UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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RING LLC,
Petitioner,

v.

SKYBELL TECHNOLOGIES, INC.,
Patent Owner

_____

PETITION FOR *INTER PARTES* REVIEW

OF

U.S. PATENT NO. 9,055,202

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I. INTRODUCTION

U.S. Patent No. 9,055,202 ("the '202 Patent," RING-1001) is generally directed to a doorbell that detects visitors using a motion detector with multiple sensors. After a brief four-month prosecution with no rejections, the Examiner allowed the '202 Patent seemingly because the claims recite a physical wall that optically separates the sensors. The alleged purpose of the wall is to reduce false detections by limiting each sensor's view to a respective portion of the total field of view. The examiner erred in allowing the claims of the '202 Patent because the concept of using a wall to optically separate motion sensors was already well known to persons of ordinary skill in the art.

For example, U.S. Patent Application Publication No. 2007/0029486 to Zhevelev achieves the same goal as the '202 Patent—the reduction of false triggering in a motion detector—in exactly same way—by placing a physical wall between multiple sensors so that each only views a portion of the field of view. Zhevelev's wall arrangement is specifically designed to improve the performance of outdoor motion detectors, and thus would naturally be applied to motion-detecting doorbells. U.S. Patent 5,428,388 to von Bauer, for example, describes one such doorbell that detects the motion of visitors near the entrance of a building. The combination of von Bauer and Zhevelev renders obvious the claims of the '202 Patent.

The evidence in this petition demonstrates that claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 of the '202 Patent are unpatentable under 35 U.S.C. § 103. Accordingly, Ring LLC ("Petitioner") respectfully requests that these claims be held unpatentable and cancelled.

II. MANDATORY NOTICES

A. Real Party-in-Interest

The real parties-in-interest are Ring LLC[1], 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.

B. Related Matters

As of the filing date of this petition, the '202 Patent has been asserted in *SkyBell Technologies, Inc. v. Ring Inc.*, 8:18-cv-00014 (C. D. Cal. 2018).

[1] In April 2018, Ring Inc. converted to a limited liability company and changed its name to Ring LLC.

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III. GROUNDS FOR STANDING

Petitioner certifies that the '202 Patent is eligible for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review challenging the patent claims on the grounds identified in this petition. Petitioner was served with a complaint asserting infringement of the '202 Patent not more than one year before the filing of this Petition. Petitioner has not filed a civil action challenging the validity of any claim of the '202 Patent.

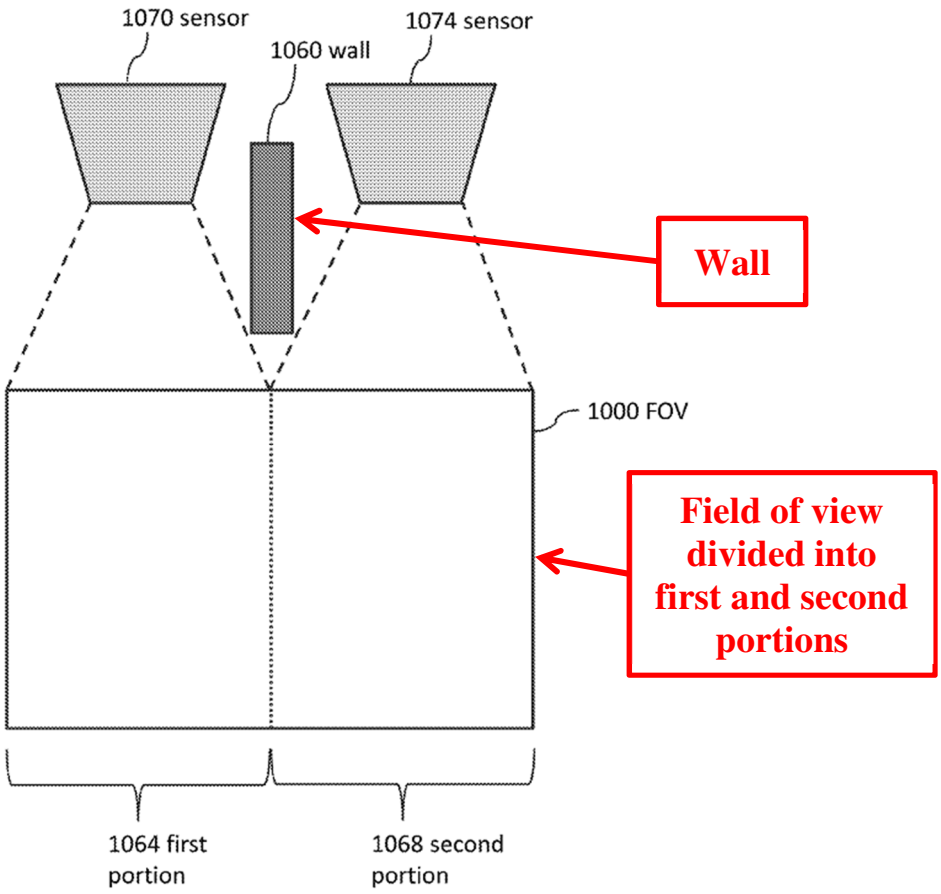
IV. THE '202 PATENT

A. Overview of the '202 Patent

The '202 Patent is generally directed to a doorbell that "can detect visitors using a visitor detection system" that includes, for example, a "motion detector

assembly." RING-1001, Abstract. The '202 Patent explains that the doorbell "can be mounted in an entryway to enable the doorbell to see an area in front of the doorbell," where the field of view of the visitor detection system encompasses the entryway. *Id*. at 3:14-18, 24:33-36.

According to the '202 Patent, the visitor detection system includes two sensors, such as "infrared sensors and/or motion sensors," that can each detect indications suggestive of a visitor in the field of view of the doorbell. RING-1001, Abstract, 33:3-6. In some embodiments, "a wall (e.g., a plastic blade) can be used to divide the field of view" into first and second portions, as illustrated in Fig. 16 of the '202 Patent:



RING-1001, Fig. 16 (annotated); RING-1003, ¶ 24.

With reference to Fig. 16, the '202 Patent explains that the wall can "hide" motion in the second portion from the first sensor and vice versa:

> The wall 1060 can be configured to divide the field of view 1000 into portions 1064, 1068 such that the doorbell system can distinguish between motions in different portions 1064, 1068. For example, the wall 1060 can be configured to prevent a second sensor 1074 from detecting a motion that the first sensor 1070 can detect (e.g., because the wall 1060 can "hide" the motion from the second sensor 1074).

RING-1001, 33:16-22; *see also id.* at 30:49-53 ("Some embodiments include

dividing the field of view into the first portion and the second portion such that the doorbell system is configured to distinguish between the first motion detected in the first portion and the second motion detected in the second portion.").

The '202 Patent additionally states that the doorbell can "ignore indications that are suggestive of a visitor" in some instances "to reduce the number of false positives." RING-1001, 27:31-32, 24:55-58. For example, the doorbell may "screen[] out motions that are too fast to likely be from a visitor." *Id*. at 30:8-11, 30:19-21.

As this Petition establishes, however, not only was it well known before the '202 Patent for a doorbell to include an infrared motion detector, but it was also well known for infrared detectors to include walls optically separating sensors in order to reduce false positives.

B. Prosecution History

The '202 Patent issued on June 9, 2015 from U.S. Patent Application No. 14/621,132 filed February 12, 2015. The '202 Patent is purportedly a continuation of an application filed on October 31, 2014. Whether the '202 Patent is entitled to its earliest alleged priority date is irrelevant for the purpose of this petition, as the prior art relied upon herein pre-dates the earliest alleged priority date.

During an extremely brief prosecution (less than four months from filing to issuance), the Examiner issued a notice of allowance without issuing an office

action or ever rejecting the claims. RING-1002, pp. 13-22. The notice of allowance followed an examiner interview and an amendment by Patent Owner. *Id*. at pp. 71-82. The only indication of the specific prior art references discussed during the interview is found in Applicant's interview summary, which states that "U.S. Nonprovisional Patent Application No. 2014/0088761 ('Shamlian')" was discussed. *Id*. at p. 80; *see also id*. at p. 23 (no references identified in the Examiner-Initiated Interview Summary).

In the statement of reasons for allowance, the Examiner generally indicated that the prior art taught the first two limitations of claim 1, but that "none of the prior arts disclose" the remaining elements ("an outer housing…," "a wall…," "wherein an outer surface…"). RING-1002, pp. 20-21. As discussed in this Petition, however, the Examiner erred in allowing the claims of the '202 Patent because all of the above elements were well known before the earliest alleged priority date.

C. Claim Construction

In an *inter partes* review, claims "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), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. §

42.100(b); *see also Phillips v. AWH Corp*., 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Further, the Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper No. 11, 16 (PTAB August 14, 2015) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc*., 200 F.3d 795, 803 (Fed. Cir.1999)). Petitioner submits that for the purposes of this proceeding, the terms of the challenged claims should be given their plain and ordinary meaning, and no terms require specific construction.[2]

V. RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF

Petitioner asks that the Board review the accompanying prior art and analysis, institute a trial for *inter partes* review of claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 of the '202 Patent, and cancel those claims as unpatentable.

As explained below and in the declaration of Petitioner's expert, Dr. Joseph Paradiso, the concepts described and claimed in the '202 Patent were not novel before its earliest alleged priority date. This petition explains where each element of claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 is found in the prior art and why the

[2] Petitioner does not concede that any term in the challenged claims meets the statutory requirements of 35 U.S.C. § 112, or that the challenged claims recite patentable subject matter under 35 U.S.C. § 101.

claims would have been obvious to a person of ordinary skill in the art ("POSITA") before the earliest claimed priority date of the '202 Patent. *See* RING-1003, ¶ 16 (noting the level of ordinary skill in the art as a bachelor's degree in Electrical Engineering or Computer Engineering, or equivalent training, as well as at least two years of technical experience in the field of sensing, signaling, embedded and/or mobile systems).

VI. IDENTIFICATION OF CHALLENGES

This petition challenges the patentability of claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 of the '202 Patent on one ground:

Challenge	Claims	Ground
Challenge #1	1, 3-5, 7, 8, 10, 18-21, and 23-25	35 U.S.C. § 103 over U.S. Patent 5,428,388 to **von Bauer** *et al*. ("von Bauer," RING-1005) in view of U.S. Patent Application Publication No. 2007/0029486 to **Zhevelev** *et al*. ("Zhevelev," RING-1006)

Prior Art Status

The '202 Patent is governed by post-AIA sections 35 U.S.C. §§ 102 and 103 based on its earliest alleged priority date of October 31, 2014.

von Bauer (RING-1005) was filed on June 15, 1992 and issued June 27, 1995, and is thus prior art at least under 35 U.S.C. § 102(a)(1).

Zhevelev (RING-1006) was filed June 22, 2006 and published February 8, 2007, and is thus prior art at least under 35 U.S.C. § 102(a)(1).

A. The Challenge Presented in This Petition is Not Cumulative to Prosecution of the '202 Patent

The challenge presented in this petition is neither cumulative nor redundant to the prosecution of the '202 Patent. During the very brief prosecution of the '202 Patent, von Bauer was one of 237 references listed in three Information Disclosure Statements submitted by Patent Owner—but it was never the basis for a rejection of the claims; nor is there evidence that it was ever discussed in an Examiner interview. RING-1002, pp. 87-124; *see HTC Corp. et. al. v. Electronic Scripting Prods*., *Inc*., IPR 2018-01032, Paper 6 at 9 (PTAB Sept. 13, 2018) ("Mere submission of a reference in an IDS, moreover, is insufficient for purposes of exercising discretion under § 325(d), especially where, as here, the reference is one of numerous references cited in the IDS."). Specifically, as discussed above, the claims were never formally rejected in an Office Action. Instead, prosecution was limited to a single examiner interview and follow-up amendment by Patent Owner. It appears von Bauer was never considered even during that informal process, as the only reference listed as being discussed was "U.S. Nonprovisional Patent Application No. 2014/0088761 ('Shamlian')." RING-1002, p. 80. Accordingly, the file history contains no evidence that the Examiner ever substantively evaluated von Bauer or attempted to apply it to the claims of the '202 Patent. *See Becton, Dickinson, & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18

(PTAB Dec. 15, 2017).

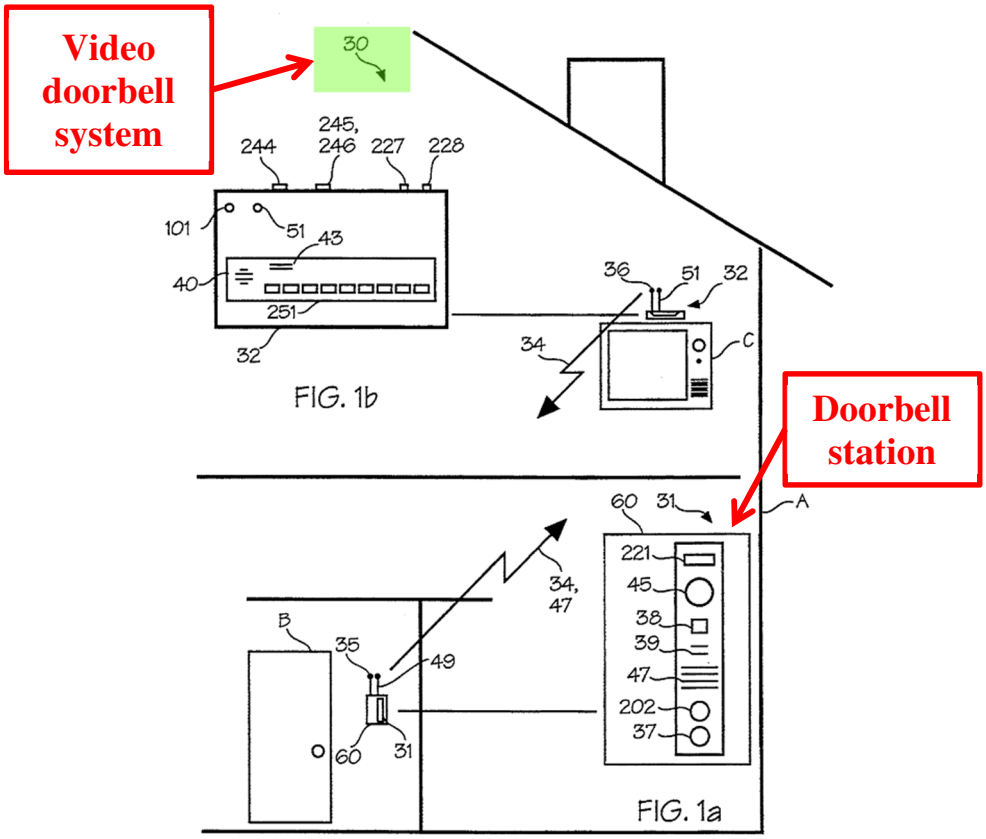
The arguments, analysis, and evidence regarding von Bauer contained in this petition and accompanying expert declaration have never been before the Office and warrant consideration. Petitioner respectfully requests that the Board institute the von Bauer challenge so that the Office can fully consider its teaching in view of the claims of the '202 Patent. *See, e.g.*, *Power-Packer North America, Inc. v. G.W. Lisk Co., Inc*., IPR2017-02034, Paper 8 at 16-17 (PTAB Mar. 19, 2018) (declining to exercise its discretion under § 325(d) because the prior art, while cited by the examiner in a first action allowance, was not used in a rejection and because it was "not clear that the examiner fully appreciated the teachings of those references as compared to the claims of the [] patent").

VII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Challenge: Claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 are invalid under 35 U.S.C § 103 over von Bauer in view of Zhevelev

1. Summary of von Bauer

Von Bauer relates to a "novel video doorbell system." RING-1005, 6:26-28. With reference to Fig. 1 (annotated below), von Bauer describes an embodiment of a "Video Doorbell System (VDBS) 30 [that] includes a remote sensing station module 31 referred to as a Doorbell Station (DBS) that is adapted to be mounted to a building [] near an entranceway." *Id*. at 6:29-34.



RING-1005, Fig. 1 (annotated); RING-1003, ¶ 34.

Von Bauer explains that the doorbell station includes "a pushbutton switch" that is meant to "replace[] the doorbell button originally installed at the entrance" of the building. RING-1005, 7:40-52.

Von Bauer's doorbell station also includes a camera and "a 'human presence sensor' (preferably an infrared proximity detector)" or "[o]ther types of sensors" that can detect the presence of a person when the person comes within "a field of view encompassing a desired region, near the entrance." *Id.* at 7:15-22, 13:15-36, 6:43-51. Thus, when mounted adjacent to a doorway, the infrared detector in von Bauer's doorbell station has a field of view encompassing an outdoor region "near

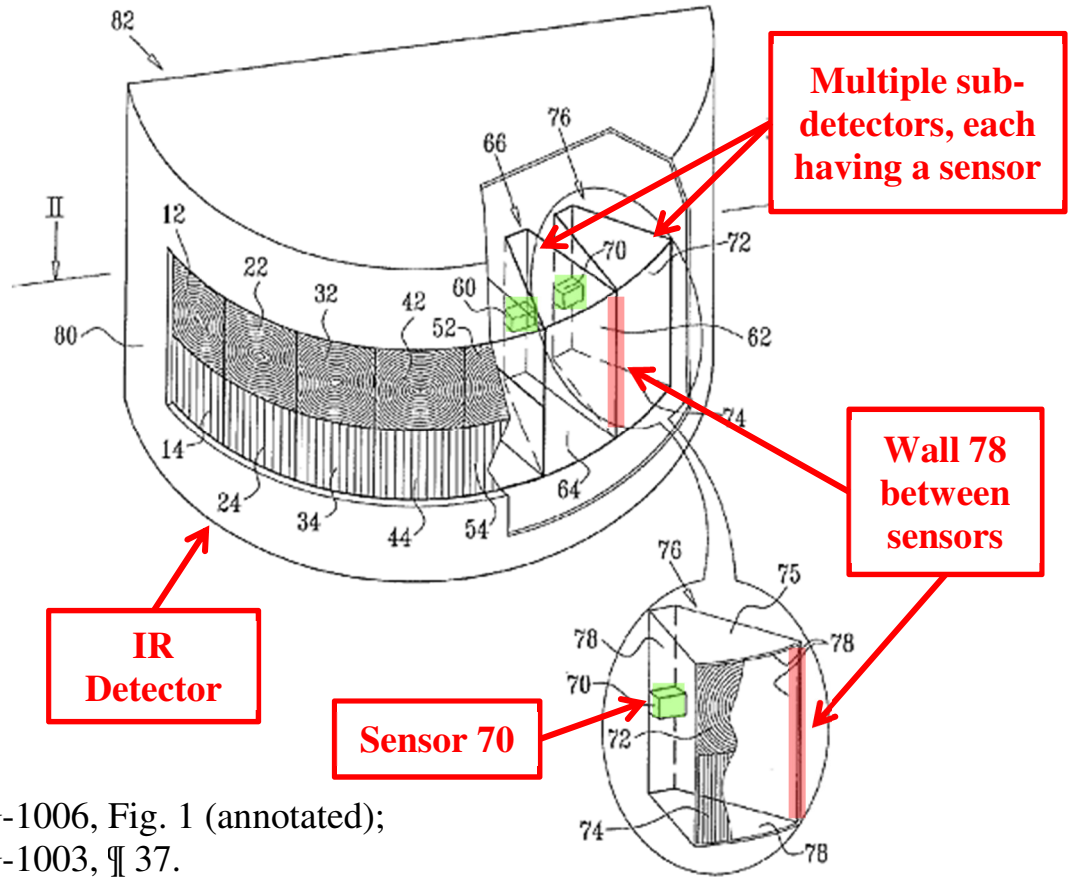
the entrance of a building." *See id*. Von Bauer further explains that the actuation of the doorbell button or the triggering of the "infrared sensor by the presence of a person near the sensor" causes circuitry within the doorbell station to send a "signal to a monitoring station within the building" that indicates the presence of a visitor to a building occupant. *Id*. at 5:6-10, 6:43-48, 13:26-37.

2. Summary of Zhevelev

Zhevelev is directed to an infrared detector specifically designed for outdoor environments. RING-1006, Abstract, ¶¶ [0198], [0018]. In particular, Zhevelev's outdoor detector is "a passive infra-red detector having a field-of-view including multiple detection zones." RING-1006, ¶ [0064]. Like the visitor detection system of the '202 Patent, Zhevelev's IR detector uses partitions or walls to divide the field-of-view "into generally non-overlapping sub fields-of-view, each associated with a separate sensor." *Id*. at ¶ [0196] ("In a preferred design, the multiple sensors and their associated optical segments are ***optically separated from each other, for instance by partitions***." (emphasis added)). Zhevelev explains that each sub field-of-view corresponds to one of multiple sub-detectors, where "[e]ach of the sub-detectors preferably views a portion of the entire field-of-view of the detector." *Id*. at ¶¶ [0197], [0199].

