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. 9,160,987

TABLE OF CONTENTS

I. INTRODUCTION

U.S. Patent No. 9,160,987 ("the '987 Patent," RING-1001) is generally directed to the concept of an electronic doorbell system with a digital chime. Because such systems were already well known before the '987 Patent, the claims filed with the '987 Patent application warranted a thorough examination. Prosecution, however, spanned only four months from filing to issuance and lacked an Office Action rejecting the claims. This brief examination failed to reveal that the subject matter deemed allowable by the Examiner—sending a "visitor alert" from the doorbell to a remote computing device via the chime—was already fully disclosed in the art.

For example, U.S. Patent Application Publication No. 2015/0163463 to Hwang describes a doorbell that captures an image of a visitor (*i.e.*, a visitor alert) and forwards it to a user's mobile device via an electronic chime. As another example, U.S. Patent Application Publication No. 2014/0267716 to Child describes a home monitoring system in which a user receives notifications of a visitor in the form of images or video taken by a doorbell camera. When the visitor presses the doorbell button, the image or video is captured and relayed first to a control panel and then to the user's remote computing device for display. Because each of these references disclose the subject matter claimed by the '987 patent, the Examiner erred when he found the claims patentable.

The evidence in this petition demonstrates that claims 1-4, 10-13, 19-25, and 28 of the '987 Patent are unpatentable under 35 U.S.C. §§ 102 and 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 '987 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.

C. Lead and Back-up Counsel and Service Information

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III. GROUNDS FOR STANDING

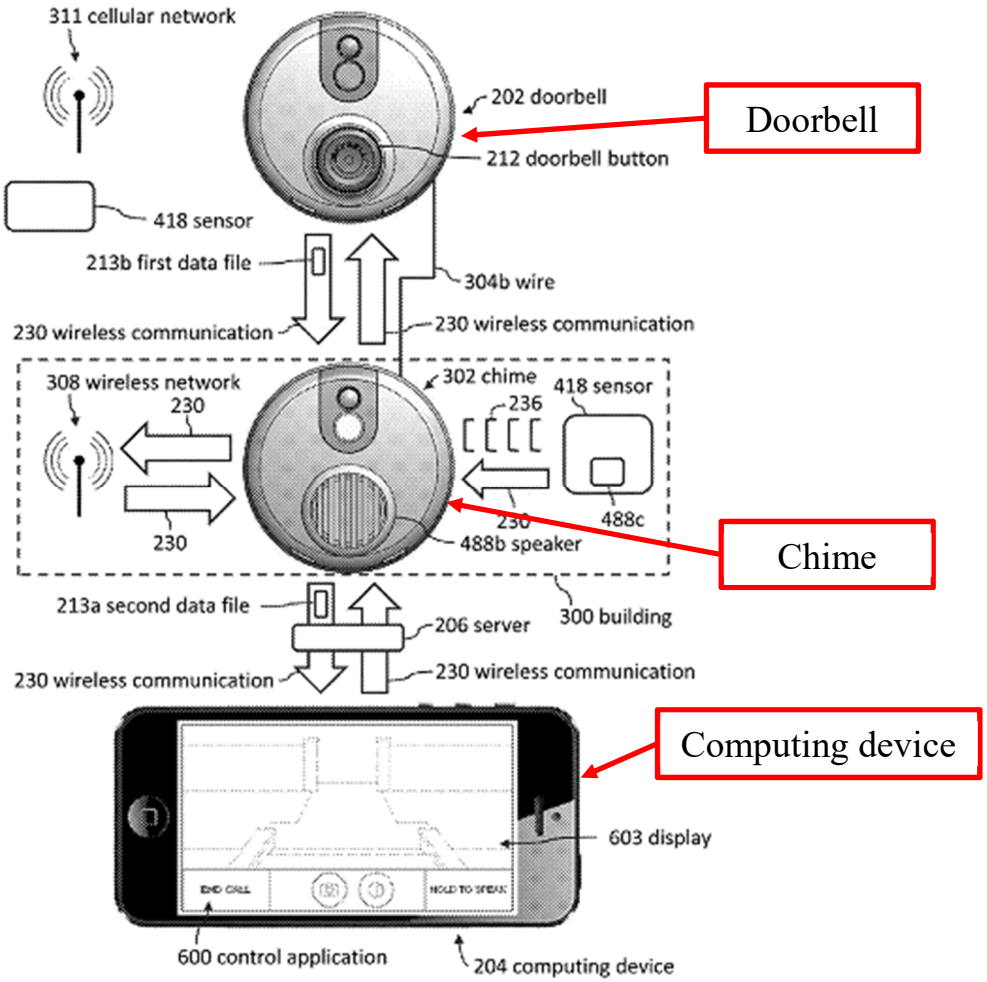
Petitioner certifies that the '987 Patent is eligible for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review challenging the patent claims on the grounds identified in this petition. Petitioner was served with a complaint asserting infringement of the '987 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 '987 Patent.

IV. THE '987 PATENT

A. Overview of the '987 Patent

The specification of the '987 Patent describes a doorbell system that includes an electronic doorbell with a camera, a remote computing device, and a

digital chime that can "serve as the communication hub" between the doorbell and the remote computing device, as illustrated in Fig. 36 (annotated below). *Id*. at 43:41-43.



RING-1001, Fig. 36 (annotated); RING-1003, ¶ 35.

As shown in Fig. 36 above, the chime may connect to a "wireless network 308 of the building 300" via wireless communications 230 such as "WiFi (e.g., wireless local area network)." RING-1001, 37:38-43, 13:46-48. Further, the "system can include a remote sensor 418 that is located outside of the doorbell 202, outside of

the chime 302, and outside of the remote computing device 204." *Id*. at 45:43-46.

The '987 Patent indicates that the "doorbell system can be used to detect an indication of a presence of a visitor and thereby transmit the indication from the doorbell 202 to the remote computing device 204 via the chime 302." RING-1001, 43:28-31. With reference to the method illustrated in Fig. 42, the '987 Patent states that "the visitor can be detected via a variety of indications," including by "a trigger of a button 212 of the doorbell 202 (at step 1702)." *Id*. at 43:31-34. The method of Fig. 42 also includes "sending an alert 232*a*, such as a visitor alert 232*a*, from the doorbell 202 to the chime 302 and thereby sending the visitor alert 232*a* from the chime 302 to the remote computing device 204 (at step 1706)." *Id*. at 43:35-39. The '987 Patent notes that the "visitor alert 232*a* can take various forms that alert a user that a visitor is present at the doorbell 202" including a "video" or "image" captured by the camera of the doorbell. *Id*. at 44:27-34.

As explained in this Petition, sending an image or video of a visitor from a doorbell to a chime and then to a remote computing device was well known before the '987 Patent.

B. Prosecution History

The '987 Patent issued on October 13, 2015 from U.S. Patent Application No. 14/737,411 ("the '411 application") filed June 11, 2015. The '987 Patent is purportedly a continuation-in-part of several related applications, the earliest of

which was filed April 10, 2015. The '987 Patent also claims priority to a U.S. provisional application filed May 14, 2015. Whether the '987 Patent is entitled to its earliest alleged priority date is irrelevant for the purpose of this petition, as the prior art relied upon in this petition pre-dates the earliest possible priority date.

During an extremely brief prosecution (just over four months from filing to issuance), the Examiner issued a notice of allowance without ever issuing an office action or rejecting the claims. The notice of allowance followed two examiner interviews and an amendment by Patent Owner. RING-1002, pp. 24, 311-318. Neither the Examiner-Initiated Interview Summary nor the Patent Owner's interview summary indicate which references, if any, were discussed in the interviews. *Id*. at 24, 317.

In the statement of reasons for allowance, the Examiner generally indicated that "none of the prior arts disclose" the limitations of "coupling communicatively the chime to a wireless network…" and "sending" the visitor alert. RING-1002, pp. 21-22. As illustrated below, however, the Examiner erred in allowing the claims of the '987 Patent because all of the claimed 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 to the extent 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)).[2]

1. "*Visitor alert*"

Independent claims 1 and 11, as well as several dependent claims, recite a "visitor alert" that is sent between elements of the claimed doorbell system. For example, claim 1 includes a recitation of:

> sending a *visitor alert* from the doorbell to the chime; and
> sending the *visitor alert* from the chime to the remote computing device such that the chime communicatively couples the doorbell to the remote computing device.

[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.

The ’987 specification explains that a “visitor alert” can take various forms, including an image or a video:

> The visitor alert 232*a* can take various forms that alert a user that a visitor is present at the doorbell 202 or that a visitor has left a message for the user via the doorbell 202. In this regard, ***the visitor alert 232a can comprise a video, an image, a sound, a text message, an email, a phone call, and the like***. With reference to FIG. 42, methods can include capturing the video and/or image via a camera assembly 208 of the doorbell 202 (at step 1704).

RING-1001, 44:27-34 (emphasis added). Dependent claims 2 and 20 further recite “wherein the visitor alert comprises a video.”

Accordingly, a person of ordinary skill in the art would understand that an example of a “visitor alert” in the context of the ’987 Patent includes at least “a video, an image, a sound, a text message, an email, a phone call, and the like.” RING-1003, ¶¶ 41-43.

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 1-4, 10-13, 19-25, and 28 of the ’987 Patent, and cancel those claims as unpatentable.

As explained below and in the declaration of Petitioner’s expert, Dr. Vijay Madisetti, the concepts described and claimed in the ’987 Patent were not novel

before its earliest alleged priority date. This petition explains where each element of claims 1-4, 10-13, 19-25, and 28 is found in the prior art and why the claims would have been anticipated or obvious to a person of ordinary skill in the art ("POSITA") before the earliest claimed priority date of the '987 Patent. *See* RING-1003, ¶ 28 (noting the level of ordinary skill in the art as a bachelor's degree in Electrical Engineering, Computer Engineering, or Computer Science, or equivalent training, as well as at least one year of technical experience in the relevant field).

VI. IDENTIFICATION OF CHALLENGES

This petition challenges the patentability of the claims of the '987 Patent as follows:

Challenge	Claims	Ground
Challenge #1	1-4, 10, 19, 20, 22	35 U.S.C. § 102 over U.S. Patent Application Publication No. 2015/0163463 to **Hwang** *et al*. ("Hwang," RING-1005)
Challenge #2	21, 23-25	35 U.S.C. § 103 over **Hwang** in view of U.S. Patent Application Publication 2015/0109111 to **Lee** *et al*. ("Lee," RING-1006)
Challenge #3	1-4, 11-13, 19, 20, 23, 28	35 U.S.C. § 103 over U.S. Patent Application Publication No. 2014/0267716 to **Child** *et al*. ("Child," RING-1007)

Prior Art Status

The '987 Patent is governed by post-AIA sections 35 U.S.C. §§ 102 and 103 based on its earliest alleged priority date of April 10, 2015.

Hwang was filed on Dec. 5, 2014 and published June 11, 2015 and is thus prior art at least under 35 U.S.C. § 102(a)(2).

Lee was filed September 25, 2014 and published April 23, 2015 and is thus prior art at least under 35 U.S.C. § 102(a)(2).

Child was filed March 10, 2014 and published September 18, 2014 and is thus prior art at least under 35 U.S.C. § 102(a)(1).

A. The Challenges Presented in This Petition are Not Cumulative to Prosecution of the '987 Patent

The prior art presented in this petition is neither cumulative nor redundant to the prosecution of the '987 Patent. As discussed above, during the very brief prosecution of the '987 Patent, no prior art references were identified by the Examiner or utilized in a rejection of the pending claims. Moreover, none of Hwang, Lee, or Child were cited in an Information Disclosure Statement submitted by Patent Owner. Accordingly, Petitioner respectfully requests that the Board institute the above challenges so that the Office can fully consider the teachings of Hwang, Lee, or Child in view of the claims of the '987 Patent.

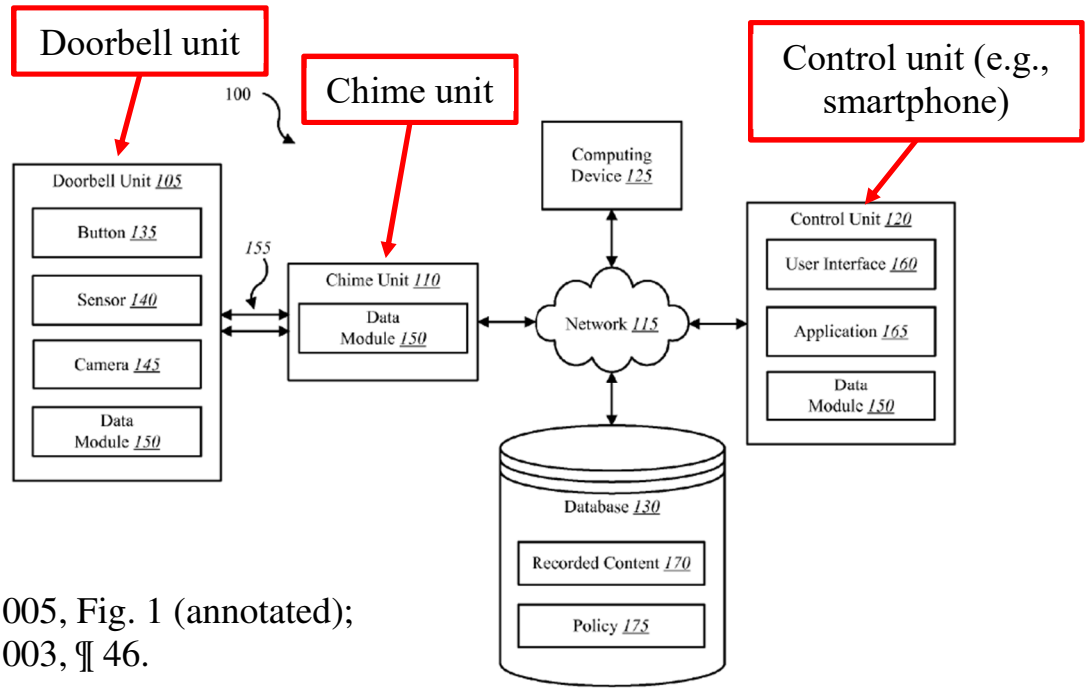
VII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Challenge #1: Claims 1-4, 10, 19, 20, and 22 are invalid under 35 U.S.C § 102 over Hwang

1. Summary of Hwang

Like the '987 Patent, Hwang is directed to electronic doorbells and chimes.

RING-1005, Abstract. Specifically, Hwang teaches a system that includes a "doorbell unit," a "chime unit," and a "control unit" that is a "tablet computing device, smartphone, etc." RING-1005, ¶ [0026]. As illustrated in Fig. 1 of Hwang (annotated below), the chime unit 110 communicatively couples the doorbell unit 105 to the control unit 120 as part of a "communication path" that includes the doorbell wire 155 and network 115. *Id*. ¶ [0032].



RING-1005, Fig. 1 (annotated);
RING-1003, ¶ 46.

With reference to Fig. 1, Hwang explains that network 115 may be a wireless "local area network" based on "802.11." RING-1005, ¶ [0032]. Hwang further teaches that "[m]any other devices or subsystems" may wirelessly connect to the chime unit, including a "door lock." *Id*. ¶¶ [0053]-[0054].

Hwang explains that its system satisfies a user's desire "to receive an alert when someone enters a predefined area," such as the area around "a door of his or

her house, office, or place of business." RING-1005, ¶ [0025]. The alert may take the form of "an image of the person that approaches a door and/or presses a doorbell button," where the image is captured by a "doorbell camera" and ultimately "relayed to one or more devices where a user is able to view the captured image." *Id*. Specifically, Hwang teaches that when the doorbell camera captures one or more images of a visitor, the doorbell unit first sends the captured images to the chime unit and then the chime unit sends the captured images to the control unit (*e.g*., a smartphone, etc.). RING-1005, ¶ [0040] ("communication module 310 may receive, at a chime unit, data associated with capturing an image using a camera in a doorbell unit.… Communication module 310 may send the data received at the chime unit to a control unit....").

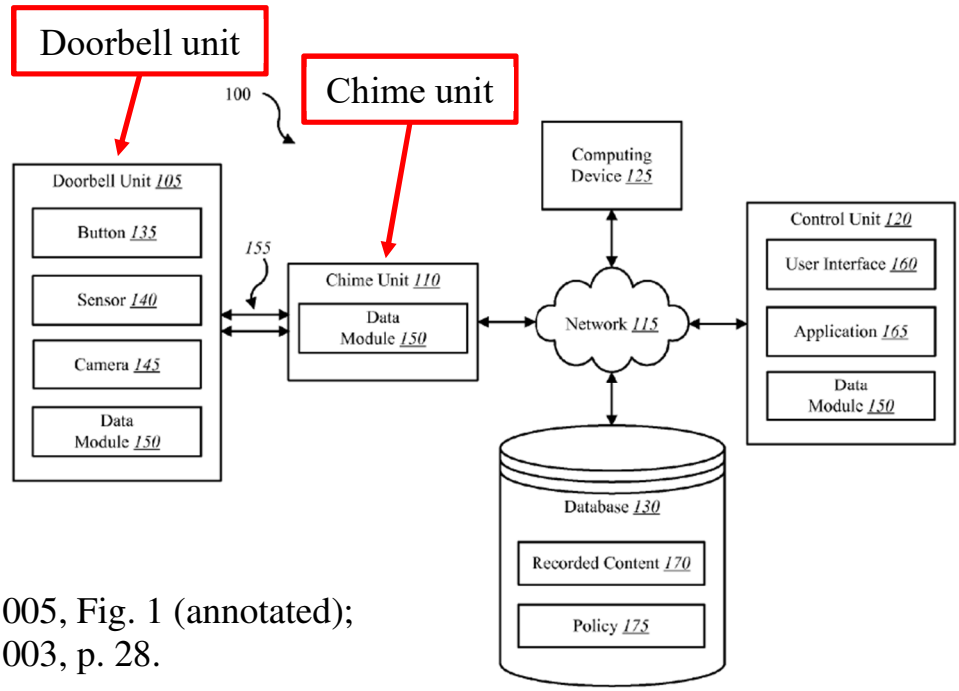
2. Detailed Analysis

The following describes how Hwang discloses each and every element of claims 1-4, 10, 19, 20, and 22 of the '987 Patent. A corresponding claim chart is contained in Dr. Madisetti's declaration. *See* RING-1003, pp. 27-68.

Claim 1

[1.0] ***"A method of using a doorbell system comprising a doorbell and a chime, wherein the doorbell system is configured to be coupled to a building, the method comprising:"***

Hwang describes a method of using a system that includes a "doorbell unit" and a "chime unit" (RING-1005, Abstract), as illustrated in Fig. 1:



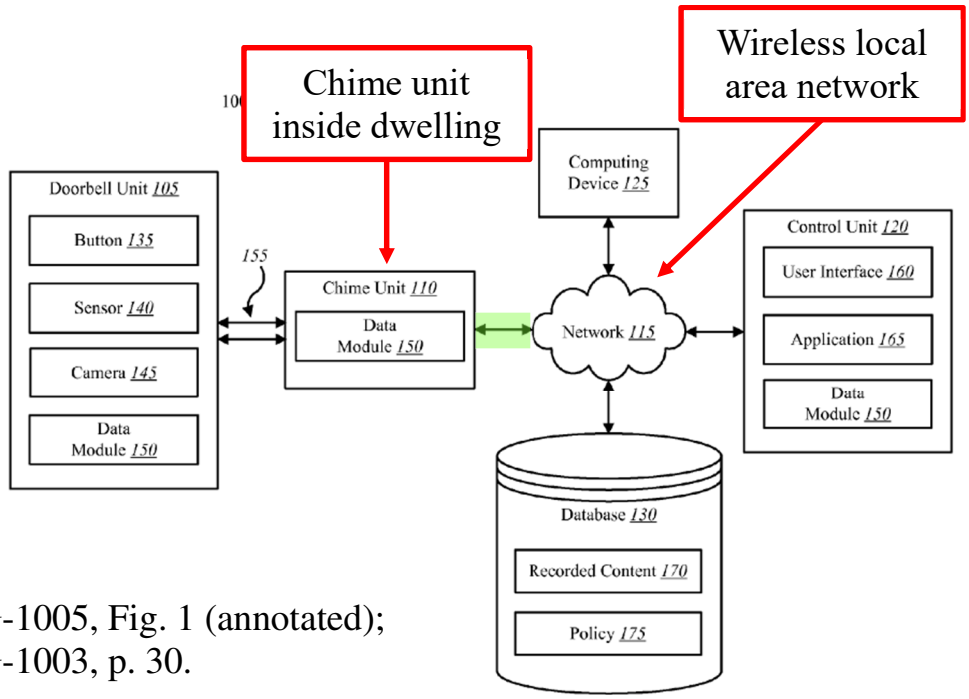
RING-1005, Fig. 1 (annotated);
RING-1003, p. 28.

Hwang explains that the doorbell unit and chime unit are each configured to be mounted to walls of a building (referred to as a dwelling by Hwang): "The doorbell unit may be installed on an exterior of a dwelling and the chime unit may be installed on an interior of the dwelling." RING-1005, ¶ [0008]; *see also id.* ¶ [0034] ("doorbell unit 105 may be located on an external wall of dwelling 205 and chime unit 110 may be mounted on an interior wall of dwelling 205").

Thus, Hwang's method of using a system that includes a doorbell unit and a chime unit, where the doorbell unit and the chime unit are configured to be respectively coupled to exterior and interior walls of a building, discloses "a method of using a doorbell system comprising a doorbell and a chime, wherein the doorbell system is configured to be coupled to a building." *See* RING-1003, pp. 27-29.

