

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RING LLC,
Petitioner,

v.

SKYBELL TECHNOLOGIES, INC.,
Patent Owner.

IPR2019-00444
Patent 9,055,202 B1

Before JEFFREY S. SMITH, DANIEL J. GALLIGAN, and
KAMRAN JIVANI, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Ring LLC (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1, 3–5, 7, 8, 10, 18–21, and 23–25 of U.S. Patent No. 9,055,202 B1 (“the ’202 patent,” Ex. 1001). Paper 1 (“Pet.”). SkyBell Technologies, Inc. (“Patent Owner”) did not file a Preliminary Response. On July 19, 2019, we instituted an *inter partes* review of all the challenged claims. Paper 11. Patent Owner filed a Response (“PO Resp.”). Paper 22. Petitioner filed a Reply (“Pet. Reply”). Paper 24. Patent Owner filed a Sur-Reply (“Sur-Reply”). Paper 26. A hearing was held on April 16, 2020, and a transcript has been entered into the record. Paper 31 (“Tr.”).

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). We determine that claims 1, 3–5, 7, 8, 10, 18–21, and 23–25 are unpatentable.

A. Related Matters

The parties note the following related matter: *SkyBell Techs., Inc. v. Ring Inc.*, 8:18-cv-00014 (C.D. Cal. 2018). Pet. 2; Paper 4, 2.

B. Real Parties in Interest

Petitioner identifies the following real parties in interest: Ring LLC, Ring of Security Limited, Ring of Security B.V., Ring of Security Pty. Ltd., Ring of Security Asia Co., Ltd., Ring Protect Inc., Wireless Environment, LLC, Wireless Environment Asia, LLC, Wireless Environment Lighting Co., Ltd., Wireless Environment UK Ltd., Wireless Lighting Technologies, LLC, Amazon.com Services, Inc., and Amazon.com, Inc. Pet. 2.

Patent Owner identifies itself as the real party in interest. Paper 4, 1.

C. The '202 Patent

The '202 patent relates to doorbells and doorbell methods to detect visitors. Ex. 1001, 1:58–60. As disclosed in the '202 patent specification, a doorbell detects visitors using a visitor detection system that includes a camera assembly, a motion detector assembly, or an infrared detector assembly. *Id.* at code (57), 2:31–37. The visitor detection system can detect an indication suggestive of a visitor. *Id.* at 2:37–38. The indication, however, can sometimes falsely detect the presence of a visitor, resulting in a false positive. *Id.* at 2:39–41. For example, a motion sensor may detect motion from moving cars, pets, or plants, and as a result, falsely indicate the presence of a visitor. *Id.* at 2:41–44, 29:48–59.

According to the specification, detecting a visitor in two or more detection zones can provide safeguards against false-positives. *Id.* at 21:3–10, 29:60–30:1. The specification further explains that the visitor detection system can include a first sensor and a second sensor, separated by a wall. *Id.* at code (57), 29:29–36. The first sensor can detect a first indication suggestive of a visitor within a first portion of a field of view, and the second sensor can detect a second indication within a second portion of the field of view. *Id.*

Figure 16 of the '202 patent is reproduced below.

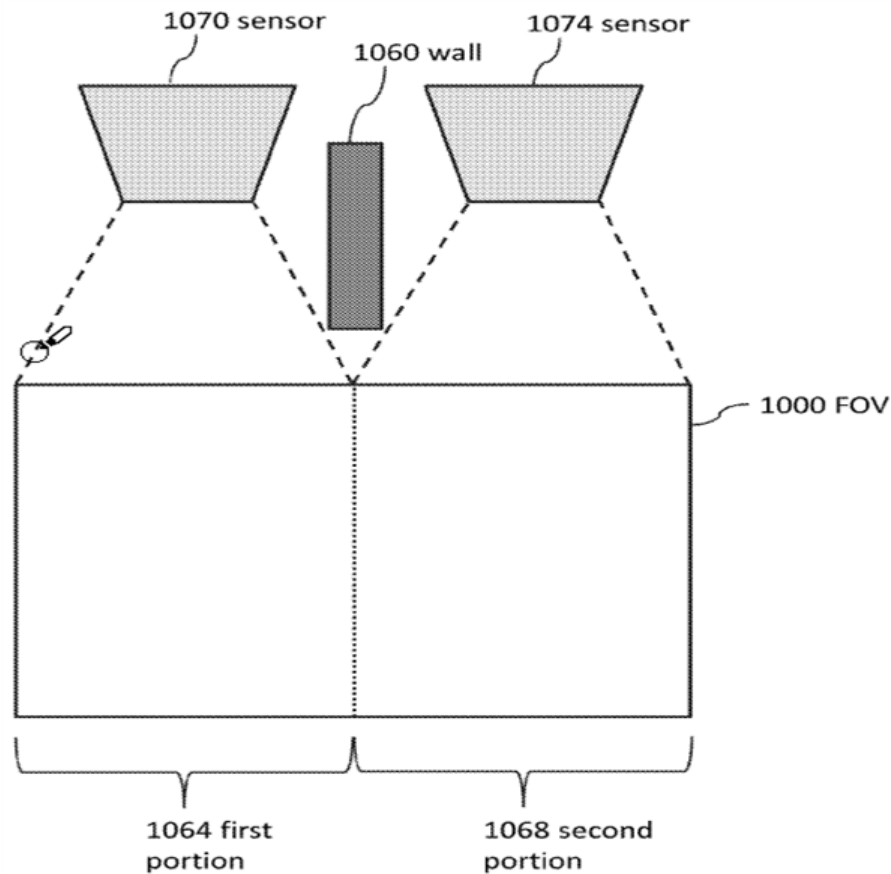


Figure 16

Figure 16 above illustrates wall 1060 dividing field of view 1000 into first portion 1064 and second portion 1068. *Id.* at 33:1–6. Wall 1060 can be configured to prevent second sensor 1074 from detecting motion that the first sensor 1070 can detect so that the doorbell system can distinguish between motions in first and second portions 1064, 1068, respectively, of field of view 1000. *Id.* at 33:16–22. If the first portion of the field of view typically results in false positives, then the first portion can be precluded from causing alerts. *Id.* at 29:60–64. If the second portion typically results

in true positives, then the doorbell system can increase its sensitivity to motion indications from the second portion. *Id.* at 29:64–30:3.

D. Illustrative Claim

Challenged independent claim 1 is reproduced below.

1. A doorbell system comprising a doorbell, wherein the doorbell system comprises:

a button configurable to enable a visitor to sound a chime;

a visitor detection system having at least one of a camera assembly, a motion detector assembly, and an infrared detector assembly, wherein the visitor detection system is configurable to detect the visitor within a field of view of the visitor detection system;

an outer housing coupled to the visitor detection system, wherein the visitor detection system comprises a first sensor configurable to detect a first indication suggestive of the visitor within the field of view, and a second sensor configurable to detect a second indication suggestive of the visitor within the field of view; and

a wall that separates the first sensor from the second sensor, wherein the wall divides the field of view such that the first sensor is configured to detect the first indication within a first portion of the field of view and the second sensor is configured to detect the second indication within a second portion of the field of view, wherein the button, the first sensor, and the second sensor face out ward towards the field of view,

wherein an outer surface of the wall faces outward, and the outer surface of the wall is located further outward than an outer surface of the first sensor and an outer surface of the second sensor.

Ex. 1001, 34:60–35:18.