For example, Zhevelev describes with reference to Fig. 1 (annotated below) "a lens-based outdoor detector ... comprising seven sub-detectors, each sub-

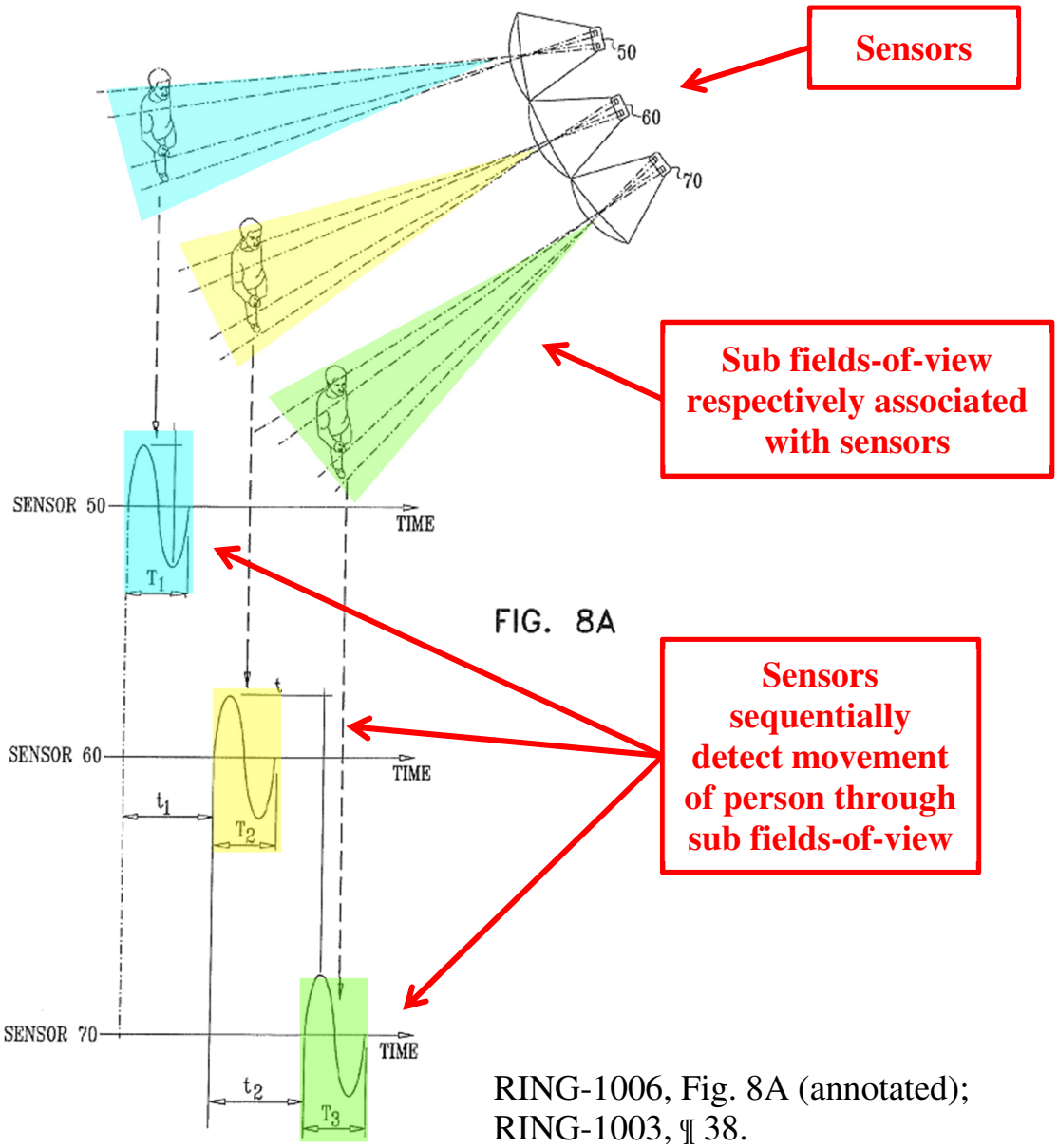
detector including a pyroelectric sensor associated with one or more corresponding lens segments, defining a corresponding sub field-of-view." *Id*. at ¶ [0198]. "Each sub-detector compartment is defined by walls, such as walls 78 of compartment 75, seen clearly in the enlarged portion of FIG. 1." *Id*. at ¶ [0204].



RING-1006, Fig. 1 (annotated);
RING-1003, ¶ 37.

Zhevelev explains that the sensor arrangement of its outdoor detector, in which each sensor is located within a sub-detector compartment defined by walls, "allows each sensor to receive only radiation emanating from its corresponding sub field-of-view." RING-1006, ¶ [0204]. In other words, "each sensor does not view the sub fields-of-view associated with other sensors." *Id*. at ¶ [0196].

According to Zhevelev, such a wall structure "enables enhanced signal processing which analyses and distinguishes more clearly between signals produced by movement of a person across the field-of-view of the detector and signals resulting from various types of interference." RING-1006, ¶ [0236]. Zhevelev explains that "motion of a person past the detector will be detected sequentially by at least two adjacent sub-detectors within a certain time duration corresponding to the speed of motion of the person." *Id*. at ¶ [0237]. For example, "FIG. 8A shows a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," (*id*. at ¶ [0240]):



RING-1006, Fig. 8A (annotated);
RING-1003, ¶ 38.

Like the '202 Patent, Zhevelev additionally states that its detector may ignore "the signal produced by several sub-detectors" in cases where the timing of the signal "is not in conformance with the expected speed of motion of a person." RING-1006, ¶¶ [0237], [0238]. For example, "in order to eliminate or reduce false alarms"—"especially in outdoor environments"—the detector can ignore "any

object moving faster then [sic] an upper speed threshold, such as 3 meters per second." *Id*. at ¶¶ [0018], [0389], [0390].

3. Reasons to Combine von Bauer and Zhevelev

For the reasons set forth below, a POSITA would have been motivated to combine the teachings of von Bauer and Zhevelev. RING-1003, ¶ 40. In particular, at the time of the '202 Patent, it would have been obvious, beneficial, and predictable to utilize the teachings regarding Zhevelev's improved optical mechanical design of an outdoor IR detector in combination with von Bauer's video doorbell system—for example, in order to reduce false triggering. *Id*.

As an initial matter, one of ordinary skill in the art when considering the teachings of von Bauer would have also considered the teachings of Zhevelev. RING-1003, ¶ 41. Specifically, in describing the general features and functionality of its video doorbell, von Bauer chooses to omit implementation details that were known to POSITAs—for example, details related to the specific infrared detector in its doorbell station. RING-1005, 13:15-36. Von Bauer merely states that the doorbell station includes a "human presence sensor" such as a "pyroelectric infrared detector" with a field of view encompassing the outdoor region "near the entrance of a building." *Id*. at 13:15-36, 6:43-51. Accordingly, when considering the description of the infrared detector in von Bauer, a POSITA would have naturally considered other literature more fully describing known infrared detectors

intended for use outdoors. RING-1003, ¶ 41. Zhevelev, for example, describes a known outdoor infrared detector. RING-1006, ¶ [0198] ("Reference is now made to FIGS. 1-3, which illustrate a lens-based ***outdoor detector*** constructed and operative in accordance with a preferred embodiment of the present invention." (emphasis added)).

One of ordinary skill in the art would have been specifically motivated to implement Zhevelev's teachings regarding outdoor IR detectors in von Bauer's video doorbell station because Zhevelev teaches "an improved optical mechanical design that performs better" relative to "known outdoor detectors on the market." RING-1006, ¶¶ [0022]-[0026]; RING-1003, ¶ 42. In particular, Zhevelev is directed to solving a problem inherent in any outdoor IR detector application—false alarms. RING-1003, ¶ 42. Zhevelev explains that "when installed outdoors or in harsh environments, such [IR] detectors are subject to operational conditions of various types, which cause false alarms." RING-1006, ¶ [0007]. In particular, "in outdoor environments, the total level of the 'undesired signals' may be even larger than that of the 'desired signal' which the detector is designed to detect." RING-1006, ¶ [0018]. Von Bauer itself recognizes that "false triggering" is a problem for the IR detector in its doorbell station, but proposes only a rudimentary solution of a time delay. *See* RING-1005, 13:37-41; RING-1003, ¶ 42. Because Zhevelev provides an improved solution to a problem faced by von Bauer's outdoor IR

detector—*i.e*., false alarms—a POSITA would have found it obvious to consider the teachings of Zhevelev together with von Bauer. RING-1003, ¶ 42.

In that regard, Zhevelev would have improved von Bauer because Zhevelev's IR detector is specially designed "to manage interference and substantially decrease the 'undesired signals' detected by a sensor" via an "improved optical mechanical design that performs better and is more immune to false alarms." RING-1006, ¶ [0026]. For example, Zhevelev explains that this improved optical mechanical design includes "multiple sensors and their associated optical segments [that] are optically separated from each other, for instance by partitions." *Id*. at ¶ [0196]. As described above, having a wall between each sensor "allows each sensor to receive only radiation emanating from its corresponding sub field-of-view," thereby enabling "enhanced signal processing which analyses and distinguishes more clearly between signals produced by movement of a person across the field-of-view of the detector and signals resulting from various types of interference." *Id*. at ¶¶ [0204], [0236]. Accordingly, a person of ordinary skill in the art would have been motivated to apply Zhevelev's teachings regarding the improved optical mechanical design of its outdoor IR detector to von Bauer's IR detector in its doorbell station. RING-1003, ¶ 43. Doing so would allow for enhanced signal processing, making von Bauer's doorbell station more resistant to false alarms when mounted outdoors. *Id*.; *see also KSR Int'l Co. v. Teleflex Inc*.,

550 U.S. 398, 419-20 (2007) ("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.").

Third, not only would utilizing Zhevelev's teachings in von Bauer's video doorbell have been advantageous, but a POSITA would have also found it relatively straightforward and predictable given that the combination utilizes Zhevelev's IR detector precisely as it was intended—for detecting motion outdoors. RING-1003, ¶ 46. A POSITA would have had a reasonable expectation of success because the combination does not change the intended functionality of either von Bauer's doorbell or Zhevelev's IR detector. *Id*. Zhevelev's improved optical mechanical design was specifically intended to be implemented in outdoor IR detectors ready for improvement, such as von Bauer's doorbell IR detector. *Id*.; *see also KSR*, 550 U.S. at 417 (finding obvious "the predictable use of prior art elements according to their established functions").

Moreover, implementation of such a combination would have been relatively straightforward to a POSITA given that Zhevelev's detector design utilizes off-the-shelf components. RING-1003, ¶ 47. For example, Zhevelev notes that the pyroelectric sensors in its outdoor detector may be, for example, "Perkin-Elmer LHi-968 sensors," which are "commercially available from Perkin-Elmer of

Freemont, Calif., USA." RING-1006, ¶¶ [0210], [0273]; *see also id*. at ¶ [0270] (explaining that any "suitable type of lens element[]" may be employed in the detector); *see also* RING-1003, ¶ 48 (citing RING-1007, PerkinsElmer's product webpage for the LHi 968 sensor that describes its advantages). Accordingly, substituting and modifying commercially-available and interchangeable components within a mechanical device such as von Bauer's doorbell station would have been well within the skill of a person of ordinary skill in the art in 2014. RING-1003, ¶ 49; *see also Tokai Corp. v. Easton Enters. Inc*., 632 F.3d 1358, 1371 (Fed. Cir. 2011) ("the nature of the mechanical arts is such that 'identified, predictable solutions' to known problems may be within the technical grasp of a skilled artisan") (quoting *KSR*, 550 U.S. at 421).

Accordingly, a person of ordinary skill in the art would have found it obvious to apply Zhevelev's teachings of a multi-sensor IR detector with a wall-based arrangement to von Bauer's doorbell station because the combination amounts to applying a known IR detection configuration and technique to a IR detector in a doorbell ready for improvement. RING-1003, ¶ 50. Such a combination would produce the predictable and beneficial result of von Bauer's doorbell station detecting fewer of the undesired signals inherent in outdoor environments and thus generating fewer false alarms. *Id*.

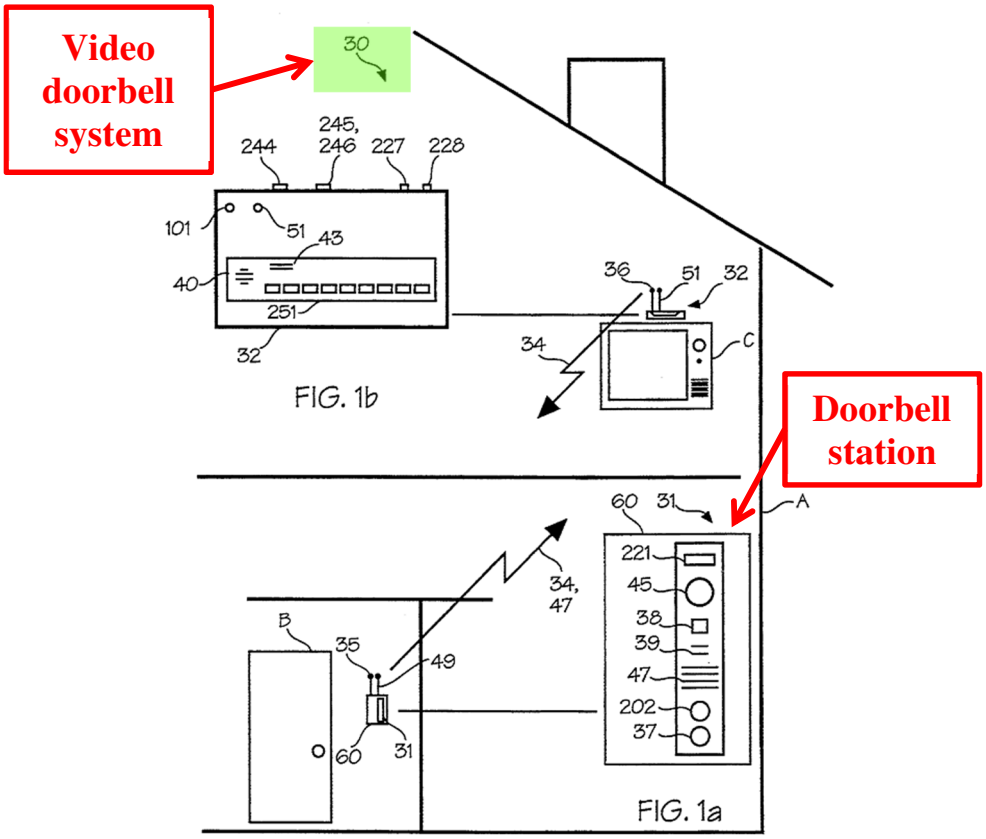
4. Detailed Analysis

The following describes how von Bauer in view of Zhevelev renders obvious each and every element of claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 of the '202 Patent. A corresponding claim chart is contained in Dr. Paradiso's declaration. *See* RING-1003, pp. 35-130.

Claim 1

[1.0] ***"A doorbell system comprising a doorbell, wherein the doorbell system comprises"***

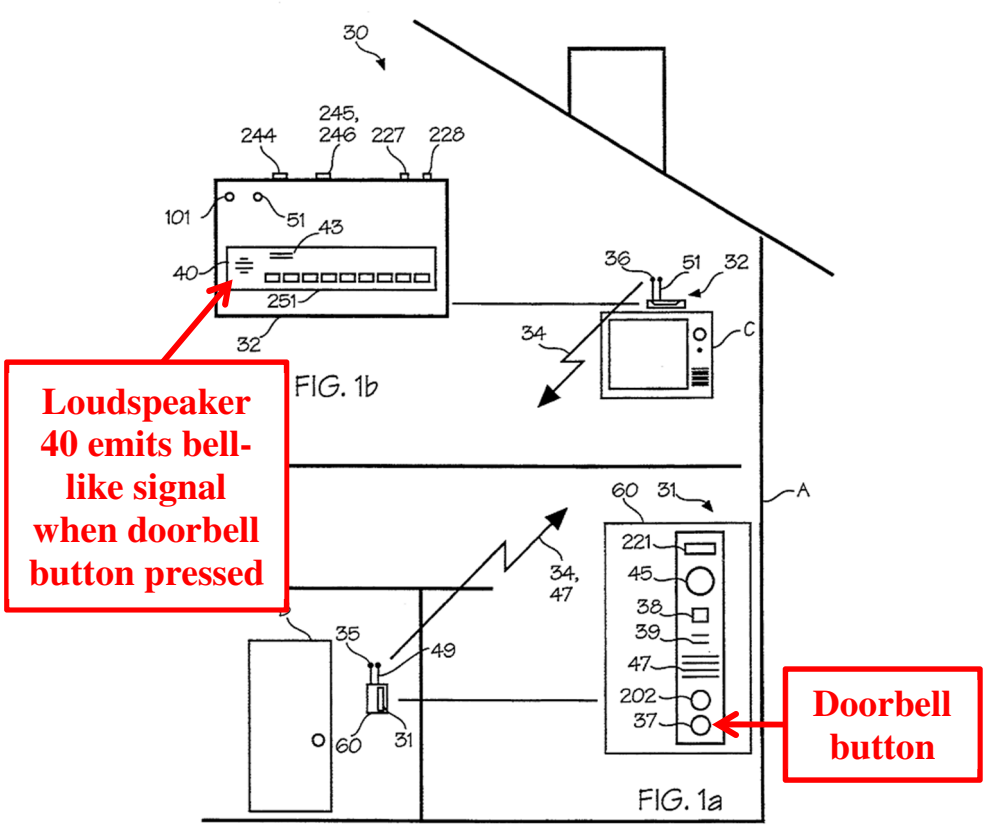
Von Bauer is directed to a "novel video doorbell system" with a "Doorbell Station that is adapted to be mounted to a building." RING-1005, 6:26-37. The Doorbell Station "includes a pushbutton switch 37 that replaces the doorbell button originally installed at the entrance." *Id*. at 7:49-52. Fig. 1 of von Bauer illustrates the video doorbell system with the doorbell station mounted adjacent to an entrance of a building:



RING-1005, Fig. 1 (annotated); RING-1003, p. 36.

[1.1] ***"a button configurable to enable a visitor to sound a chime"***

Von Bauer discloses this limitation because it teaches that its "Video Doorbell Station 31 includes a pushbutton switch 37 that replaces the doorbell button originally installed at the entrance to building A." RING-1005, 7:49-52. Von Bauer explains that when "a visitor has pressed the doorbell button of a Video Doorbell Station," a loudspeaker of a Video Receiver Station located inside the building "outputs an acoustic bell-like signal alerting a building occupant in the vicinity of the Video Receiver Station." *Id.* at 11:18-38.



RING-1005, Fig. 1 (annotated); RING-1003, p. 37.

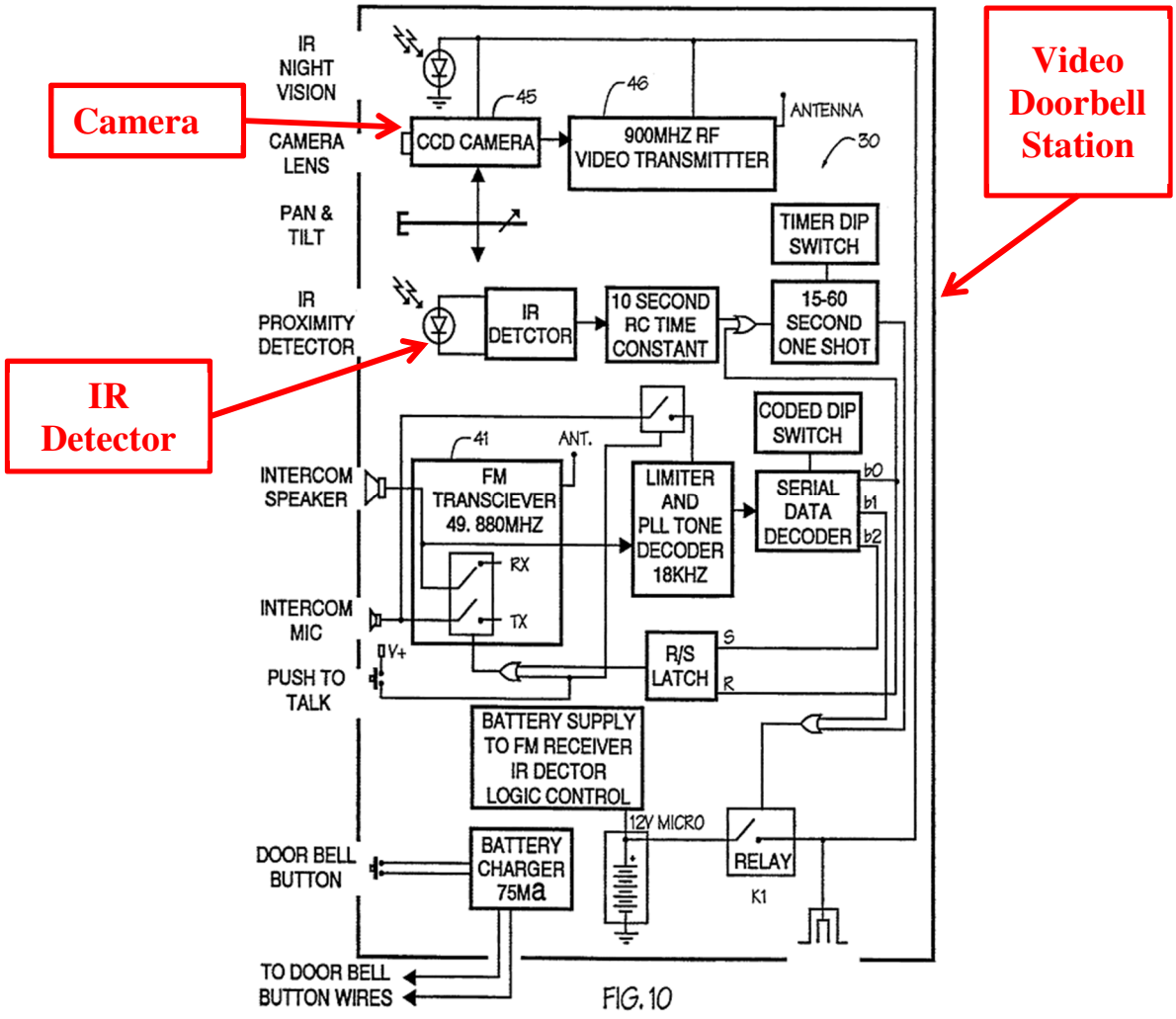
Von Bauer teaches that one of the ways its doorbell button is configurable is via its physical placement "near an entranceway" of a building. RING-1005, 6:26-37. Specifically, this placement of the doorbell button enables a visitor to sound the acoustic bell-like signal because the doorbell button "replaces the doorbell button originally installed at the entrance to building." *Id*. at 7:49-52; RING-1003, p. 39 (explaining that a component in the context of the '202 Patent is "configurable" at least based on its ability to be physically placed or located so as to perform a specific function). Additionally, von Bauer teaches that in order for the Video Receiver Station inside the building to output the acoustic bell-like

signal when the doorbell button is pressed, the Video Doorbell Station (which includes the pushbutton switch) must be configured by a user via DIP switches. RING-1005, 8:41-10:22, 11:31-38 (explaining that a user must program the Video Doorbell Station and Video Receiver Station to have the same address in order for "a properly encoded annunciator signal" to be transmitted between them); *see also* RING-1003, pp. 39-40.