[1.1] ***"coupling communicatively the chime to a wireless network of the building, to the doorbell, and to a remote computing device"***

Hwang discloses this limitation. First, Hwang teaches that the chime unit inside the dwelling may be communicatively coupled to a "local area network" such as a wireless network "using 802.11, for example." RING-1005, ¶ [0032]. Fig. 1 of Hwang illustrates the chime unit being coupled to the local area network 115 via "wireless network connections" (*id*. ¶ [0039]):

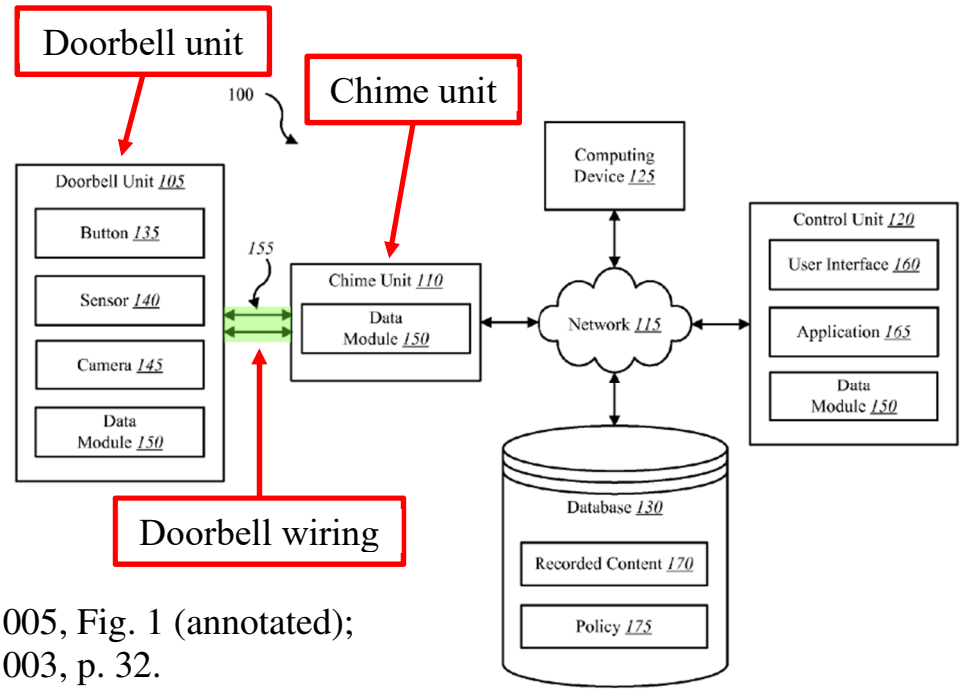


RING-1005, Fig. 1 (annotated);
RING-1003, p. 30.

A POSITA would have considered a local area network that is wireless and utilized by devices inside of a dwelling to be a wireless network of the dwelling. *See* RING-1003, pp. 30-31 (citing RING-1022).

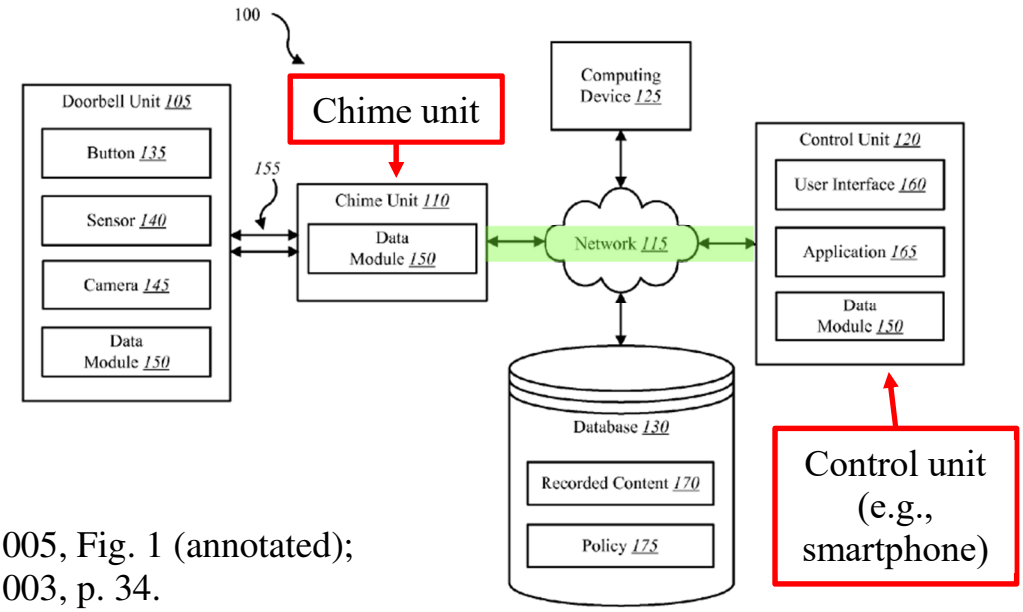
Second, Hwang teaches that the chime unit is communicatively coupled to the doorbell unit "using doorbell wiring" (labeled with reference numeral 155 in

Fig. 1 below). RING-1005, ¶ [0027]. Hwang explains that "data may be sent over doorbell wiring between the chime unit and the doorbell unit." *Id.* ¶ [0009].



RING-1005, Fig. 1 (annotated);
RING-1003, p. 32.

Third, as illustrated in Fig. 1 (annotated below), Hwang teaches that the chime unit is communicatively coupled, via the network 115, to "control unit 120" that may be "a personal computing device (e.g., laptop, desktop, etc.), a mobile computing device (e.g., tablet computing device, smartphone, etc.), and the like." RING-1005, ¶ [0026]; *see also id.* ¶ [0010] ("[D]ata received at the chime unit may be sent to a control unit over a data communication network.").



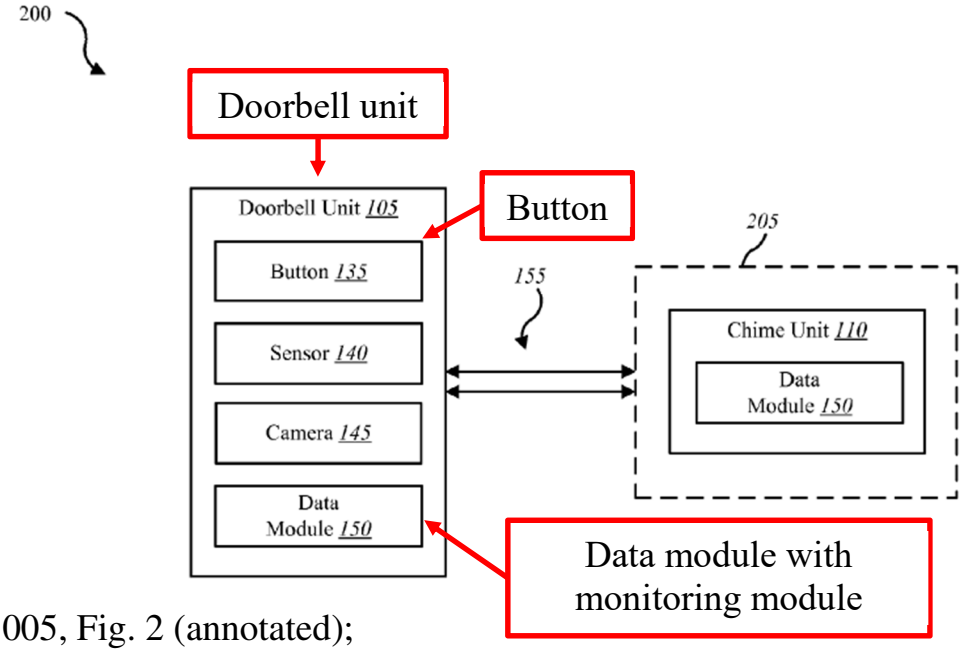
RING-1005, Fig. 1 (annotated);
RING-1003, p. 34.

Thus, coupling communicatively the chime unit in a dwelling to a wireless local area network via 802.11, to the doorbell unit via doorbell wire, and to a computing device and control unit that may be a laptop, smartphone, etc., as taught by Hwang, discloses "coupling communicatively the chime to a wireless network of the building, to the doorbell, and to a remote computing device." RING-1003, pp. 29-34.

[1.2] ***"detecting, by the doorbell, a trigger of a button of the doorbell"***

Hwang discloses this limitation because it teaches that a monitoring module of the doorbell unit "may detect a press of a button on the doorbell unit (e.g., a press of button 135)." RING-1005, ¶ [0038]. Fig. 2 of Hwang (annotated below) illustrates the doorbell unit 105 in more detail, including the button 135 and data module 150 that includes the monitoring module, which detects a press of button

135 (*id*. ¶ [0035], Fig. 3):



RING-1005, Fig. 2 (annotated);
RING-1003, p. 35.

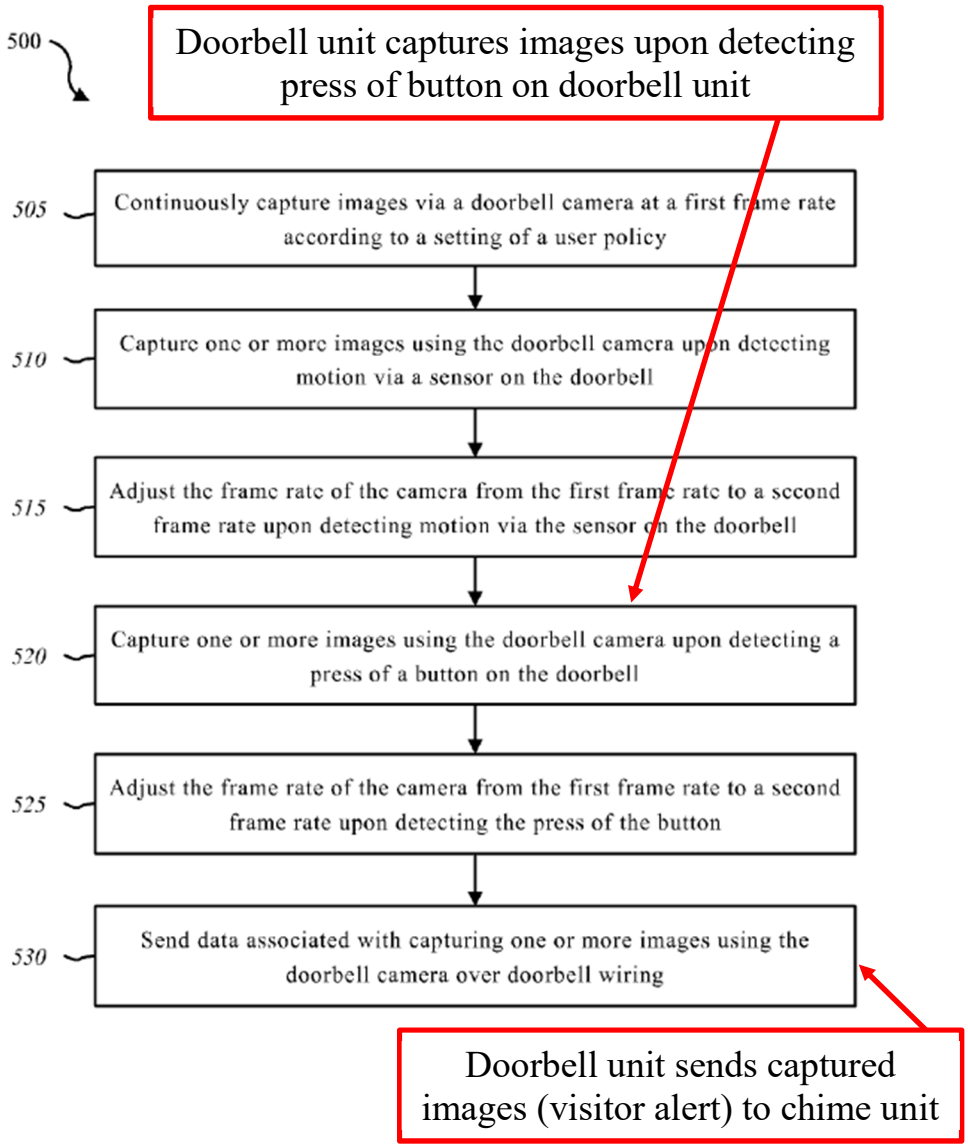
Thus, detecting, by the doorbell unit, a press of the button on the doorbell unit, as taught by Hwang, discloses "detecting, by the doorbell, a trigger of a button of the doorbell." *See* RING-1003, pp. 34-36.

[1.3] ***"sending a visitor alert from the doorbell to the chime;"***

Hwang discloses this limitation. First, with respect to the recited "visitor alert," Hwang teaches that "a user may desire to receive an alert when someone enters a predefined area," such as the area around "a door of his or her house, office, or place of business." RING-1005, ¶ [0025]. Hwang explains that the alert may take the form of "an image of the person that approaches a door and/or presses a doorbell button." *Id*. The image is captured by a "doorbell camera" and

ultimately "relayed to one or more devices where a user is able to view the captured image." *Id*.

Second, Hwang teaches that in order to relay the visitor image from the doorbell to the user, the image is first "sent over the doorbell wiring to the chime unit." RING-1005, ¶¶ [0039], [0046]. In more detail, Hwang teaches in association with Fig. 5 that "[a]t block 520, one or more images may be captured using the doorbell camera upon detecting a press of a button on the doorbell." *Id*. ¶ [0046]. Then, "[a]t block 530, data associated with capturing one or more images using the doorbell camera may be sent to one or more devices over the doorbell wiring (e.g., ***sent to a chime unit***)." *Id*. (emphasis added).



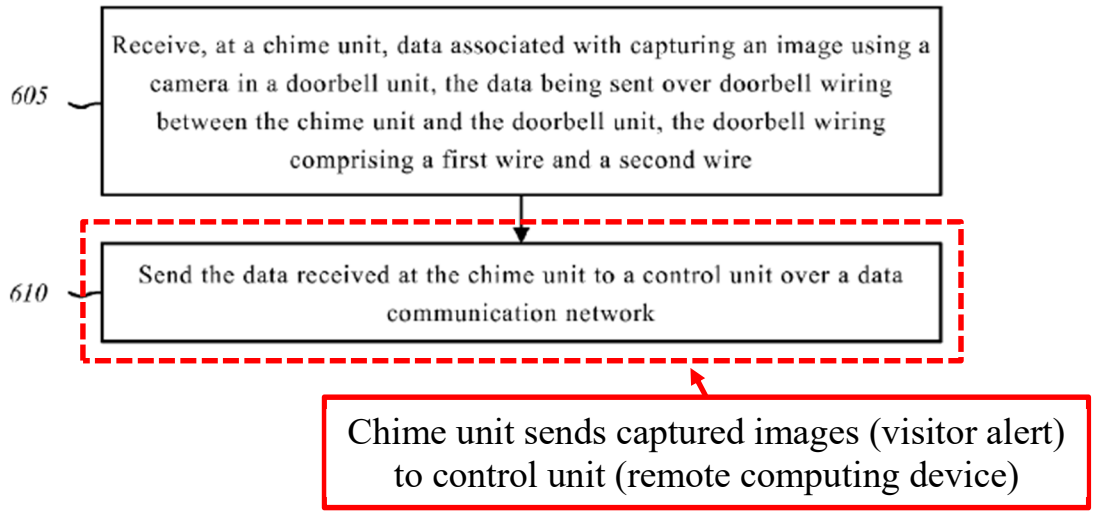
RING-1005, Fig. 5 (annotated); RING-1003, p. 38.

Thus, sending an alert in the form of an image of a visitor who pressed the doorbell button from the doorbell unit to the chime unit, as taught by Hwang, discloses "sending a visitor alert from the doorbell to the chime." *See* RING-1003, pp. 36-39.

[1.4] ***"sending the visitor alert from the chime to the remote computing device such that the chime communicatively couples the doorbell to the remote***

computing device."

Hwang discloses this limitation because it teaches, as illustrated in association with Fig. 6, that after the chime unit receives the data associated with the captured image(s), the chime unit sends the image data to the control unit (*e.g.*, a laptop, smartphone, etc). RING-1005, ¶ [0048] ("At block 610, the data received at the chime unit may be sent to a control unit over a data communication network.").



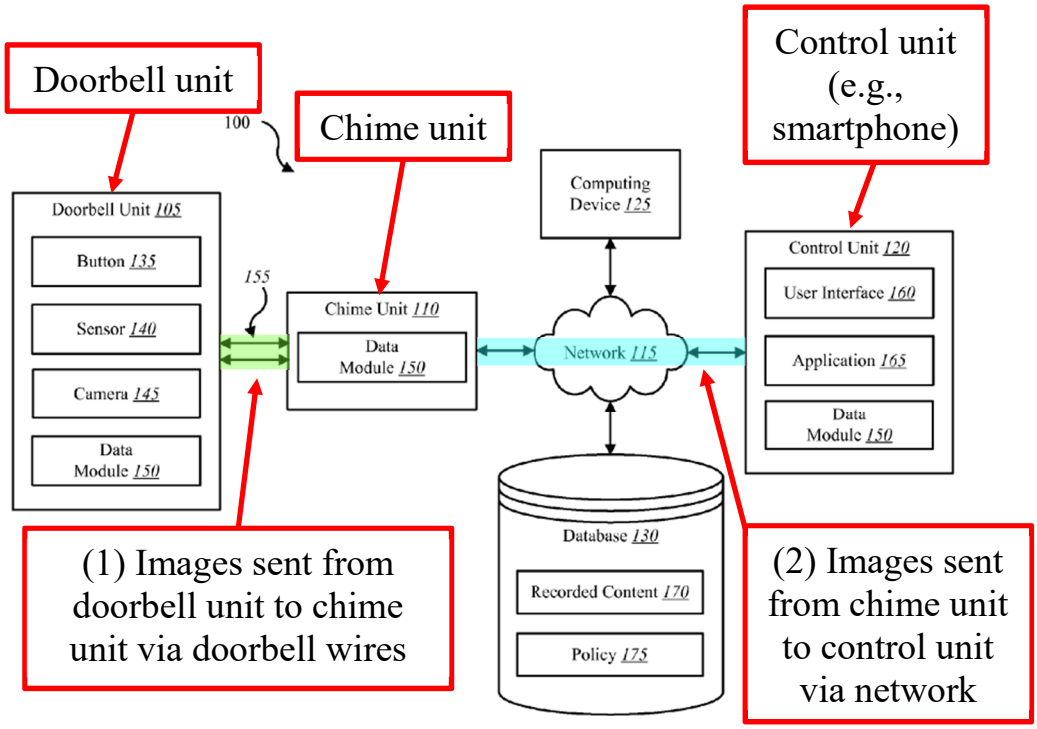
RING-1005, Fig. 6 (annotated); RING-1003, p. 40.

Accordingly, Hwang teaches when the doorbell camera captures one or more images of a visitor (*i.e.*, a visitor alert), the doorbell unit first sends the captured images to the chime unit and then the chime unit sends the captured images to the control unit (remote computing device):

> In one embodiment, ***communication module 310 may receive, at a chime unit, data associated with capturing an image using a***

> ***camera in a doorbell unit.*** The data may be sent over doorbell wiring between the chime unit and the doorbell unit (e.g., doorbell wiring 155). ***Communication module 310 may send the data received at the chime unit to a control unit over a data communication network. For example, data received at chime unit 110 may be sent to control unit 120 over network 115.***

RING-1005, ¶ [0040] (emphasis added). In other words, the chime unit communicatively couples the doorbell unit to the control unit by relaying the image(s) of the visitor from the doorbell unit to the control unit. RING-1003, p. 42. Specifically, Hwang explains that "doorbell unit 105 may communicate with control unit 120 … via a communication path that includes a combination of doorbell wiring 155, chime unit 110, and network 115," as illustrated in Fig. 1 below. RING-1005, ¶ [0026].



RING-1005, Fig. 1 (annotated); RING-1003, p. 43.

Thus, sending the images (visitor alert) captured by the doorbell unit from the chime unit to the control unit (remote computing device) such that the chime unit communicatively couples the doorbell unit to the control unit, as taught by Hwang, discloses "sending the visitor alert from the chime to the remote computing device such that the chime communicatively couples the doorbell to the remote computing device." *See* RING-1003, pp. 39-43.

Claim 2

[2.1] ***"The method of claim 1, wherein the visitor alert comprises a video"***

Hwang discloses this limitation because it teaches that "images may be continuously captured via a doorbell camera," and upon detection of a doorbell press "camera module 305 may adjust a frame rate of the camera from a first frame

rate to a second frame rate." RING-1005, ¶¶ [0045], [0038]. Hwang explains that the "second frame rate may be set to a relatively high frame rate (e.g., above 15 frames per second)." *Id*. ¶ [0045]. Accordingly, the "data associated with capturing one or more images using the doorbell camera" that is sent to the chime unit is continuously captured at a frame rate above 15 frames per second. *Id*. ¶ [0046]. A POSITA would understand that image data continuously captured at a frame rate above 15 frames per second (*e.g*., 16 frames per second) is video. *See* RING-1003, p. 45 (citing RING-1017, RING-1018, RING-1019).

Thus, the images continuously captured by the doorbell unit at a frame rate above 15 frames per second (*i.e*., video) in response to detecting a press of the doorbell button, as taught by Hwang, discloses "the visitor alert comprises a video," as recited in the claim. *See* RING-1003, pp. 44-45.

[2.2] ***"the method further comprising the doorbell taking the video."***

Hwang discloses this limitation because it teaches, as discussed in association with [2.1], that the doorbell camera continuously captures images at a frame rate above 15 frames per second (*i.e*., video) in response to detecting a press of the doorbell button. RING-1005, ¶¶ [0038], [0045], [0046]; RING-1003, pp. 45-47.

Claim 3

"The method of claim 1, further comprising sending the visitor alert from the doorbell to the chime while the doorbell is located outside of the building and while the chime is located inside of the building."

Hwang discloses this limitation. First, as discussed in association with [1.3], Hwang teaches that the doorbell unit sends images of a visitor (*i.e.*, a visitor alert) to the chime unit. *See* RING-1005, ¶¶ [0009], [0038], [0044]-[0046], Fig. 5. Second, Hwang teaches that the "doorbell unit may be installed on an exterior of a dwelling and the chime unit may be installed on an interior of the dwelling." RING-1005, ¶¶ [0008], [0034]; *see* RING-1003, p. 48.

Claim 4

"The method of claim 1, further comprising sending the visitor alert from the chime to the remote computing device via the wireless network of the building."

Hwang discloses this limitation because it teaches that "the data received at the chime unit may be sent to a control unit over a data communication network," where the data communication network is a "local area network" such as a wireless network "using 802.11, for example." RING-1005, ¶¶ [0010], [0032], Figs. 1, 6. As discussed above, a POSITA would have considered a local area network that is wireless and utilized by devices inside of a dwelling to be a wireless network of the dwelling. *See* RING-1003, p. 51 (citing RING-1022).

Thus, sending the captured images of the visitor (visitor alert) from the chime unit to the control unit (remote computing device) via the wireless local area network, as taught by Hwang, discloses "sending the visitor alert from the chime to the remote computing device via the wireless network of the building." *See* RING-1003, pp. 48-51.

Claim 10

"The method of claim 1, further comprising coupling communicatively the chime to a doorlock via the wireless network of the building."