E. Asserted Ground of Unpatentability

Petitioner asserts the following ground of unpatentability (Pet. 9):

Claims Challenged	35 U.S.C. §	References/Basis
1, 3–5, 7, 8, 10, 18–21, 23–25	103	Von Bauer ¹ , Zhevelev ²

II. ANALYSIS

A. Claim Construction

The Petition was accorded a filing date of December 17, 2018. Paper 5, 1. In an *inter partes* review for a petition filed on or after November 13, 2018, a claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2019); *see* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018).

We do not find it necessary to construe expressly any claim terms. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (only terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy).

B. Level of Ordinary Skill in the Art

Petitioner’s declarant, Dr. Joseph Paradiso, testifies that a person of ordinary skill in the art of the ’202 Patent would have had

a bachelor’s degree in Electrical Engineering or Computer Engineering, or equivalent training, as well as at least two years

¹ US Patent No. 5,428,388, issued June 27, 1995 (Ex. 1005).

² US Publ. No. 2007/0029486 A1, published Feb. 8, 2007 (Ex. 1006).

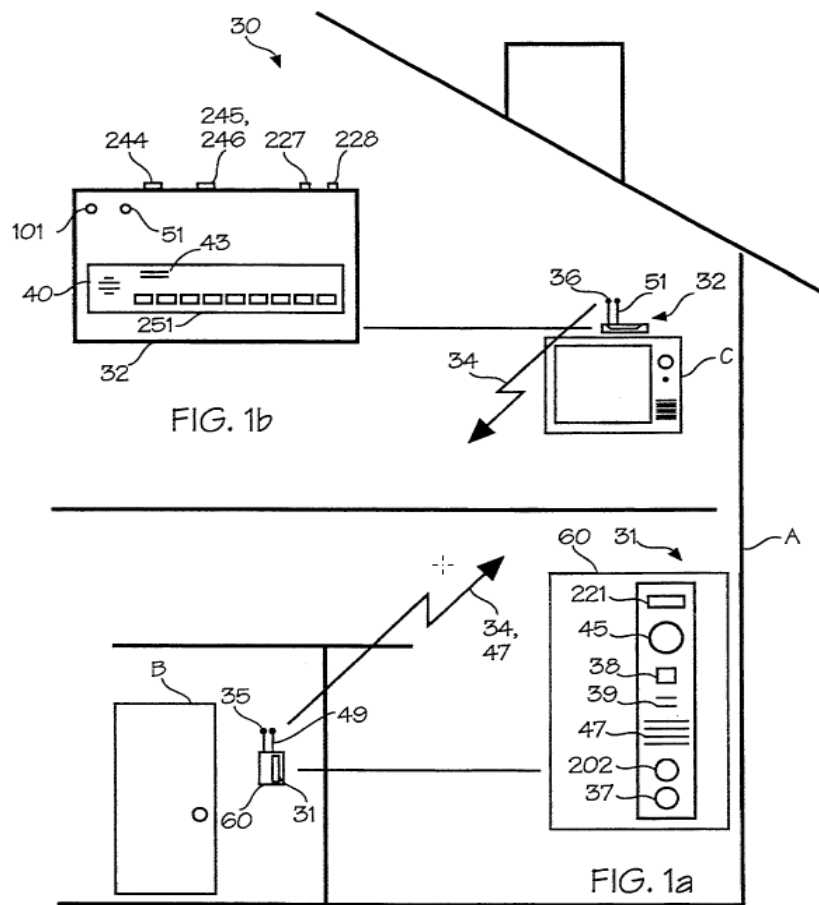
of technical experience in the field of sensing, signaling, embedded and/or mobile systems. Lack of work experience can be remedied by additional education or training, and vice versa.

Ex. 1003 ¶ 16, *cited in* Pet. 8–9. Patent Owner agrees with this assessment. PO Resp. 9–10 (citing Ex. 2001 ¶ 36). We adopt Dr. Paradiso’s articulation of the level of skill in the art, with the exception of the language “at least,” which introduces ambiguity.

C. Asserted Obviousness Over Von Bauer and Zhevelev

1. Von Bauer

Von Bauer relates to a signaling, voice communication, and video camera apparatus connectable to an existing doorbell button. Ex. 1005, 1:10–12. Figures 1A and 1B of Von Bauer are reproduced below.



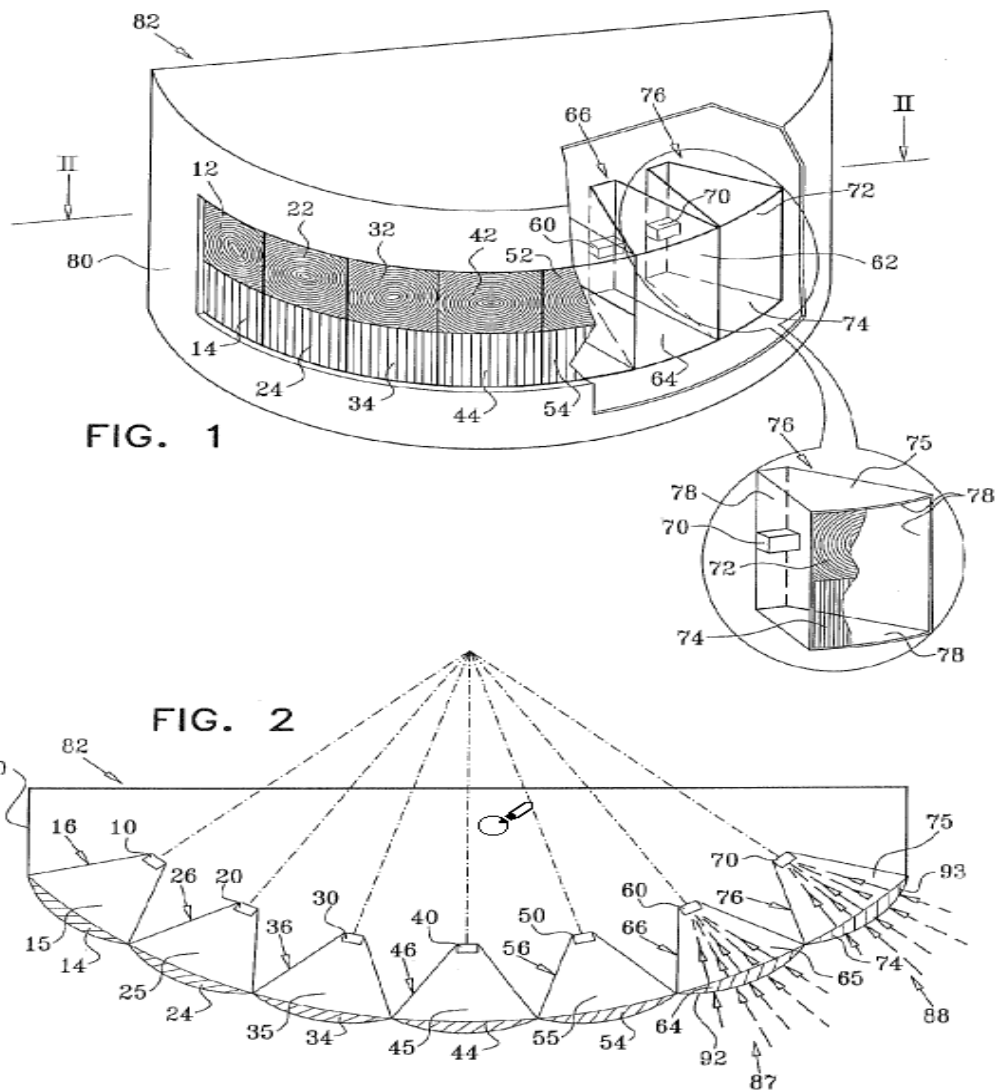
Figures 1A and 1B of Von Bauer show a pictorial diagram of video doorbell system 30, including doorbell station 31 shown in Figure 1A and video receiver station 32 shown in Figure 1B. Ex. 1005, 5:41–43, 6:29–37.