Thus, the pushbutton configurable to enable a visitor to sound an acoustic bell-like signal, as taught by von Bauer, discloses "a button configurable to enable a visitor to sound a chime." *See* RING-1003, pp. 36-41.

[1.2] ***"a visitor detection system having at least one of a camera assembly, a motion detector assembly, and an infrared detector assembly"***

Von Bauer discloses this limitation because its "Video Doorbell Station" (visitor detection system) includes many elements configured to detect visitors, as illustrated in Fig. 10, reproduced below. RING-1005, 5:65-68.



RING-1005, Fig. 10 (annotated); RING-1003, p. 43.

For example, von Bauer teaches that its doorbell station includes a CCD camera and camera lens, as shown in Fig. 10 above. RING-1005, 7:15-22 ("Preferably camera 45 is of the type employing a solid state, Charge Coupled Device (CCD) as an imaging transducer."). Von Bauer also teaches that its doorbell station includes a "human presence sensor," such as an infrared proximity detector. *Id*. at 13:15-36. In particular, the sensor in the doorbell station may be a "pyroelectric infrared detector 38 responsive to the presence of a person in the

vicinity of the DBS." *Id*. at 6:43-51.

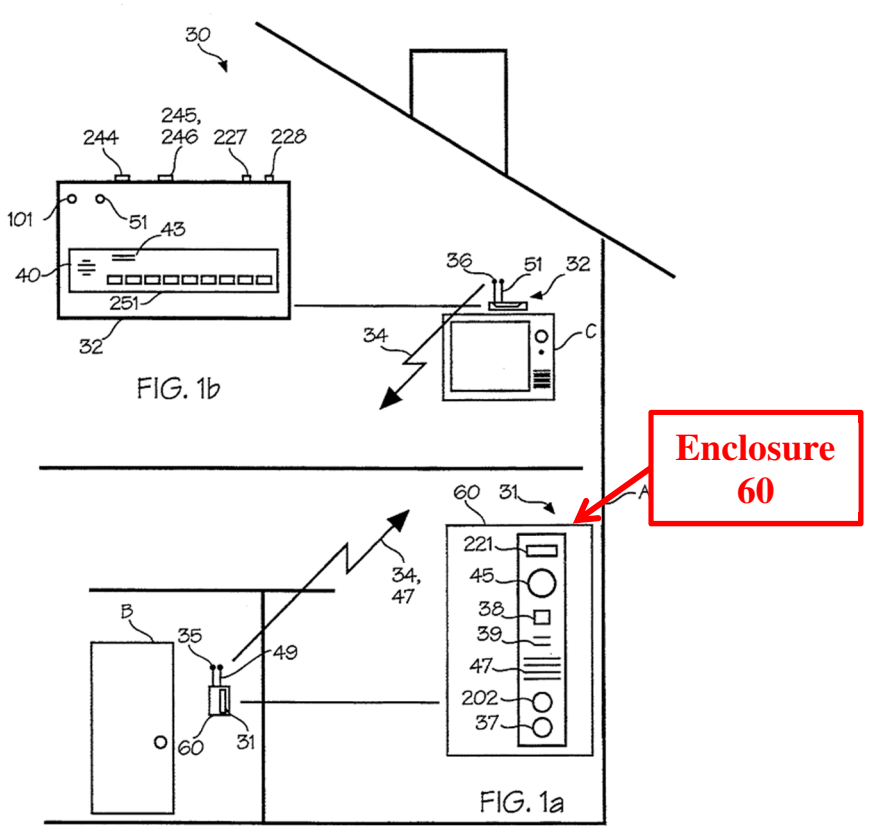
Thus, the doorbell station that includes a camera and an infrared detector, as taught by von Bauer, discloses "a visitor detection system having at least one of a camera assembly, a motion detector assembly, and an infrared detector assembly." *See* RING-1003, pp. 42-43.

[1.3] ***"wherein the visitor detection system is configurable to detect the visitor within a field of view of the visitor detection system"***

Von Bauer discloses this limitation because it teaches that its Video Doorbell Station (visitor detection system) includes a "pyroelectric infrared detector 38 responsive to the presence of a person in the vicinity of the DBS." RING-1005, 6:43-51. Specifically, von Bauer explains that the "IR detector 38 goes to a logic true level when a person comes within the field of view of the IR detector and sufficiently close to it." *Id*. at 13:15-36. The Video Doorbell Station is configurable to detect visitors at least because it is capable of being "mounted to a building [] near an entranceway" so that visitors approaching the building will fall within the field of view of its pyroelectric infrared detector, enabling detection of the visitors. *Id*. at 6:29-48; RING-1003, p. 44. Thus, the doorbell station that is configurable to detect a person within the field of view of the infrared detector, as taught by von Bauer, discloses "wherein the visitor detection system is configurable to detect the visitor within a field of view of the visitor detection system." *See* RING-1003, pp. 43-44.

[1.4] ***"an outer housing coupled to the visitor detection system"***

Von Bauer discloses this limitation because it teaches that the doorbell station includes "an enclosure 60 of a suitable size and shape to be attached to a structure wall." RING-1005, 7:40-48. Von Bauer explains that the "housing 60 found suitable by the present inventors" is a "rectangular box" (*id.*), as illustrated in Fig. 1 below:



RING-1005, Fig. 1 (annotated); RING-1003, p. 45.

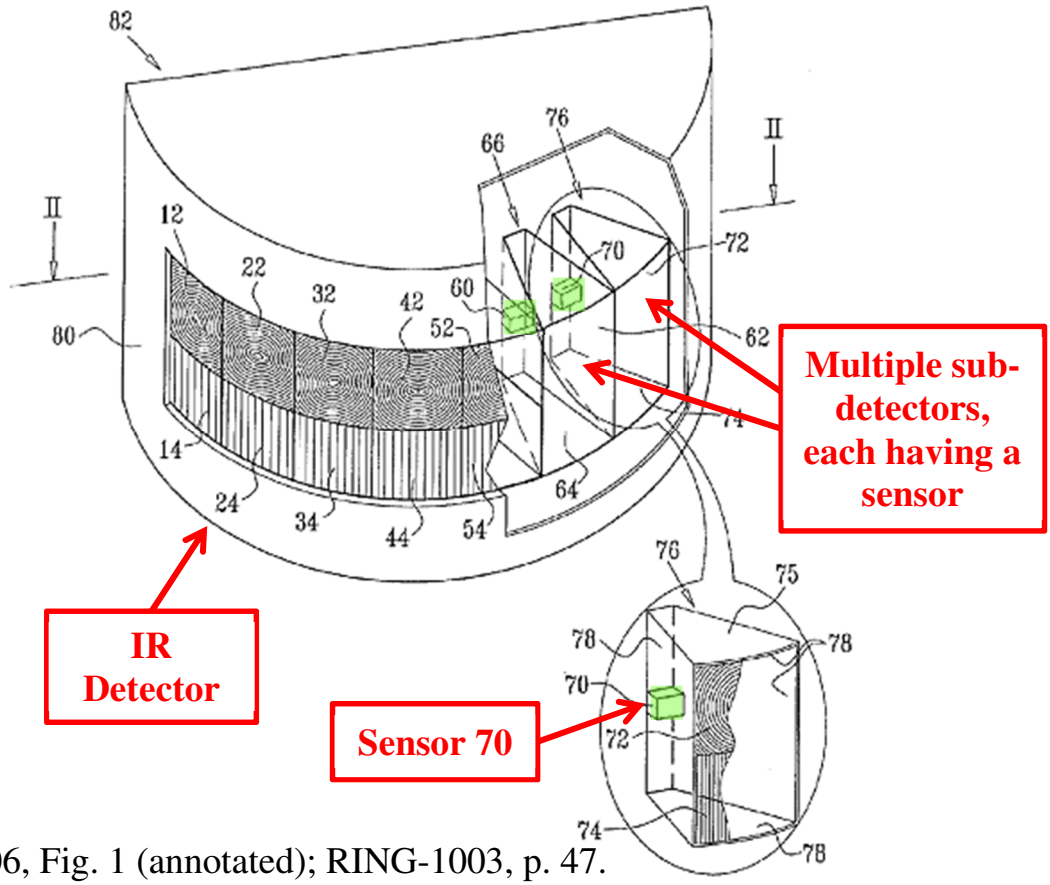
Thus, the enclosure/housing of the doorbell station, as taught by von Bauer, discloses "an outer housing coupled to the visitor detection system." *See* RING-1003, pp. 44-45.

[1.5] ***"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"***

Von Bauer in view of Zhevelev renders obvious this limitation.

First, as discussed above in association with [1.2] and [1.3], von Bauer teaches that its doorbell station includes a pyroelectric infrared detector configurable to detect an indication of a person within its field of view. *See* RING-1005, 13:15-36.

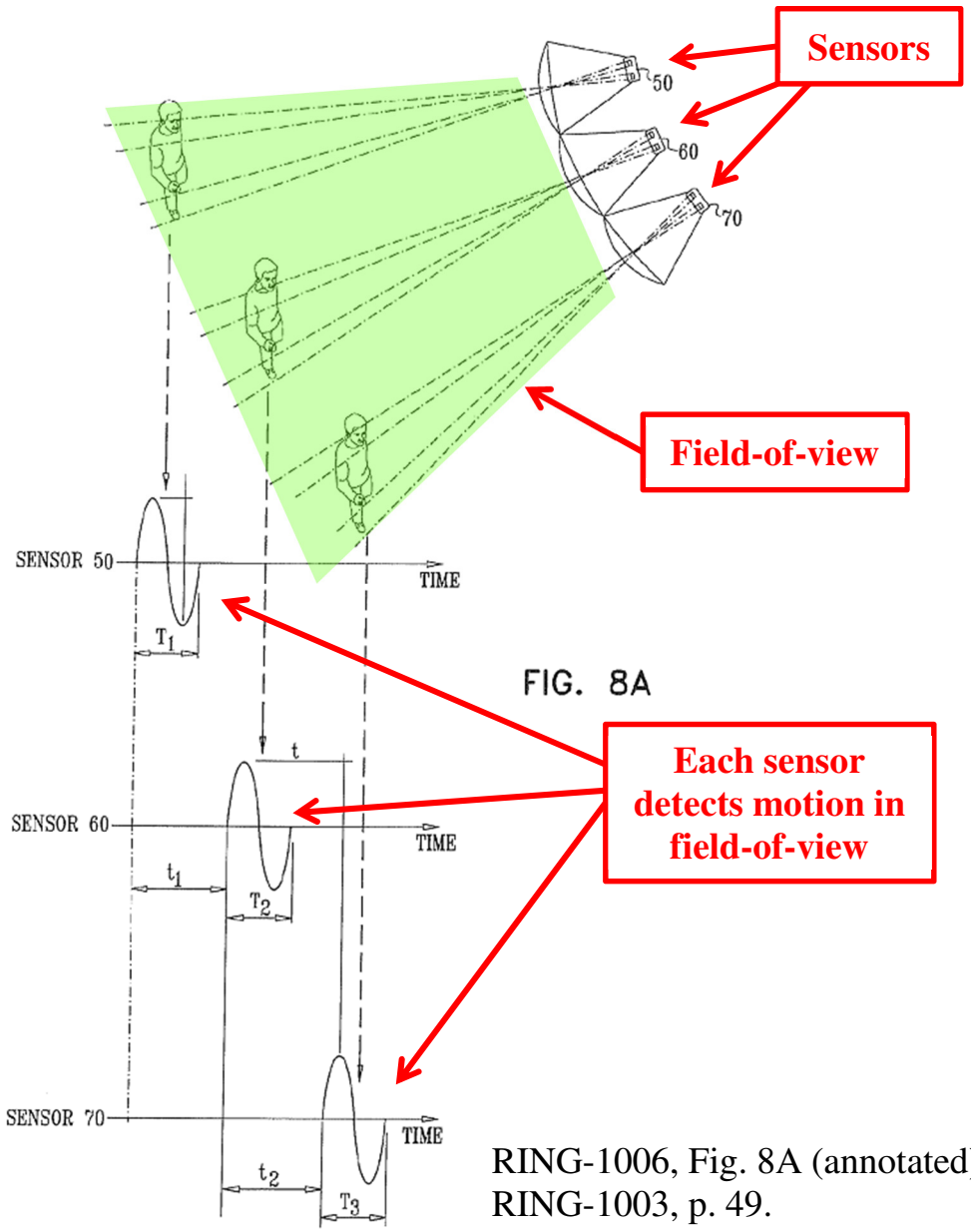
Second, to the extent von Bauer is silent as to the number of sensors within its IR detector, Zhevelev teaches that it was well known for IR detectors to include multiple sensors. Specifically, Zhevelev teaches a "passive infra-red detector including at least three sub-detectors, each sub-detector being operative to receive infra-red radiation from a corresponding one of at least three sub fields-of-view." RING-1006, Abstract. Fig. 1 (annotated below) illustrates an example of Zhevelev's "outdoor detector" that includes "seven sub-detectors, each sub-detector including a pyroelectric sensor associated with one or more corresponding lens segments, defining a corresponding sub field-of-view." RING-1006, ¶ [0198]; *see also id*. at ¶ [0204] ("As seen in FIGS. 1 and 2, each of sensors 10, 20, 30, 40, 50, 60 and 70 of respective sub-detectors 16, 26, 36, 46, 56, 66 and 76 is preferably located within a corresponding sub-detector compartment.")



RING-1006, Fig. 1 (annotated); RING-1003, p. 47.

Third, Zhevelev teaches that each of the sub-detectors is configurable to detect indications of "signals produced by movement of a person across the field-of-view of the detector." RING-1006, ¶ [0236]. For example, "motion of a person past the detector will be ***detected sequentially by at least two adjacent sub-detectors*** within a certain time duration corresponding to the speed of motion of the person." *Id*. at ¶ [0237] (emphasis added). Fig. 8A of Zhevelev illustrates "a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," where the "motion of the person is initially

detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].



RING-1006, Fig. 8A (annotated);
RING-1003, p. 49.

As discussed above in section VII(A)(3), a person of ordinary skill in the art would have been motivated to utilize the improved multi-sensor IR detector design described by Zhevelev in combination with von Bauer's Video Doorbell Station.

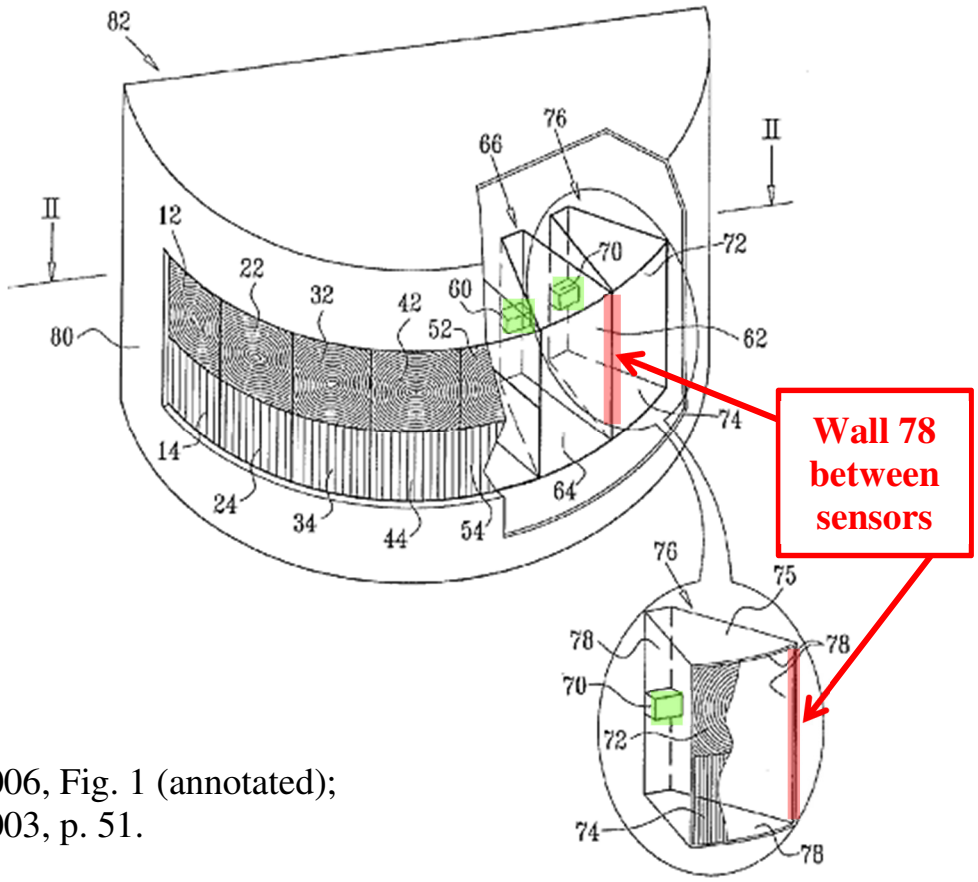
See RING-1003, p. 49. Because Zhevelev teaches that each sensor is capable of being arranged within the detector to detect motion within a portion of the field of view, it would have been obvious that, when placed within von Bauer's detector, the multiple sensors would be configurable to detect visitor motion within the Video Doorbell Station's field of view. RING-1006, ¶ [0204] (teaching an "arrangement [that] allows each sensor to receive only radiation emanating from its corresponding sub field-of-view"); RING-1003, pp. 49-50.

Thus, the doorbell station that includes an infrared detector that detects motion of a person within its field-of-view, as taught by von Bauer, in view of Zhevelev's outdoor IR detector with multiple sensors, each arranged to individually detect movement of a person across the field-of-view of the detector, renders obvious "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. " *See* RING-1003, pp. 45-50.

[1.6] ***"a wall that separates the first sensor from the second sensor"***

Zhevelev discloses this limitation because it teaches that "the multiple sensors and their associated optical segments are optically separated from each other, for instance by ***partitions***." RING-1006, ¶ [0196] (emphasis added). Specifically, as illustrated in Fig. 1 of Zhevelev, each sensor (60, 70, *etc*.) is

located within a sub-detector compartment, where "[e]ach sub-detector compartment is ***defined by walls, such as walls 78*** of compartment 75, seen clearly in the enlarged portion of FIG. 1." *Id.* at ¶ [0204] (emphasis added).



RING-1006, Fig. 1 (annotated);
RING-1003, p. 51.

Thus, the walls that separate adjacent sensors, as taught by Zhevelev, disclose "a wall that separates the first sensor from the second sensor." *See* RING-1003, pp. 50-51.

[1.7] ***"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"***

Zhevelev discloses this limitation because it teaches that the walls between the sensors create "sub fields-of-view" respectively associated with each sensor, where each sensor detects radiation within its respective sub field-of-view:

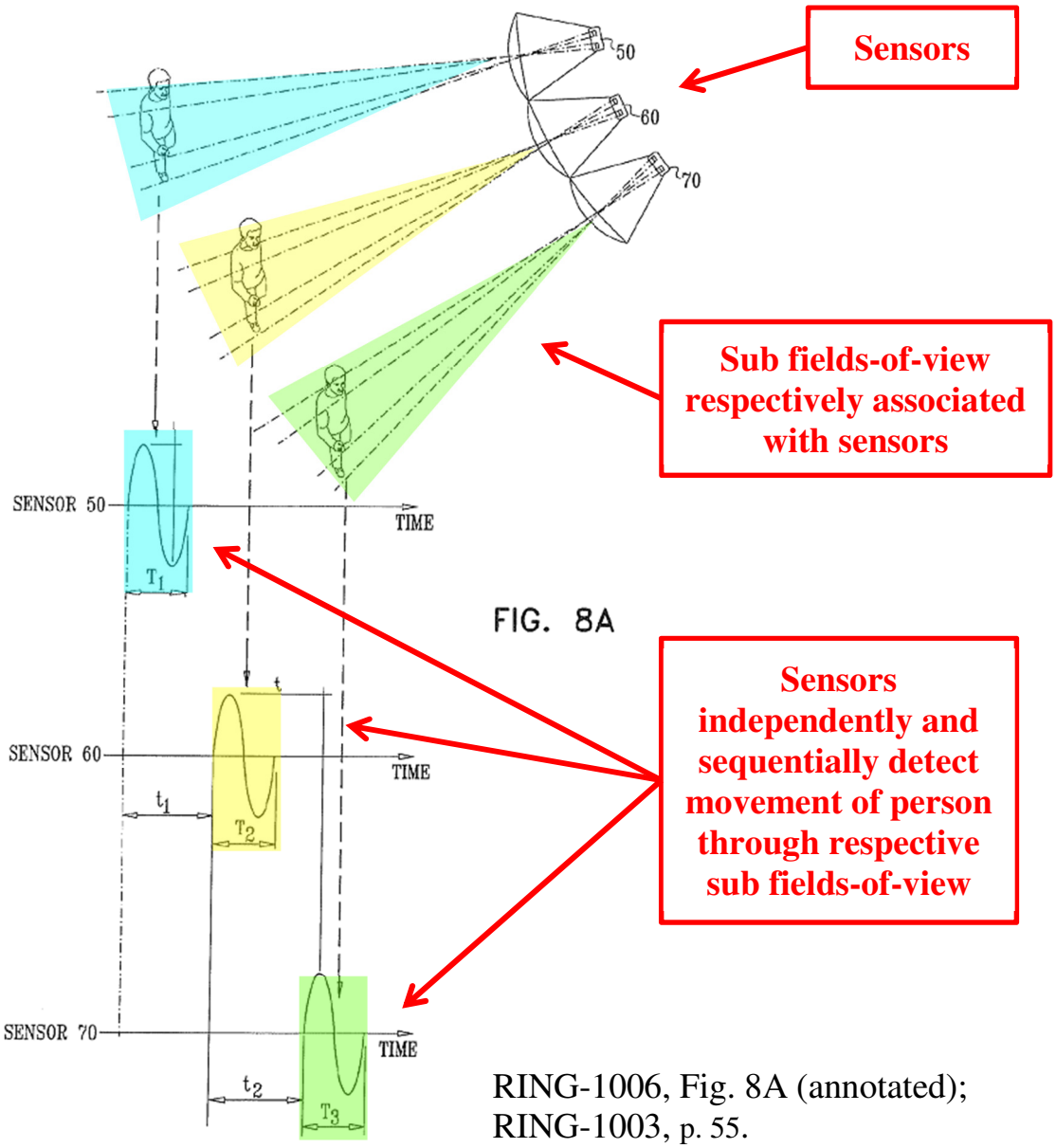
> In accordance with a preferred embodiment of the present invention, ***the field-of-view is divided into generally non-overlapping sub fields-of-view, each associated with a separate sensor. Each such sensor receives radiation only from the sub field-of-view with which it is associated and not from the other sub fields-of-view.*** As explained hereinabove, each such sub field-of-view is associated with certain segments of the detector's lens or mirror assembly, and not with the entire optical system. In a preferred design, ***the multiple sensors and their associated optical segments are optically separated from each other, for instance by partitions, compartments or by the optical design, so that each sensor does not view the sub fields-of-view associated with other sensors***.