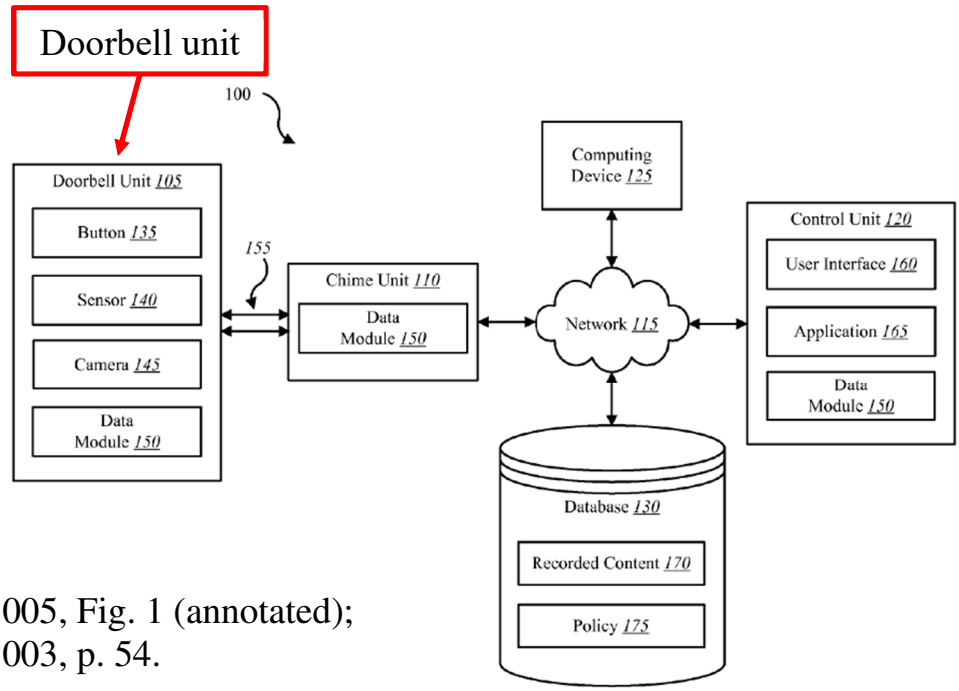
Hwang discloses this limitation. First, it teaches that the chime unit may be implemented as controller 800 illustrated in Fig. 8. RING-1005, ¶ [0051] ("The controller 800 may be an example of doorbell unit 105, chime unit 110…"). Second, Hwang teaches that devices such as sensors "connect to controller 800 wirelessly" (*id*. ¶ [0053]) and that "[m]any other devices or subsystems … may be connected in a similar manner," where one of these devices may be a "door lock." *Id*. ¶ [0054]. And, as discussed in association with [1.1], Hwang teaches that one of the ways the chime unit can wirelessly connect to other devices is via a "local area network," such as a wireless network "using 802.11." *See id*. ¶¶ [0010], [0032], Fig. 1. Accordingly, Hwang teaches that a door lock may be wirelessly connected to the chime unit via the wireless local area network. RING-1003, p. 53.

Thus, coupling communicatively the chime unit to a door lock via the wireless local area network, as taught by Hwang, discloses "coupling communicatively the chime to a doorlock via the wireless network of the building." *See* RING-1003, pp. 52-53.

Claim 19

[19.0] ***"A doorbell system comprising:"***

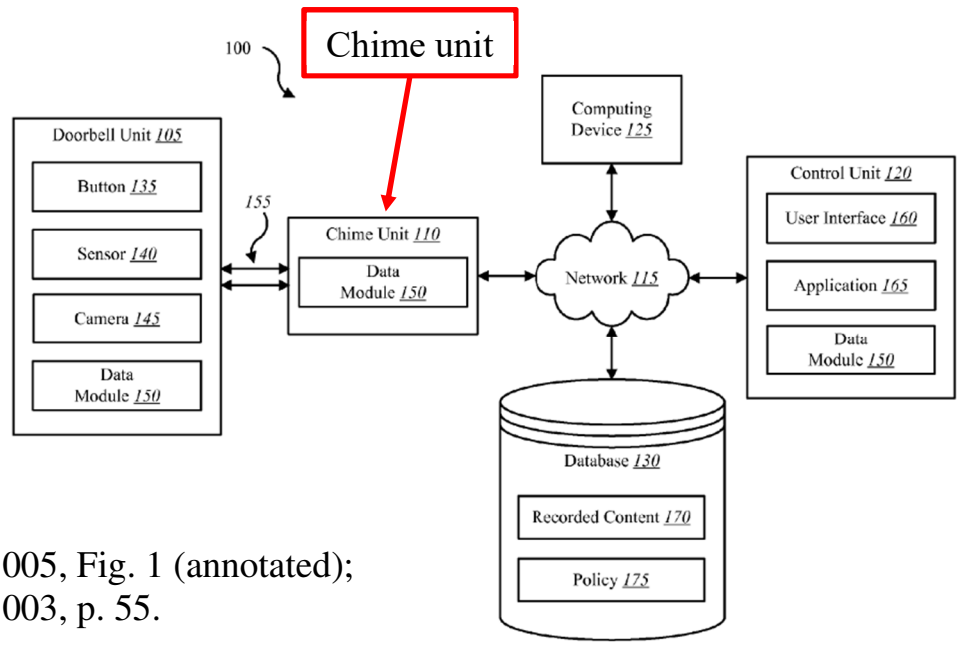
Hwang describes a system that includes a "doorbell unit" (RING-1005, ¶ [0026], Abstract), as illustrated in Fig. 1:



RING-1005, Fig. 1 (annotated);
RING-1003, p. 54.

[19.1] ***"a chime;"***

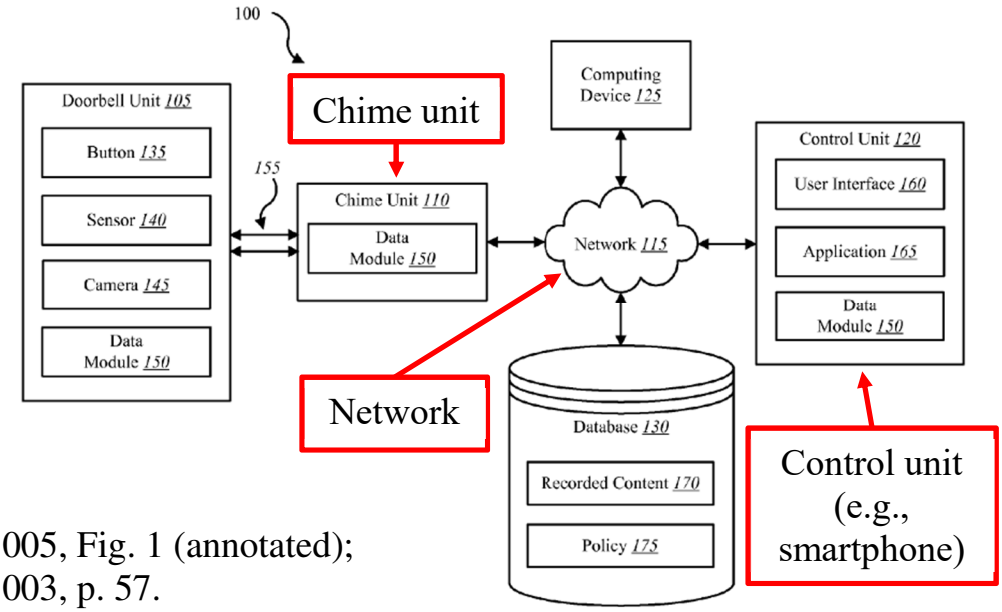
Hwang discloses this limitation because it teaches that its system includes a "chime unit" (RING-1005, ¶ [0026], Abstract), as illustrated in Fig. 1:



RING-1005, Fig. 1 (annotated);
RING-1003, p. 55.

[19.2] ***"a remote computing device communicatively coupled to the chime;"***

Hwang discloses this limitation because, as illustrated in Fig. 1 (annotated below), it teaches that the chime unit is communicatively coupled, via the network 115, to "control unit 120" that may be "a personal computing device (e.g., laptop, desktop, etc.), a mobile computing device (e.g., tablet computing device, smartphone, etc.), and the like." RING-1005, ¶ [0026]; *see also id.* ¶ [0010] ("data received at the chime unit may be sent to a control unit over a data communication network").



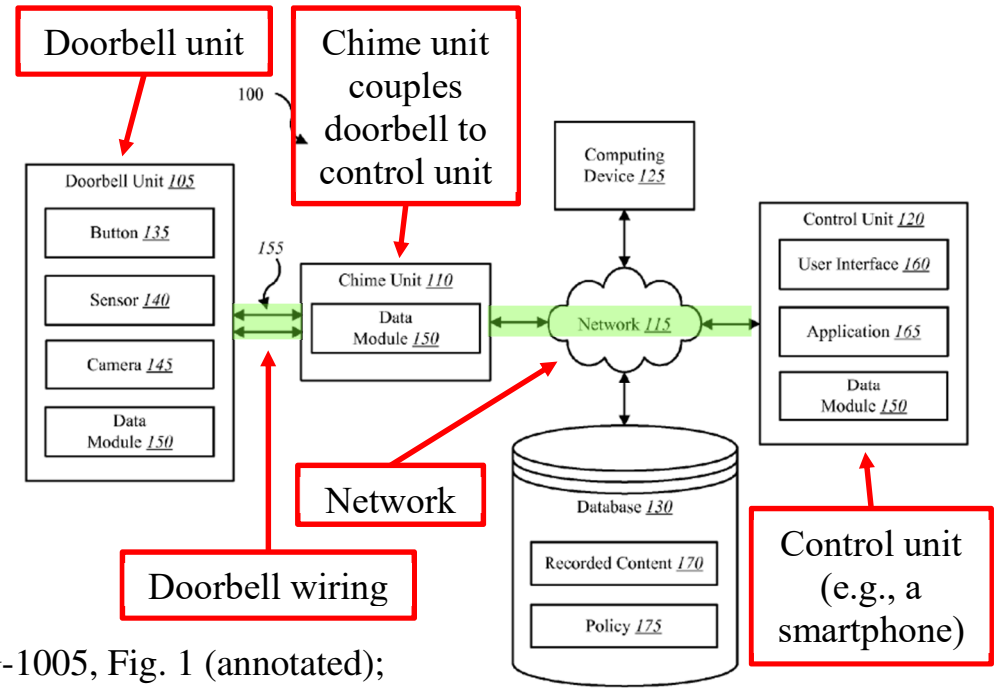
RING-1005, Fig. 1 (annotated);
RING-1003, p. 57.

Thus, the control unit (*e.g.*, a laptop, smartphone, etc) communicatively coupled to the chime unit, as taught by Hwang, discloses "a remote computing device communicatively coupled to the chime." *See* RING-1003, pp. 55-57.

[19.3] ***"a doorbell communicatively coupled with the remote computing device***

via the chime;"

Hwang discloses this limitation. First, as discussed above, Hwang teaches that its system includes a "doorbell unit" with a button 135, where the "[d]oorbell unit 105 may connect to chime unit 110 using doorbell wiring 155." RING-1005, ¶ [0027]. As also discussed above, the system also includes a control unit such as a smartphone, laptop, etc. *Id.* ¶ [0026]. Second, Hwang explains that "***doorbell unit 105 may communicate with control unit 120*** … via a communication path that includes a combination of doorbell wiring 155, ***chime unit 110***, and network 115," as illustrated in Fig. 1 (annotated below). RING-1005, ¶ [0032].



RING-1005, Fig. 1 (annotated);
RING-1003, p. 58.

Thus, the doorbell unit communicatively coupled with the control unit via the chime unit, as taught by Hwang, discloses "a doorbell communicatively

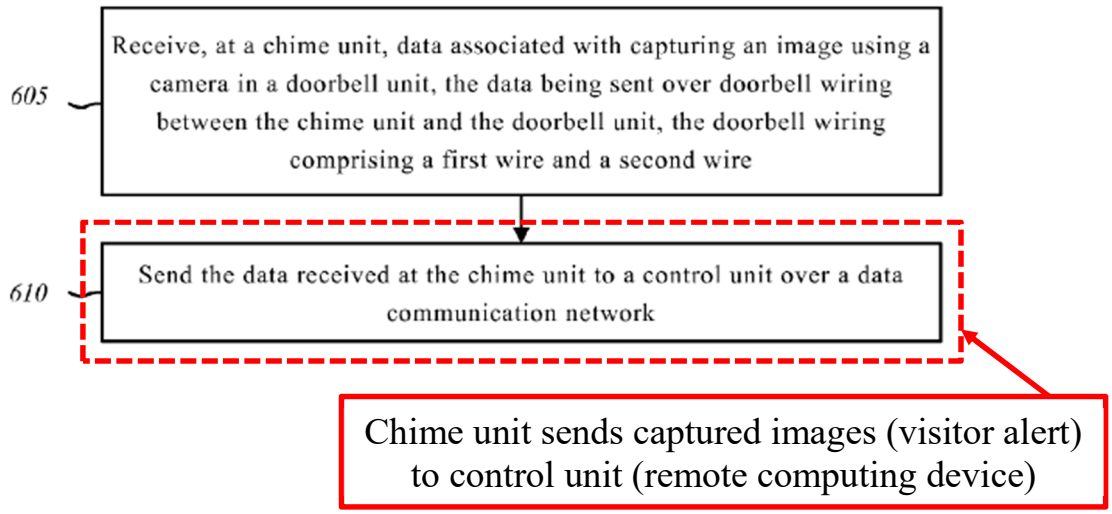
coupled with the remote computing device via the chime." *See* RING-1003, pp. 57-58.

[19.4] ***"a first communication from the doorbell to the chime, wherein the first communication comprises a visitor alert;"***

This claim element is substantively identical to claim element [1.3], and thus for the reasons discussed in association with [1.3], Hwang discloses this claim element. *See* RING-1003, pp. 58-62.

[19.5] ***"a second communication from the chime to the remote computing device, wherein the second communication comprises the visitor alert."***

Hwang discloses this limitation because it teaches, as illustrated in association with Fig. 6, that after the chime unit receives the data associated with the captured image(s), the chime unit sends the image data to the control unit (*e.g.*, a laptop, smartphone, etc). RING-1005, ¶ [0048] ("At block 610, the data received at the chime unit may be sent to a control unit over a data communication network.").



RING-1005, Fig. 6 (annotated); RING-1003, p. 63.

Accordingly, Hwang teaches when the doorbell camera captures one or more images of a visitor (*i.e.*, a visitor alert), the doorbell unit first sends the captured images to the chime unit, and then the chime unit sends the captured images to the control unit (remote computing device). RING-1005, ¶ [0040].

Thus, the images (visitor alert) captured by the doorbell unit sent from the chime unit to the control unit (remote computing device), as taught by Hwang, disclose "a second communication from the chime to the remote computing device, wherein the second communication comprises the visitor alert." *See* RING-1003, pp. 62-64.

Claim 20

"The doorbell system of claim 19, wherein the visitor alert comprises a video taken by a camera of the doorbell."

Hwang discloses this limitation because it teaches, as discussed more fully in association with claim 2, that the doorbell camera continuously captures images

at a frame rate above 15 frames per second (*i.e.*, video) in response to detecting a press of the doorbell button. RING-1005, ¶¶ [0038], [0045], [0046]; RING-1003, pp. 65-66.

Claim 22

"The doorbell system of claim 20, wherein the remote computing device comprises a display configurable to display the video."

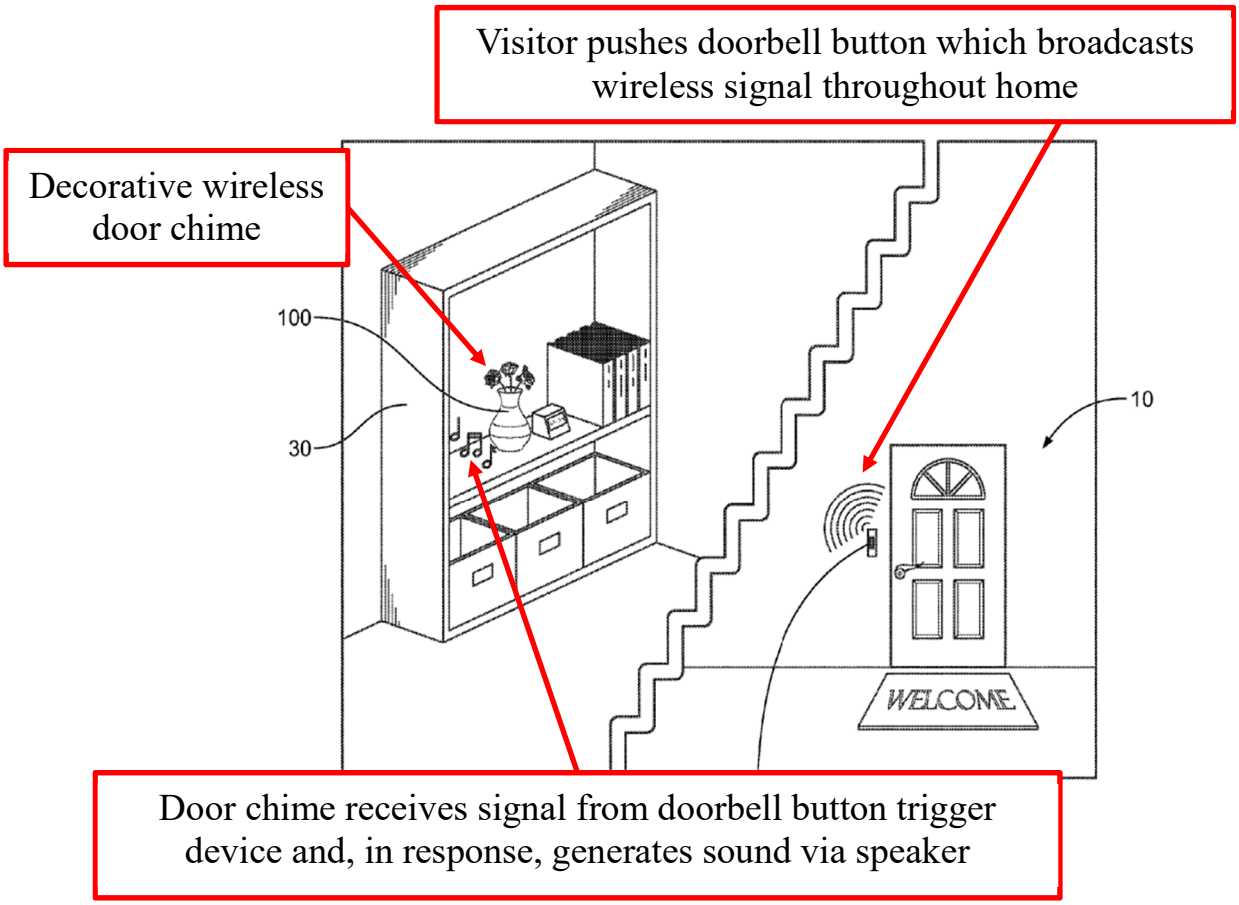
Hwang discloses this limitation. First, as discussed above in association with [19.2] and [19.5], Hwang teaches that the captured images are sent from the chime unit to a control unit such as a smartphone. RING-1005, ¶¶ [0010], [0026]. Second, Hwang teaches the user is able to view the captured images on a "screen" of the control unit. *Id.* ¶ [0025] ("The captured image may be relayed to one or more devices where a user is able to view the captured image. For example, the image may be sent to … a screen of a home automation control unit."); *see* RING-1003, pp. 67-68.

B. Challenge #2: Claims 21 and 23-25 are invalid under 35 U.S.C § 103 over Hwang in view of Lee.

1. Summary of Lee

Like Hwang, Lee is also directed to doorbell chimes. RING-1006, Abstract. Specifically, Lee describes a "wireless door chime apparatus configured to operate in connection with a trigger device installed at a doorway." *Id.* ¶ [0005]. The door chime "can include a decorative housing and a wireless speaker unit mounted to

the decorative housing," as illustrated in Figs. 1A and 1B of Lee. *Id.*



RING-1006, Figs. 1A and 1B (annotated), ¶¶ [0017]-[0018]; RING-1003, ¶ 50.

Lee teaches that its wireless chime includes a "power connection mechanism" that connects with, for example, "a wall power supply" via "a wall wart." RING-1006, ¶¶ [0023], [0021]; *see also* RING-1003, ¶ 51 (explaining that a wall wart is a "power adapter that contains the plug for the wall outlet"). Lee further teaches that the speaker of its wireless chime can "communicate wirelessly with an audio source, such as an mp3 player, a smart phone…" and "play audio files transmitted from the audio source." RING-1006, ¶ [0025]. Additionally, Lee

teaches that its wireless door chime includes LED lights that "can indicate the power level of the door chime 100 or the quality of wireless signal detected" and also "simulate[] the appearance of a candle flame." *Id*. ¶¶ [0032], [0034].

2. Reasons to Combine Hwang and Lee

For the reasons set forth below, a POSITA would have been motivated to combine the teachings of Hwang and Lee. RING-1003, ¶¶ 52-57. In particular, before the '987 Patent, it would have been obvious, beneficial, and predictable to incorporate Lee's teachings of known door chime features into Hwang's door chime unit. *Id*.

As an initial matter, a POSITA when considering the teachings of Hwang would have also considered the teachings of Lee, as they are both directed to digital door chime systems. RING-1003, ¶ 53. A POSITA looking to implement and improve upon Hwang's system would naturally refer to literature describing similar devices. *Id*. Moreover, in describing the general features and functionality of its door chime system, Hwang chooses to omit implementation details that were known to POSITAs—for example, details related to how its digital door chime unit is powered and the source of the sounds it plays when someone rings the doorbell. Although Hwang explains how "conventional" chimes are powered and generate

sound[3], it leaves out similar details regarding its inventive digital chime unit. Accordingly, a POSITA looking to implement Hwang's chime unit would have naturally considered other literature, like Lee, that more fully describes features of known digital door chimes. RING-1003, ¶ 53.

A POSITA would have been motivated to incorporate several features of Lee's digital door chime into Hwang's chime unit—including wall socket-based power, the capability to play downloaded audio files, and LED lights—as doing so would have improved Hwang's chime unit in a predictable manner. RING-1003, ¶ 54. With respect to how digital chimes are powered, Lee explains that:

> With the development of wireless technology, it is no longer necessary for doorbell units to be hard-wired to the homes. Wireless technology allows pushbutton transmitters to be installed in a doorway to generate wireless signals that activate a doorbell unit. Further, batteries or other portable power sources can supply electric power without a constant connection to the house power mains. Accordingly, portable doorbell units can be positioned around a home and yard to ensure that a user can hear a doorbell signal when activated.