Doorbell station 31 includes enclosure 60 mounted adjacent to doorway B of Building A. Ex. 1005, 7:40–48. Doorbell station 31 also includes doorbell button 37, infrared detector 38, and camera 45. *Id.* at 6:44–46, 7:15–18.

Infrared detector 38 has a field of view encompassing a region near the entrance of the building. *Id.* at 13:15–19. When a person comes within the field of view of infrared detector 38, doorbell station 31 transmits a signal to video receiver station 32 to indicate a visitor is present at doorbell station 31. *Id.* at 13:19–37.

2. Zhevelev

Zhevelev relates to passive infrared detectors. Ex. 1006 ¶ 2. Figures 1 and 2 of Zhevelev are reproduced below.



Figures 1 and 2 above illustrate a lens-based outdoor detector. Ex. 1006 ¶ 198. Figure 1 is a general view of a detector comprising seven sub-detectors, each sub-detector defining a corresponding sub-field of view, where the seven sub-fields of view may not overlap. *Id.* Figure 2 shows that each of the seven sub-fields of view includes two mutually vertically separated zones. *Id.* Each of sensors 10, 20, 30, 40, 50, 60, and 70 of respective sub-detectors 16, 26, 36, 46, 56, 66, and 76 is located within a corresponding sub-detector compartment 15, 25, 35, 45, 55, 65, and 75. *Id.*

¶ 204. Each sub-detector compartment is defined by walls, such as walls 78 of compartment 75. *Id.*

The structure shown in Figures 1 and 2 enables enhanced signal processing, which analyzes and distinguishes between signals produced by movement of a person across the field of view of the detector and signals resulting from interference. *Id.* ¶ 236. For example, should a signal be received by only one sub-detector, the signal may be regarded as a false signal and ignored. *Id.* ¶ 237.

3. Analysis of Independent Claim 1

Claim 1 recites “a button configurable to enable a visitor to sound a chime.” Petitioner contends Von Bauer teaches this limitation in disclosing that doorbell station 31 includes a pushbutton switch which, when pressed by a visitor, causes a loudspeaker to output an acoustic bell-like signal. Pet. 23–25 (citing Ex. 1005, 6:26–37, 7:49–52, 11:18–38, Fig. 1). Von Bauer discloses that “loudspeaker 40 of the Video Receiver Station 32 outputs an acoustic bell-like signal alerting a building occupant . . . that a visitor has depressed the doorbell button.” Ex. 1005, 11:33–38. We rely on the Petition and supporting evidence in determining that Von Bauer teaches “a button configurable to enable a visitor to sound a chime.”

Claim 1 recites “a visitor detection system having at least one of a camera assembly, a motion detector assembly, and an infrared detector assembly, wherein the visitor detection system is configurable to detect the visitor within a field of view of the visitor detection system.” Petitioner contends Von Bauer teaches this limitation in disclosing a doorbell station that includes an infrared proximity detector that detects the presence of a person within the field of view of the detector. Pet. 25–27 (citing Ex. 1005,

5:65–68, 6:43–51, 13:15–36, Fig. 10). Von Bauer discloses an infrared proximity detector that “goes to a logic true level when a person comes within the field of view of the IR detector and sufficiently close to it.”

Ex. 1005, 13:15–22. We rely on the Petition and supporting evidence in determining that Von Bauer teaches “a visitor detection system having at least one of a camera assembly, a motion detector assembly, and an infrared detector assembly, wherein the visitor detection system is configurable to detect the visitor within a field of view of the visitor detection system.”

Claim 1 recites “an outer housing coupled to the visitor detection system.” Petitioner contends Von Bauer teaches this limitation in disclosing that the doorbell station includes housing 60 suitable to be attached to a wall. Pet. 28 (citing Ex. 1005, 7:40–48, Fig. 1A). Von Bauer discloses “Video Doorbell Station 31 includes an enclosure 60 of a suitable size and shape to be attached to a structure of a wall, for example, adjacent to a doorway B of a building A.” Ex. 1005, 7:40–45. We rely on the Petition and supporting evidence in determining that Von Bauer teaches “an outer housing coupled to the visitor detection system.”

Claim 1 recites “wherein the visitor detection system comprises a first sensor configurable to detect a first indication suggestive of the visitor within the field of view, and a second sensor configurable to detect a second indication suggestive of the visitor within the field of view.” Petitioner contends that the combination of Von Bauer and Zhevelev teaches this limitation. Pet. 29–32.

Petitioner contends Von Bauer teaches a doorbell station that includes an infrared detector configurable to detect an indication of a person within the field of view of the infrared detector. Pet. 29 (citing Ex. 1005, 13:15–

36). As discussed above, Von Bauer discloses an infrared proximity detector that “goes to a logic true level when a person comes within the field of view of the IR detector and sufficiently close to it.” Ex. 1005, 13:15–22. We determine Von Bauer’s disclosure of an IR detector that goes to a logic level of true when a person is within its field of view teaches “a first sensor configurable to detect a first indication suggestive of the visitor within the field of view.”

Petitioner contends Zhevelev teaches an infrared detector that includes seven sub-detectors. Pet. 29–30 (citing Ex. 1006 ¶¶ 198, 204, Fig. 1). Petitioner contends that each of the sub-detectors of Zhevelev detects signals produced by motion of a person crossing the sub-detector’s corresponding sub-field of view. Pet. 30–32 (citing Ex. 1006 ¶¶ 236–37, 240, Fig. 8A). Zhevelev discloses “a detector comprising seven sub-detectors, each sub-detector . . . defining a corresponding sub field-of-view. The seven sub fields-of-view are preferably, but not necessarily, not overlapping.” Ex. 1006 ¶ 198, Fig. 1; *see id.* ¶¶ 236–37, 240, Fig. 8A. We determine that Zhevelev’s disclosure of a detector with multiple sub-detectors, each defining a corresponding sub field-of-view, teaches “wherein the visitor detection system comprises a first sensor configurable to detect a first indication suggestive of the visitor within the field of view, and a second sensor configurable to detect a second indication suggestive of the visitor within the field of view.”

Petitioner contends that using Zhevelev’s infrared detector as the infrared detector in Von Bauer’s doorbell station does no more than yield the predictable result of reducing false alarms as taught by Zhevelev. Pet. 17–21 (citing Ex. 1005, 13:15–36; Ex. 1006 ¶¶ 7, 18, 26, 196, 198, 204, 236;

Ex. 1003 ¶¶ 40–43, 46–50). Zhevelev discloses that infrared detectors, when installed outdoors, are subject to operational conditions which cause false alarms, including wind bursts, rain and snow, thermal interference signals, large variations in temperature within the field-of-view, movement of background elements, fast changes of background temperature, a high level of sunlight radiation, and the presence of animals. Ex. 1006 ¶¶ 7–15. These conditions result in the detector detecting undesired signals, causing false alarms. *Id.* ¶¶ 16–18. Zhevelev discloses that providing multiple non-overlapping sub-detectors causes the detector to detect desired signals while reducing undesired signals. *Id.* ¶¶ 26–28, 194–198.