RING-1006, ¶ [0196] (emphasis added).

Referring to Fig. 1, reproduced above, Zhevelev teaches that the wall 78 between sensors 60 and 70 "allows each sensor to receive only radiation emanating from its corresponding sub field-of-view." RING-1006, ¶ [0204]; *see also id*. at Fig. 2 (showing two sub fields-of-view 87, 88 respectively associated with two sensors, 60, 70); *see also id*. at ¶ [0199] ("Each of the sub-detectors preferably views a portion of the entire field-of-view of the detector."). Zhevelev explains

that, as a result of this wall arrangement, "motion of a person past the detector will be detected ***sequentially*** by at least two adjacent sub-detectors within a certain time duration corresponding to the speed of motion of the person." *Id*. at ¶ [0237] (emphasis added). Zhevelev illustrates this sequential detection with a series of figures showing the operation of the improved sensor and wall configuration of Fig. 1. *See id.* at Figs. 8A-8G (showing the sensors 50, 60, and 70 of Figs. 1-2).

For example, Fig. 8A of Zhevelev (annotated below) illustrates "a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," where the "motion of the person is initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].



RING-1006, Fig. 8A (annotated);
RING-1003, p. 55.

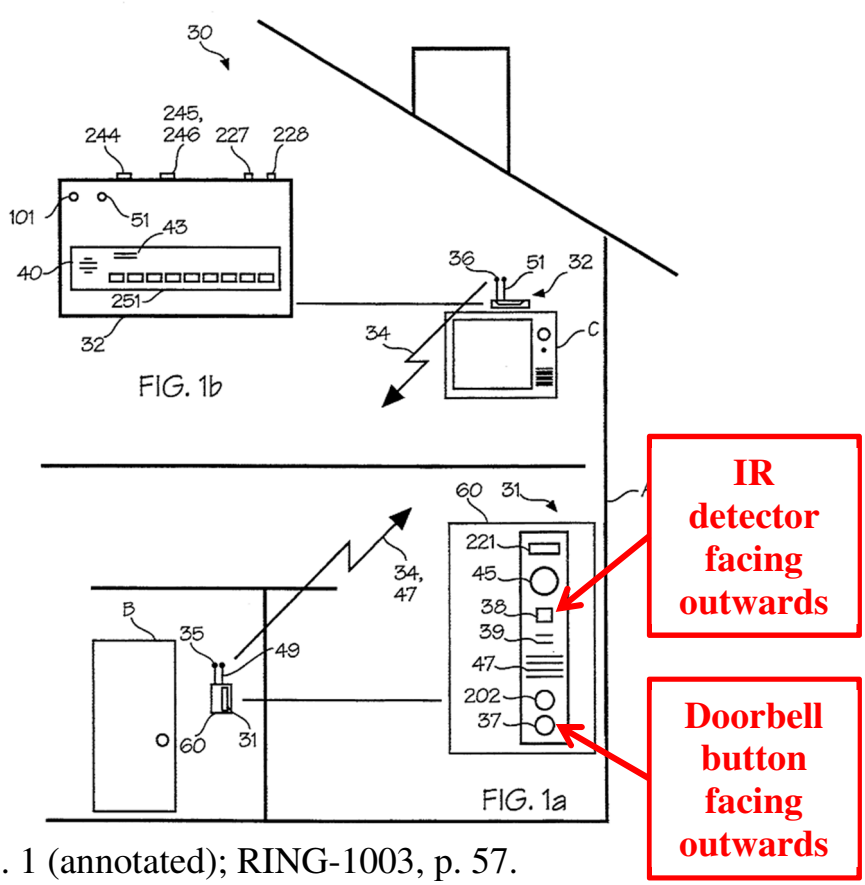
Thus, the walls that divide the field-of-view of the IR detector into sub fields-of-view such that each sensor is configured to detect the motion of a person within its respective sub field-of-view, as taught by Zhevelev, discloses "wherein the wall divides the field of view such that the first sensor 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." *See* RING-1003, pp. 51-56.

[1.8] ***"wherein the button, the first sensor, and the second sensor face outward towards the field of view"***

Von Bauer in view of Zhevelev renders obvious this limitation.

First, as discussed in association with [1.1], von Bauer's doorbell station includes a doorbell pushbutton and infrared detector. RING-1005, 7:49-52, 13:15-36, 6:43-51. Von Bauer further teaches and illustrates that when the doorbell station is mounted "adjacent to a doorway," as shown in Fig. 1 (annotated below), the doorbell pushbutton 37 and the infrared detector 38 face outwards from the doorbell station towards the "field of view encompassing a desired region, near the entrance of a building." *Id*. at 7:40-48, 13:15-36.



RING-1005, Fig. 1 (annotated); RING-1003, p. 57.

Second, Zhevelev teaches that each of its sensors face outwards toward the field-of-view, so as to "receive[] radiation only from the sub field-of-view with which it is associated," (RING-1006, ¶ [0196]), as illustrated in Fig. 8A:

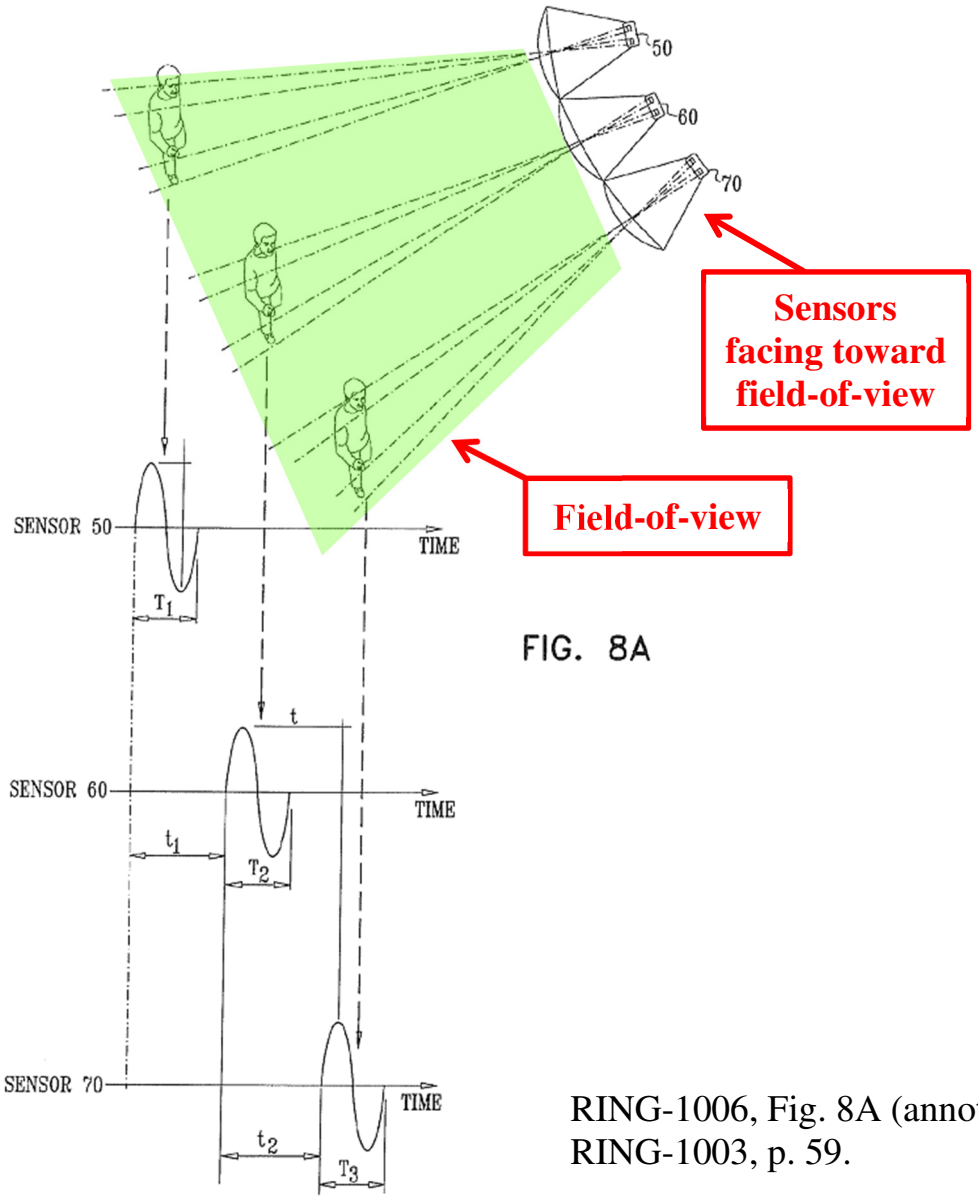


FIG. 8A

RING-1006, Fig. 8A (annotated);
RING-1003, p. 59.

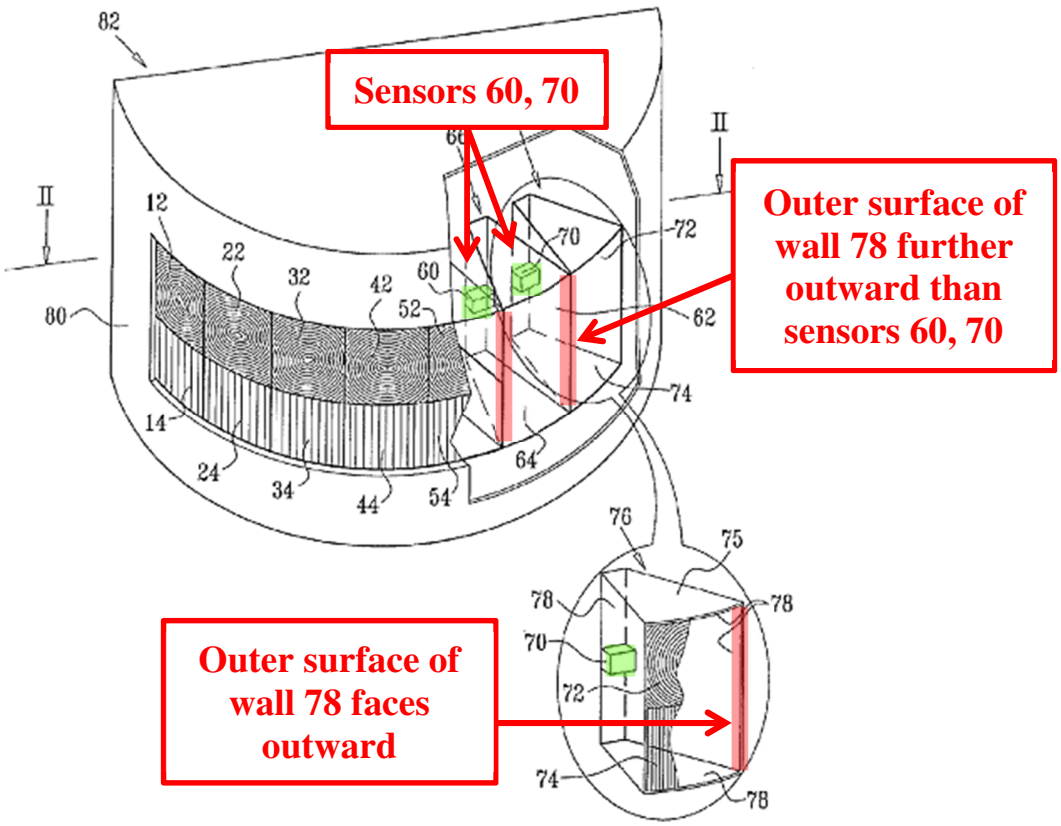
Accordingly, when Zhevelev's multi-sensor arrangement is applied to von Bauer's infrared detector, a person of ordinary skill in the art would have found it obvious that both the existing doorbell pushbutton and each of the multiple sensors

would face outward toward the Video Doorbell Station's field of view, so as to detect approaching visitors. RING-1003, p. 59.

Thus, the pushbutton and infrared detector of the doorbell station that face outwards to the field-of-view encompassing the area near the entrance of a building, as taught by von Bauer, in view of the multiple sub-detectors/sensors of the outdoor IR detector that each face outward toward the field-of-view, as taught by Zhevelev, render obvious "wherein the button, the first sensor, and the second sensor face outward towards the field of view." *See* RING-1003, pp. 56-60.

[1.9] ***"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."***

Zhevelev discloses this limitation because it teaches and illustrates, as shown in Fig. 1 (annotated below), that the outer surface of each wall 78 (in red) faces outward and is located further outward than outer surfaces of sensors 60 and 70 (in green) within a compartment of a respective sub-detector:



RING-1006, Fig. 1 (annotated); RING-1003, p. 60.

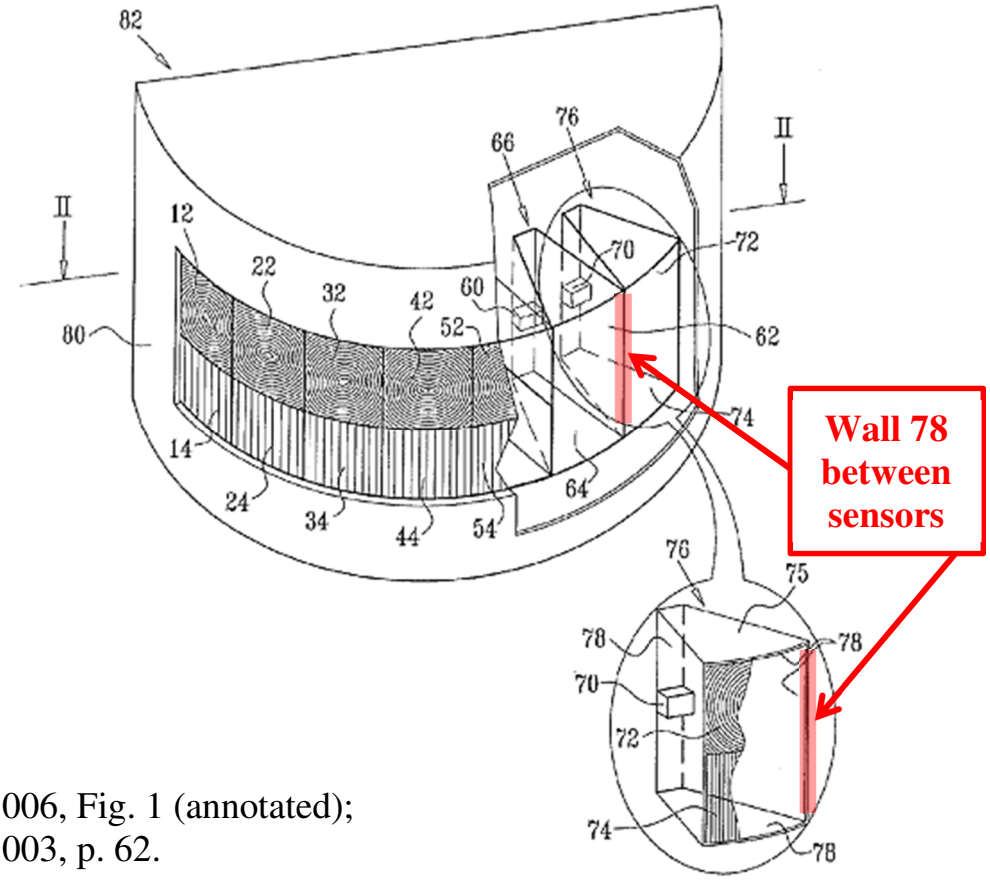
Zhevelev explains that this "arrangement allows each sensor to receive only radiation emanating from its corresponding sub field-of-view." RING-1006, ¶ [0204].

Thus, the outer surface of the wall between sub-detectors that faces outward and is located further outward than an outer surface of each sensor within the sub-detector compartments, as taught by Zhevelev, discloses "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." *See* RING-1003, pp. 60-61.

Claim 3

"The doorbell system of claim 1, wherein the wall is located at least partially between the first sensor and the second sensor."

Zhevelev discloses this limitation because it teaches that the walls in its detector are located between each of the sensors, as shown in Fig. 1 (annotated below). *See* RING-1006, ¶¶ [0204], [0196] (explaining that "multiple sensors and their associated optical segments are optically separated from each other, for instance by partitions.")



RING-1006, Fig. 1 (annotated);
RING-1003, p. 62.

Thus, the walls located between each sensor, as taught by Zhevelev, disclose "wherein the wall is located at least partially between the first sensor and the second sensor." *See* RING-1003, pp. 61-62.

Claim 4

[4.1] ***"The doorbell system of claim 1, wherein the first sensor comprises a first infrared detector and the second sensor comprises a second infrared detector,"***

Von Bauer in view of Zhevelev renders obvious this limitation. First, as discussed in association with [1.2], von Bauer teaches that its doorbell station includes an "infrared detector." RING-1005, 6:43-51, 13:15-36. Second, as discussed in association with [1.5], Zhevelev teaches that its "passive infra-red detector" includes "at least three sub-detectors, each sub-detector being operative to receive infra-red radiation." RING-1006, Abstract; *see also id*. at ¶ [0198] (teaching that the sub-detectors each include a "pyroelectric sensor.")

As discussed above, a person of ordinary skill in the art would have found it obvious to utilize Zhevelev's multi-sensor IR detector in conjunction with von Bauer's video doorbell. RING-1003, ¶¶ 40-50.

Thus, the infrared sensor in von Bauer's video doorbell in view of Zhevelev's outdoor IR detector with multiple infrared sensors, renders obvious "wherein the first sensor comprises a first infrared detector and the second sensor comprises a second infrared detector." *See* RING-1003, pp. 63-64.

[4.2] ***"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."***

Von Bauer in view of Zhevelev renders obvious this limitation. Zhevelev teaches that in its multi-sensor IR detector, "[e]ach such sensor receives radiation

only from the sub field-of-view with which it is associated and not from the other sub fields-of-view." RING-1006, ¶ [0196]. Zhevelev further explains that the wall and sensor "arrangement allows each sensor to receive only radiation emanating from its corresponding sub field-of-view." *Id*. at ¶¶ [0204], [0199], Fig. 8A. Accordingly, because Zhevelev's multiple infrared sensors are capable of being arranged to detect radiation from respective sub fields-of-view, when combined with von Bauer, each sensor would be configurable to detect radiation within respective portions of the Video Doorbell Station's field of view. RING-1003, p. 66.

Thus, the doorbell station that includes an infrared detector that detects a person within its field-of-view, as taught by von Bauer, in view of Zhevelev's multiple infrared sensors that are each configurable to detect radiation from its own sub field-of-view, renders obvious "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." *See* RING-1003, pp. 64-66.

Claim 5

[5.1] ***"The doorbell system of claim 1, wherein the first sensor comprises a first motion detector and the second sensor comprises a second motion detector"***

Von Bauer in view of Zhevelev renders obvious this limitation. First, as

discussed in association with [1.2], von Bauer teaches that its doorbell station includes a "human presence sensor," such as a "pyroelectric infrared detector 38 responsive to the presence of a person in the vicinity of the DBS." RING-1005, 13:15-36, 6:43-51. Second, as discussed in association with [1.5], Zhevelev teaches that its "passive infra-red detector" includes multiple sub-detectors with respective sensors, where "***motion of a person*** past the detector will be detected ***sequentially*** by at least two adjacent sub-detectors." RING-1006, ¶¶ [0236]-[0237] (emphasis added). For example, with respect to the illustration of Fig. 8A, Zhevelev teaches that "motion of the person is initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].

As discussed above in section VII(A)(3), a person of ordinary skill in the art would have found it obvious to utilize Zhevelev's multi-sensor IR motion detector in conjunction with von Bauer's video doorbell. *See* RING-1003, p. 68.

Thus, the human presence sensor in von Bauer's video doorbell in view of Zhevelev's outdoor IR detector with multiple sensors that each detect motion, renders obvious "wherein the first sensor comprises a first motion detector and the second sensor comprises a second motion detector." *See* RING-1003, pp. 66-68.

[5.2] ***"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."***

Von Bauer in view of Zhevelev renders obvious this limitation. As discussed in association with [1.7], Zhevelev teaches that the walls between the sensors create sub fields-of-view respectively associated with each sensor (RING-1006, ¶¶ [0196], [0199]), where each sensor detects motion within its respective sub field-of-view, as illustrated in Fig. 8A (annotated below):

> ***FIG. 8A shows a typical*** 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, after a time interval t1, the motion of the person is detected by sensor 60.*** After an additional time interval t2, the motion of the person is detected by sensor 70.

RING-1006, ¶ [0240] (emphasis added).