[3] Hwang explains that in a conventional doorbell design, electrified doorbell wires cause a solenoid piston to strike a tone bar. RING-1005, ¶ [0028].

RING-1006, ¶ [0004]. In light of these teachings, a POSITA would have been motivated to modify Hwang's chime unit to instead be triggered wirelessly and be powered by a portable power source (*i.e.*, instead of by a permanent connection to house power mains). RING-1003, ¶ 54. Specifically, it would have been advantageous to power Hwang's chime unit with "a wall power supply," for example, through the use of a "a wall wart" plugged into a wall outlet, as taught by Lee. RING-1006, ¶¶ [0023], [0021]; RING-1003, ¶ 54. Doing so would allow Hwang's chime unit to be plugged into any wall outlet around a home to ensure that a user can hear the doorbell chime when activated. RING-1003, ¶ 54. Modifying Hwang's chime unit to be portably powered and communicate wirelessly would have yielded a predictable result because (i) chimes powered by wall outlets were already best sellers on Amazon.com before the '987 Patent (see RING-1003, ¶ 54 (citing RING-1009)) and (ii) Hwang's chime unit and doorbell unit each already contain a network interface for wireless communications (as implemented as controller 800 in Fig. 8) and are not reliant upon physical doorbell wires for communication. RING-1005, ¶¶ [0051], [0053], [0032], [0039], Fig. 8; RING-1003, ¶ 54.

Additionally, a POSITA would have been motivated to modify Hwang's chime unit such that its speaker 830 (see Fig. 8) is configured to played a sound file downloaded from a computing device. RING-1003, ¶ 55. Specifically, it would

have been advantageous for Hwang's chime unit to "connect with a computer or other device to download audio files that can be played back" via a speaker at a later time, as taught by Lee. RING-1006, ¶¶ [0022], [0025]. Doing so would allow the chime unit to be customizable in that a user could select which sounds the chime would play, rather than being limited to a single mechanical tone. RING-1003, ¶ 55. Adding this feature to Hwang's chime would have produced a predictable result because (i) customizable door chimes that played downloaded sound files were already well known in the art (*id*. ¶ 55 (citing RING-1011, RING-1012—each teaching downloading audio files to a door chime)) and (ii) Hwang's chime unit already contained the components needed to download and play audio files, such as a network interface, processor, storage, and audio interface, as illustrated in Fig. 8. RING-1003, ¶ 55.

A POSITA would have also been motivated to incorporate Lee's teachings of LED lights into Hwang's chime unit for a number of reasons. RING-1003, ¶ 56. For example, it would have been advantageous and predictable to incorporate into Hwang's chime unit "an LED indicator 146, which can indicate the power level of the door chime 100 or the quality of wireless signal detected," as taught by Lee. RING-1006, ¶ [0032]. Additionally, Lee teaches that in order to "accommodate the look and feel of a home's decor," it was known for a door chime to take on an "attractive decorative housing" that includes an "LED light that simulates the

appearance of a candle flame." RING-1006, ¶¶ [0015], [0034]. Adding LEDs to Hwang's chime unit to gain the same benefits taught by Lee—indication of wireless signal strength and simulation of a candle—would have produced a predictable result given the maturity and wide availability of LED technology in 2015. RING-1003, ¶ 56 (explaining the mature state of LED technology in 2015). It was well within the skill of a POSITA to integrate commercially-available and technologically-mature elements into a device such as Hwang's chime unit. *Id*. ¶ 56. For example, a number of doorbell chimes available before the '987 Patent already included LED lights, including the "#1 Best Seller" in doorbell push buttons on Amazon.com in November of 2014. *Id*. ¶ 56 (citing RING-1013, illustrating SadoTech's wireless doorbell chime with LED light).

Accordingly, a POSITA would have found it obvious and predictable to add any of the various elements taught in association with Lee's digital door chime above to Hwang's chime unit because doing so would have equated to merely applying prior art elements to improve a similar device in the same way. RING-1003, ¶ 57. Moreover, substituting and modifying commercially-available and interchangeable components within a mechanical device such as Hwang's chime unit was well within the skill of a POSITA in 2015. *Id*. ¶ 57; *see also Tokai Corp.. v. Easton Enters. Inc*., 632 F.3d 1358, 1371 (Fed. Cir. 2011) ("[T]he 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 Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 421 (2007)).

3. Detailed Analysis

The following describes how Hwang in view of Lee renders obvious each and every element of claims 21 and 23-25 of the '987 Patent. A corresponding claim chart is contained in Dr. Madisetti's declaration. *See* RING-1003, pp. 80-93.

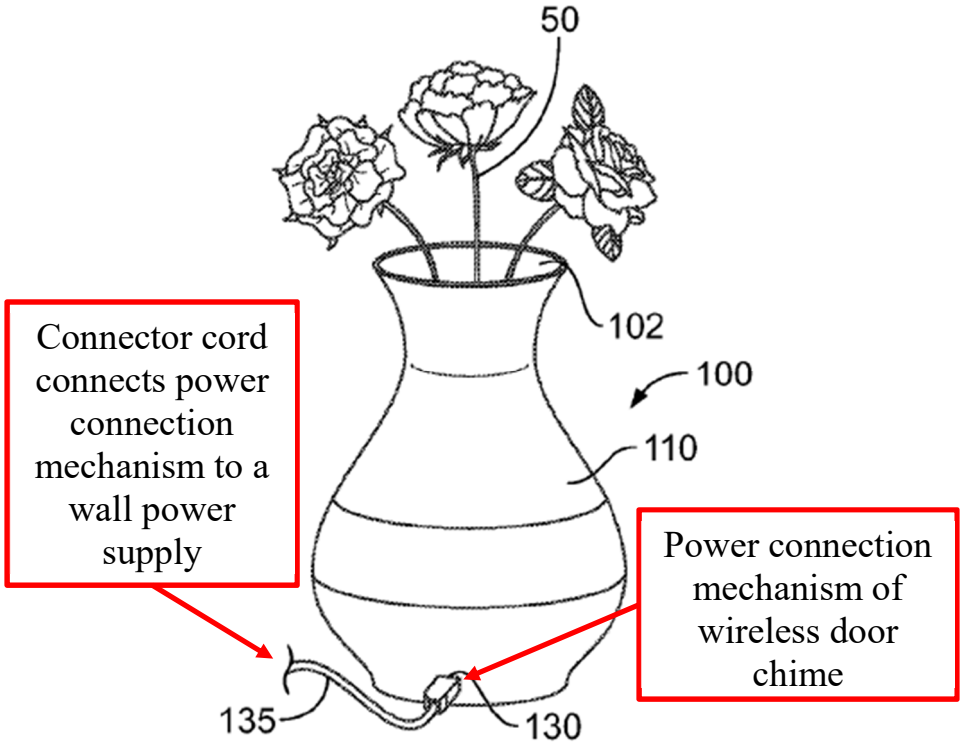
Claim 21

"The doorbell system of claim 20, wherein the chime is plugged into a power outlet of a building."

Hwang in view of Lee renders obvious this limitation. First, as discussed above, Hwang teaches that its chime unit is placed in the interior of a dwelling. RING-1005, ¶ [0008].

Second, to the extent Hwang is silent as to how the chime unit is powered, a POSITA would have found it obvious to power it with a wall power outlet of the dwelling rather than by traditional doorbell wiring, as discussed above. RING-1003, p. 80. For example, Lee teaches a "wireless door chime apparatus configured to operate in connection with a trigger device installed at a doorway." RING-1006, ¶ [0005]. In Lee's system, "when a user presses a pushbutton doorbell to activate the trigger device, the wireless door chime apparatus and/or the wireless speaker unit can generate an audible notification signal, such as a chime, tone, or bell." *Id*. Lee's wireless chime apparatus includes a "power connection

mechanism" that connects with, for example, "a wall power supply" via "a wall wart." *Id*. ¶¶ [0023], [0021]; *see also* RING-1003, pp. 80-82 (citing RING-1006).



RING-1006, Fig. 3 (annotated); RING-1003, p. 82.

Thus, the chime unit installed in the interior of a dwelling, as taught by Hwang, in view of a wireless door chime plugged into a wall power supply of a building, as taught by Lee, renders obvious "wherein the chime is plugged into a power outlet of a building." *See* RING-1003, pp. 80-82.

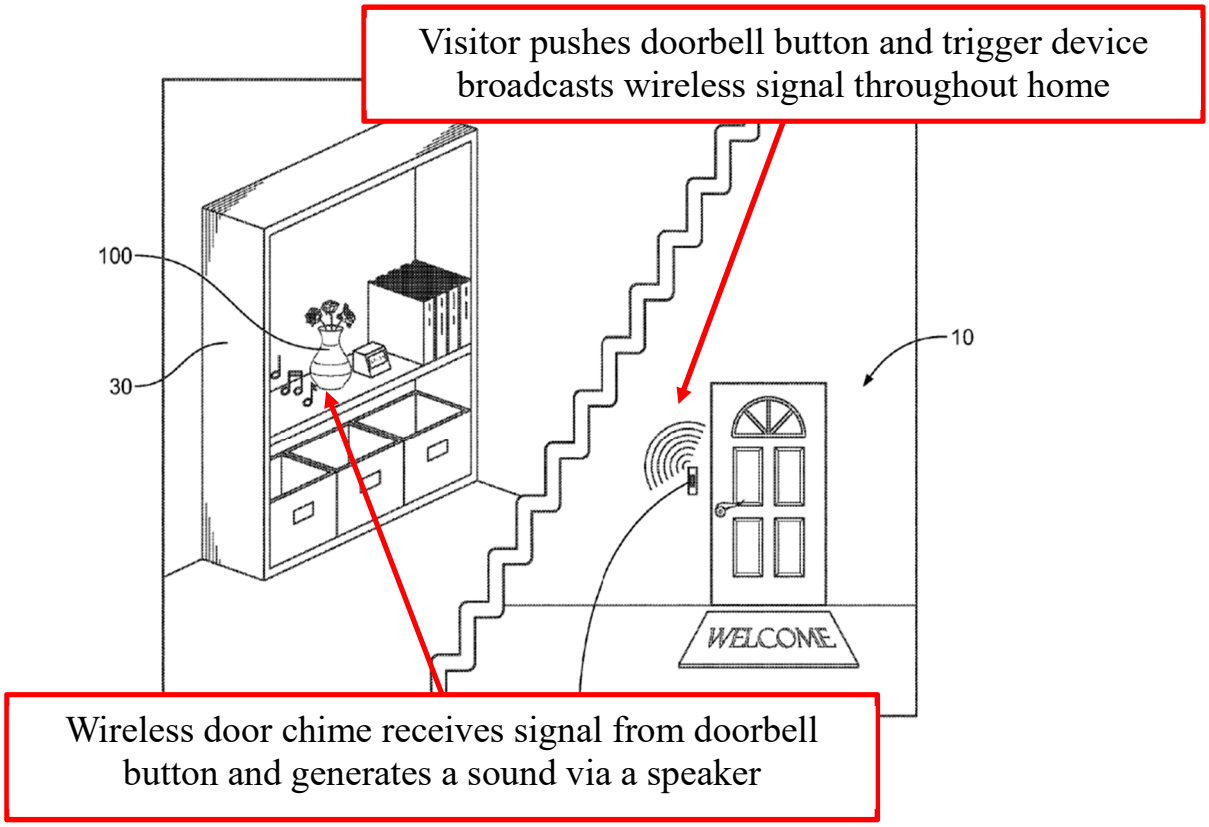
Claim 23

"The doorbell system of claim 19, further comprising a sound emitted by a speaker of the chime in response to the doorbell detecting an indication of a presence of a visitor."

Hwang in view of Lee renders obvious this limitation. First, Hwang teaches

that the chime unit may be implemented as controller 800 illustrated in Fig. 8. RING-1005, ¶ [0051] ("The controller 800 may be an example of doorbell unit 105, chime unit 110…"). The controller 800/chime unit includes "an external audio device, such as a speaker system 830." RING-1005, ¶ [0051].

Second, to the extent Hwang does not explicitly teach that the speaker of its chime unit emits a sound in response to a visitor pressing a doorbell, a POSITA would have found it obvious given that the traditional function of a chime is to do just that. *See* RING-1003, pp. 83-85 (citing RING-1005, ¶¶ [0027]-[0028]). Additionally, as discussed above, a POSITA would have been motivated to combine the teachings of Lee regarding a wireless chime with Hwang's chime unit. Lee teaches that its wireless chime includes a "wireless speaker unit" that emits "an audible notification in response to receiving a wireless signal generated by the trigger device." RING-1006, ¶ [0005]. "For example, when a user presses a pushbutton doorbell to activate the trigger device, the wireless door chime apparatus and/or the wireless speaker unit can generate an audible notification signal, such as a chime, tone, or bell." *Id*.



RING-1006, Figs. 1A and 1B (annotated); RING-1003, p. 87.

Thus, the chime unit that includes a speaker system, as taught by Hwang, in view of Lee's audible notification emitted by the speaker unit of its wireless door chime in response to a visitor pressing the doorbell button renders obvious "a sound emitted by a speaker of the chime in response to the doorbell detecting an indication of a presence of a visitor." *See* RING-1003, pp. 83-87.

Claim 24

"The doorbell system of claim 19, wherein the chime comprises a speaker configurable to play a sound file from the remote computing device."

Hwang in view of Lee renders obvious this limitation. First, Hwang teaches that the chime unit may be implemented as controller 800 illustrated in Fig. 8, and

that the controller/chime unit includes "an external audio device, such as a speaker system 830." RING-1005, ¶ [0051]. Hwang also teaches, as discussed above, that the chime unit is communicatively coupled to multiple remote computing devices, including computing device 125 (e.g., a mobile device, etc.) and control unit 120 (e.g., a smartphone, laptop, etc.). *See* RING-1005, ¶¶ [0010], [0026], Fig. 1.

Second, a POSITA would have found it obvious to configure the speaker in Hwang's chime unit to play a sound file from a remote computing device, as discussed above. *See* RING-1003, p. 88. For example, Lee teaches that its wireless chime includes a wireless speaker unit that is configured to play audio files transmitted from various computing devices:

> The wireless speaker unit 120 can also be configured to communicate wirelessly with an ***audio source, such as an mp3 player, a smart phone***, a tablet, a radio, a computer, or another source capable of storing audio files. In this way, ***the wireless speaker unit 120 can play audio files transmitted from the audio source***, thereby serving as a home speaker or a home audio system.

RING-1006, ¶ [0025] (emphasis added); *see also id*. ¶ [0022] ("the wireless door chime apparatus 100 can connect with a computer or other device to download audio files that can be played back via the wireless speaker 130 at a later time").

Thus, a chime unit comprising a speaker system and communicatively coupled to a remote computing device, as taught by Hwang, in view of Lee's

wireless door chime with a speaker unit configurable to play an audio file from a smart phone renders obvious "the chime comprises a speaker configurable to play a sound file from the remote computing device." *See* RING-1003, pp. 88-90.

Claim 25

"The doorbell system of claim 19, wherein the chime comprises a light configurable to illuminate."

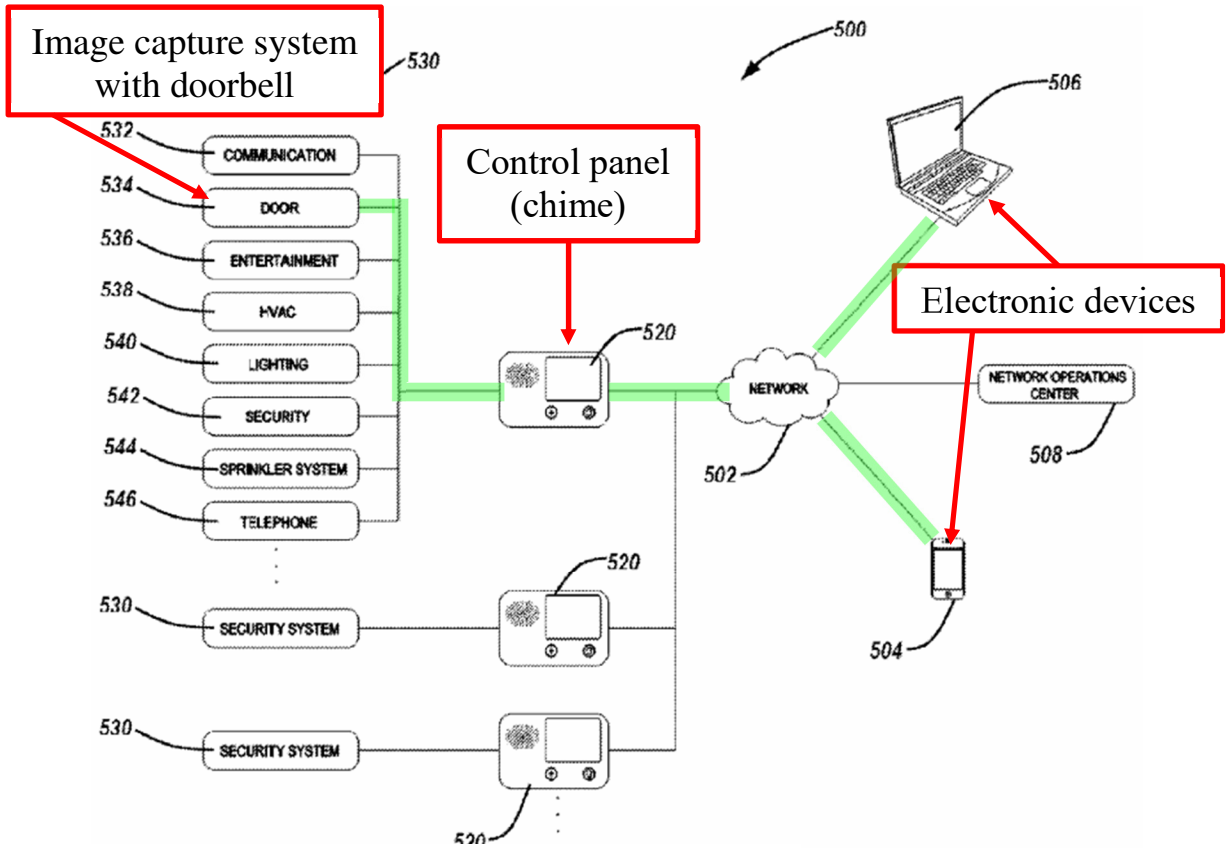
Hwang in view of Lee renders obvious this limitation. First, Hwang teaches that the chime unit may be implemented as controller 800 illustrated in Fig. 8, and that the controller/chime unit can be connected to a "lighting system." RING-1005, ¶ [0054].

Second, to the extent Hwang does not explicitly teach that its chime unit includes a light configurable to illuminate, a POSITA would have found it obvious, as chimes with lights were well known and provide practical advantages, as discussed above. RING-1003, p. 91. For example, Lee teaches that its wireless door chime can take on a "functional form" such as "an artificial or electronic candle" which includes a "light source, for example an LED light that simulates the appearance of a candle flame," which by its very nature is designed to provide illumination. RING-1006, ¶ [0034]; *see also id*. ¶ [0032] (explaining that the wireless chime can also include "an LED indicator 146, which can indicate the power level of the door chime 100 or the quality of wireless signal detected"); *see* RING-1003, pp. 91-93.

C. Challenge #3: Claims 1-4, 11-13, 19, 20, 23, 28 are invalid under 35 U.S.C § 103 over Child

1. Summary of Child

Like the '987 Patent, Child is directed to a "method for monitoring an entry to a structure [that] includes detecting that a person is present." RING-1007, ¶ [0006]. Child's monitoring system includes a doorbell integrated with an image capture system, a control panel that chimes when someone presses the doorbell (*i.e.*, a chime), and remote electronic devices. RING-1007, Abstract, ¶¶ [0094], [0036]. As illustrated in Fig. 5 of Child (annotated below), the control panel 520 (chime) communicatively couples the doorbell camera (labeled as door system 534, *id*. ¶ [0075]) to the remote electronic devices 504, 506.

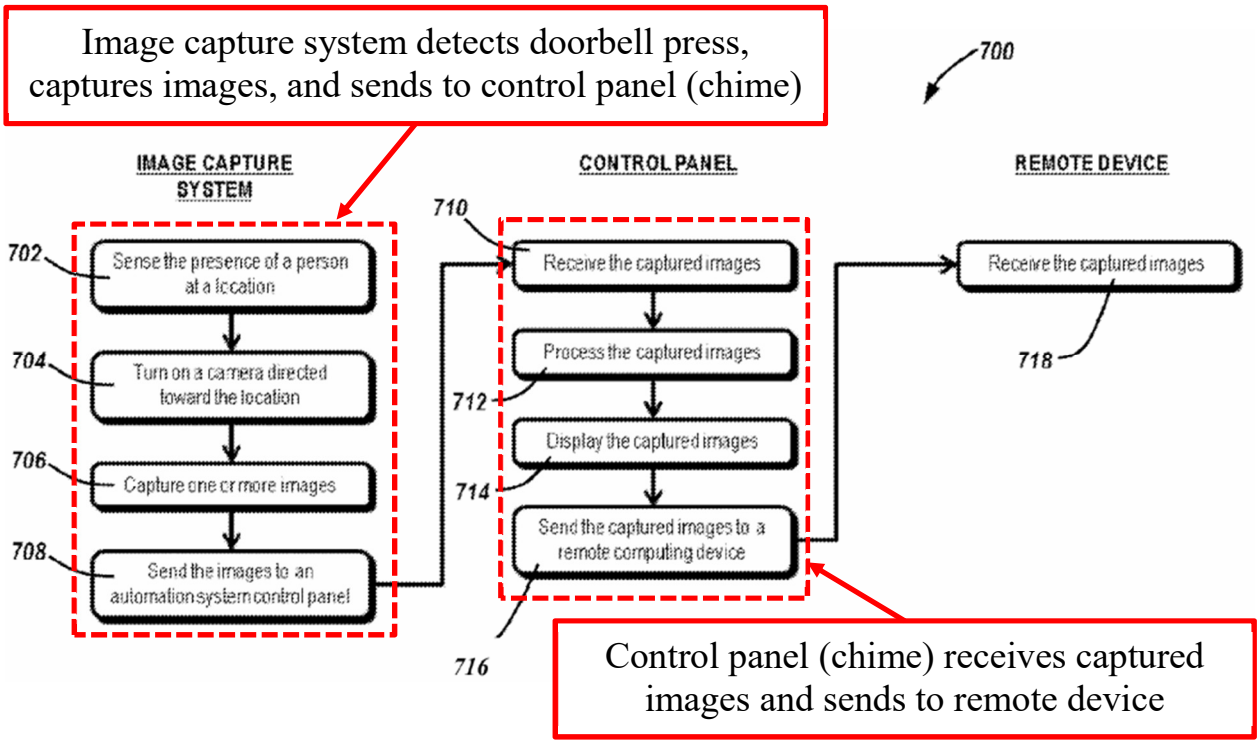


RING-1007, Fig. 5 (annotated); RING-1003, ¶ 60.