Dr. Paradiso testifies that Von Bauer’s outdoor IR detector is faced with the general problem of false alarms caused by a variety of sources and operational conditions, as noted by Zhevelev. Ex. 1003 ¶ 42 (citing Ex. 1006 ¶ 26). Dr. Paradiso testifies that a person of ordinary skill in the art would have applied the teachings of Zhevelev’s outdoor IR detector to Von Bauer’s IR detector for the benefit of making Von Bauer’s doorbell station more resistant to false alarms when mounted outdoors. *Id.* ¶ 42 (citing Ex. 1006 ¶¶ 7, 18; Ex. 1005, 13:26–41). We rely on Dr. Paradiso’s testimony and supporting evidence in determining that replacing the known IR detector of Von Bauer with the known IR detector of Zhevelev does no more than yield the predictable benefit of reducing undesired signals as taught by Zhevelev. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) (“[W]hen a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.”).

Claim 1 recites “a wall that separates the first sensor from the second sensor, wherein the wall divides the field of view such that the first sensor is configured to detect the first indication within a first portion of the field of view and the second sensor is configured to detect the second indication within a second portion of the field of view.” Petitioner contends Zhevelev teaches this limitation in disclosing that each sub-detector compartment is defined by walls, so that each sensor receives only radiation emanating from its corresponding sub field of view, but not from the sub fields of view associated with other sensors. Pet. 32–37 (citing Ex. 1006 ¶¶ 196, 199, 204, 237, 240, Figs. 1, 2, 8A–8G). Zhevelev discloses that each “sub-detector compartment is defined by walls . . . [to allow] each sensor to receive only radiation emanating from its corresponding sub field-of-view.” Ex. 1006 ¶ 204. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 1 recites “wherein the button, the first sensor, and the second sensor face outward towards the field of view.” Petitioner contends the combination of Von Bauer and Zhevelev teaches this limitation. Petitioner contends Von Bauer teaches the button faces outward in disclosing a doorbell pushbutton that faces outward, towards the field of view encompassing a desired region. Pet. 37–38 (citing Ex. 1005, 7:40–52, Fig. 1A). Petitioner contends Zhevelev teaches “the first sensor, and the second sensor face outward” in disclosing multiple sensors, where each sensor receives radiation only from the sub field of view with which it is associated. Pet. 38–40 (citing Ex. 1006 ¶ 196, Fig. 8A).

Von Bauer discloses “referring to FIG. 1A, Video Doorbell Station 31 includes a pushbutton switch 37 that replaces the doorbell button originally

installed.” Ex. 1005, 7:49–51. Figure 1A of Von Bauer shows pushbutton switch facing outward. We determine Von Bauer teaches “the button . . . face[s] outward” as claimed. Zhevelev discloses that each “sensor receives radiation only from the sub field-of-view with which it is associated,” because each sensor faces outward, towards its associated sub field-of-view as shown in Figure 8A. Ex. 1006 ¶ 196, Fig. 8A. We determine Zhevelev discloses “the first sensor, and the second sensor face outward towards the field of view.” We rely on the Petition and supporting evidence in determining that the combination of Von Bauer and Zhevelev teaches “wherein the button, the first sensor, and the second sensor face outward towards the field of view.”

Claim 1 recites “wherein an outer surface of the wall faces outward, and the outer surface of the wall is located further outward than an outer surface of the first sensor and an outer surface of the second sensor.” Petitioner contends Zhevelev teaches this limitation in disclosing an outer surface of each wall of each compartment is located further outward than the outer surfaces of the sensor within the compartment, to allow each sensor to receive only radiation emanating from its corresponding sub field of view. Pet. 40–41 (citing Ex. 1006 ¶ 204, Fig. 1). Zhevelev discloses that each sensor of a respective sub-detector is “located within a corresponding sub-detector compartment,” and “[e]ach sub-detector compartment is defined by walls.” Ex. 1006 ¶ 204, Fig. 1. Dr. Paradiso testifies that Figure 1 of Zhevelev shows that the outer surface of each wall between the sub-detectors faces outward and is located further outward than an outer surface of each sensor within a compartment of a respective sub-detector. Ex. 1003, 60–61 (citing Ex. 1006 ¶ 204, Fig. 1). We rely on Dr. Paradiso’s testimony

and supporting evidence in determining that Zhevelev teaches “wherein an outer surface of the wall faces outward, and the outer surface of the wall is located further outward than an outer surface of the first sensor and an outer surface of the second sensor.”

Patent Owner does not dispute Petitioner’s contentions that the prior art teaches the claim limitations. Rather, Patent Owner contends that a person of ordinary skill in the art would not have been motivated to combine Zhevelev’s outdoor infrared sensor with Von Bauer’s video doorbell system. PO Resp. 16–24. In particular, Patent Owner contends that there is no motivation to combine the teachings of Zhevelev with those of Von Bauer, because there is no evidence that the multiple sensors of Zhevelev would improve the detection function of Von Bauer. PO Resp. 16–17. According to Patent Owner, the problem Zhevelev aims to solve is found only in multiple-sensor devices. *Id.* at 18–19 (citing Ex. 2001 ¶ 48; Ex. 1006 ¶¶ 7, 17). Patent Owner contends that Von Bauer does not have this problem because Von Bauer uses a single sensing element. *Id.* at 19 (citing Ex. 2001 ¶ 48); Sur-Reply 2–4.

Petitioner contends that a person of ordinary skill in the art would have combined the teachings of Zhevelev with Von Bauer’s video doorbell system for the benefit of reducing false triggering. Pet. 17–21 (citing Ex. 1003 ¶¶ 40–48). Petitioner contends that Zhevelev teaches that multi-sensor detectors perform better outdoors than single sensor detectors. Pet. Reply 8 (citing Ex. 1006 ¶ 19; Ex. 1003 ¶ 36). Zhevelev discloses that “solutions have been proposed for outdoor applications” that “incorporate two sensors . . . to activate a common alarm output upon generally simultaneous detection of motion by both sensors.” Ex. 1006 ¶ 19. Zhevelev discloses that

“[p]revention of false alarms is based on the statistical assumption that the probability that each of the two sensors will generate a false alarm at approximately the same instant is very low” and that “such detectors perform better outdoors than a detector employing a single sensor.” *Id.* Contrary to Patent Owner’s contention, we determine that the multiple sensors of Zhevelev would have improved the detection function of Von Bauer because the multi-sensor detector of Zhevelev will “perform better outdoors than [Von Bauer’s] detector employing a single sensor.” *Id.*

Patent Owner contends that Von Bauer has a solution to the problem of detecting false positives, in teaching a ten second delay to reduce false triggering by normal pedestrian traffic. PO Resp. 19–20 (citing Ex. 1005, 13:37–41; Ex. 2001 ¶ 49). According to Patent Owner, because Von Bauer already includes a solution to the problem of false positives with a single sensor, a person of ordinary skill would not have combined the teachings of Zhevelev with those of Von Bauer. *Id.* at 20 (citing Ex. 2001 ¶ 51); Pet. Reply 6–7.

Petitioner contends that the ten second delay of Von Bauer would not eliminate a false alarm caused by an operational condition such as moving trees and bushes, when the condition lasts for more than ten seconds. Pet. Reply 12–14 (citing Ex. 1006 ¶¶ 7–17; Ex. 1005, 13:15–41; Ex. 1015, 78:2–14). In contrast to Von Bauer, Petitioner contends that the multiple sensors of Zhevelev would eliminate a false alarm caused by moving bushes, when one sensor detects movement and an adjacent sensor does not. *Id.* at 14–17 (citing Ex. 1006 ¶¶ 237, 247; Fig. 8C; Ex. 1003 ¶¶ 43–45; Ex. 1015, 80:22–81:7).