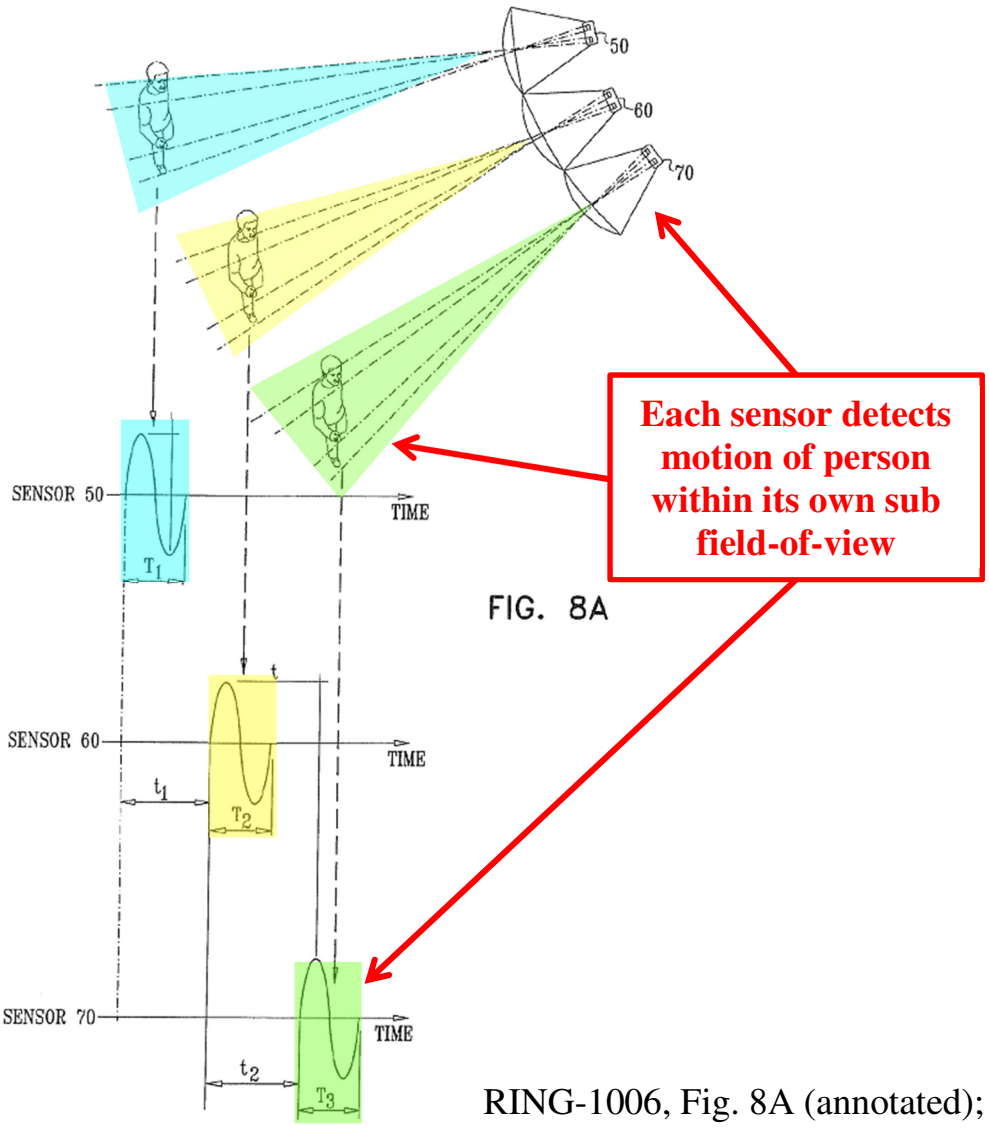


FIG. 8A

RING-1006, Fig. 8A (annotated); RING-1003, p. 70.

Accordingly, because Zhevelev's multiple infrared sensors are capable of being arranged to detect motion from respective sub fields-of-view, when combined with von Bauer, each sensor would be configurable to detect motion within respective portions of the Video Doorbell Station's field of view. RING-1003, p. 70.

Thus, the doorbell station that includes an infrared detector that detects motion of a person within its field-of-view, as taught by von Bauer, in view of Zhevelev's multiple infrared sensors that are each configurable to detect motion in its own sub field-of-view, as taught by Zhevelev, discloses "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." *See* RING-1003, pp. 68-71.

Claim 7

"The doorbell system of claim 1, 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."

Zhevelev discloses this limitation because it teaches that the walls between the sensors of its IR detector are arranged to create sub fields-of-view respectively associated with each sensor, where "[e]ach such sensor receives radiation ***only*** from the sub field-of-view with which it is associated and ***not*** from the other sub fields-of-view." RING-1006, ¶¶ [0196], [0199] (emphasis added). In particular, Zhevelev teaches that "the multiple sensors and their associated optical segments are optically separated from each other, for instance by ***partitions***, compartments or by the optical design, so that each sensor does not view the sub fields-of-view associated with other sensors." *Id.* (emphasis added). Referring to Fig. 1, Zhevelev teaches that the wall 78 arrangement between sensors 60 and 70 "allows each

sensor to receive only radiation emanating from its corresponding sub field-of-view." RING-1006, ¶ [0204]. As a result, when a person crosses adjacent sub fields-of-view, as shown in Fig. 8A (annotated below, showing the operation of the sensor and wall arrangement of Fig. 1), the "motion of the person is initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60"—that is, "the signals of the three sensors 50, 60 and 70 are received in succession." *Id*. at ¶ [0240].

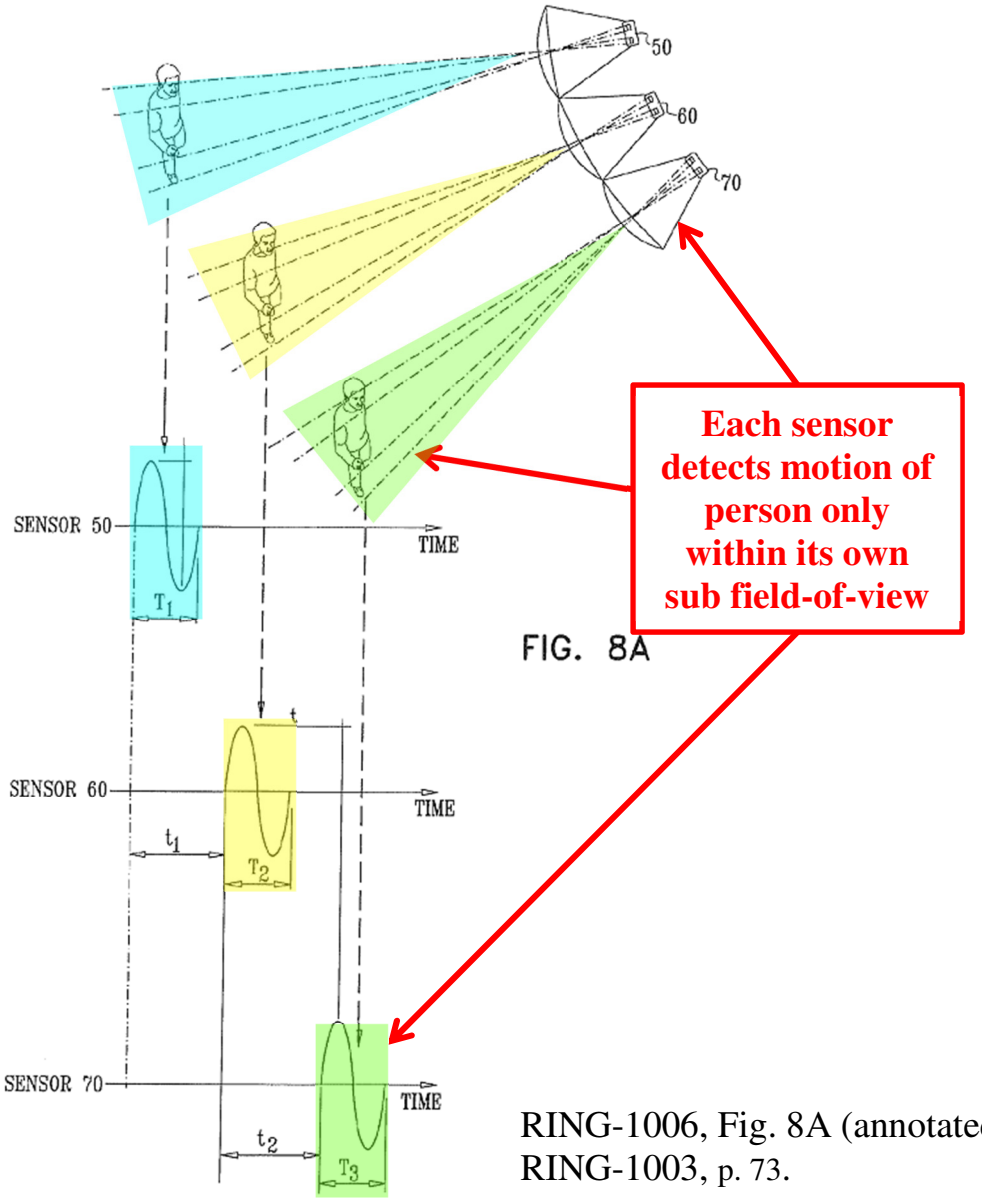


FIG. 8A

RING-1006, Fig. 8A (annotated); RING-1003, p. 73.

Accordingly, Zhevelev's wall, when placed between the sensors 60 and 70 (as shown in Fig. 1), prevents each sensor from detecting motion in the sub field-of-view associated with the other sensor. RING-1003, p. 73.

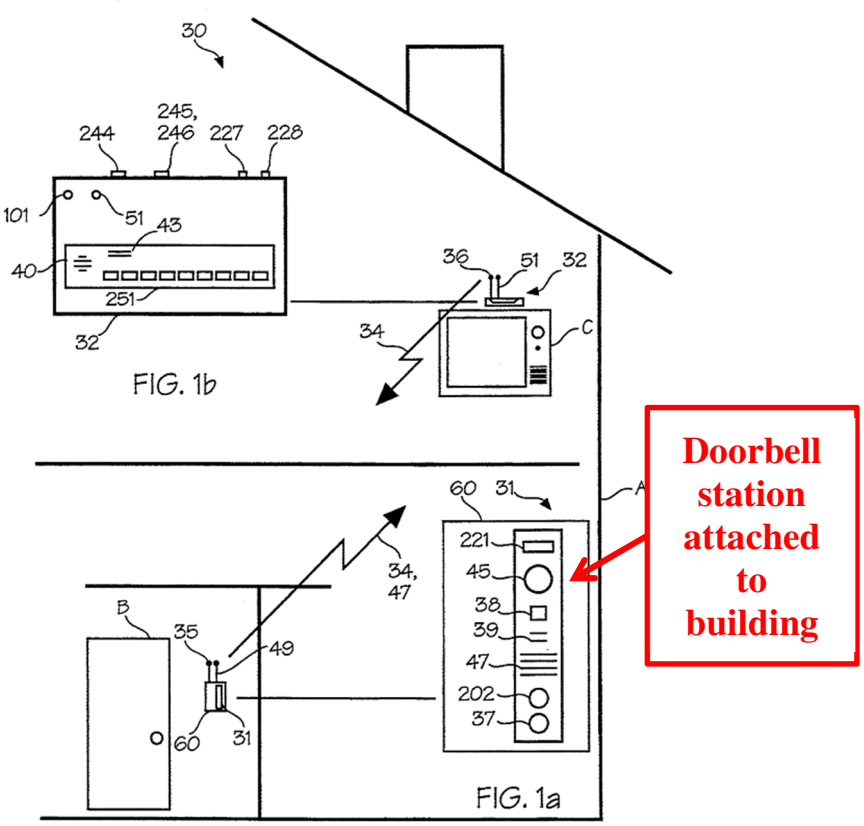
Thus, the walls between adjacent sensors that are configurable to prevent each sensor from detecting motion of a person in sub fields-of-view associated with other sensors, as taught by Zhevelev, discloses "wherein the wall is

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." *See* RING-1003, pp. 71-74.

Claim 8

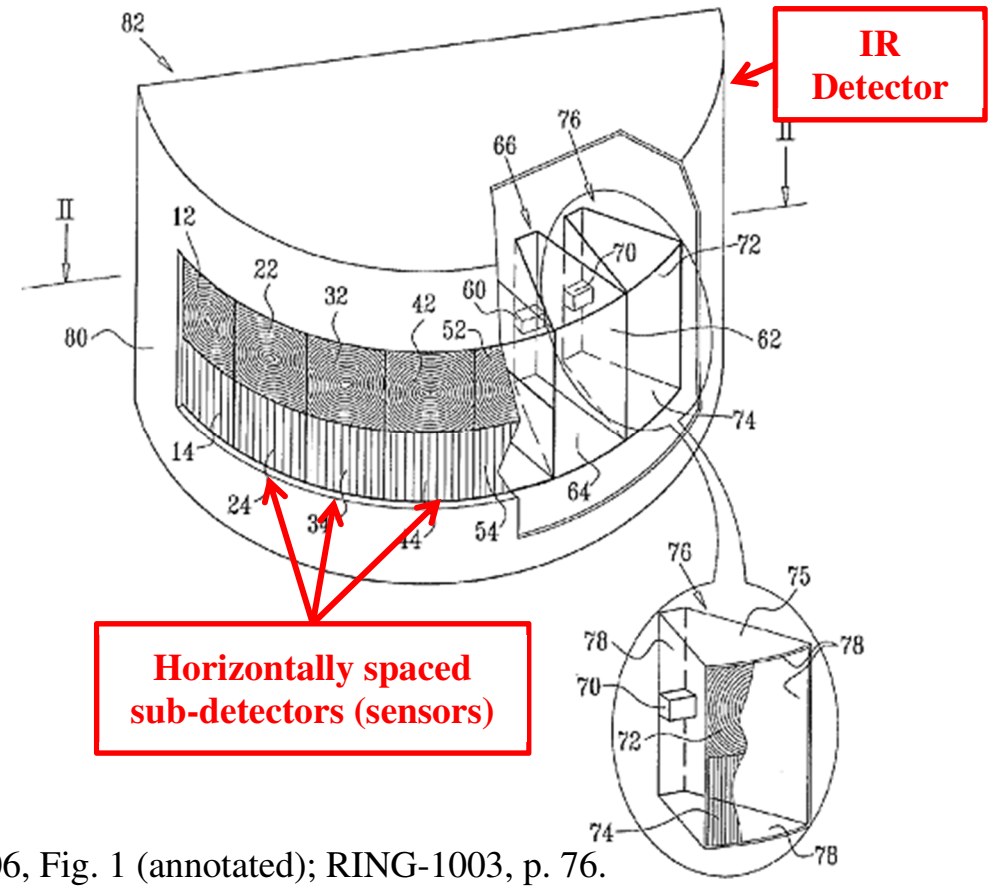
"The doorbell system of claim 1, wherein when the doorbell is attached to a building, the first sensor is horizontally spaced from the second sensor."

Von Bauer in view of Zhevelev renders obvious this limitation. First, von Bauer teaches that its video doorbell station is configured to be "attached to a structure wall, for example, adjacent to a doorway B of a building A, as shown in FIG. 1." RING-1005, 7:40-48; *see also id*. at 13:15-36 (explaining that the IR sensor of the doorbell has "a field of view encompassing a desired region, near the entrance of a building.")



RING-1005, Fig. 1 (annotated); RING-1003, p. 75.

Second, Zhevelev teaches that the sensors in its IR detector are horizontally spaced from one another, as shown in Fig. 1:



RING-1006, Fig. 1 (annotated); RING-1003, p. 76.

Zhevelev further teaches that its IR detector should be "installed such that its azimuth is generally parallel to a surface along which motion of the intruder is expected to occur." RING-1006, ¶ [0193] (explaining that "[f]or the purpose of description herein, the term 'horizontal' generally refers to a plane which extends generally azimuthally"); *see also id*. at ¶ [0240], Fig. 8a (illustrating three sensors *sequentially* detecting the motion of a person as the person crosses in front of the sensors).

Accordingly, when Zhevelev's IR detector is utilized in conjunction with von Bauer's doorbell, a person of ordinary skill in the art would have found it

obvious to horizontally space the multiple sensors in the IR detector (as taught by Zhevelev) so as to sequentially detect motion of a person as the person moves across the ground in the area around the entrance of a building. RING-1003, p. 78.

Thus, von Bauer's doorbell station that is attached to a wall of a building such that the field of view of the IR sensor encompasses the area around the entrance of the building, in view of Zhevelev's IR detector that includes horizontally spaced sensors that sequentially detect motion of a person as the person moves across the field of view, renders obvious "wherein when the doorbell is attached to a building, the first sensor is horizontally spaced from the second sensor." *See* RING-1003, pp. 74-79.

Claim 10

"The doorbell system of claim 1, wherein an outer surface of the button is located further outward than the outer surface of the wall."

Von Bauer in view of Zhevelev renders obvious this limitation. As discussed above in association with claim element [1.8], von Bauer teaches that its pushbutton and the infrared detector in its doorbell station face outwards towards the field of view encompassing the area near an entrance. RING-1005, 7:40-52, 13:15-36, Fig. 1. Further, as discussed in association with claim element [1.9], Zhevelev teaches that the outer surface of each wall in its detector faces outward toward the field of view. RING-1006, Fig. 1. Accordingly, when a person of ordinary skill in the art applies Zhevelev's wall-based arrangement that faces

outward to von Bauer's infrared detector that faces outward, it would have been obvious that both the outer surface of the pushbutton and the outer surface of the added wall would face outward toward the field of view. RING-1003, p. 82. One of ordinary skill in the art would have further found it obvious to configure the outer surface of the pushbutton to be *further outward* than the outer surface of the wall, as such an arrangement is merely an obvious design choice among a discrete number of predictable options (*e.g.*, the outer surface of the pushbutton could be (i) further outward, (ii) flush with, or (iii) further inward than the outer surface of the wall). *Id.* When the number of design choices is limited, and where the claimed arrangement—the button being further outward than wall—"solves no stated problem and presents no unexpected results," the decision to configure the components as claimed "would be an obvious matter … within the skill of the art." *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975).

In more detail, the '202 Patent fails to attach any significance to the recited arrangement—an arrangement notably found only in the claims. RING-1003, pp. 82-83. The specification and figures lack any description of the relative "outward" positions of the outer surfaces of the button and the wall, and are silent as to why the claimed arrangement is critical or advantageous. *Id.* (citing RING-1001, Fig. 16 (illustrating the wall but not the button)). Further, the claimed arrangement presents no unexpected results in the context of the combination of von Bauer and

Zhevelev, as the pushbutton and the wall, when combined, would each still perform its intended function regardless of the relative outward positions of their outer surfaces. RING-1003, pp. 82-83. The proposed combination does not contemplate any modifications to the doorbell button, and the wall would optically isolate adjacent sensors regardless of whether it is located in Zhevelev's or von Bauer's IR detector. RING-1003, pp. 82-83; *see SDI Techs., Inc. v. Bose Corp*., IPR2013-00350, Paper 36 at 28 (PTAB Nov. 7, 2014) (holding that the location of circuitry is a predictable design choice because "the circuitry perform[s] the same intended function regardless of whether it is located in the subwoofer or a satellite speaker"). Moreover, arranging the outer surface of von Bauer's pushbutton to be further outward than the wall would have been a predictable choice in view of "smart doorbells" already described in the art with similar arrangements. *See* RING-1003, pp. 83-84 (citing RING-1010, Fig. 4; RING-1011, Fig. 8B (both illustrating doorbell buttons that protrude further outward than every other element in a video doorbell)).

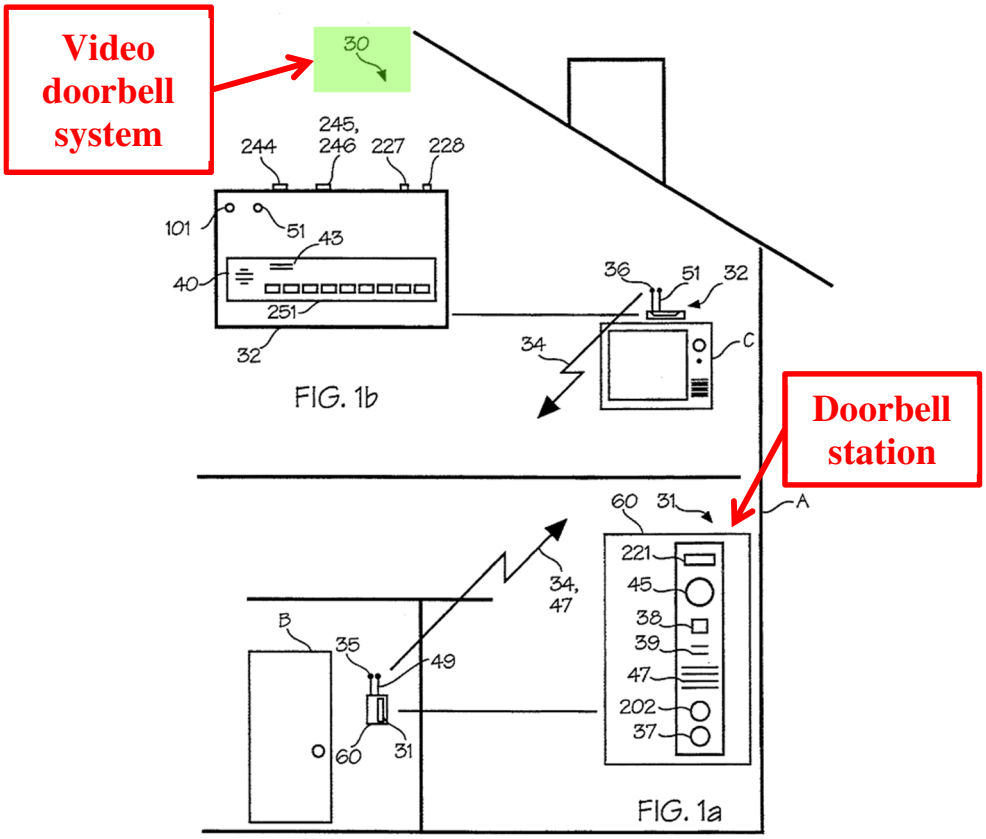
Accordingly, because there are only a discrete number of possible design options for the relative positioning of the outer surfaces of the pushbutton and wall in the above combination, and the claimed option solves no stated problem and presents no unexpected results, a person of ordinary skill in the art would have found the arrangement recited in claim 10 obvious. *See KSR*, 550 U.S. at 421

(where there "are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue known options within his or her grasp").