With reference to Fig. 5 above, Child explains that network 502, to which the control panel is coupled, may be a "local area network" based on "a wireless protocol such as WiFi (i.e., IEEE 802.11)," and that the control panel may also support "connecting to local components ... over a wireless mesh network." RING-1007, ¶¶ [0068], [0083], [0081]. Child further teaches that the control panel may communicate wirelessly with "sensors that detect intruders (e.g., unauthorized opening of a door or window, motion sensors, etc.), sensors that detect smoke or fire, or some other security related component." *Id*. ¶¶ [0065]-[0066].

Child teaches that its system alerts users to the presence of a visitor at a building entrance by "capturing an image of the person in response to detecting that the person is present, and transmitting the captured image to a control panel of an automation and security system of the structure for delivery of the captured image to a remote computing device." RING-1007, ¶ [0006]. Child explains that the captured images forwarded to a user's mobile device are a type of "notification." *Id*. ¶ [0101] ("The images (or potentially a notification of another type) may also be forwarded to a mobile device….").

Fig. 7 (annotated below) illustrates Child's notification method, which includes (i) detecting when someone presses the doorbell, (ii) capturing one or more images, (iii) sending the images to a control panel (*i.e*., the chime), and (iv) sending the images from the control panel to a remote device for viewing. RING-1007, ¶¶ [0095]-[0099].



RING-1007, Fig. 7 (annotated); RING-1003, ¶ 62.

Child describes that the monitoring method of Fig. 7 above is implemented with "an image capture system, automation system control panel, and remote computing device," where "[e]xamples of the various elements may be found in FIGS. 1-6." RING-1007, ¶¶ [0093]-[0094]. As such, the claim-by-claim analysis below points to these examples in Figs. 1-6 when describing the method of Fig. 7. To the extent it is argued that the examples of Figs. 1-6 are different embodiments, Child expressly tells a POSITA to consider all of the elements shown in Figs. 1-6 when considering the method of Fig. 7. Child further states that "[a]ny feature illustrated or described relative to one embodiment is interchangeable and/or may be employed in combination with features of any other embodiment herein."

RING-1007, ¶ [0124]. In light of this express language, a POSITA would have therefore found it obvious to draw from different elements of the examples of Figs. 1-6 when implementing the monitoring method of Fig. 7. RING-1003, ¶ 63; *see also Boston Scientific Scimed, Inc. v. Cordis Corp*., 554 F.3d 982, 991 (Fed. Cir. 2009) ("Combining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.").

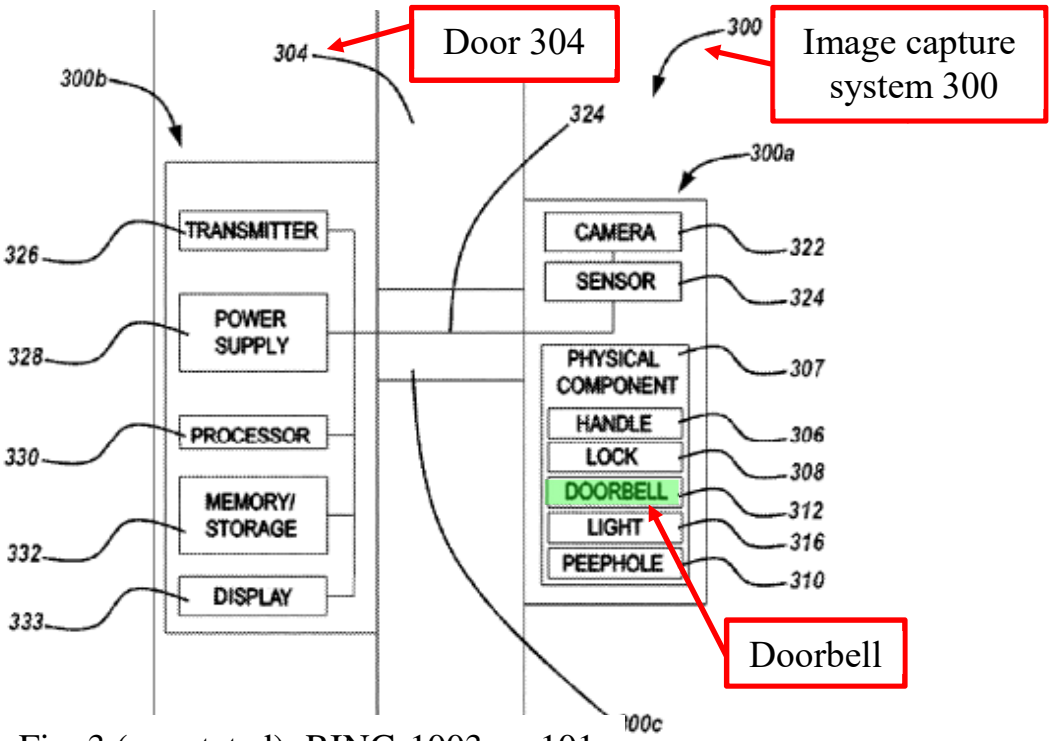
2. Detailed Analysis

The following describes how Child renders obvious each and every element of claims 1-4, 11-13, 19, 20, 23, and 28 of the '987 Patent. A corresponding claim chart is contained in Dr. Madisetti's declaration. *See* RING-1003, pp. 98-178.

Claim 1

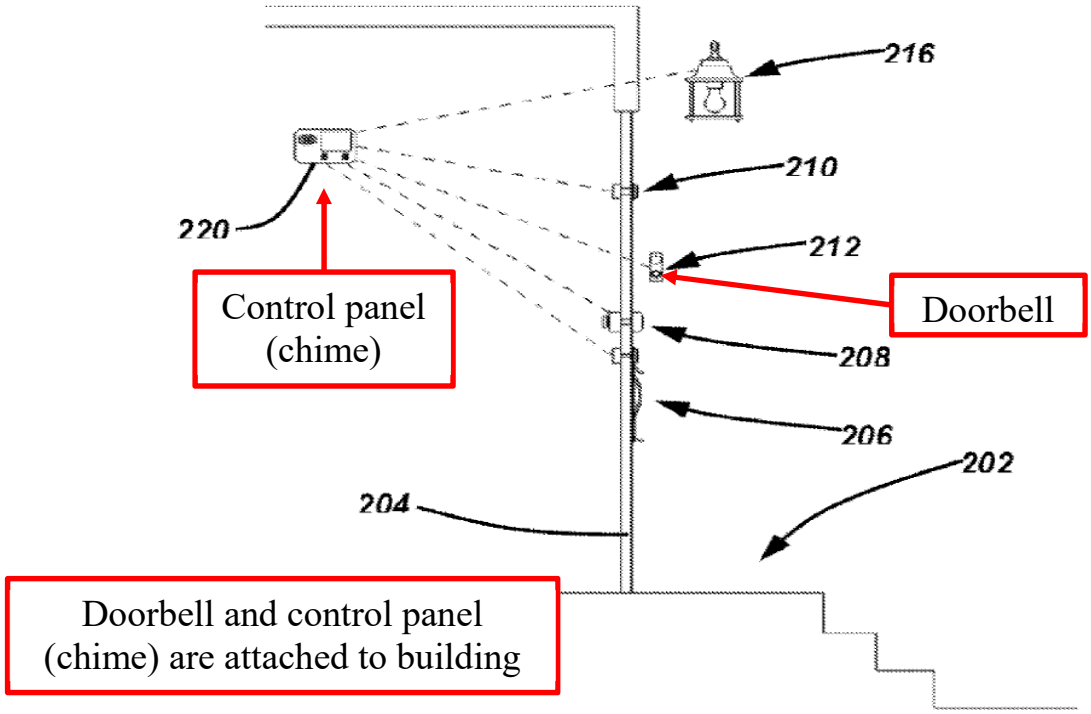
[1.0] ***"A method of using a doorbell system comprising a doorbell and a chime, wherein the doorbell system is configured to be coupled to a building, the method comprising:"***

Fig. 7 of Child illustrates "an example method 700 for monitoring an access point to a physical structure." RING-1007, ¶¶ [0093]-[0094]. Child teaches that its method 700 is implemented with "an image capture system, automation system control panel, and remote computing device." *Id*. As illustrated in Fig. 3 below, the "image capture system 300" includes or is integrated with a "doorbell 312" on the exterior of the structure next to a door 304. *Id*. ¶ [0041].



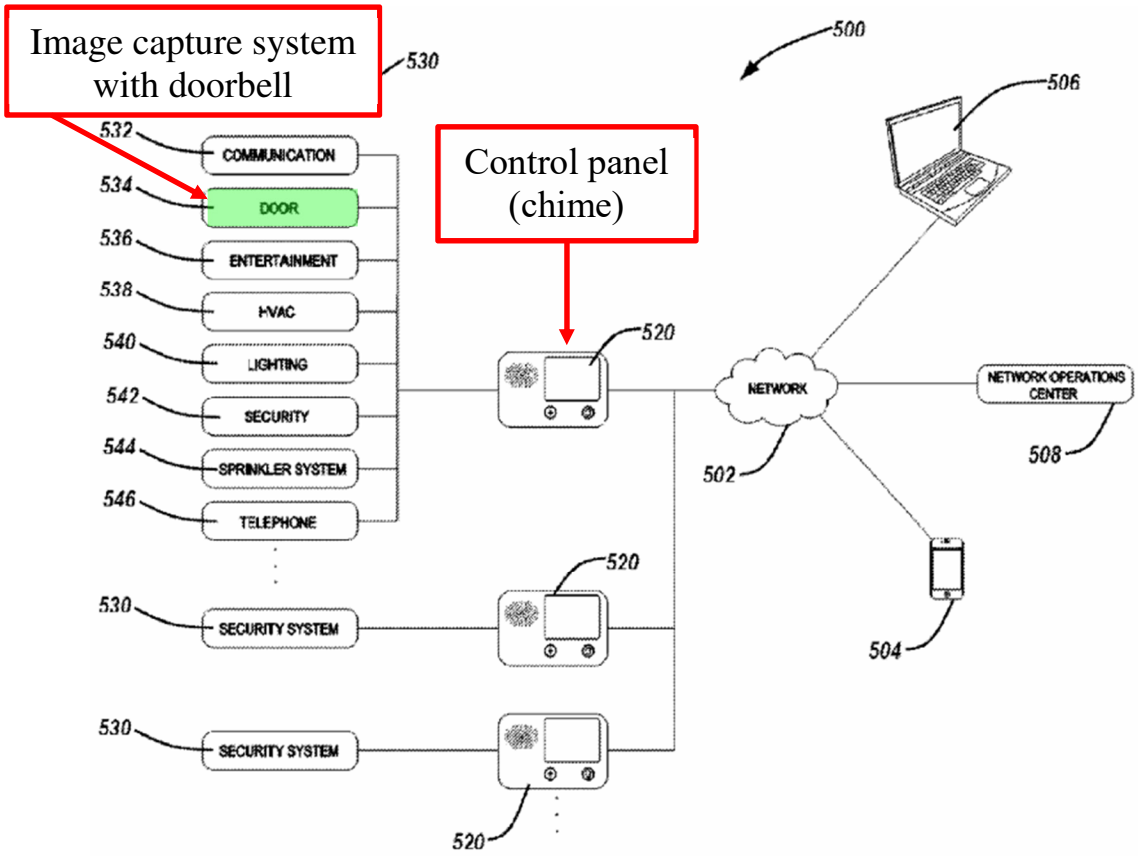
RING-1007, Fig. 3 (annotated); RING-1003, p. 101.

And, as illustrated in Fig. 2 below, the control panel is disposed within the structure and plays a chime when the doorbell is depressed. *Id*. ¶¶ [0035], [0094], [0036] ("The control panel 220 may detect when the doorbell 212 is depressed. In response, the control panel 220 may play a chime or other sound….").



RING-1007, Fig. 2 (annotated); RING-1003, p. 100.

Further, Fig. 5 (annotated below) illustrates the architecture of Child's building monitoring system, including the image capture system (labeled as door system 534, RING-1007, ¶ [0075]) and the control panel that chimes that are mounted to the building. RING-1007, ¶ [0065] ("FIG. 5 illustrates a distributed system 500 for allowing control or monitoring of certain aspects of a physical location (e.g., a home, office, etc.).").



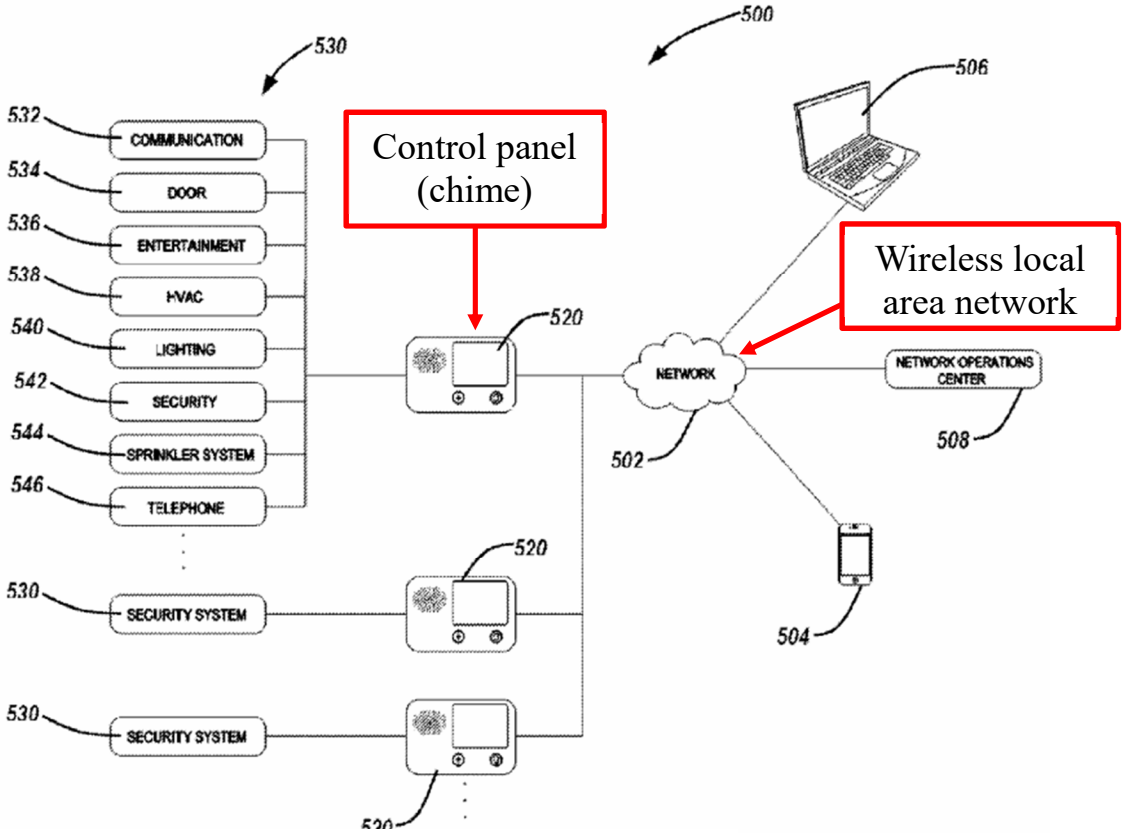
RING-1007, Fig. 5 (annotated); RING-1003, p. 104.

Thus, Child's method of using a system that includes a doorbell and a control panel that chimes when a visitor presses the doorbell, where each is coupled to a building, discloses "a method of using a doorbell system comprising a doorbell and a chime, wherein the doorbell system is configured to be coupled to a building." *See* RING-1003, pp. 98-104.

[1.1] ***"coupling communicatively the chime to a wireless network of the building, to the doorbell, and to a remote computing device"***

Child discloses this limitation. First, Child teaches that the control panel (chime) inside the building includes a "wireless component … used to send and/or

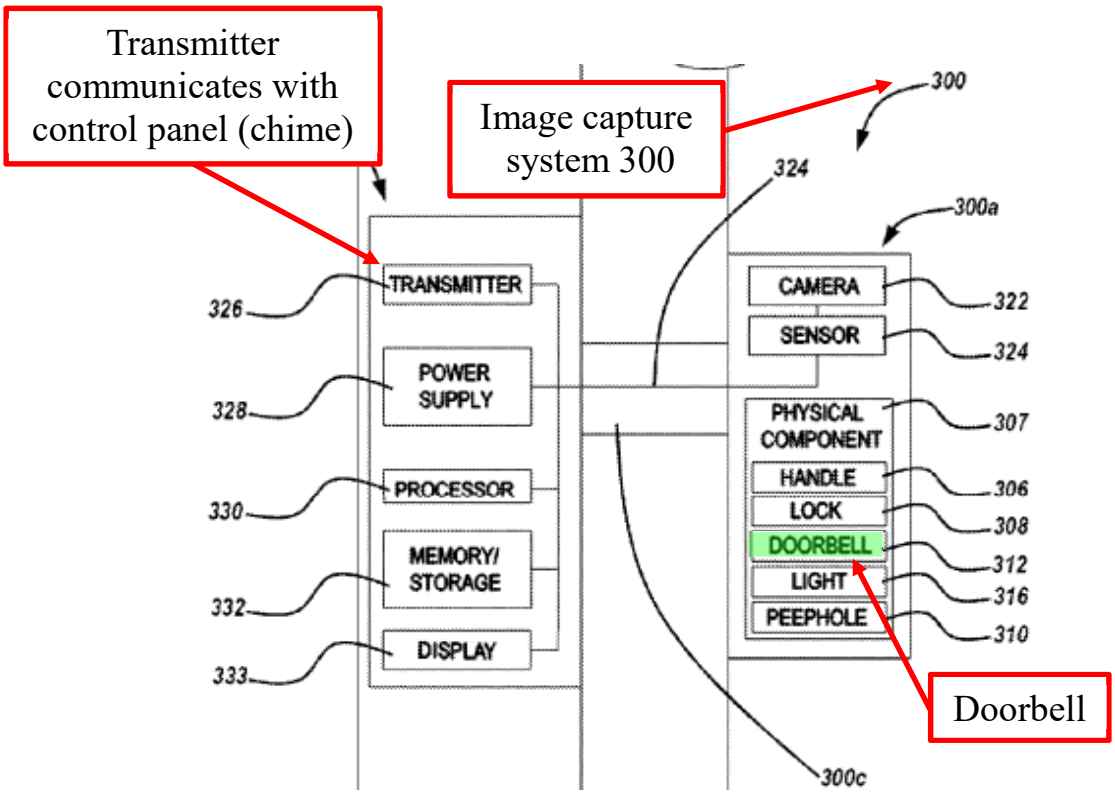
receive communications over a wireless protocol such as WiFi (i.e., IEEE 802.11)" and "for connecting to local components, such as over a wireless mesh network." RING-1007, ¶¶ [0081], [0083]. For example, Fig. 5 of Child illustrates the control panel (chime) being communicatively coupled to a "local area network" 502 (*id.* ¶ [0068]):



RING-1007, Fig. 5 (annotated); RING-1003, p. 106.

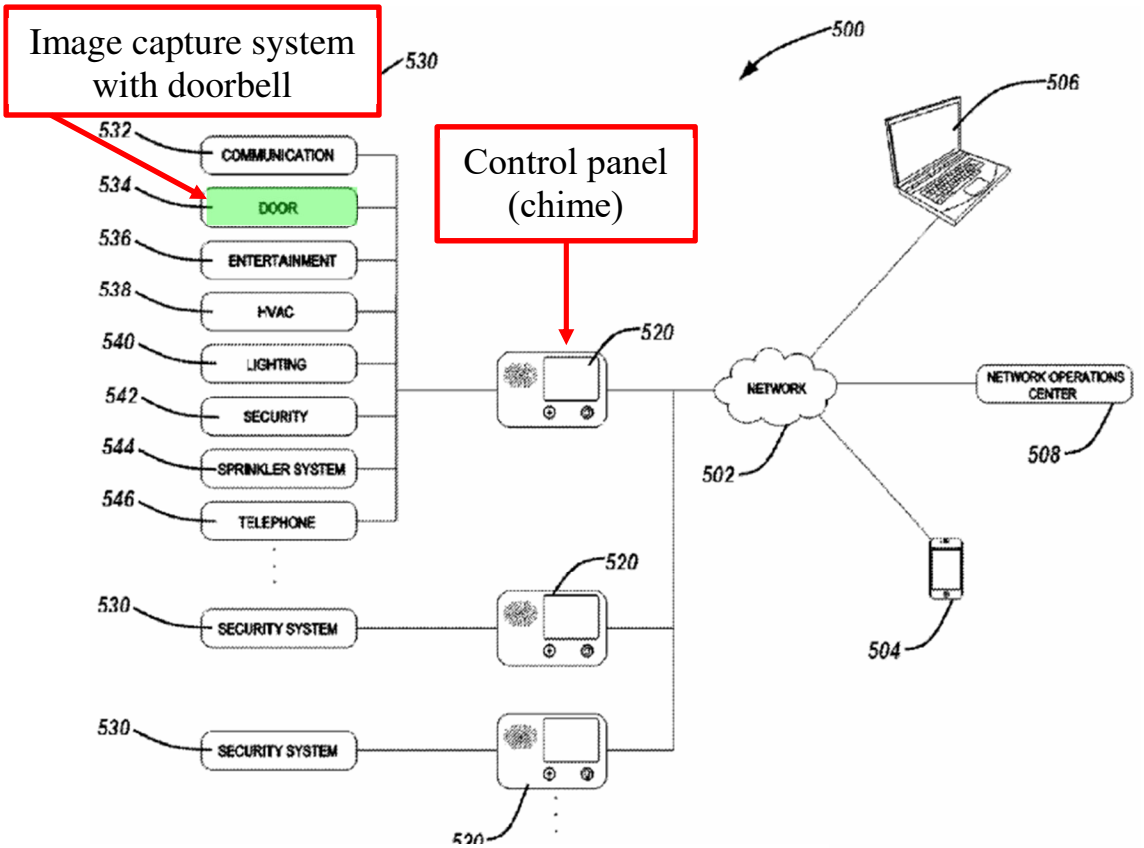
A POSITA would have considered either a local area network that is wireless and utilized by devices inside of a building, or a wireless mesh network connected to local components, to be a wireless network of the building. *See* RING-1003, p. 106 (citing RING-1022).