Zhevelev discloses that “when installed outdoors . . . such [prior art single sensor] detectors are subject to operational conditions of various types, which cause false alarms,” such as wind bursts, rain and snow, thermal interference, large variations in temperature, movement of background elements, fast changes in background temperature, high level of sunlight radiation, and presence of animals. Ex. 1006 ¶¶ 7–18. Dr. Paradiso testifies that Zhevelev’s IR detector can detect false alarms arising from these various types of operational conditions. Ex. 1003 ¶ 43. For example, Dr. Paradiso testifies that when signals are received by sensors 50 and 70, but not from sensor 60 located between sensors 50 and 70, this indicates that the signals are “a result of moving trees or bushes located in the sub fields-of-view of sensors 50 and 70 and not in the sub field-of-view of sensor 60.” *Id.* ¶ 44 (quoting Ex. 1006 ¶ 247) (citing Ex. 1006, Fig. 8C). Dr. Baker testifies that ignoring the movement of bushes and trees and not producing a false trigger is “beneficial from the point that there is no false trigger, yes.” Ex. 1015, 80:17–21.

Dr. Paradiso testifies that the ten second delay of Von Bauer is narrowly directed to reducing false alarms caused by pedestrian traffic but does not address the more general problem of false alarms caused by the variety of operational conditions noted by Zhevelev. Ex. 1003 ¶ 42. Dr. Paradiso testifies that “Zhevelev’s IR detector design provides a solution to the problem of false alarms for outdoor IR detectors, which is more comprehensive and produces more accurate results than the limited ‘ten second delay’ solution in von Bauer.” Ex. 1003 ¶ 45. Dr. Baker testifies that Von Bauer “does not have the ability to look at multiple zones or multiple sensors and eliminate two different fields or a different field of

view to determine that there is no false trigger.” Ex. 1015, 81:2–7.

Dr. Baker testifies that an advantage of Zhevelev over Von Bauer, is that “Zhevelev uses more sensors and a more elaborate detection scheme, yes.” *Id.* at 81:8–11.

We rely on the testimonies of Dr. Baker and Dr. Paradiso in determining that a person of ordinary skill would have been motivated to use Zhevelev’s detector in the doorbell system of Von Bauer because Zhevelev’s IR detector design provides a solution to the problem of false alarms for outdoor IR detectors, which is more comprehensive and produces more accurate results than the limited ten second delay solution in Von Bauer. *KSR*, 550 U.S. at 419–20 (“One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.”).

Patent Owner contends that combining Zhevelev’s multi-sensor detector with the doorbell system of Von Bauer would require replacing Von Bauer’s single sensor with at least three sensors that are angled, separated by partitions, and fit into the relatively small dimensions of Von Bauer’s housing. PO Resp. 20–22 (citing Ex. 1003 ¶ 46; Ex. 2001 ¶¶ 53–56; Ex. 1015, 64:10–20; Ex. 1006 ¶ 27; Ex. 1005, 7:45–48). Patent Owner contends that the combination would also require removing Von Bauer’s ten second delay. PO Resp. 22–23. According to Patent Owner, such modifications would require substantial experimentation, and a person of ordinary skill would have no guarantee of success. PO Resp. 22–23 (citing Ex. 2001 ¶¶ 55–56); Sur-Reply 7–9.

Petitioner contends that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, but rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art. Pet. Reply 19–20; *see In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Petitioner contends that a person of ordinary skill in the art is also a person of ordinary creativity that knows how to combine familiar prior art elements to achieve the same functions. Pet. Reply 20–21; *see Tyco Healthcare Grp. LP v. Ethicon Endo-Surgery, Inc.*, 774 F.3d 968, 978 (Fed. Cir. 2014) (citing *KSR*, 550 U.S. at 420–21). Petitioner contends that incorporating infrared detectors into doorbells was already commonplace. Pet. Reply 21–24 (citing Ex. 1003 ¶¶ 46–49; Ex. 1006 ¶¶ 210, 273; Ex. 1008; Ex. 1009; Ex. 1013; Ex. 1016, 6).

Dr. Paradiso testifies that “the mechanics of incorporating infrared detectors into doorbells were well known to persons of ordinary skill in the art before the ’202 Patent.” Ex. 1003 ¶ 49. Dr. Paradiso testifies that combining Zhevelev’s detector with Von Bauer’s doorbell system would have been relatively straightforward because Zhevelev’s detector utilizes off-the-shelf components. *Id.* ¶¶ 47–48. Dr. Paradiso testifies that a person of ordinary skill in the art would have had a reasonable expectation of success because Zhevelev’s detector was specifically intended to be implemented in outdoor detectors ready for improvement, such as the detector of Von Bauer’s doorbell system. *Id.* ¶ 46. With respect to Patent Owner’s argument about removing the ten second delay of Von Bauer, Dr. Paradiso testifies that replacing, augmenting, or using the timer in a different way in Zhevelev’s detector were all possible. Ex. 2002, 66:7–20;

see id. at 62:5–22, 63:17–64:9. We rely on the testimony of Dr. Paradiso in determining that a person of ordinary skill in the art would have known how to combine the known detector of Zhevelev with the known doorbell system of Von Bauer to achieve the predictable result of a doorbell system with a detector that triggers fewer false alarms as taught by Zhevelev.

Patent Owner contends that removing the ten second delay would render Von Bauer inoperable for the intended purpose of having a ten second delay. PO Resp. 23–24 (citing Ex. 2001 ¶ 56); Sur-Reply 9–10. Petitioner contends that the intended purpose of Von Bauer is “announcing the presence of a person at the entrance of a structure,” not having a ten second delay. Pet. Reply 24–26 (quoting Ex. 1005, 1:5–10). Petitioner contends that the purpose of Von Bauer’s delay is reducing the rate of false alarms, so that the doorbell does not announce a visitor when there is none. *Id.* at 25–26 (citing Ex. 1005, 13:37–41). Dr. Paradiso testifies that the ten second delay of Von Bauer is a rudimentary solution to the problem of false alarms and that Zhevelev provides an improved solution that addresses false alarms caused by a variety of conditions in an outdoor environment. Ex. 1003 ¶ 42.

We agree with Petitioner that Von Bauer’s intended purpose is announcing visitors, not having a ten second delay. We rely on the testimony of Dr. Paradiso in determining that the ten second delay is a rudimentary solution by which Von Bauer seeks to achieve its intended purpose of announcing the presence of a person and that modifying Von Bauer’s doorbell system to include Zhevelev’s detector would enhance the ability of Von Bauer’s doorbell system to achieve its intended purpose of announcing the presence of visitors, by reducing false alarms.

We determine the Petition and supporting evidence show by a preponderance of the evidence that the combination of Von Bauer and Zhevelev would have rendered claim 1 obvious.

2. Analysis of Dependent Claims 3–5, 7, 8, and 10

We determine that the Petition and supporting evidence show that combination of Von Bauer and Zhevelev would have rendered claims 3–5, 7, 8, and 10 obvious for the reasons discussed below.