Claim 18

[18.0] ***"A method for using a doorbell system comprising"***

Von Bauer is directed to a "novel video doorbell system" that is used "for monitoring sounds and images at a remote location, such as the entranceway of a dwelling or other building." RING-1005, 6:26-37; Abstract. RING-1003, pp. 84-85. Fig. 1 of von Bauer illustrates the video doorbell system that includes a "Doorbell Station" mounted adjacent to an entrance of a building (RING-1005, 6:26-37):



RING-1005, Fig. 1 (annotated); RING-1003, p. 85.

[18.1] ***"a button configurable to enable a visitor to sound a chime"***

This limitation is identical to [1.1], and is therefore rendered obvious for the same reasons as discussed in association with [1.1]. *See* RING-1003, p. 85.

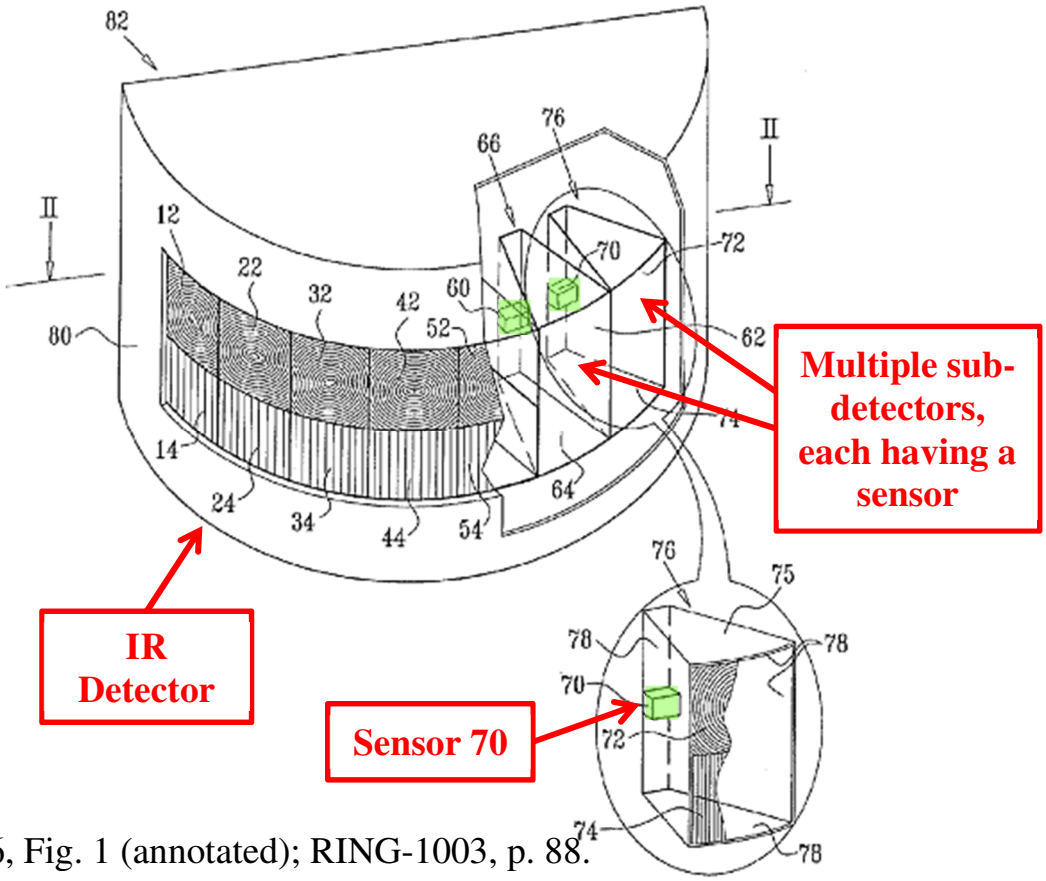
[18.2] ***"a first motion sensor configurable to detect a first indication suggestive of the visitor within a field of view of the doorbell system, a second motion sensor configurable to detect a second indication suggestive of the visitor within the field of view"***

Von Bauer in view of Zhevelev renders obvious this limitation.

First, von Bauer teaches that its doorbell station includes a "human presence sensor," such as an infrared proximity detector. RING-1005, 13:15-36. In particular, the sensor in the doorbell station may be a "pyroelectric infrared

detector 38 responsive to the presence of a person in the vicinity of the DBS." *Id*. at 6:43-51.

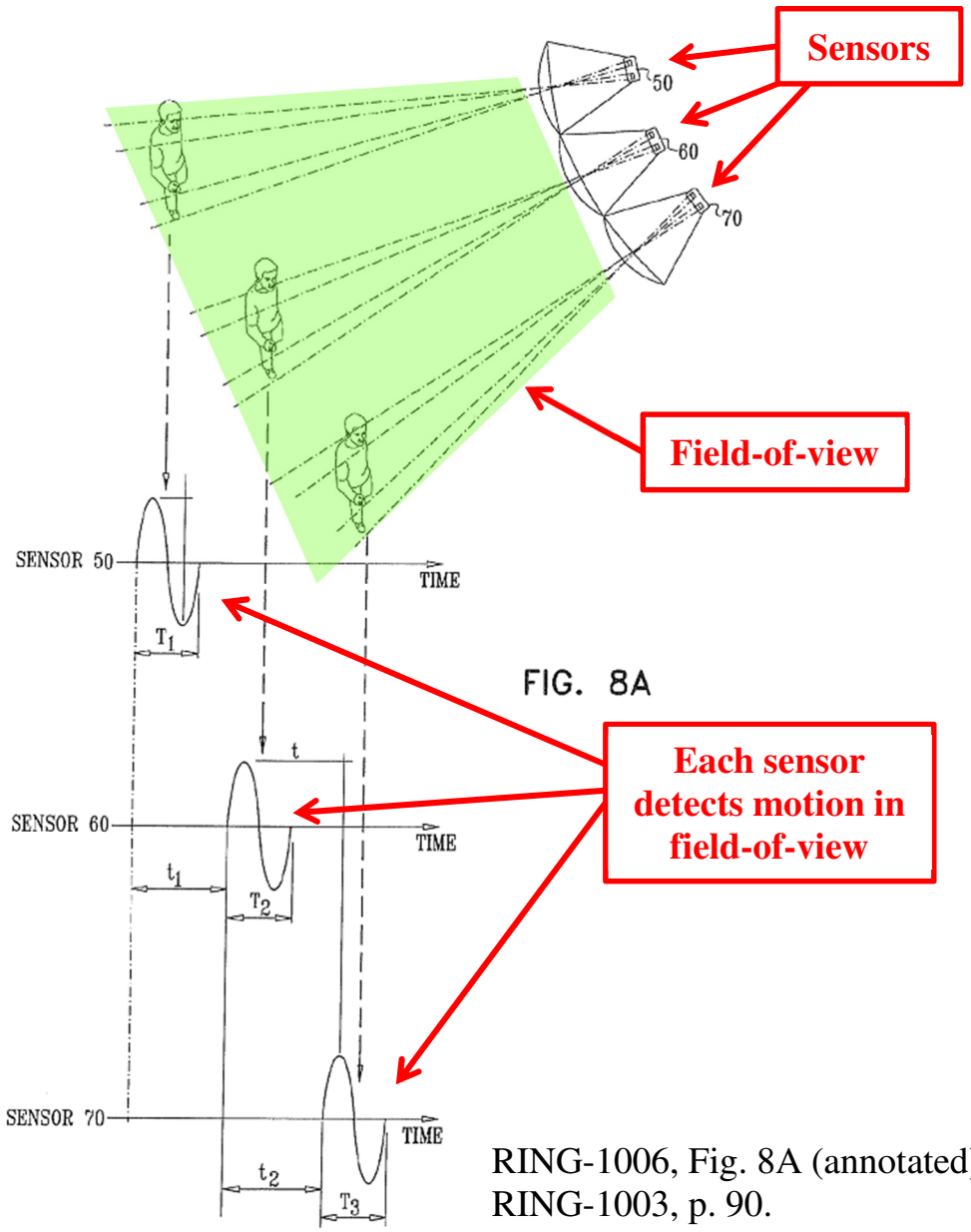
Second, to the extent von Bauer is silent as to the number of sensors within its IR detector, Zhevelev teaches that it was well known for IR detectors to include multiple sensors. Specifically, Zhevelev teaches a "passive infra-red detector including at least three sub-detectors, each sub-detector being operative to receive infra-red radiation from a corresponding one of at least three sub fields-of-view." RING-1006, Abstract. Fig. 1 (annotated below) illustrates an example of Zhevelev's "outdoor detector" that includes "seven sub-detectors, each sub-detector including a pyroelectric sensor associated with one or more corresponding lens segments, defining a corresponding sub field-of-view." *Id*. at ¶ [0198]; *see also id*. at ¶ [0204] ("As seen in FIGS. 1 and 2, each of sensors 10, 20, 30, 40, 50, 60 and 70 of respective sub-detectors 16, 26, 36, 46, 56, 66 and 76 is preferably located within a corresponding sub-detector compartment.")



RING-1006, Fig. 1 (annotated); RING-1003, p. 88.

Third, Zhevelev teaches that each of the sub-detectors is configurable to detect indications of "signals produced by ***movement of a person across the field-of-view*** of the detector." RING-1006, ¶ [0236] (emphasis added). For example, "motion of a person past the detector will be detected sequentially by at least two adjacent sub-detectors within a certain time duration corresponding to the speed of motion of the person." *Id*. at ¶ [0237]. Fig. 8A of Zhevelev (annotated below) illustrates "a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," where the "motion of the person is

initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].



RING-1006, Fig. 8A (annotated);
RING-1003, p. 90.

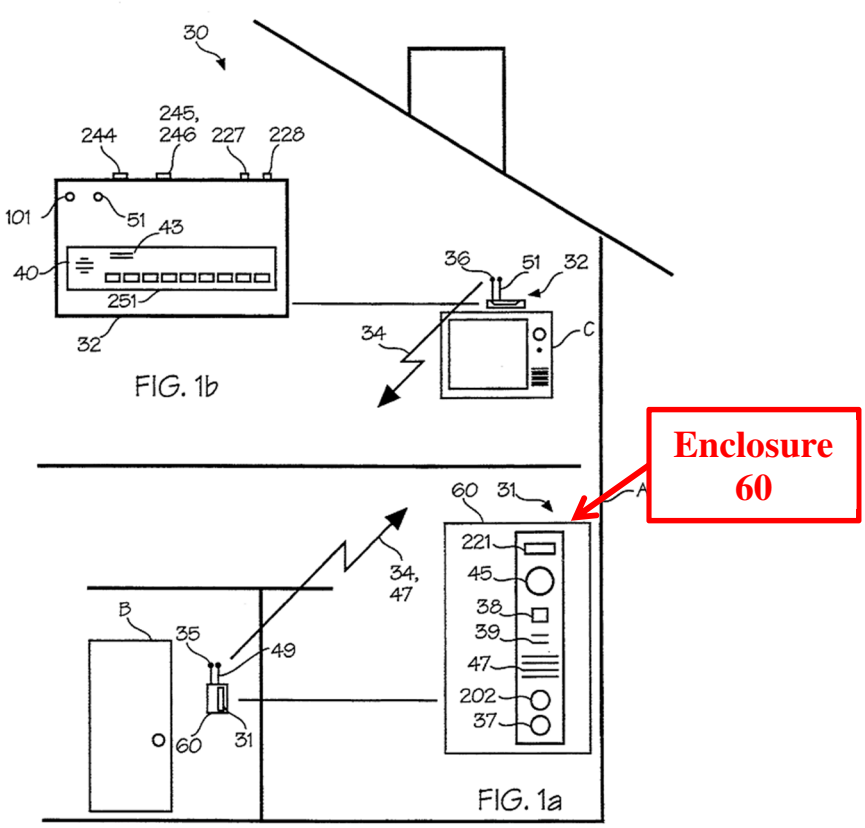
As discussed above in section VII(A)(3), a person of ordinary skill in the art would have been motivated to utilize the improved multi-sensor motion detector design described by Zhevelev in combination with von Bauer's Video Doorbell

Station. *See* RING-1003, pp. 90-91. Because Zhevelev teaches that each sensor is capable of being arranged within the detector to detect motion within a portion of the field of view, it would have been obvious that, when placed within von Bauer's detector, the multiple sensors would be configurable to detect visitor motion within the Video Doorbell Station's field of view. RING-1006, ¶ [0204] (teaching an "arrangement [that] allows each sensor to receive only radiation emanating from its corresponding sub field-of-view"); RING-1003, pp. 90-91.

Thus, the doorbell station that includes an infrared detector that detects a person within its field-of-view, as taught by von Bauer, in view of Zhevelev's outdoor IR detector with multiple sensors, each individually arranged to detect movement of a person across the field-of-view of the detector, renders obvious "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." *See* RING-1003, pp. 85-91.

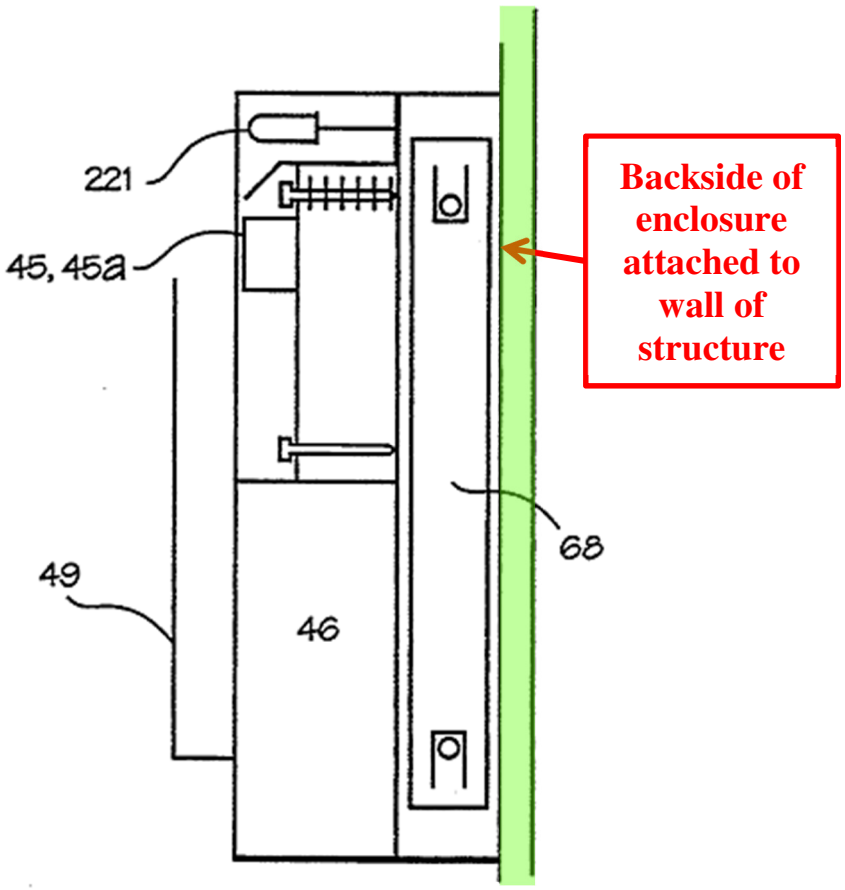
[18.3] ***"and an outer housing having a backside configured to be coupled to a building and having a frontside facing outward towards the field of view, the method comprising"***

Von Bauer discloses this limitation because it teaches that the doorbell station includes "an enclosure 60 of a suitable size and shape to be attached to a structure wall" (RING-1005, 7:40-48), as illustrated in Fig. 1 below:



RING-1005, Fig. 1 (annotated); RING-1003, p. 92.

Von Bauer further explains that when the doorbell station is attached to a building, the IR detector 38 on its frontside (as shown in Fig. 1 above) has "a field of view encompassing a desired region, near the entrance of a building." *Id*. at 13:15-36. A sectional side view of the doorbell station housing attached to a wall of a building (in green) is illustrated by von Bauer in Fig. 3:

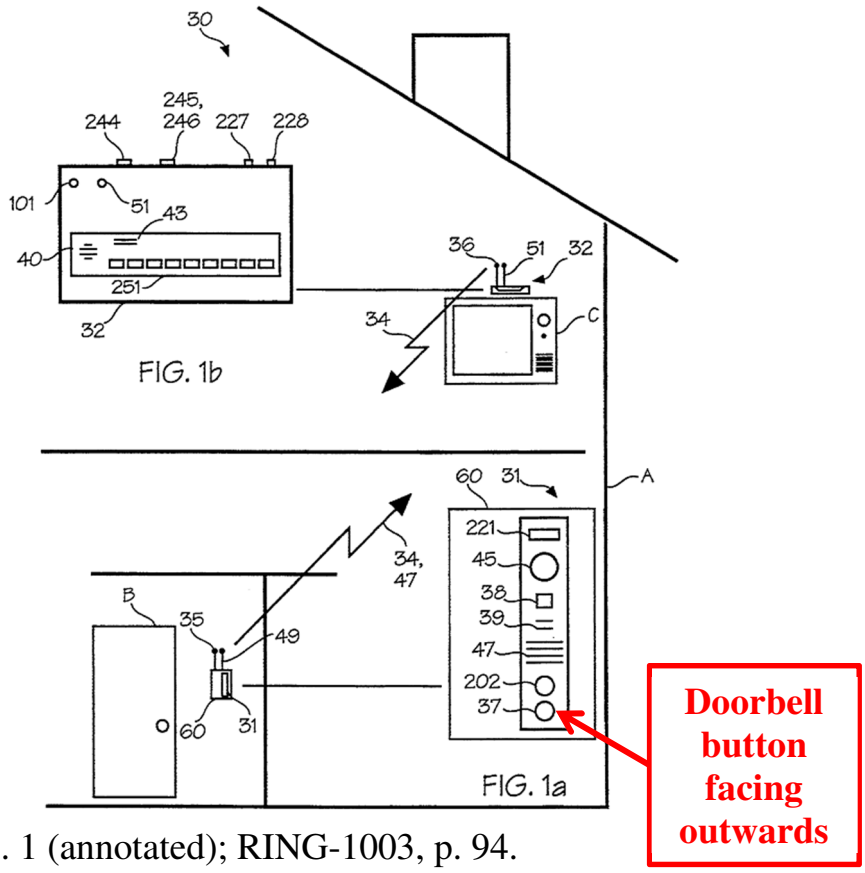


RING-1005, Fig. 3 (annotated); RING-1003, p. 93.

Thus, the enclosure/housing of the doorbell station that has a backside configured to be attached to a wall of a building adjacent to a doorway and a front side facing outwards towards the field of view that encompasses the area around the entrance of a building, as taught by von Bauer, discloses "an outer housing having a backside configured to be coupled to a building and having a frontside facing outward towards the field of view." *See* RING-1003, pp. 91-93.

[18.4] ***"orienting the button of the doorbell system such that the button faces outward from the frontside of the outer housing"***

Von Bauer discloses this limitation because it teaches that when the doorbell station is mounted adjacent to a doorway, as shown in Fig. 1a below, the doorbell pushbutton faces 37 outwards from the front side of the enclosure of the doorbell station (RING-1005, 7:40-52):

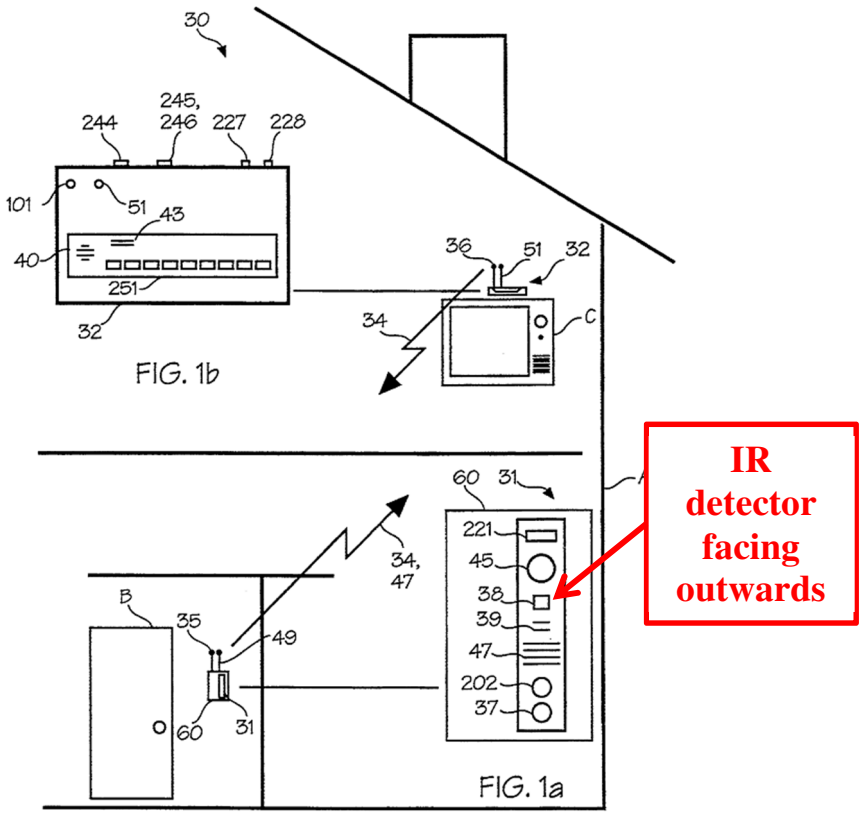


RING-1005, Fig. 1 (annotated); RING-1003, p. 94.

[18.5]-[18.6] ***"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;"***

Von Bauer in view of Zhevelev renders obvious these limitations. First, von Bauer teaches and illustrates that when the doorbell station is mounted "adjacent to a doorway," as shown in Fig. 1a below, the infrared detector 38 faces outwards

from the frontside of the doorbell station towards the "field of view encompassing a desired region, near the entrance of a building." RING-1005, 7:40-48, 13:15-36.