Second, Child teaches that the doorbell is part of the "image capture system 300," which is communicatively coupled to the control panel (chime) via a "wireless transmitter 326," as shown in Fig. 3 annotated below. RING-1007, ¶ [0075] ("transmitter 326 may be used to communicate directly with a control panel"), ¶ [0054] ("transmitter 326 is [used] to send image data, sensor-related data, or other data to an automation system control panel").



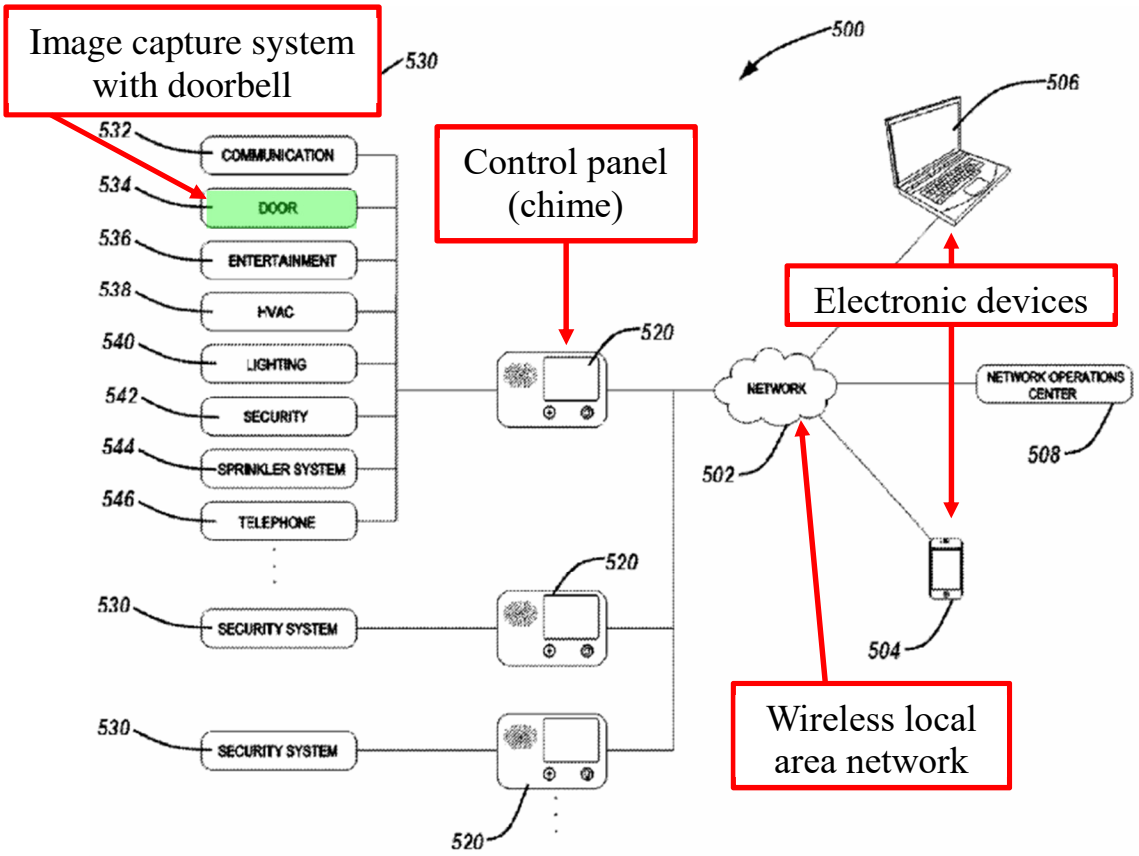
RING-1007, Fig. 3 (annotated); RING-1003, p. 108.

Fig. 5 of Child illustrates that the image capture system with doorbell (labeled as door system 534, RING-1007, ¶ [0075]) is communicatively coupled to the control panel (chime):



RING-1007, Fig. 5 (annotated); RING-1003, p. 109.

Third, as illustrated in Fig. 5 (annotated below), Child teaches that the control panel (chime) is communicatively coupled to remote electronic devices. RING-1007, ¶ [0076] ("The control panel 520 may also optionally communicate with the network 502 and/or the electronic devices 504, 506."); *see also id.* ¶ [0092] (teaching a remote access module to "enable the control panel 620 to be accessed using remote devices (e.g., devices 504, 506 of FIG. 5)").



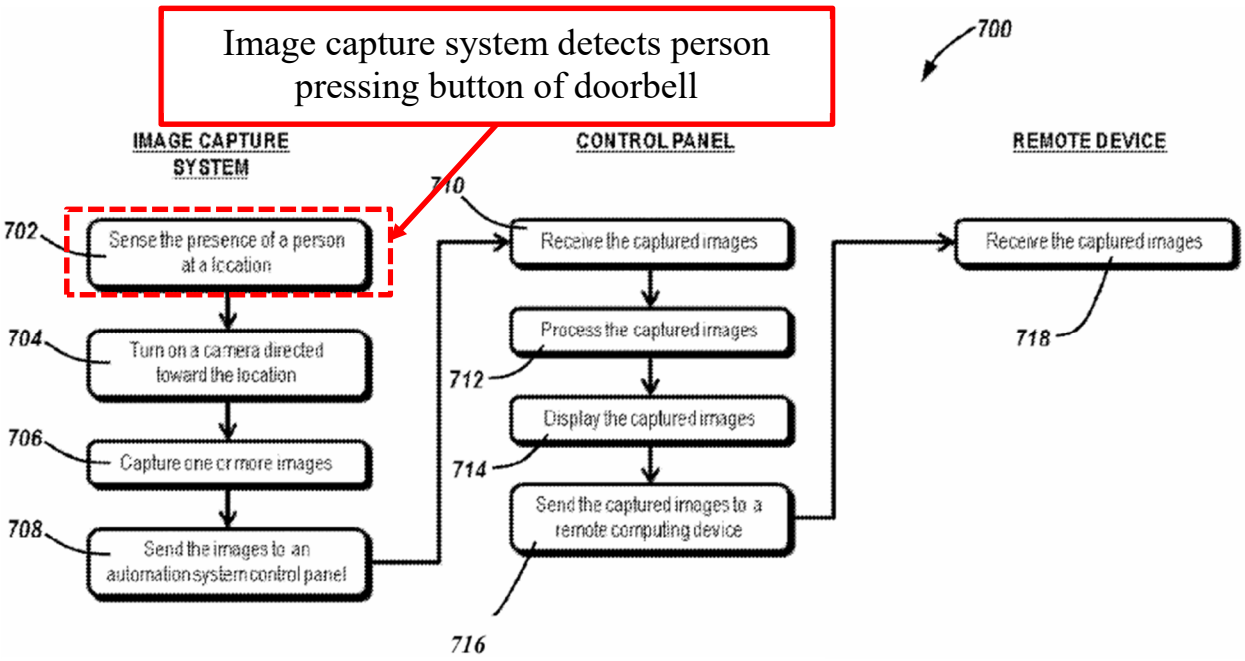
RING-1007, Fig. 5 (annotated); RING-1003, p. 111.

Thus, coupling communicatively the control panel (chime) to a wireless local area network, to the doorbell in the image capture system, and to the remote electronic devices, as taught by Child, discloses "coupling communicatively the chime to a wireless network of the building, to the doorbell, and to a remote computing device." *See* RING-1003, pp. 104-112.

[1.2] ***"detecting, by the doorbell, a trigger of a button of the doorbell"***

Child discloses this limitation. As discussed above, Child's image capture system includes a doorbell. RING-1007, ¶¶ [0061], [0094]. This doorbell includes a button. RING-1007, ¶ [0061]. The doorbell is activated when the button is

"pressed" or "depressed." *Id.* ¶¶ [0030], [0036], [0061]. Child teaches that the doorbell determines when someone is present: "image capture system may be used to sense the presence of a person at a particular location (block 702)" where it is detected that a person is likely present, for example, the "doorbell or door knocker may be used to determine someone is present," as illustrated in Fig. 7. RING-1007, ¶ [0095]; *see also id.* ¶¶ [0030], [0061], [0096].



RING-1007, Fig. 7 (annotated); RING-1003, p. 113.

A POSITA would understand the above disclosure as teaching that the doorbell determines when someone is present by detecting the fact that someone pushed the doorbell button. RING-1003, p. 114.

Thus, detecting, by the doorbell in the image capture system, the presence of a person in response to the person depressing the button of the doorbell, as taught

by Child, discloses "detecting, by the doorbell, a trigger of a button of the doorbell." *See* RING-1003, pp. 112-114.

[1.3] ***"sending a visitor alert from the doorbell to the chime; and"***

Child discloses this limitation. First, with respect to the recited "visitor alert," Child teaches that the purpose of its system is to notify a user to the presence of a person near an entry of a structure by capturing images/video upon detection of the person and sending the images/video to the user for viewing:

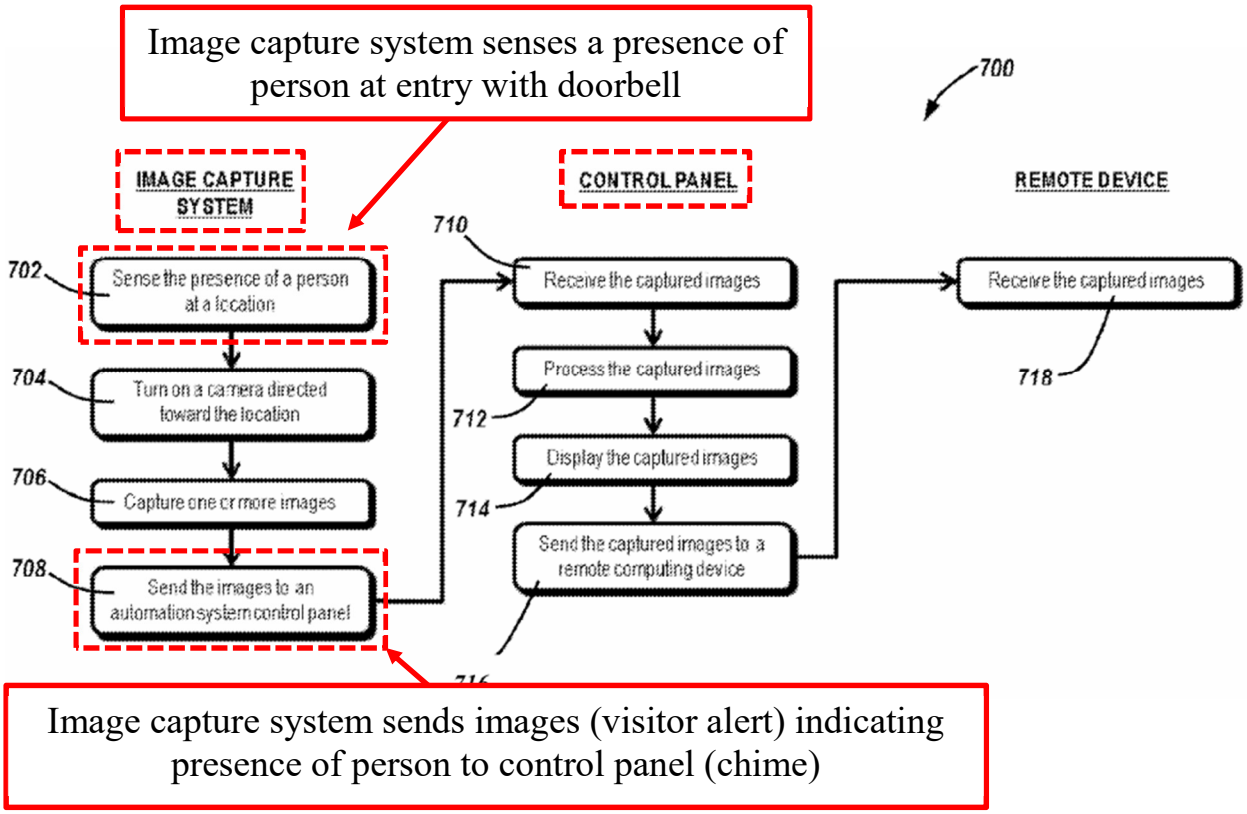
> According to at least one embodiment, a computer-implemented ***method for monitoring an entry to a structure includes detecting that a person is present at or near an entry to a structure, capturing an image of the person in response to detecting that the person is present***, and transmitting the captured image to a control panel of an automation and security system of the structure ***for delivery of the captured image to a remote computing device***.

RING-1007, ¶ [0006] (emphasis added).

> ***When the person approaches the access point, an imaging system may capture an image of the person. An imaging system may include a camera or other device suitable for capturing a still, video or other image of the person. That image may then be transferred to a remote location where another person can view the image.*** By way of example, the imaging system may send the image to an owner or resident of the building, or security for the building. The image may be sent to a mobile device such as a mobile phone, personal media player, or the like.

RING-1007, ¶ [0026] (emphasis added); *see also id*. ¶ [0103]. Child explains that the captured images forwarded to a user's remote device are a type of "notification." *Id*. ¶ [0101] ("The images (or potentially a notification of another type) may also be forwarded to a mobile device, a computer, a tablet, or some other remote computing device."); *see also id*. ¶ [0036].

Second, Child teaches that as part of its notification process illustrated in Fig. 7, after a visitor is detected with the doorbell, the image capture system sends images of the visitor to the control panel (chime). RING-1007, ¶¶ [0095]-[0097]. Specifically, Child explains that (i) "[r]egardless of the manner in which the presence of a person is determined, image capture system may have a camera thereof turned on (block 704) and be used to capture one or more images of the location (block 706)" and (ii) "the images may be sent to an automation system control panel." RING-1007, ¶¶ [0096]-[0097].



RING-1007, Fig. 7 (annotated); RING-1003, p. 118.

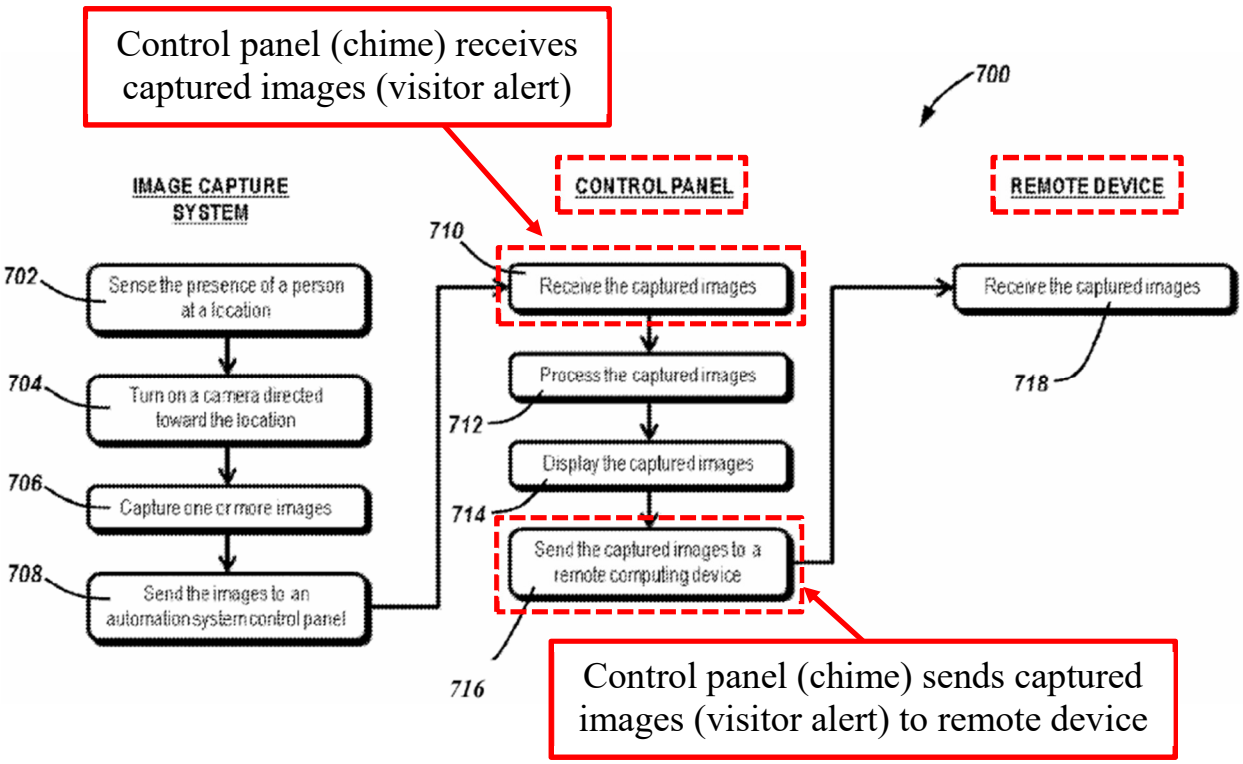
Child further explains that "[w]hen a photograph, video, or other image is obtained by the camera 322, the image data may be sent over the communicative connection 334 to the transmitter 326," and the "transmitter 326 may transmit the image data to a control panel." RING-1007, ¶ [0044].

Thus, sending images of a person who presses the doorbell (a visitor alert) from the image capture system to the control panel (chime), as taught by Child, discloses "sending a visitor alert from the doorbell to the chime." *See* RING-1003, pp. 114-119.

[1.4] ***"sending the visitor alert from the chime to the remote computing device such that the chime communicatively couples the doorbell to the remote***

computing device."

Child discloses this limitation because it teaches, as illustrated in Fig. 7 (annotated below), that after the control panel (chime) receives the images captured of the visitor, "the captured image(s) may be sent to a remote computing device in block 716." RING-1007, ¶ [0099].

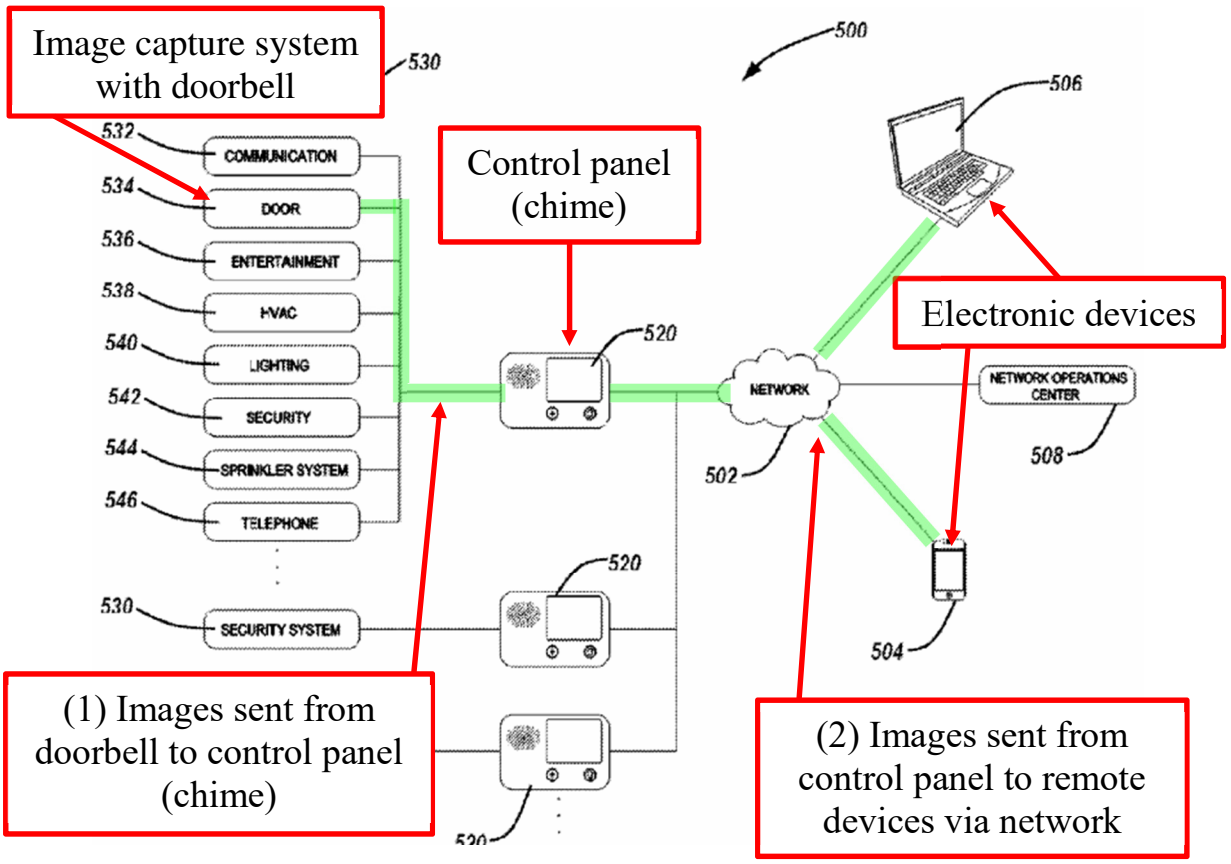


RING-1007, Fig. 7 (annotated); RING-1003, p. 120.

Child further explains that after the control panel receives the image data of the visitor, "the control panel may send the image data to a remote source (e.g., a mobile device)." RING-1007, ¶ [0044].

Accordingly, Child teaches when the image capture system with the doorbell captures one or more images of a visitor (*i.e.*, a visitor alert), the image capture

system first sends the captured images to the control panel (chime) and then the control panel sends the captured images to a remote computing device. *See* RING-1007, ¶¶ [0097]-[0099], [0006]. In other words, the control panel (chime) communicatively couples the image capture system to the remote electronic devices by relaying the image(s) of the visitor from the image capture system to the remote electronic devices, as illustrated in Fig. 5 below. RING-1003, p. 121.



RING-1007, Fig. 5 (annotated); RING-1003, p. 122.

Thus, sending images of a person who presses the doorbell (a visitor alert) from the control panel (chime) to a remote electronic device such that the control panel (chime) communicatively couples the image capture system (doorbell) to the

remote electronic device, as taught by Child, discloses "sending the visitor alert from the chime to the remote computing device such that the chime communicatively couples the doorbell to the remote computing device." *See* RING-1003, pp. 119-122.