Claim 3 recites “the wall is located at least partially between the first sensor and the second sensor.” Petitioner contends Zhevelev teaches this limitation in disclosing that the walls in its detector are located between each of the sensors. Pet. 42 (citing Ex. 1006 ¶¶ 196, 204, Fig. 1; Ex. 1003, 61–62). Patent Owner does not dispute this contention. Zhevelev discloses that “the multiple sensors and their associated optical segments are optically separated from each other, for instance by partitions.” Ex. 1006 ¶ 196, Fig. 1. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 4 recites “the first sensor comprises a first infrared detector and the second sensor comprises a second infrared detector, wherein the first infrared detector is configurable to detect a first infrared signature within the first portion of the field of view and the second infrared detector is configurable to detect a second infrared signature within the second portion of the field of view.” Petitioner contends that the combination of Von Bauer and Zhevelev teaches this limitation. Pet. 43–44. In particular, Petitioner contends that Von Bauer discloses a doorbell station with an infrared detector and that Zhevelev discloses multiple infrared sensors, where each sensor receives radiation only from its field of view. *Id.* (citing Ex. 1005,

6:43–51, 13:15–36; 1006 ¶¶ 196, 198–199, 204, Fig. 8A; Ex. 1003, 64–66, ¶¶ 40–50). Patent Owner does not dispute this contention. Von Bauer discloses a doorbell system with an infrared detector. Ex. 1005, 13:15–25. Zhevelev discloses that each “sensor receives radiation only from the sub field-of-view with which it is associated and not from the other sub fields-of-view.” Ex. 1006 ¶ 196. We rely on the Petition and supporting evidence in determining that the combination of Von Bauer and Zhevelev teaches this limitation.

Claim 5 recites “wherein the first sensor comprises a first motion detector and the second sensor comprises a second motion detector, wherein the first motion detector is configurable to detect a first motion within the first portion of the field of view and the second motion detector is configurable to detect a second motion within the second portion of the field of view.” Petitioner contends that this limitation is taught by the combination of Von Bauer and Zhevelev. Pet. 44–45 (citing Ex. 1003, 66–68). Petitioner contends Von Bauer teaches a human presence sensor such as an infrared detector that responds to the presence of a person in the vicinity of the doorbell system. *Id.* at 45 (citing Ex. 1005, 6:43–51, 13:15–36). Petitioner contends that Zhevelev teaches multiple infrared sub-detectors, where each sub-detector detects motion within its respective sub field-of-view. *Id.* (citing Ex. 1006 ¶¶ 196, 199, 236–237, 240, Fig. 8A). Patent Owner does not dispute these contentions.

Zhevelev discloses “that motion of a person past the detector will be detected sequentially by at least two adjacent sub-detectors.” Ex. 1006 ¶ 237. Zhevelev discloses an “example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70. The

motion of the person is initially detected by sensor 50, and thereafter . . . the motion of the person is detected by sensor 60.” Ex. 1006 ¶ 240. We rely on the Petition and supporting evidence in determining that the combination of Von Bauer and Zhevelev teaches the limitation of claim 5.

Claim 7 recites “wherein the wall is configurable to prevent the first sensor from detecting the second indication suggestive of the visitor from the second portion of the field of view, and wherein the wall is configurable to prevent the second sensor from detecting the first indication suggestive of the visitor from the first portion of the field of view.” Petitioner contends Zhevelev teaches this limitation in disclosing walls between adjacent sensors that prevent each sensor from detecting motion in sub fields-of-view of other sensors. Pet. 48–51 (citing Ex. 1006 ¶¶ 196, 199, 204, 240, Figs. 1, 8A; Ex. 1003, 71–74). Patent Owner does not dispute this contention. Zhevelev discloses that “[e]ach sub-detector compartment is defined by walls . . . [to allow] each sensor to receive only radiation emanating from its corresponding sub field-of-view.” Ex. 1006 ¶ 204. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 8 recites “when the doorbell is attached to a building, the first sensor is horizontally spaced from the second sensor.” Petitioner contends that the combination of Von Bauer and Zhevelev teaches this limitation. Pet. 51–54 (citing Ex. 1003, 74–79). Petitioner contends that Von Bauer teaches a doorbell station attached to a building. Pet. 51–52 (citing Ex. 1005, 7:40–48, 13:15–36; Fig. 1). Petitioner contends that Zhevelev teaches a first sensor horizontally spaced from a second sensor. Pet. 53–54 (citing Ex. 1006 ¶¶ 193, 240, Fig. 8A). Dr. Paradiso testifies that Von Bauer

teaches a doorbell station configured to be attached to a building. Ex. 1003, 74–75 (citing Ex. 1005, 7:40–48, 13:15–36, Figs. 1, 2, 13). Dr. Paradiso testifies that Zhevelev’s “horizontal arrangement of the sensors is also illustrated in Fig. 8A” and provides the benefit of “sequentially detect[ing] motion of a person as the person moves across the ground in the area around the entrance of a building.” Ex. 1003, 76, 78. We rely on the testimony and supporting evidence of Dr. Paradiso in determining that the combination of Von Bauer and Zhevelev teaches this limitation.

Claim 10 recites “wherein an outer surface of the button is located further outward than the outer surface of the wall.” Petitioner contends that this limitation is taught by the combination of Von Bauer and Zhevelev. Pet. 54–57 (citing Ex. 1003, 82–84). Petitioner contends that Von Bauer teaches a pushbutton facing outwards and that Zhevelev teaches a wall-based arrangement facing outwards. Pet. 54 (citing Ex. 1005, 7:40–52, 13:15–36, Fig. 1; Ex. 1006, Fig. 1). Dr. Paradiso testifies that a person of ordinary skill in the art would have found it obvious to configure the outer surface of the pushbutton to be located further outward than the outer surface of the wall. Ex. 1003, 82. Dr. Paradiso testifies that a person of ordinary skill in the art, when configuring the outer surfaces of the pushbutton and the wall, would have the finite options of configuring the outer surface of the pushbutton (1) further outward than the outer surface of the wall, (2) flush with the outer surface of the wall, or (3) further inward than the outer surface of the wall. Ex. 1003, 82. Dr. Paradiso testifies that a smart doorbell with a doorbell button protruding further outward than the housing was known in the art. Ex. 1003, 83–84 (citing Ex. 1010, Fig. 4; Ex. 1011, Fig. 8B). Petitioner further contends that the claimed “an outer

surface of the button is located further outward than the outer surface of the wall” does not solve a problem, does not present an unexpected result, is not critical, and is not advantageous. Pet. 55–56 (citing *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975); Ex. 1003, 82–83; Ex. 1001, Fig. 1); Pet. Reply 27.

Patent Owner contends that arranging the outer surface of Von Bauer’s pushbutton to be further outward than the wall is not taught by Zhevelev, nor by Von Bauer. PO Resp. 25–26; Sur-Reply 10–11. Patent Owner contends that the Petition and Dr. Paradiso incorrectly relied on other prior art references to show that a protruding doorbell button was known in the art. PO Resp. 26 (citing Ex. 1003, 82–84, 125, 128; Ex. 2002, 13:21–14:22; Ex. 1010; Ex. 1011; Ex. 1012; Ex. 1013). Patent Owner contends that finding the protruding button in the prior art and contending that a person of ordinary skill in the art would have chosen such a design is impermissible hindsight. PO Resp. 26–27 (citing Ex. 2001 ¶ 64). Petitioner contends that Patent Owner’s argument and Dr. Baker’s testimony only address the language of claim 25, not the language of claim 10. Pet. Reply 26–27 (citing Ex. 2001 ¶¶ 59–61; Ex. 1015, 86:14–88:15).

The additional references cited in the Petition and by Dr. Paradiso “can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness.” *Genzyme Therapeutic Prod. Ltd. P’ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1369 (Fed. Cir. 2016). Patent Owner “was not denied notice of the . . . references or an opportunity to respond to them.” *Id.* We agree with Dr. Paradiso that a skilled artisan, when reading about Von Bauer’s doorbell button, would have brought to bear the knowledge of

protruding doorbell buttons. Ex. 1003, 83–84 (citing Ex. 1010, Fig. 4; Ex. 1011, Fig. 8B).