RING-1005, Fig. 1 (annotated); RING-1003, p. 96.

Second, Zhevelev teaches that each of its sensors face outwards toward the field-of-view, so as to "receive[] radiation only from the sub field-of-view with which it is associated," (RING-1006, ¶ [0196]), as illustrated in Fig. 8A:

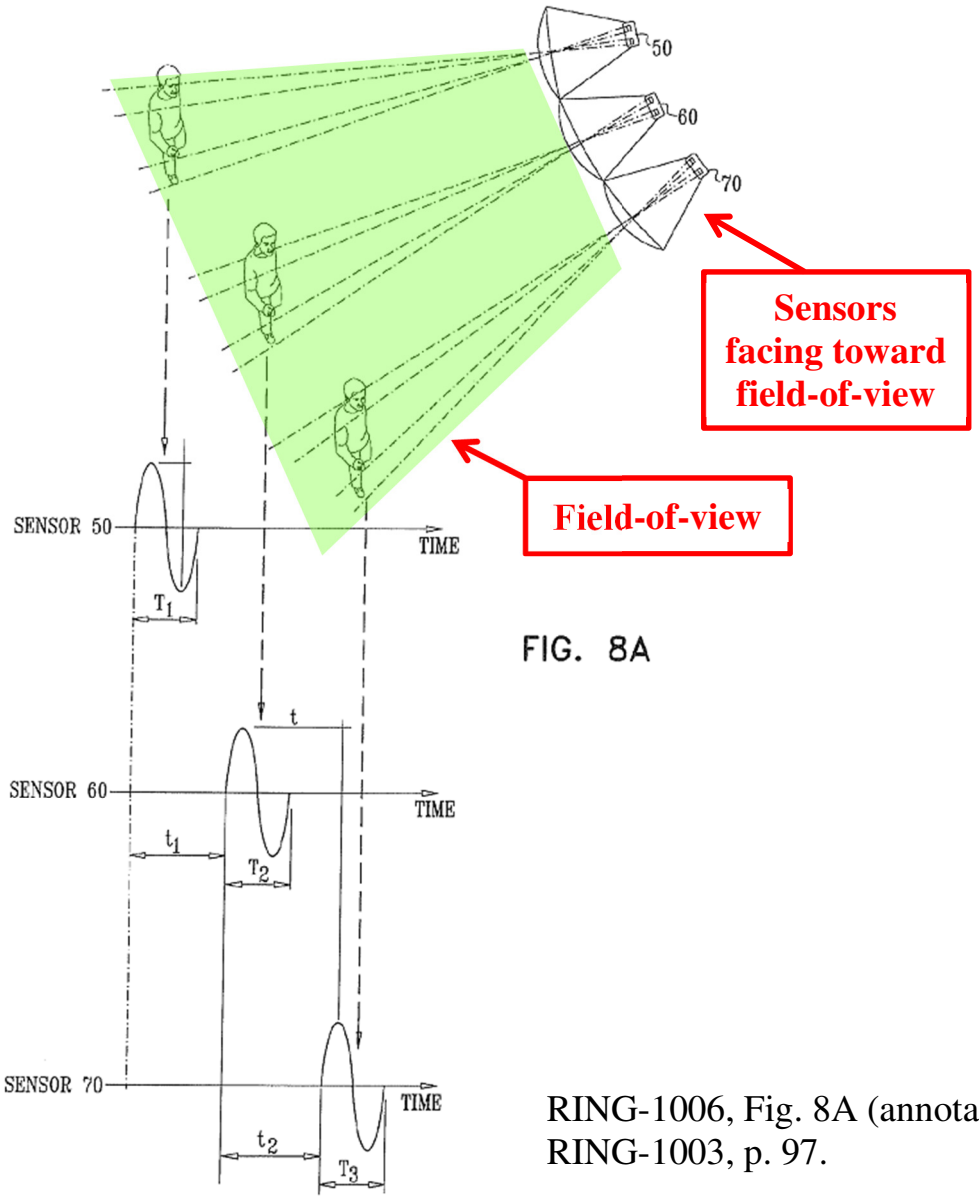


FIG. 8A

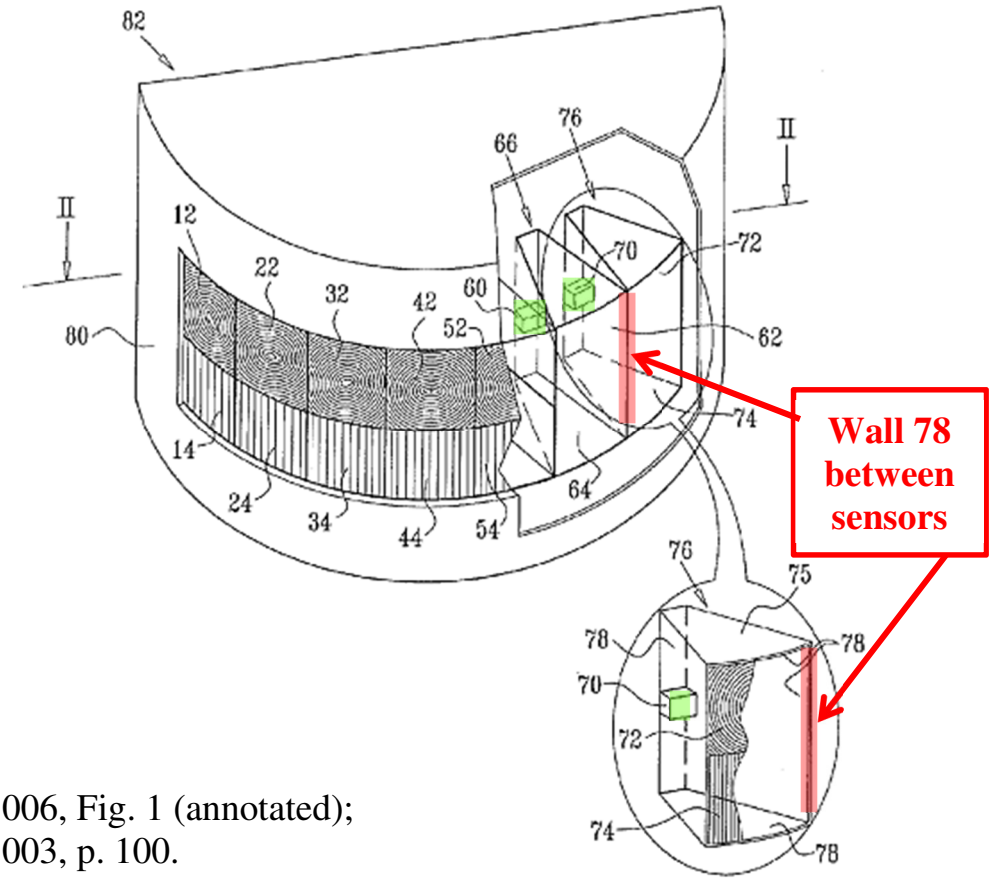
RING-1006, Fig. 8A (annotated);
RING-1003, p. 97.

Accordingly, when Zhevelev's outdoor IR detector is utilized in conjunction with von Bauer's doorbell station, each of the multiple sensors will be facing outwards from the front side of the doorbell station enclosure such that they cover the field-of-view encompassing the area around the entrance of a building. *See* RING-1003, p. 98.

Thus, attaching the doorbell station to a wall adjacent to a doorway such that the IR detector faces outwards from the frontside of the enclosure of the doorbell station toward the field-of-view, as taught by von Bauer, in view of the multiple motion sensors of the outdoor IR detector that face outward toward the field-of-view, as taught by Zhevelev, render obvious "orienting the first motion sensor to face outward from the frontside of the outer housing" and "orienting the second motion sensor to face outward from the frontside of the outer housing." *See* RING-1003, pp. 95-98.

[18.7] ***"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"***

Zhevelev discloses this limitation. First, it teaches that "the multiple sensors and their associated optical segments are optically separated from each other, for instance by ***partitions***." RING-1006, ¶ [0196] (emphasis added). Specifically, as illustrated in Fig. 1 of Zhevelev, each sensor is located within a sub-detector compartment, where "[e]ach sub-detector compartment is ***defined by walls, such as walls 78*** of compartment 75, seen clearly in the enlarged portion of FIG. 1." *Id*. at ¶ [0204] (emphasis added).



RING-1006, Fig. 1 (annotated);
RING-1003, p. 100.

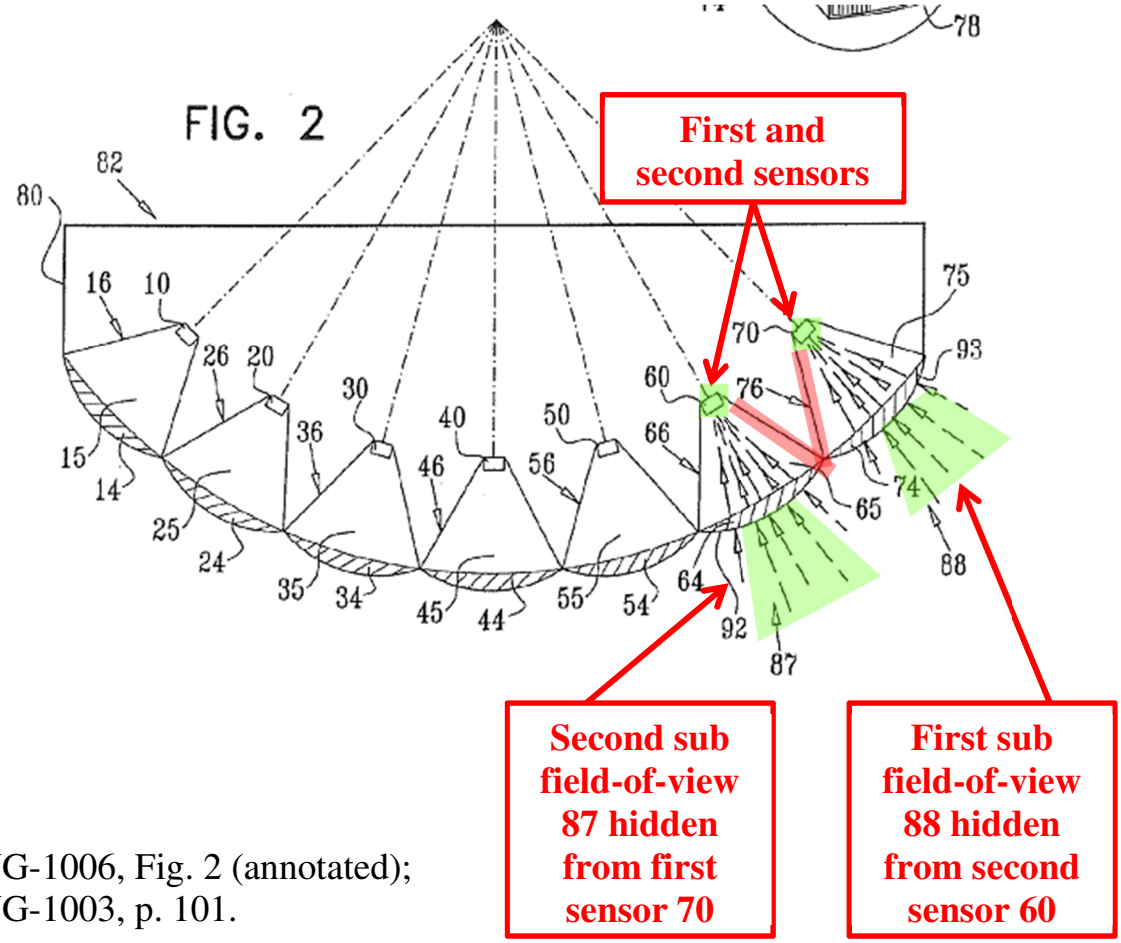
Second, Zhevelev teaches that the walls between the sensors create "sub fields-of-view" respectively associated with each sensor, such that each sensor detects radiation ***only*** within its respective sub field-of-view:

> In accordance with a preferred embodiment of the present invention, ***the field-of-view is divided into generally non-overlapping sub fields-of-view, each associated with a separate sensor. Each such sensor receives radiation only from the sub field-of-view with which it is associated and not from the other sub fields-of-view.*** As explained hereinabove, each such sub field-of-view is associated with certain segments of the detector's lens or mirror assembly, and not with the entire optical system. In a

> preferred design, ***the multiple sensors and their associated optical segments are optically separated from each other, for instance by partitions, compartments or by the optical design, so that each sensor does not view the sub fields-of-view associated with other sensors***.

RING-1006, ¶ [0196] (emphasis added).

Referring to Fig. 1, reproduced above, Zhevelev teaches that the wall 78 is arranged between sensors 60 and 70 and that such an "arrangement allows each sensor to receive only radiation emanating from its corresponding sub field-of-view." RING-1006, ¶ [0204]; *see also id*. at ¶ [0199] ("Each of the sub-detectors preferably views a portion of the entire field-of-view of the detector."). For example, reproduced below is Fig. 2 of Zhevelev, which is a top down view of Fig. 1 and illustrates sensors 60 and 70 and respective sub fields-of-view 87 and 88. As shown by Dr. Paradiso's annotations, the wall is configured to hide from sensor 70 the sub field-of-view associated with sensor 60 and hide from sensor 60 the sub field-of-view associated with sensor 70. RING-1003, p. 101.



RING-1006, Fig. 2 (annotated);
RING-1003, p. 101.

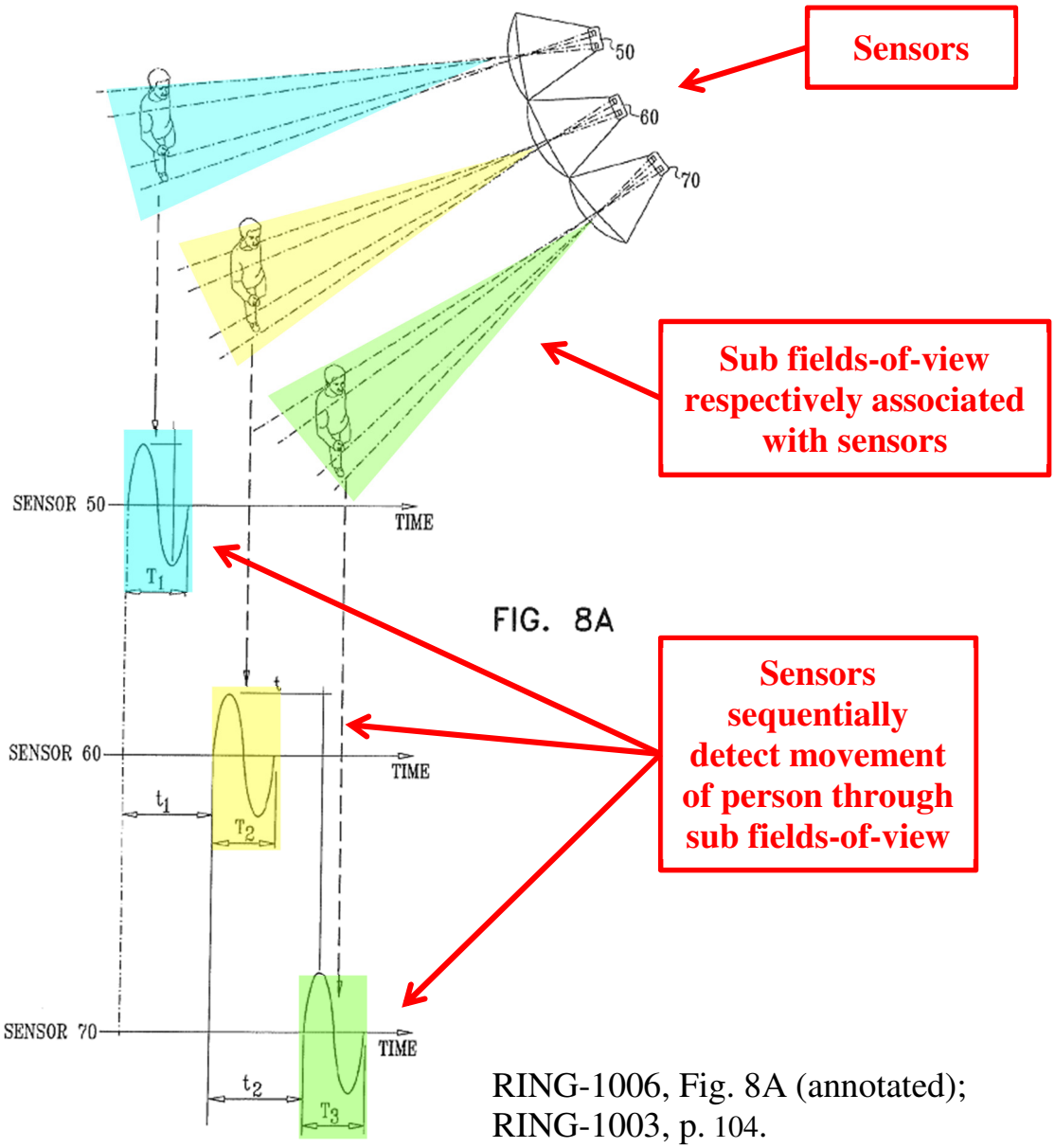
Thus, placing walls between adjacent sensors to create sub fields-of-view associated with each sensor, such that the walls are configured to hide from each sensor the sub fields-of-views of the other sensors, as taught by Zhevelev, discloses "placing a wall at least partially between the first motion 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." *See* RING-1003, pp. 98-102.

[18.8] ***"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"

Zhevelev discloses this limitation. As discussed in association with [18.7], Zhevelev teaches that its sensor-wall-sensor configuration causes "the field-of-view [to be] divided into generally non-overlapping sub fields-of-view, each associated with a separate sensor." RING-1006, ¶ [0196], Fig. 2. Because the sensors are optically isolated, Zhevelev teaches that the sensors will "sequentially" detect the motion of a person moving past the detector, such that its IR detector "***distinguishes more clearly between signals produced by movement of a person across the field-of-view***." *Id.* at ¶¶ [0236]-[0237] (emphasis added).

To demonstrate this functionality of its IR detector, Zhevelev includes a number of figures that "illustrate examples of signals produced by a detector of a multiple sub-detector embodiment … having non-overlapping sub fields-of-view." RING-1006, ¶ [0239]. In particular, Fig. 8A of Zhevelev (annotated below) illustrates "a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," where the "motion of the person is initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].



RING-1006, Fig. 8A (annotated);
RING-1003, p. 104.

Accordingly, when a person moves through the field-of-view, the IR detector distinguishes between motion of the person in the different sub fields-of-view associated with the sensors because "[e]ach such sensor receives radiation only from the sub field-of-view with which it is associated." RING-1006, ¶ [0196]. In other words, because each sensor is associated with one—and only one—sub field-

of-view, Zhevelev's detector associates the motion signals from each sensor with the sensor's corresponding sub field-of-view. *See id.* ("the field-of-view is divided into generally non-overlapping sub fields-of-view, each associated with a separate sensor"); *see also id.* ¶ [0247] (associating motion signals detected by sensors 50 and 70, as shown in Fig. 8C, with "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"); RING-1003, pp. 104-105. Notably, the '202 Patent states that its system distinguishes between movement in different portions of the field of view in the same way: "The wall 1060 can be configured to divide the field of view 1000 into portions 1064, 1068 such that the doorbell system can distinguish between motions in different portions 1064, 1068." RING-1001, 33:16-19; RING-1003, p. 105.

Thus, configuring the IR detector to distinguish between motions detected in different sub fields-of-view by associating motion detected by each sensor with the sub field-of-view corresponding to that sensor, as taught by Zhevelev, discloses "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." *See* RING-1003, pp. 102-105.

[18.9] ***"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."***

Zhevelev discloses this limitation because it teaches that one of the ways its outdoor IR detector "manage[s] interference and substantially decrease[s] the 'undesired signals' arising from interference" is by ignoring false signals generated by its sensors. RING-1006, ¶¶ [0026], [0237]. Specifically, Zhevelev teaches that when, for example, signals are received "by two sub-detectors, which are not adjacent to one another," "***the signal may be regarded as a false signal and ignored***." *Id*. at ¶¶ [0237], [0238] (emphasis added). In other words, Zhevelev ignores detected motion signals in response to determining that the signals are associated with particular sub fields-of-view (as each sensor is associated with only one sub field-of-view). RING-1003, p. 107. Zhevelev illustrates in association with Fig. 8C, annotated below, that the ignored motion signals are directly associated with movement in specific sub fields-of-view. RING-1006, ¶ [0247]. For example, when "signals are received from sensors 50 and 70 but not from sensor 60 which is located therebetween," "[i]t is more likely that this is 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*. at ¶ [0247] (emphasis added).