Claim 2

[2.1] ***"The method of claim 1, wherein the visitor alert comprises a video"***

Child discloses this limitation because it teaches that the "image data that is captured in block 706" when a visitor presses a doorbell may be "video." RING-1007, ¶ [0096]. Child explains that "[w]hen the person approaches the access point, an imaging system may capture an image of the person," where the "imaging system may include a camera or other device suitable for capturing a still, ***video*** or other image of the person." *Id*. ¶ [0026] (emphasis added).

[2.2] ***"the method further comprising the doorbell taking the video."***

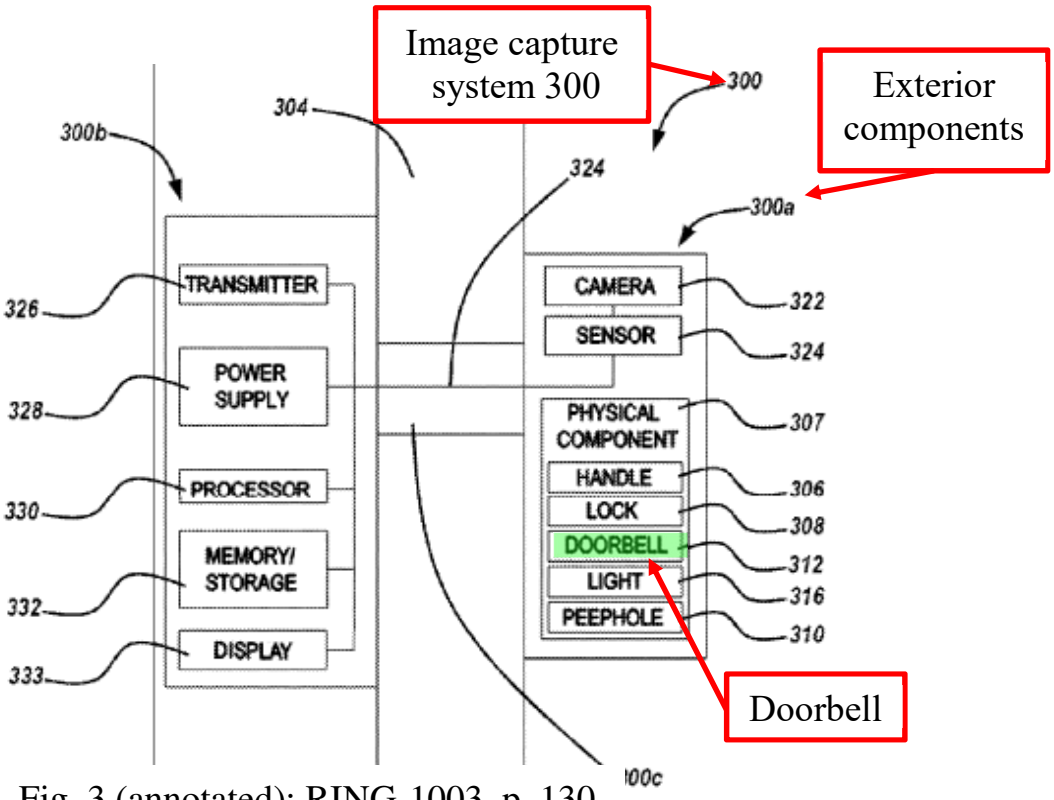
Child discloses this limitation. First, as discussed above, Child's image capture system includes a doorbell. RING-1007, ¶ [0094]; *see also id.* ¶¶ [0030], [0036], [0061]. And the doorbell includes a camera. *Id.* ¶ [0061], Fig. 4B. Second, Child teaches that the image capture system "may include a camera or other device suitable for capturing a still, ***video*** or other image of the person." *Id*. ¶ [0026] (emphasis added); *see also id*. ¶ [0096].

Claim 3

"The method of claim 1, further comprising sending the visitor alert from the doorbell to the chime while the doorbell is located outside of the building and

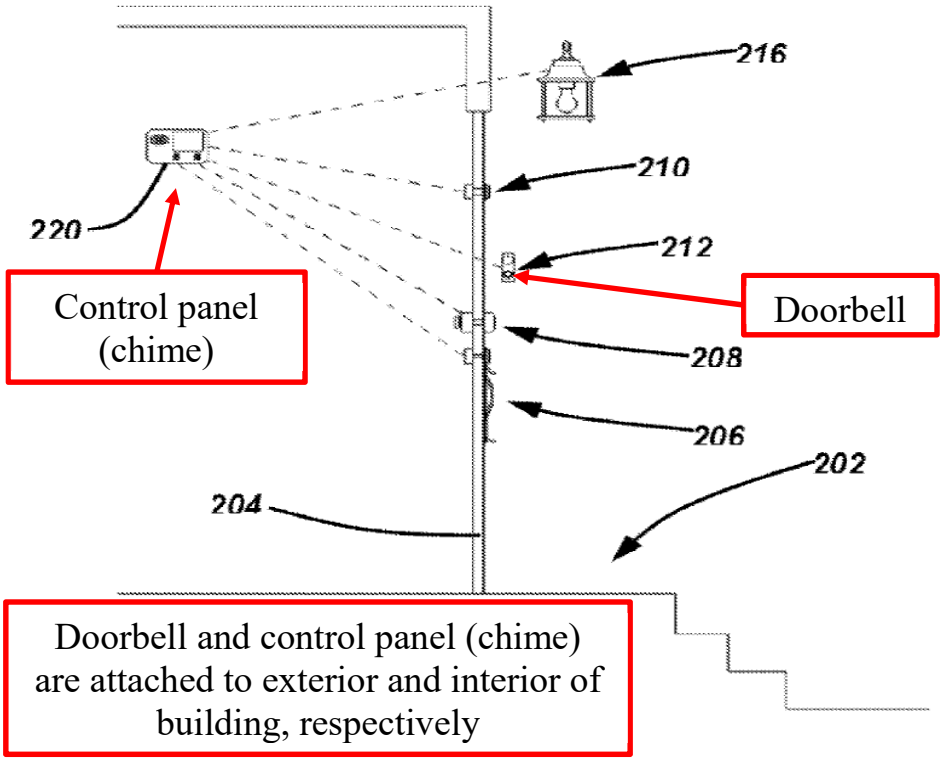
while the chime is located inside of the building."

Child discloses this limitation. First, as discussed in association with [1.3], Child teaches that the image capture system (with the doorbell) sends images of a visitor (*i.e.*, a visitor alert) to the control panel (chime). *See* RING-1007, ¶¶ [0095]-[0097], Fig. 7. Second, Child teaches that the image capture system includes an "exterior component 300a" with "elements that are wholly or partially exterior to the door 304" such as the "doorbell 312" illustrated in Fig. 3:



RING-1007, Fig. 3 (annotated); RING-1003, p. 130.

Further, Child illustrates in Fig. 2 that the doorbell is located outside the structure 200 and the control panel (chime) is located on an interior of the structure 200 (*i.e.*, a building):



RING-1007, ¶¶ [0031], [0035], Fig. 2 (annotated); RING-1003, p. 128.

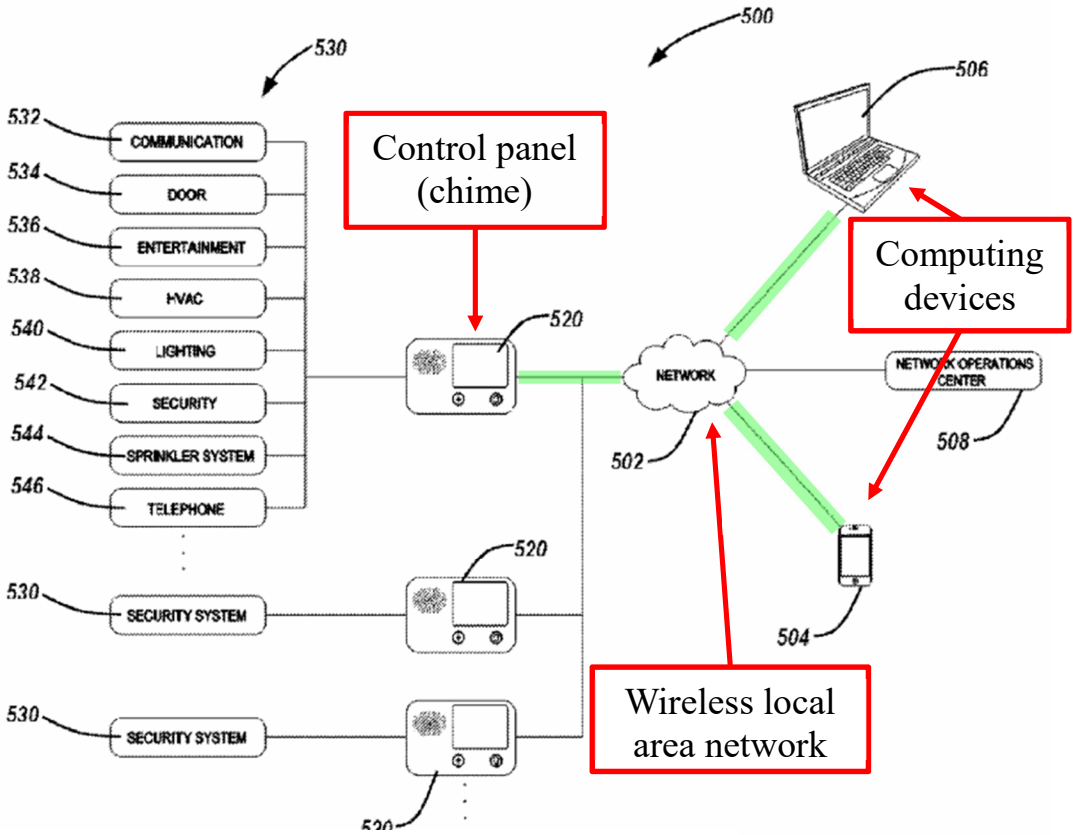
Thus, sending images indicating the presence of the person to the control panel (chime) while the image capture system (doorbell) is located on an exterior of the building and while the control panel (chime) is attached to an interior of the building, as taught by Child, discloses "sending the visitor alert from the doorbell to the chime while the doorbell is located outside of the building and while the chime is located inside of the building." *See* RING-1003, pp. 128-132.

Claim 4

"The method of claim 1, further comprising sending the visitor alert from the chime to the remote computing device via the wireless network of the building."

Child discloses this limitation. First, as discussed in association with [1.4], the control panel (chime) inside the building sends the images captured of the

visitor to a user's remote computing device. RING-1007, ¶¶ [0099], [0044]. Second, Fig. 5 of Child illustrates that the control panel (chime) is communicatively coupled to the remote electronic devices 504 and 506 via a "local area network" 502 (*id.* ¶ [0068]):



RING-1007, Fig. 5 (annotated); RING-1003, p. 133.

Child further teaches that "if the electronic device 504 is sufficiently close to the control panel 520, a physical connection may be used, or ***a suitable wireless communication protocol (e.g.*** Z-Wave, ZigBee, Bluetooth, ***WiFi***, etc.) ***may be used.***" RING-1007, ¶ [0076] (emphasis added).

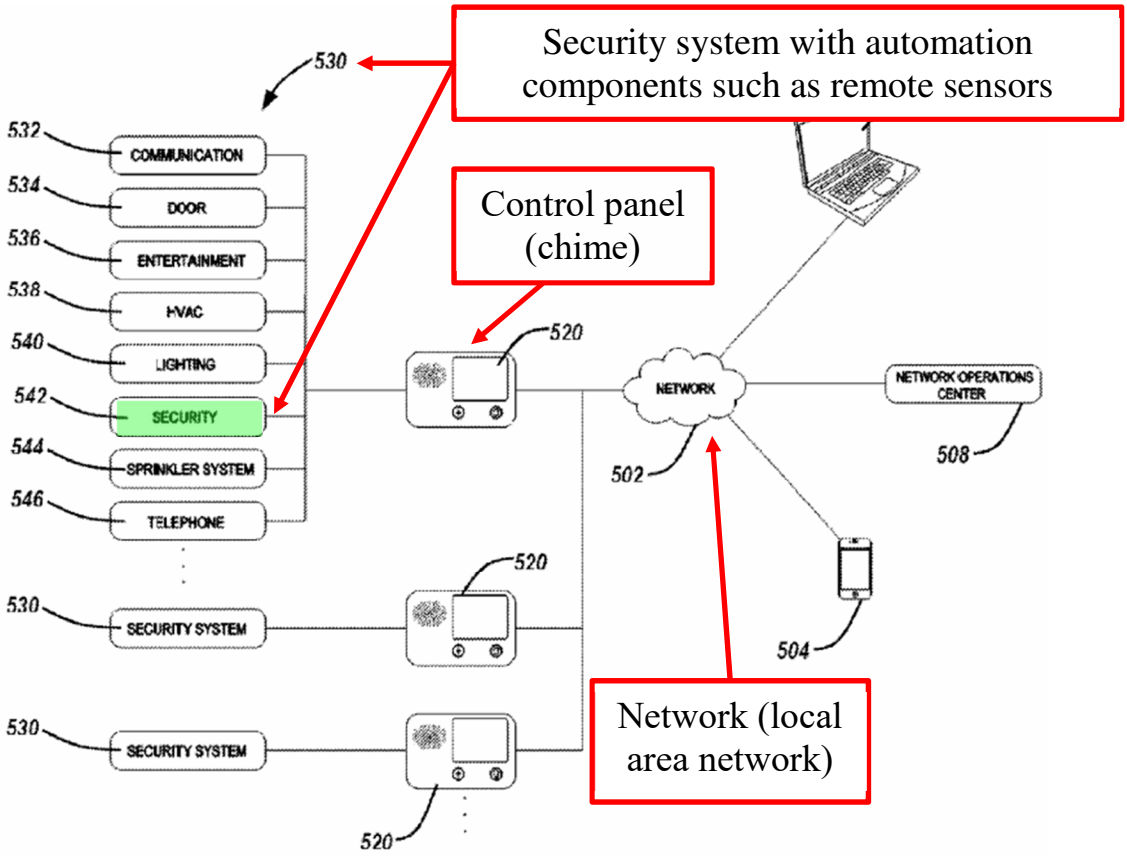
Thus, sending the captured images (visitor alert) from the control panel

(chime) inside the building to the remote computing devices via the wireless local area network, as taught by Child, discloses "sending the visitor alert from the chime to the remote computing device via the wireless network of the building," as recited in the claim. *See* RING-1003, pp. 133-135.

Claim 11

[11.1] ***"The method of claim 1, further comprising coupling communicatively the chime to a remote sensor via the wireless network of the building"***

Child renders obvious this limitation. First, it teaches that the control panel (chime) "communicates with a security system 530," which includes "a variety of automation components (ACs) for performing any of one or more functions." RING-1007, ¶ [0065]. In particular, "the ACs of the security system 542 may include ***sensors*** that detect intruders (e.g., unauthorized opening of a door or window, motion sensors, etc.), ***sensors*** that detect smoke or fire, or some other security related component." RING-1007, ¶ [0066] (emphasis added).



RING-1007, Fig. 5 (annotated); RING-1003, p. 137.

Second, Child teaches that the "the control panel 520 may be equipped to use one or more different communication protocols in communicating with the ACs of the security system 530," including "wireless communication protocols (e.g., WiFi, LightwaveRF, etc.)." RING-1007, ¶ [0075] ("the ACs use a wireless system for communicating with the control panel 520").

Further, as discussed above, Child teaches that its building monitoring system includes wireless local area network 502 that communicatively couples devices using WiFi, as shown in Fig. 5. *Id*. ¶¶ [0068], [0076], [0080]. It would have been obvious and predictable to a POSITA to communicatively couple the

control panel (chime) to the remote sensors of the security system via the wireless local area network 502 using each device's pre-existing WiFi capabilities. RING-1003, pp. 140-142. For example, Child specifically teaches that the wireless component 666 in the control panel (chime) is "for connecting to local components, such as over a wireless mesh network." RING-1007, ¶¶ [0081], [0080]. Moreover, it was well known in the home automation industry to connect a WiFi-enabled sensor to other local components via a wireless network of the building in which it is installed. RING-1003, pp. 140-142 (citing RING-1020, Fig. 1, RING-1021, Fig. 5.)).

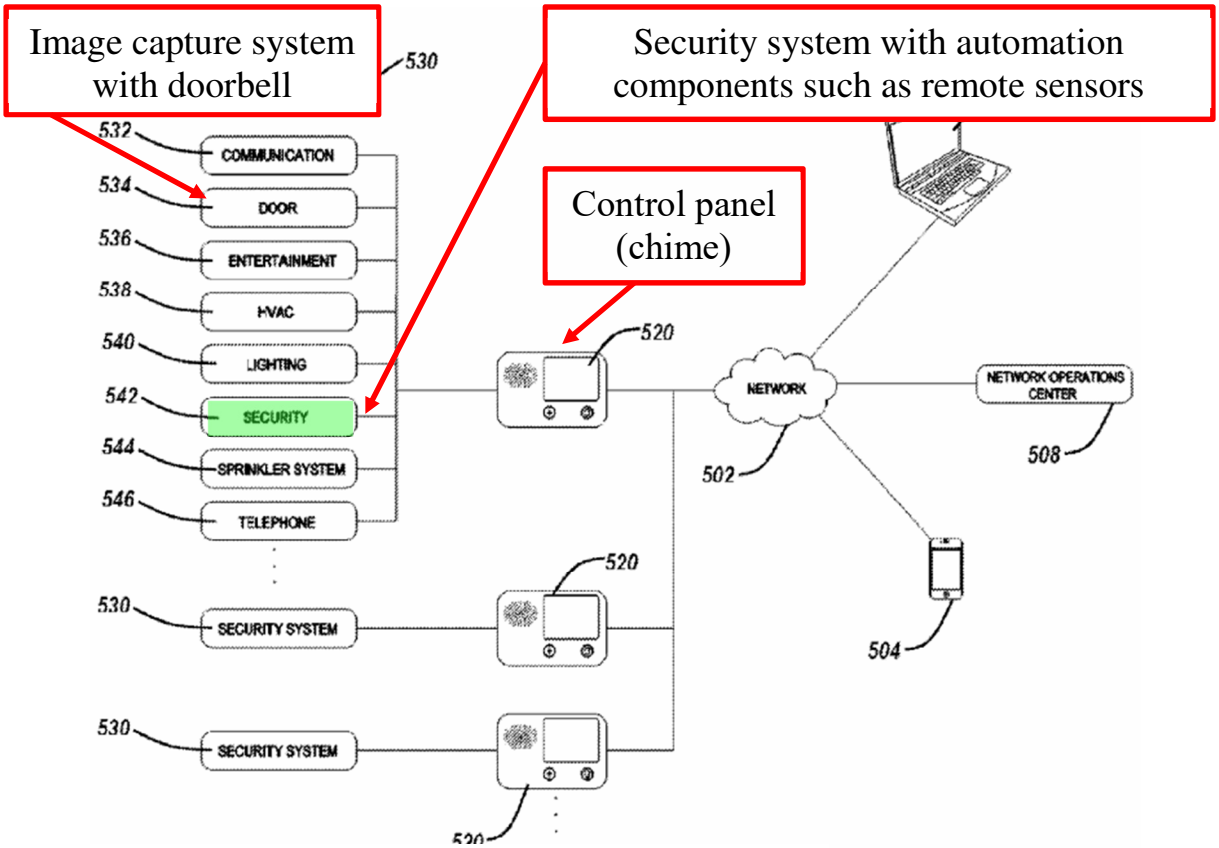
Thus, coupling communicatively the control panel (chime) to the remote sensors of the security system via a local wireless protocol such as WiFi, as taught by Child, renders obvious "coupling communicatively the chime to a remote sensor via the wireless network of the building." *See* RING-1003, pp. 136-142.

[11.2] ***"wherein the remote sensor comprises at least one of a fire alarm, a smoke alarm, a carbon monoxide detector, a motion sensor, a glass-break sensor, and a burglar alarm, and"***

Child discloses this limitation because it teaches that "the ACs of the security system 542 may include sensors that detect intruders (e.g., unauthorized opening of a door or window, motion sensors, etc.), sensors that detect smoke or fire, or some other security related component." RING-1007, ¶ [0066].

[11.3] ***"wherein the remote sensor is located remotely relative to the doorbell and the chime."***

Child discloses this limitation because, as illustrated in Fig. 5 (annotated below), it teaches that the security system 542 with remote sensors is "separate" from the image capture system (labeled as the door system 534) and also distinct from the control panel (chime), where each of the components communicate wirelessly. RING-1007, ¶ [0066] ("In other embodiments, a *separate* system (e.g., door system 534) may include cameras for monitoring access points to a structure."), ¶¶ [0075], [0083].



RING-1007, Fig. 5 (annotated); RING-1003, p. 144.

Child further teaches, as illustrated in Fig. 1, that its system can include "alarm sensors" and "proximity sensors" at windows that are remotely located from the entry where the doorbell is located. RING-1007, ¶ [0030].

Thus, the remote sensors being separate from the image capture system (doorbell) and being wirelessly connected to the control panel (chime), as taught by Child, discloses that "the remote sensor is located remotely relative to the doorbell and the chime." *See* RING-1003, pp. 143-146.

Claim 12

[12.1] ***"The method of claim 11, further comprising sending a second alert from the chime to the remote computing device in response to receiving, by the chime, a communication from the remote sensor."***

Child discloses this limitation because it teaches, first, that "[w]hen the security system 542 components detect a certain event (e.g., a security-related event such as a break-in, a fire, etc.), ***the ACs [sensors] may communicate the information to the control panel 520 [chime]***." RING-1007, ¶ [0069] (emphasis added). After receiving a communication from a sensor, the "control panel 520 optionally reviews the information and takes a prescribed action, such as … ***notifying an administrator or user***." *Id*. (emphasis added). To accomplish this, the control panel includes a remote access module in order to "have communications relayed through the control panel 620 … to the remote device." *Id*. ¶ [0092]; *see also id*. ¶ [0070].

Thus, sending a notice from the control panel (chime) to a user at a remote computing device in response to receiving, by the control panel, a communication from the remote sensors, as taught by Child, discloses "sending a second alert from the chime to the remote computing device in response to receiving, by the chime, a communication from the remote sensor." *See* RING-1003, pp. 147-148.

