detached regardless of the other components of the system. Li is pertinent to individual speaker operation by allowing independent detachment of the speaker. The fact that Li's speaker is detachable from a computer case goes to the field of endeavor portion of the analogous art test. As to Liu, as discussed above in Rejection I, Liu is in the same field of endeavor, an assembly of a ventilating fan and a speaker.

Through Holes

Appellant also argues that the Examiner does not clearly identify which of Berkman's through holes are configured as both an output channel of the speaker and a ventilation channel. Appeal Br. 9. Appellant asserts that, in any event, Berkman does not disclose this limitation because Berkman's "first openings 308c are for admission of moisture but not for downward propagation of sound waves, and ... the second openings 308d are for downward propagation of sound waves but not for admission of moisture. *Id.*

Appellant's arguments are not persuasive. The Examiner relies on the holes depicted in Berkman's Figure 3A, reproduced below.

FIG. 3A

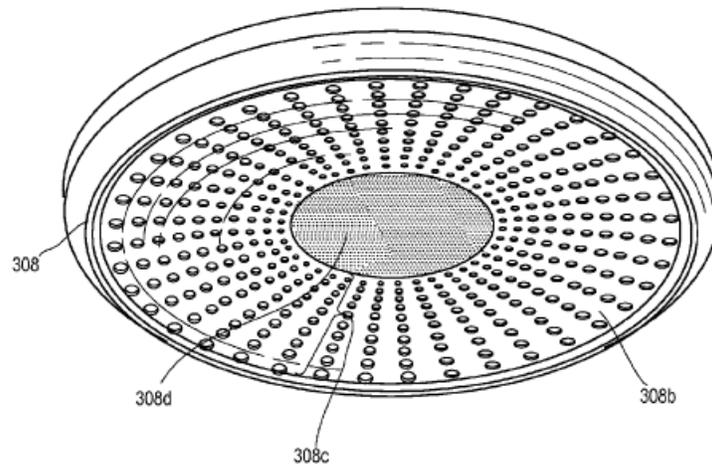


Figure 3A illustrates an embodiment without illustrating the speaker. Berkman ¶ 8. Figure 3A shows grille 308 having “first openings 308c and second openings 308d.” *Id.* ¶ 39. Consistent with Appellant’s argument, Berkman’s grille 308 “defines a first array of openings 108c [(308c)] through which air may flow upward while the fan is operated and a second array of openings 108d [(308d)] through which sound may propagate downward.” *Id.* ¶ 20. However, we also note that Berkman discloses that “[t]he smaller size of second openings 108d may help to prevent moisture from reaching the speaker 110 as air flow will find less resistance in passing through the larger openings of the first array of openings 108c.” *Id.* Although the reduced size of openings 308d may limit the amount of moisture reaching speaker 110 *some air* will flow through openings 308d. Thus, openings 308d will function as an output channel of the speaker by propagating sound as well as a ventilation channel by flowing air. Appellant’s arguments do not apprise us of Examiner error.

Accordingly, we sustain the rejection of claim 18 as unpatentable over Berkman, Li, Liu, and Park. We also sustain the rejection of claims 22 and 23 depending from claim 18, which Appellant does not separately argue.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–4, 7–10	103	Massini, Liu, Berkman	1–4, 7–10	
5	103	Massini, Liu, Berkman, Homewerks	5	
6	103	Massini, Liu, Berkman, Homewerks, Waynick	6	
11, 12, 14–17	103	Slapak, Berkman		11, 12, 14–17
13	103	Slapak, Berkman, Homewerks		13
18, 22, 23	103	Berkman, Li, Liu, Park	18, 22, 23	
Overall Outcome:			1–10, 18, 22, 23	11–17

TIME PERIOD FOR RESPONSE

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

AFFIRMED IN PART