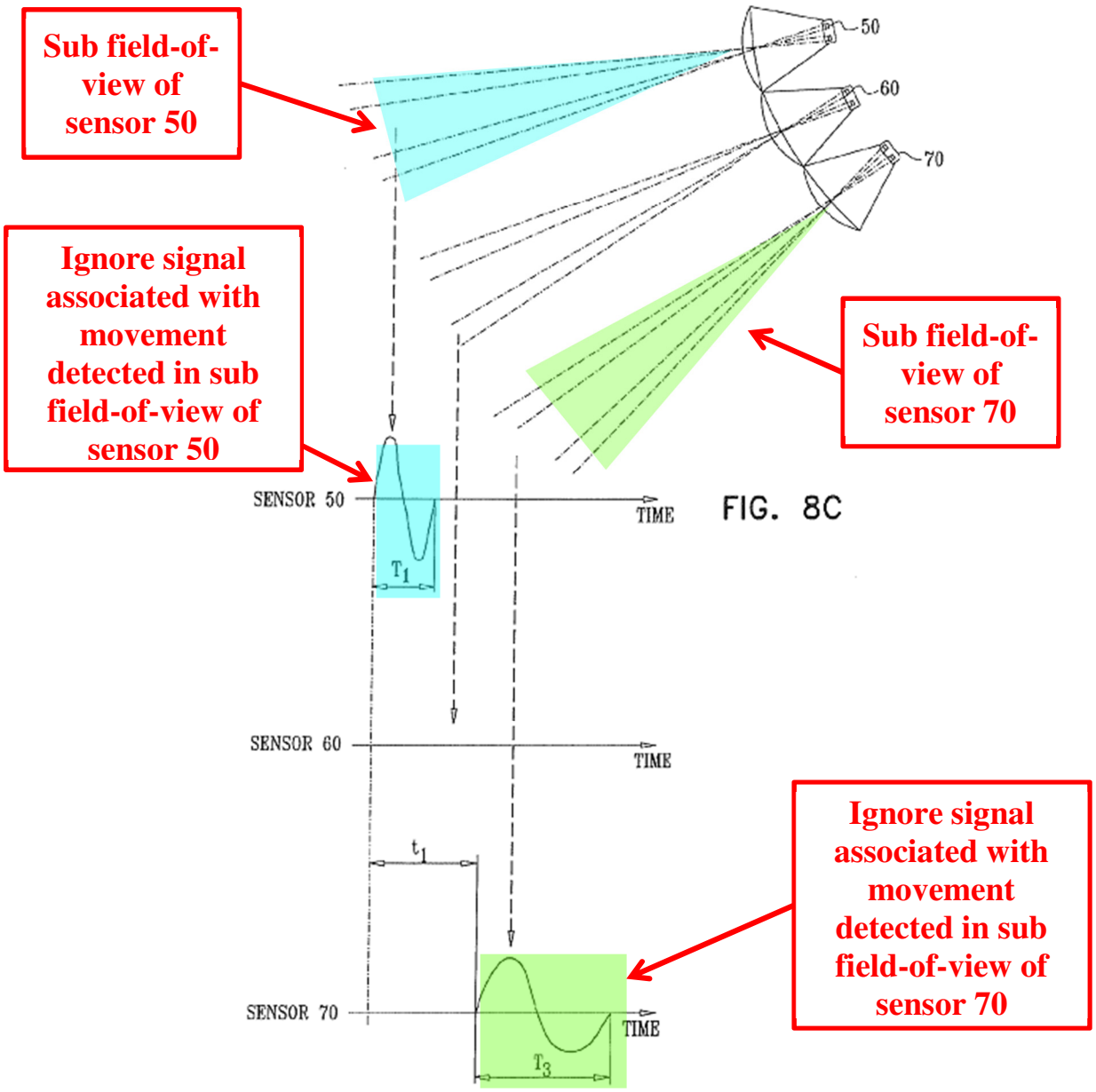


FIG. 8C

RING-1006, Fig. 8C (annotated); RING-1003, p. 107.

Thus, configuring the IR detector to ignore a motion detection signal in response to determining that the signal is associated with two non-adjacent sub-detectors corresponding to two non-adjacent sub fields-of-view, as taught by Zhevelev, discloses "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." *See* RING-1003, pp. 105-107.

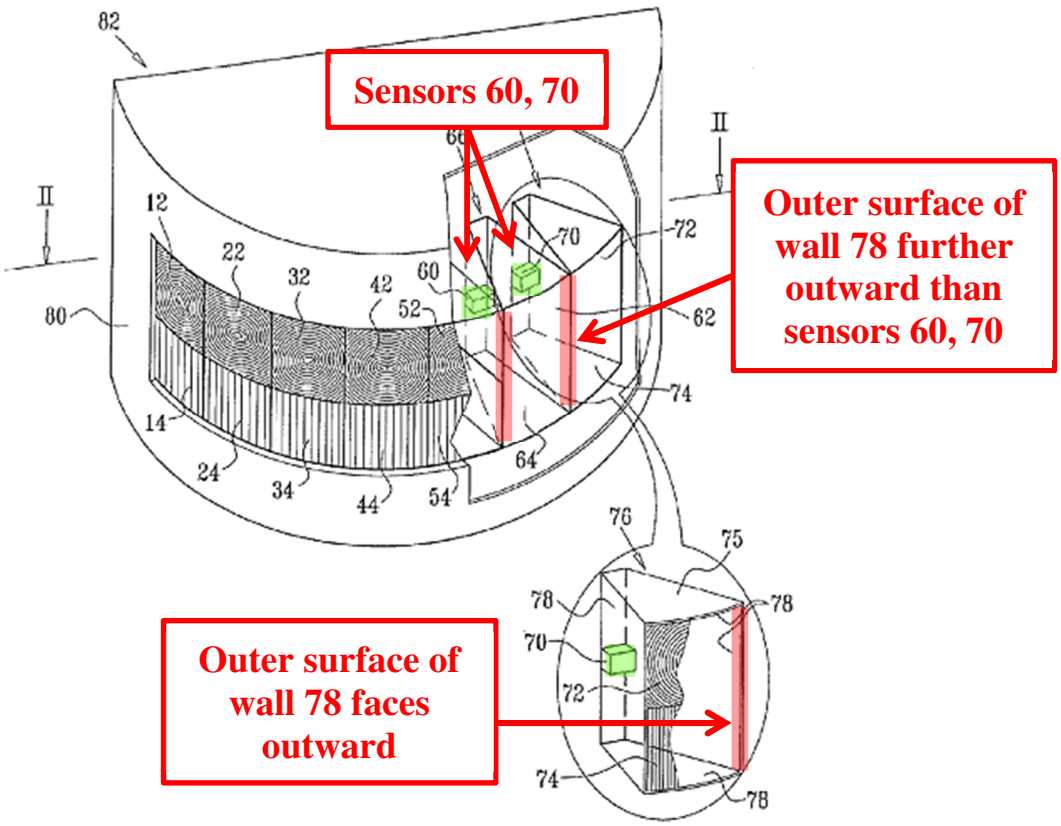
Claim 19

Independent claim 19 is a system claim version of independent claim 18. Each limitation of claim 19 is substantially similar to a corresponding limitation in claim 18. As such, for the reasons discussed in association with claim 18 above, von Bauer in view of Zhevelev renders obvious claim 19. *See* RING-1003, pp. 108-111.

Claim 20

"The doorbell system of claim 19, wherein at least a portion of the wall is located further outward than the first sensor and the second sensor."

Zhevelev discloses this limitation because it teaches, as shown in Fig. 1 annotated below, that at least the outer surface of each wall 78 (in red) is located further outward than each sensor 60, 70 (in green):



RING-1006, Fig. 1 (annotated); RING-1003, p. 112.

Thus, the outer surface of each wall between sub-detectors that is located further outward than each sensor within the sub-detector compartments, as taught by Zhevelev, discloses "wherein at least a portion of the wall is located further outward than the first sensor and the second sensor." *See* RING-1003, pp. 111-113.

Claim 21

"The doorbell system of claim 19, wherein 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."

Claim 21 is substantially identical to claim 4. As such, for the reasons discussed in association with claim 4 above, von Bauer in view of Zhevelev renders obvious claim 21. *See* RING-1003, pp. 113-116.

Claim 23

"The doorbell system of claim 19, 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 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."

Claim 23 is substantially identical to claim 7. As such, for the reasons discussed in association with claim 7 above, von Bauer in view of Zhevelev renders obvious claim 23. *See* RING-1003, pp. 116-119.

Claim 24

"The doorbell system of claim 19, 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."

Von Bauer in view of Zhevelev renders obvious this limitation. Zhevelev teaches that the walls between the sensors create "sub fields-of-view" respectively associated with each sensor, where each sensor detects radiation within its respective sub field-of-view:

> In accordance with a preferred embodiment of the present invention, ***the field-of-view is divided into generally non-overlapping sub fields-of-view, each associated with a separate sensor. Each such sensor receives radiation only from the sub field-of-view with which it is associated and not from the other***

> ***sub fields-of-view.*** As explained hereinabove, each such sub field-of-view is associated with certain segments of the detector's lens or mirror assembly, and not with the entire optical system. In a preferred design, ***the multiple sensors and their associated optical segments are optically separated from each other, for instance by partitions, compartments or by the optical design, so that each sensor does not view the sub fields-of-view associated with other sensors***.

RING-1006, ¶ [0196] (emphasis added); *see also id*. at ¶ [0204] ("This arrangement allows each sensor to receive only radiation emanating from its corresponding sub field-of-view."). Zhevelev explains that "[e]ach of the sub-detectors preferably views a portion of the entire field-of-view of the detector." *Id*. at ¶ [0199].

For example, Fig. 8A of Zhevelev (annotated below) illustrates "a typical example of signals produced by a person crossing adjacent sub fields-of-view of the sensors 50, 60 and 70," where the "motion of the person is initially detected by sensor 50 and thereafter, after a time interval t1, the motion of the person is detected by sensor 60." *Id*. at ¶ [0240].

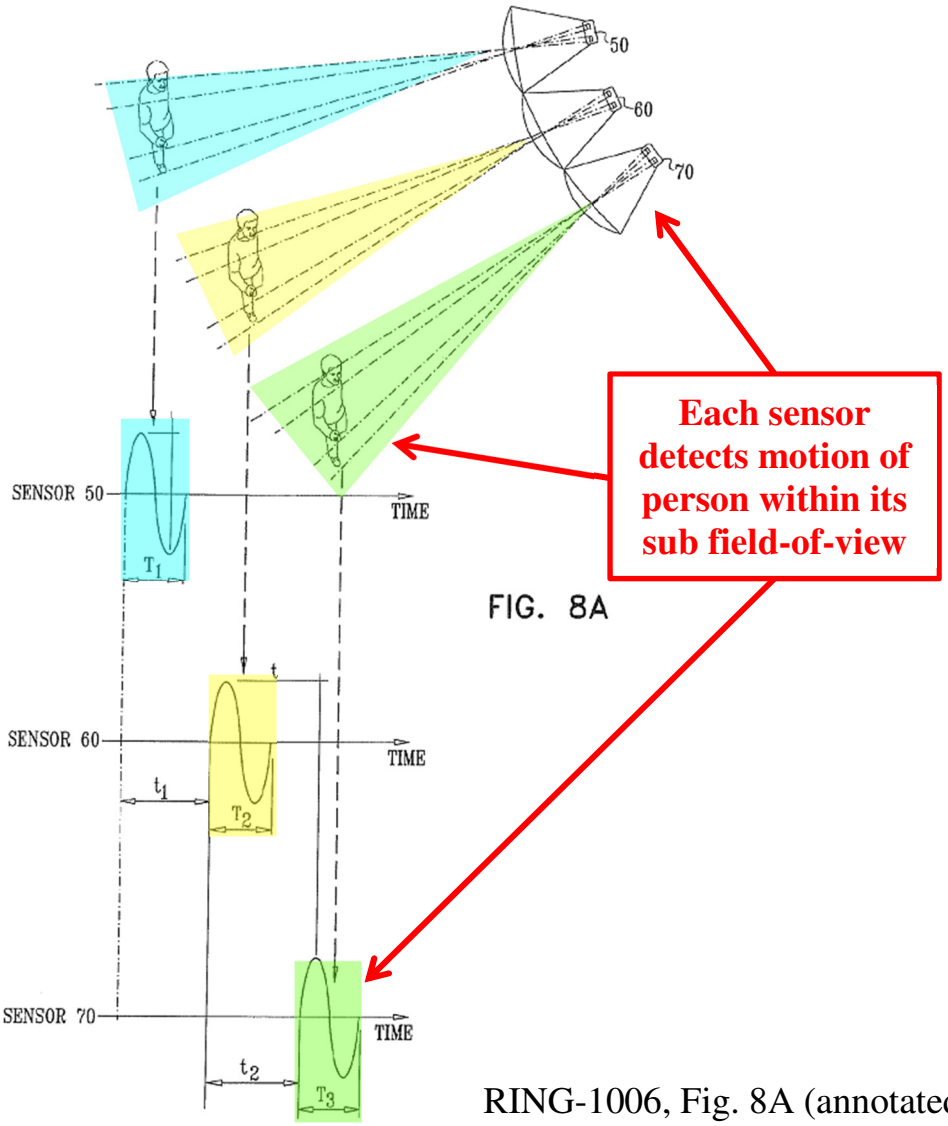


FIG. 8A

RING-1006, Fig. 8A (annotated); RING-1003, p. 121.

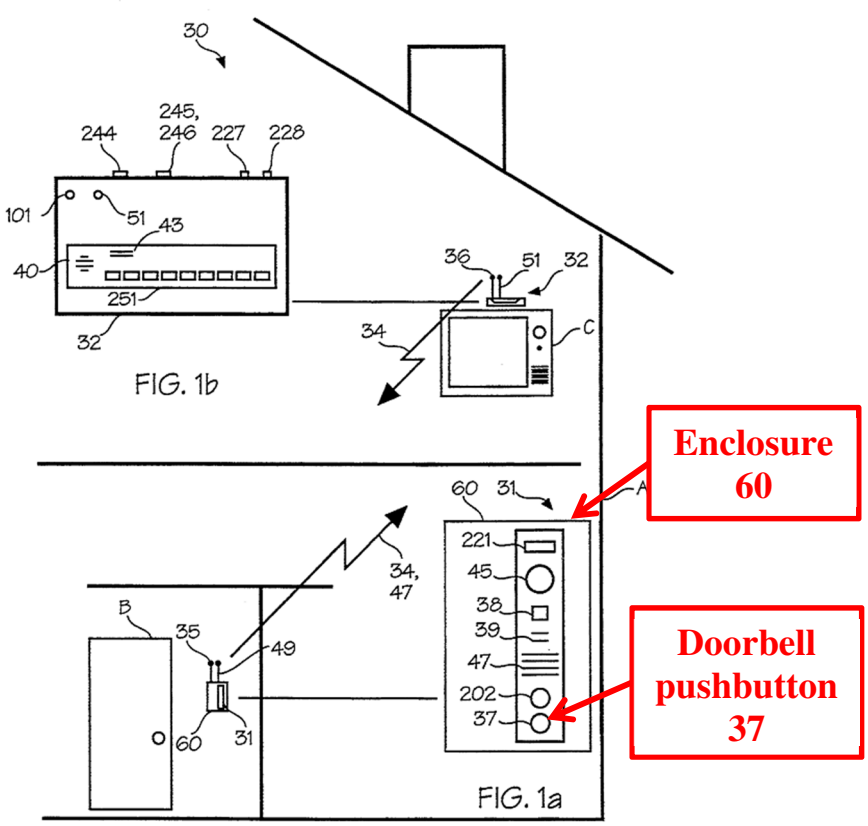
Accordingly, because Zhevelev's multiple infrared sensors are capable of being arranged to detect motion from respective sub fields-of-view, when combined with von Bauer, it would have been obvious that each sensor would be configurable to detect motion within respective portions of the Video Doorbell Station's field of view. RING-1006, ¶ [0240]; RING-1003, pp. 121-122.

Thus, the doorbell station that includes an infrared detector that detects a person within its field-of-view, as taught by von Bauer, in view of Zhevelev's multiple sensors that are each configurable to detect the motion of a person within its respective sub field-of-view, as taught by Zhevelev, discloses "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." *See* RING-1003, pp. 119-122.

Claim 25

"The doorbell system of claim 19, wherein 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."

Von Bauer in view of Zhevelev renders obvious this limitation. First, von Bauer teaches that its video doorbell station "is adapted to be mounted to a building." RING-1005, 6:26-37; *see also id*. at 7:40-48. Von Bauer further teaches that the doorbell station includes "an enclosure 60 of a suitable size and shape to be attached to a structure wall." *Id*. at 7:40-48. Von Bauer explains that the "housing 60 found suitable by the present inventors" is a "rectangular box" (*id*.), as illustrated in Fig. 1 below:



RING-1005, Fig. 1 (annotated); RING-1003, p. 123.

Second, von Bauer teaches that the "Video Doorbell Station 31 includes a pushbutton switch 37 that replaces the doorbell button originally installed at the entrance to building A." RING-1005, 7:49-52. As shown in Fig. 1 above, von Bauer is not explicit as to the relative positioning between the outer surface of the pushbutton 37 and the housing 60. One of ordinary skill in the art would have found it obvious for the outer surface of the pushbutton 37 to protrude from the housing 60, as such an arrangement would have merely been an obvious design choice among a discrete number of predictable options (*e.g.*, the pushbutton could protrude from, be flush with, or be recessed within the housing). RING-1003, p.

124. Because the particular arrangement recited in claim 25 "solves no stated problem and presents no unexpected results," it is nothing more than a predictable and obvious alternative in a limited set of options. *See In re Kuhle*, 526 F.2d at 555.

In more detail, the '202 Patent fails to attach any significance to the recited arrangement—an arrangement notably found only in the claims. RING-1003, p. 125. The specification and figures lack any description or illustration of the relative positioning of the outer surface of the doorbell button with respect to the housing, nor do they explain why the claimed arrangement is critical or advantageous. *Id*. (citing RING-1001, elements 212 and 224 in Figs. 1, 10-13). Further, the claimed arrangement in the context of von Bauer's Video Doorbell Station would not produce an unexpected result, as the pushbutton would perform its intended function (*i.e*., allowing a visitor to ring the doorbell) regardless of the position of its outer surface to the housing 60. RING-1003, p. 126; *see SDI Techs., Inc.*, IPR2013-00350, Paper 36 at 28. Moreover, arranging the outer surface of von Bauer's pushbutton to protrude from the housing would have been a predictable choice in view of prior video doorbells described in the art that already featured protruding doorbells. *See* RING-1003, pp. 126-127 (citing RING-1010, Fig. 4; RING-1011, Fig. 8B (both illustrating doorbell buttons that protrude out from the housing of a video doorbell)).

Similarly, when the IR detector in von Bauer's Video Doorbell Station is modified to include multiple sensors, as discussed above in section VII(A)(3), a person of ordinary skill in the art would have found it obvious to recess the sensors within the doorbell station's housing. RING-1003, p. 128. Such an arrangement is, again, merely an obvious design choice among a discrete number of predictable options, and the '202 Patent is silent as to why the claimed arrangement is critical or advantageous. *Id*. at p. 125 (noting that the '202 Patent specification and figures fail to describe or illustrate the relative position of the sensors (Fig. 16) with respect to the housing (Fig. 1)).

Further, not only would the claimed arrangement have been predictable in the context of the combination of von Bauer and Zhevelev, but a person of ordinary skill would have also found it advantageous to recess the sensors into the housing of the von Bauer's doorbell station. RING-1003, p. 128. In particular, it was already well known in the electro-optical design arts that "recessed mounting" of an IR sensor within a housing "makes it less susceptible to interference with ambient sunlight entering the front window" of the housing. RING-1003, pp. 128-129 (quoting RING-1012, ¶¶ [0026], [0009], Fig. 2). This design concern would be especially relevant to a person of ordinary skill in the art when configuring von Bauer's doorbell station, as the station is intended to be mounted outdoors and would be exposed to ambient sunlight. RING-1003, p. 129. Moreover, arranging

the sensors to be recessed within housing would have been a predictable choice in view of other "smart doorbells" in the art that already included such an arrangement. *See* RING-1003, pp. 129-130 (citing RING-1013, Fig. 23 (illustrating an infrared sensor array recessed with a housing of a doorbell)).

Accordingly, because there are only a discrete number of possible design options for the relative positioning of the outer surfaces of the pushbutton and the sensors with respect to the housing in the above combination, and the claimed arrangement solves no stated problem in the '202 Patent and presents no unexpected results, a person of ordinary skill in the art would have found such an arrangement obvious. *See KSR Int'l Co.*, 550 U.S. at 421 (where there "are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue known options within his or her grasp").

VIII. CONCLUSION

For the reasons set forth above, Petitioner has established a reasonable likelihood that claims 1, 3-5, 7, 8, 10, 18-21, and 23-25 of the '202 Patent are unpatentable. Petitioner requests institution of an *inter partes* review and cancellation of these claims.

Respectfully submitted,

Dated: December 17, 2018

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this petition, that the number of words in this paper is 13,788. Pursuant to 37 C.F.R. §42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: December 17, 2018

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PETITIONER'S EXHIBIT LIST

December 17, 2018

RING-1001	U.S. Patent No. 9,055,202
RING-1002	Prosecution History of U.S. Patent No. 9,055,202
RING-1003	Declaration of Joseph Paradiso, Ph.D., Under 37 C.F.R. § 1.68
RING-1004	Curriculum Vitae of Joseph Paradiso, Ph.D.
RING-1005	U.S. Patent No. 5,428,388 ("von Bauer")
RING-1006	U.S. Patent Application Publication No. 2007/0029486 ("Zhevelev")
RING-1007	Wayback Machine Archive Page, "LHi968 – Lhi 968 Dual Element Detector, Top Line," archived March 18, 2007, https://web.archive.org/web/20070318105101/http://optoelectronics.perkinelmer.com:80/catalog/Product.aspx?ProductID=LHi968
RING-1008	Wayback Machine Archive Page, "Pyroelectric Infrared Detectors from PerkinElmer," archived April 16, 2009, https://web.archive.org/web/20090416112034/http://optoelectronics.perkinelmer.com:80/catalog/Category.aspx?CategoryName=Pyroelectric+Detectors
RING-1009	Wayback Machine Archive Page, "Dual Element Detectors from PerkinElmer," archived March 25, 2007, https://web.archive.org/web/20070325123802/http://optoelectronics.perkinelmer.com:80/catalog/Category.aspx?CategoryName=Dual+Elements
RING-1010	U.S. Patent Application Publication No. 2004/0085205
RING-1011	U.S. Patent Application Publication No. 2014/0266669
RING-1012	U.S. Patent Application Publication No. 2012/0085824
RING-1013	U.S. Patent Application Publication No. 2015/0022620
RING-1014	Affidavit of Christopher Butler and archived pages from

	perkinelmer.com corresponding to RING-1007, RING-1008, RING-1009

CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner as detailed below.

Date of service December 17, 2018

Manner of service FEDERAL EXPRESS

Documents served Petition for *Inter Partes* Review of U.S. Patent No. 9,055,202
Certificate of Word Count
Petitioner's Exhibit List
Exhibits RING-1001 through RING-1014

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