We agree with Dr. Paradiso that a button protruding further outward from a wall is one of a finite number of choices, namely, protruding further outward, flush with, or recessed further inward. *Id.* at 82–83, 124–127.

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

KSR, 550 U.S. at 421; *see also Uber Techs. Inc. v. X One, Inc.*, 957 F.3d 1334, 1341 (Fed. Cir. 2020) (“[T]wo known, finite, predictable solutions for solving the same problem . . . , consistent with precedent, renders obvious the challenged limitation.”).

We rely on the Petition and supporting evidence in determining that “a person of ordinary skill has good reason to pursue the known option[] within his or her technical grasp” of a button protruding from a housing, and that “the anticipated success . . . is likely the product not of innovation but of ordinary skill and common sense.” *KSR*, 550 U.S. at 421. Petitioner has provided “convincing evidence that” locating the doorbell button further outward than the wall “was a design step well within the grasp of a person of ordinary skill in the relevant art.” *KSR*, 550 U.S. at 427. We rely on the testimony and supporting evidence of Dr. Paradiso in determining that the combination of Von Bauer and Zhevelev teaches this limitation.

3. Analysis of Independent Claims 18 and 19

Petitioner contends that independent claim 19 is a system claim version of independent claim 18, and that each limitation of claim 19 is substantially similar to a corresponding limitation in claim 18. Pet. 77. Petitioner analyzes claims 18 and 19 together. *See id.*; Ex. 1003, 108–111.

Claim 18 recites a “method for using a doorbell system.” Claim 19 recites a “doorbell system.” Petitioner contends that Von Bauer teaches this limitation in disclosing a video doorbell system. Pet. 57–58 (citing Ex. 1005, 6:26–37, Abstract, Fig. 1; Ex. 1003, 84–85). Von Bauer discloses using a video doorbell system for monitoring sounds and images at an entrance of a building. Ex. 1005, 6:26–37. We rely on the Petition and supporting evidence in determining that Von Bauer teaches this limitation.

Claims 18 and 19 recite “a button configurable to enable a visitor to sound a chime.” Petitioner contends that claim 1 recites an identical limitation and that Von Bauer teaches this limitation as discussed in Petitioner’s analysis of claim 1. Pet. 58 (citing Pet. 23–25; Ex. 1003, 85). We determine that Von Bauer teaches this limitation as discussed in our analysis of claim 1 above.

Claims 18 and 19 recite “a first motion sensor configurable to detect a first indication suggestive of the visitor within a field of view of the doorbell system, a second motion sensor configurable to detect a second indication suggestive of the visitor within the field of view.” Petitioner contends that this limitation is taught by the combination of Von Bauer and Zhevelev. Pet. 58–62 (citing Ex. 1003, 85–91; Ex. 1005, 13:15–36, 6:43–51; Ex. 1006 ¶¶ 198, 204, 236–237, Figs. 1, 2, 8A, Abstract). Claim 1 recites an identical

limitation. We determine the combination of Von Bauer and Zhevelev teaches this limitation for the reasons given in our analysis of claim 1 above.

Claims 18 and 19 recite “an outer housing having a backside configured to be coupled to a building and having a frontside facing outward towards the field of view.” Petitioner contends Von Bauer teaches this limitation in disclosing a housing of a doorbell station that has a backside configured to be attached to a wall of a building, and “a frontside facing outward towards a field of view.” Pet. 62–64 (citing Ex. 1005, 7:40–48, 13:15–36, Figs. 1A, 1B, 3; Ex. 1003, 91–93). Von Bauer discloses attaching a housing of a video doorbell station to a wall of a building, where a sensor within the housing has a field of view encompassing a desired region. Ex. 1005, 7:40–48, 13:15–36, Figs. 1A, 1B, 3. We rely on the Petition and supporting evidence in determining that Von Bauer teaches this limitation.

Claim 18 recites “orienting the button of the doorbell system such that the button faces outward from the frontside of the outer housing.” Claim 19 recites a similar limitation. Petitioner contends Von Bauer teaches this limitation in disclosing a doorbell button facing outwards from the front side of the doorbell. Pet. 65 (citing Ex. 1005, 7:40–52, Fig. 1A; Ex. 1003, 94). Dr. Paradiso testifies that Figure 1A of Von Bauer shows a doorbell button facing outwards from the front side of the housing. Ex. 1003, 93–95. We rely on the Petition and supporting evidence in determining that Von Bauer teaches this limitation.

Claim 18 recites “orienting the first motion sensor to face outward from the frontside of the outer housing; orienting the second motion sensor to face outward from the frontside of the outer housing.” Claim 19 recites a similar limitation. Petitioner contends that the combination of Von Bauer

and Zhevelev teaches this limitation. Pet. 65–68 (citing Ex. 1003, 95–98; Ex. 1005, 7:40–48, 13:15–36, Figs. 1A, 1B; Ex. 1006 ¶ 196, Fig. 8A). Von Bauer discloses a human presence sensor that faces a field of view encompassing a desired region. Ex. 1005, 7:40–48, 13:15–36, Fig. 1A. Zhevelev discloses motion sensors facing outwards toward a field-of-view. Ex. 1006 ¶ 196, Fig. 8A. We rely on the Petition and supporting evidence in determining that the combination of Von Bauer and Zhevelev teaches this limitation.

Claim 18 recites “placing a wall at least partially between the first motion sensor and the second motion sensor such that the wall is configured to hide a first portion of the field of view from the first motion sensor and to hide a second portion of the field of view from the second motion sensor.” Claim 19 recites a similar limitation. Petitioner contends Zhevelev teaches this limitation in disclosing motion sensors separated from each other by walls, so that each sensor detects radiation only within its sub field-of-view. Pet. 68–71 (citing Ex. 1006 ¶¶ 196, 199, 204, Figs. 1, 2, 8A; Ex. 1003, 98–102). Zhevelev discloses that each “sub-detector compartment is defined by walls . . . [to allow] each sensor to receive only radiation emanating from its corresponding sub field-of-view.” Ex. 1006 ¶ 204; *see id.* at Fig. 2. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 18 recites “configuring the doorbell system to distinguish between motions detected in different sections of the field of view by associating the first indication detected by the first motion sensor with a first area of the field of view and associating the second indication detected by the second motion sensor with a second area of the field of view.” Claim 19

recites a similar limitation. Petitioner contends that Zhevelev teaches this limitation in dividing a field-of-view into non-overlapping sub fields-of-view, such that each sensor receives radiation only from its associated sub field-of-view. Pet. 74 (citing Ex. 1003, 102–105; Ex. 1006, Figs. 2, 8A, 8C, ¶¶ 196, 236–237, 239–240, 247). Zhevelev discloses “that motion of a person past the detector will be detected sequentially by at least two adjacent sub-detectors.” Ex. 1006 ¶ 237. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 18 recites “configuring the doorbell system to ignore the first indication in response to associating the first indication with the first area of the field of view.” Claim 19 recites a similar limitation. Petitioner contends Zhevelev teaches this limitation in disclosing ignoring signals received by non-adjacent sub-detectors. Pet. 74–77 (citing Ex. 1003, 105–107; Ex. 1006 ¶¶ 26, 237–238, 247, Fig. 8C). Zhevelev discloses that “should the signal be received by only one sub-detector, or by two sub-detectors, which are not adjacent to one another . . . the signal may be regarded as a false signal and ignored.” Ex. 1006 ¶ 237. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Petitioner contends that a person of ordinary skill in the art would have combined the teachings of Zhevelev with Von Bauer’s video doorbell system for the benefit of reducing false triggering. Pet. 17–21 (citing Ex. 1003 ¶¶ 40–48). Patent Owner does not dispute that the prior art teaches the claim limitations, but contends that a person of ordinary skill would not have been motivated to combine the teachings of Zhevelev and Von Bauer. PO Resp. 16–25; Sur-Reply 2–9. We disagree with Patent Owner for the reasons discussed in our analysis of claim 1 above.

We determine that the combination of Von Bauer and Zhevelev would have rendered claims 18 and 19 obvious.

4. Analysis of Dependent Claims 20, 21, and 23–25

We determine that the Petition and supporting evidence show that combination of Von Bauer and Zhevelev would have rendered claims 20, 21, and 23–25 obvious for the reasons discussed below.

Claim 20 recites “at least a portion of the wall is located further outward than the first sensor and the second sensor.” Petitioner contends Zhevelev discloses this limitation in Figure 1, which shows an outer surface of each wall 78 located further outward than each sensor 60, 70. Pet. 77–78 (citing Ex. 1006, Fig. 1; Ex. 1003, 111–113). Patent Owner does not dispute this contention. Dr. Paradiso testifies that Figure 1 of Zhevelev shows that the outer surface of each wall between sub-detectors is located further outward than each sensor within the sub-detector compartments. Ex. 1003, 111–113. We rely on the Petition and supporting evidence in determining that Zhevelev teaches this limitation.

Claim 21 recites “the first sensor comprises a first infrared detector and the second sensor comprises a second infrared detector, wherein the first infrared detector is configurable to detect a first infrared signature within the first portion of the field of view and the second infrared detector is configurable to detect a second infrared signature within the second portion of the field of view.” Petitioner contends that this limitation is similar to that recited in claim 4 and that Zhevelev teaches this limitation as discussed in the analysis of claim 4. Pet. 78–79 (citing Ex. 1003, 113–116). Patent Owner does not dispute this contention. We determine that Zhevelev teaches this limitation as discussed in our analysis of claim 4 above.

Claim 23 recites “the wall is configurable to prevent the first sensor from detecting the second indication suggestive of the visitor from the second portion of the field of view, and the wall is configurable to prevent the second sensor from detecting the first indication suggestive of the visitor from the first portion of the field of view.” Petitioner contends that this limitation is similar to that recited in claim 7 and is taught by the combination of Von Bauer and Zhevelev as discussed in the analysis of claim 7. Patent Owner does not dispute this contention. We determine that the combination of Von Bauer and Zhevelev teaches this limitation for the reasons given in our analysis of claim 7 above.

Claim 24 recites “wherein the first sensor is configurable to detect the first indication within the first portion of the field of view and the second sensor is configurable to detect the second indication within the second portion of the field of view.” Petitioner contends that the combination of Von Bauer and Zhevelev teaches this limitation. Pet. 79–82 (citing Ex. 119–122). Petitioner contends Zhevelev teaches multiple sensors that are each configurable to detect the motion of a person within its respective sub field-of-view. *Id.* (citing Ex. 1006 ¶¶ 196, 199, 204, 240, Fig. 8A). Patent Owner does not dispute this contention. Zhevelev discloses an “example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70. The motion of the person is initially detected by sensor 50 and thereafter . . . the motion of the person is detected by sensor 60.” Ex. 1006 ¶ 240, Fig. 8A. We rely on the Petition and supporting evidence in determining that the combination of Von Bauer and Zhevelev teaches this limitation.

Claim 25 recites “the doorbell is coupled to a building, the first sensor and the second sensor are recessed within the outer housing, and an outer surface of the button protrudes outward from the outer housing.” Petitioner contends that the combination of Von Bauer and Zhevelev teaches this limitation. Pet. 82–86 (citing Ex. 1003, 124–130).

Petitioner contends that Von Bauer teaches a housing for a doorbell station adapted to be mounted to a building that includes a pushbutton. Pet. 82–84 (citing Ex. 1005, 6:26–37, 7:40–52, Figs. 1A, 1B). Petitioner, relying on testimony of Dr. Paradiso, contends that arranging the outer surface of the pushbutton to protrude from the housing would have been a predictable and obvious alternative in a limited set of options. *Id.* at 83–84 (citing *Kuhle*, 526 F.2d at 555; Ex. 1003, 125–127; Ex. 1010; Ex. 1011).

Petitioner contends that a person of ordinary skill in the art, when modifying Von Bauer’s sensor to include multiple sensors as taught by Zhevelev, would have recessed the sensors within the housing. Pet. 85 (citing Ex. 1003, 125, 128). Petitioner contends that a person of ordinary skill would have known of smart doorbells having recessed sensors, and would have known that recessed sensors provide the advantage of being less susceptible to interference with ambient sunlight entering the front window of the housing. *Id.* at 85–86 (citing Ex. 1003, 128–130; Ex. 1012 ¶¶ 9, 26, Fig. 2; Ex. 1013, Fig. 23).

Patent Owner contends that Petitioner, in asserting that the additional limitations of claim 25 are obvious design choices, is relying on impermissible hindsight. Sur-Reply 10–12; PO Resp. 26–27 (citing Ex. 2001 ¶ 64). Patent Owner contends that the Petition and Dr. Paradiso refer to other prior art references, even though Dr. Paradiso testified that the

teachings of Von Bauer and Zhevelev were the basis for his opinions of obviousness. PO Resp. 26 (citing Ex. 1003, 82–84, 125, 128; Exs. 1010, 1011, 1012, 1013; Ex. 2002, 13:21–14:22).

As discussed above in our analysis of claim 10, the additional references cited in the Petition and by Dr. Paradiso can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness. Patent Owner was not denied notice of the references or an opportunity to respond to them.

As discussed above in our analysis of claim 10, we agree with Dr. Paradiso that a skilled artisan, when reading about Von Bauer’s doorbell button, would have brought to bear the knowledge of protruding doorbell buttons. We agree with Dr. Paradiso that a protruding button is one of a finite number of choices, namely, protruding, flush, or recessed. Ex. 1003, 82–84. We also agree with Dr. Paradiso that a skilled artisan would have brought to bear the knowledge of recessed sensors, and would have known that an advantage of recessed sensors is being less susceptible to ambient sunlight. Ex. 1003, 127–130 (citing Ex. 1012 ¶¶ 9, 26, Fig. 2; Ex. 1013, Fig. 23).

We rely on the Petition and supporting evidence in determining that “a person of ordinary skill has good reason to pursue the known options within his or her technical grasp” of a button protruding from a housing and sensors recessed within the housing, and that “the anticipated success [of the combination] is likely the product not of innovation but of ordinary skill and common sense.” *KSR*, 550 U.S. at 421. Petitioner has provided “convincing evidence that” recessing the sensors within the housing, and protruding the

doorbell button outward from the housing “was a design step well within the grasp of a person of ordinary skill in the relevant art.” *Id.* at 427.

III. CONCLUSION³

For the foregoing reasons, we determine that Petitioner shows by a preponderance of the evidence that claims 1, 3–5, 7, 8, 10, 18–21, and 23–25 are unpatentable, as summarized in the following table:

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 3–5, 7, 8, 10, 18–21, 23–25	103	Von Bauer, Zhevelev	1, 3–5, 7, 8, 10, 18–21, 23–25	
Overall Outcome			1, 3–5, 7, 8, 10, 18–21, 23–25	

³ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 3–5, 7, 8, 10, 18–21, and 23–25 are unpatentable under 35 U.S.C. § 103;

FURTHER ORDERED that because this Final Written Decision is final, a party to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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