Claim 13

[13.1] ***"The method of claim 1, further comprising coupling communicatively the chime to a remote sensor,"***

Child discloses this limitation because it teaches, as discussed in association with claim element [11.1], that the control panel (chime) communicates with a security system that includes automation components, such as sensors that detect motion, smoke, or fire. RING-1007, ¶¶ [0065], [0066], [0075], Fig. 5; *see* RING-1003, p. 149.

[13.2] ***"wherein the remote sensor comprises at least one of a fire detector, a smoke detector, and a carbon monoxide detector,"***

Child discloses this limitation because it teaches that "the ACs of the security system 542 may include sensors that detect intruders (e.g., unauthorized opening of a door or window, motion sensors, etc.), sensors that detect smoke or fire, or some other security related component." RING-1007, ¶ [0066].

[13.3] ***"the method further comprising sending a second alert from the chime to the remote computing device in response to receiving, by the chime, a communication from the remote sensor."***

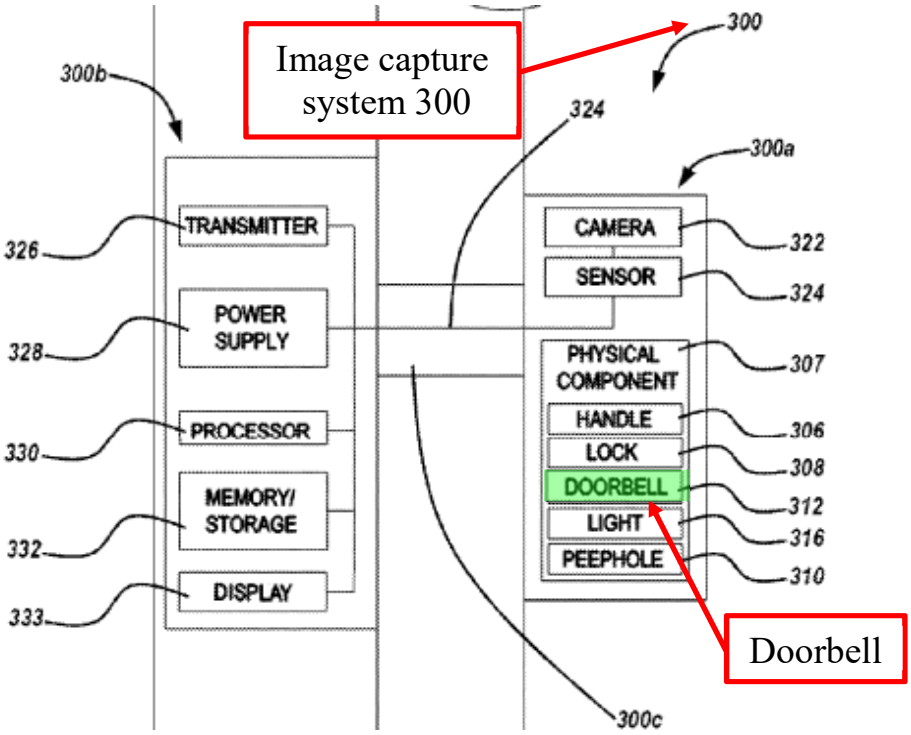
This claim element is substantively identical to claim element [12.1], and

thus for the reasons discussed in association with [12.1], Child discloses this claim element. *See* RING-1003, p. 149.

Claim 19

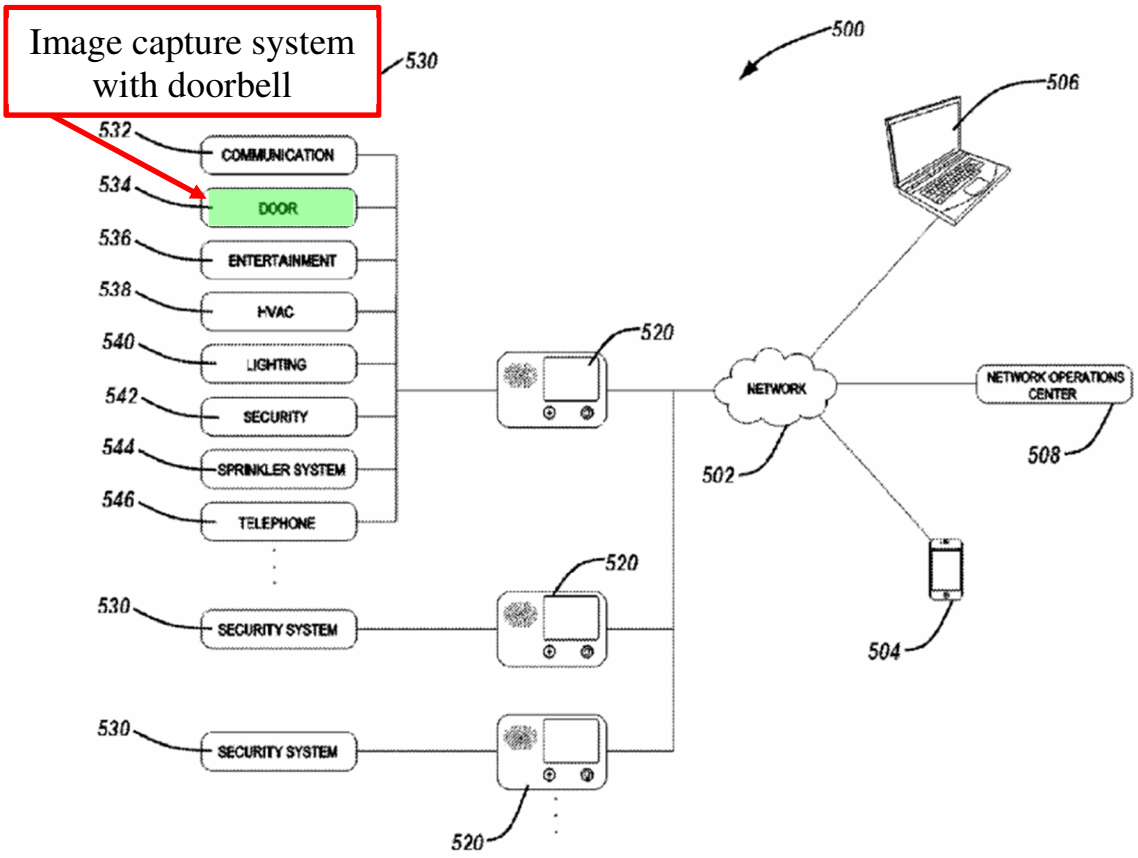
[19.0] ***"A doorbell system comprising:"***

Child describes a system and method "for monitoring an entry to a structure [that] includes detecting that a person is present." RING-1007, ¶ [0006]. Child teaches that its method 700 is implemented with the various system elements of a building monitoring system "found in FIGS. 1-6," including "an image capture system, automation system control panel, and remote computing device." *Id.* ¶ [0094]. As illustrated in Fig. 3 below, the "image capture system 300" includes or is integrated with a "doorbell 312" on the exterior of the structure:



RING-1007, Fig. 3 (annotated); RING-1003, p. 152.

Further, Fig. 5 (annotated below) illustrates the architecture of Child's building monitoring system, including the image capture system with doorbell (labeled as door system 534, RING-1007, ¶ [0075]). *See id.* ¶ [0065] ("FIG. 5 illustrates a distributed system 500 for allowing control or monitoring of certain aspects of a physical location (e.g., a home, office, etc.).").

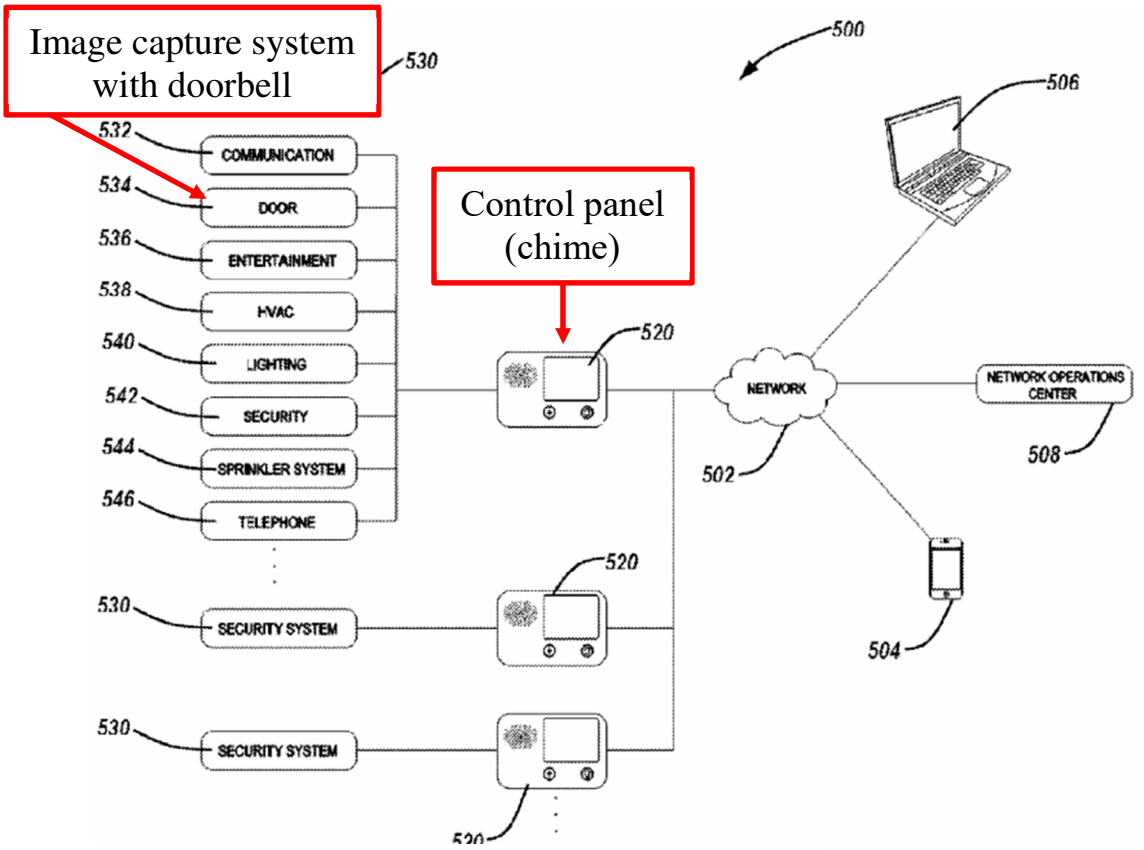


RING-1007, Fig. 5 (annotated); RING-1003, p. 154.

Thus, Child's building monitoring system that includes a doorbell integrated with an image capture system discloses "a doorbell system," as recited in the claim. *See* RING-1003, pp. 150-154.

[19.1] ***"a chime;"***

Child discloses this limitation because it teaches that its building monitoring system includes a control panel that plays a chime when the doorbell is depressed. *Id*. ¶ [0036] ("The control panel 220 may detect when the doorbell 212 is depressed. In response, the control panel 220 may play a chime or other sound….").

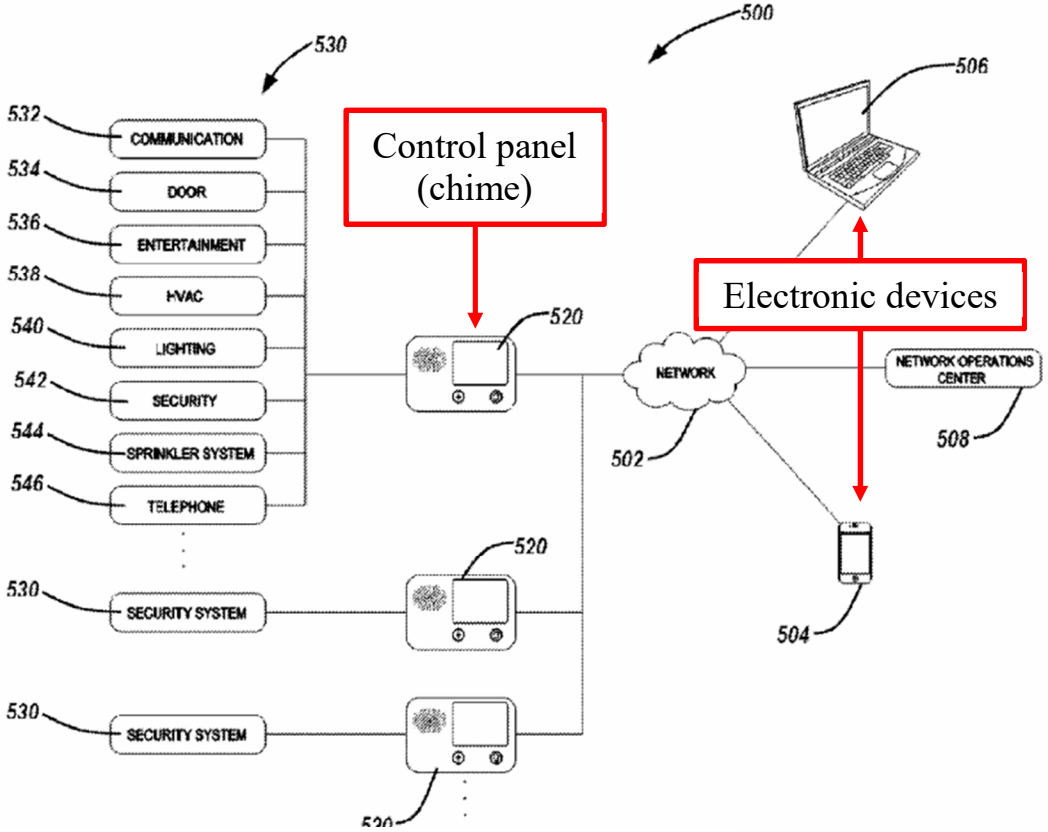


RING-1007, Fig. 5 (annotated); RING-1003, p. 156.

Thus, the control panel that chimes when a visitor presses the doorbell, as taught by Child, discloses "a chime," as recited in the claim. *See* RING-1003, pp. 154-156.

[19.2] ***"a remote computing device communicatively coupled to the chime;"***

Child discloses this limitation because it teaches, as illustrated in Fig. 5 (annotated below), that the control panel (chime) is communicatively coupled to remote electronic devices. RING-1007, ¶ [0076] ("The control panel 520 may also optionally communicate with the network 502 and/or the electronic devices 504, 506."); *see also id.* ¶ [0092] (teaching a remote access module to "enable the control panel 620 to be accessed using remote devices (e.g., devices 504, 506 of FIG. 5)").



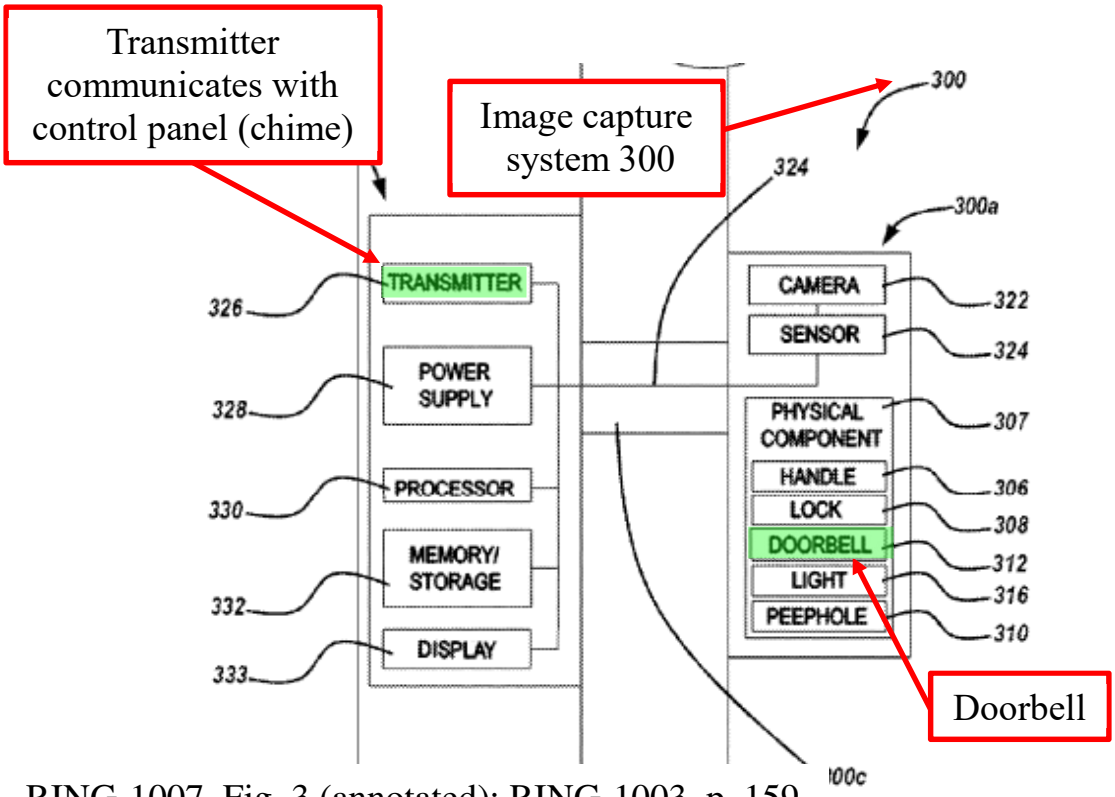
RING-1007, Fig. 5 (annotated); RING-1003, p. 157.

Thus, the remote electronic devices communicatively coupled to the control

panel (chime), as taught by Child, disclose "a remote computing device communicatively coupled to the chime." *See* RING-1003, pp. 156-157.

[19.3] ***"a doorbell communicatively coupled with the remote computing device via the chime;"***

Child discloses this limitation. First, as discussed above in association with [19.0], Child teaches that the "image capture system 300" includes or is integrated with a "doorbell 312," as illustrated in Fig. 3 (annotated below). RING-1007, ¶ [0041]. Second, Child teaches that the image capture system is communicatively coupled to the control panel (chime) via a "wireless transmitter 326." RING-1007, ¶ [0075] ("transmitter 326 may be used to communicate directly with a control panel"), ¶ [0054] ("transmitter 326 is [used] to send image data, sensor-related data, or other data to an automation system control panel").

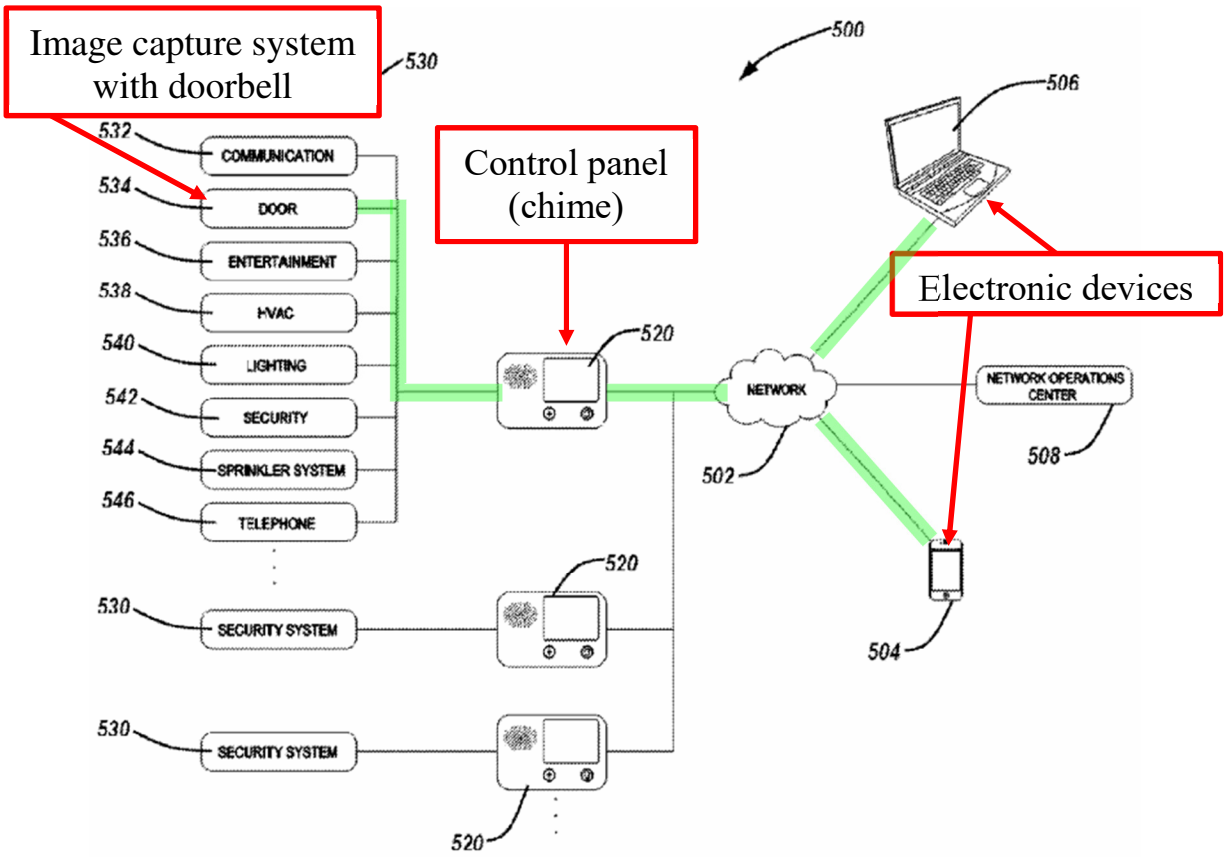


RING-1007, Fig. 3 (annotated); RING-1003, p. 159.

Third, as shown in Fig. 5 (annotated below), the image capture system (labeled as door system 534, RING-1007, ¶ [0075]) is communicatively coupled to the remote electronic devices 504 and 506 via the control panel (chime), such that the control panel can relay images from the image capture system to a user of a remote device:

> When a photograph, video, or other image is obtained by the camera 322, the image data may be sent over the communicative connection 334 to the transmitter 326. … In such an embodiment, the ***transmitter 326 may transmit the image data to a control panel*** for the automation system. … In one embodiment, the ***control panel may send the image data to a remote source (e.g.,***

a mobile device) as discussed in greater detail herein. RING-1007, ¶ [0044] (emphasis added).



RING-1007, Fig. 5 (annotated); RING-1003, p. 160.

Thus, the image capture system with the doorbell communicatively coupled with the remote electronic devices via the control panel (chime), as taught by Child, discloses "a doorbell communicatively coupled with the remote computing device via the chime," as recited in the claim. *See* RING-1003, pp. 157-163.

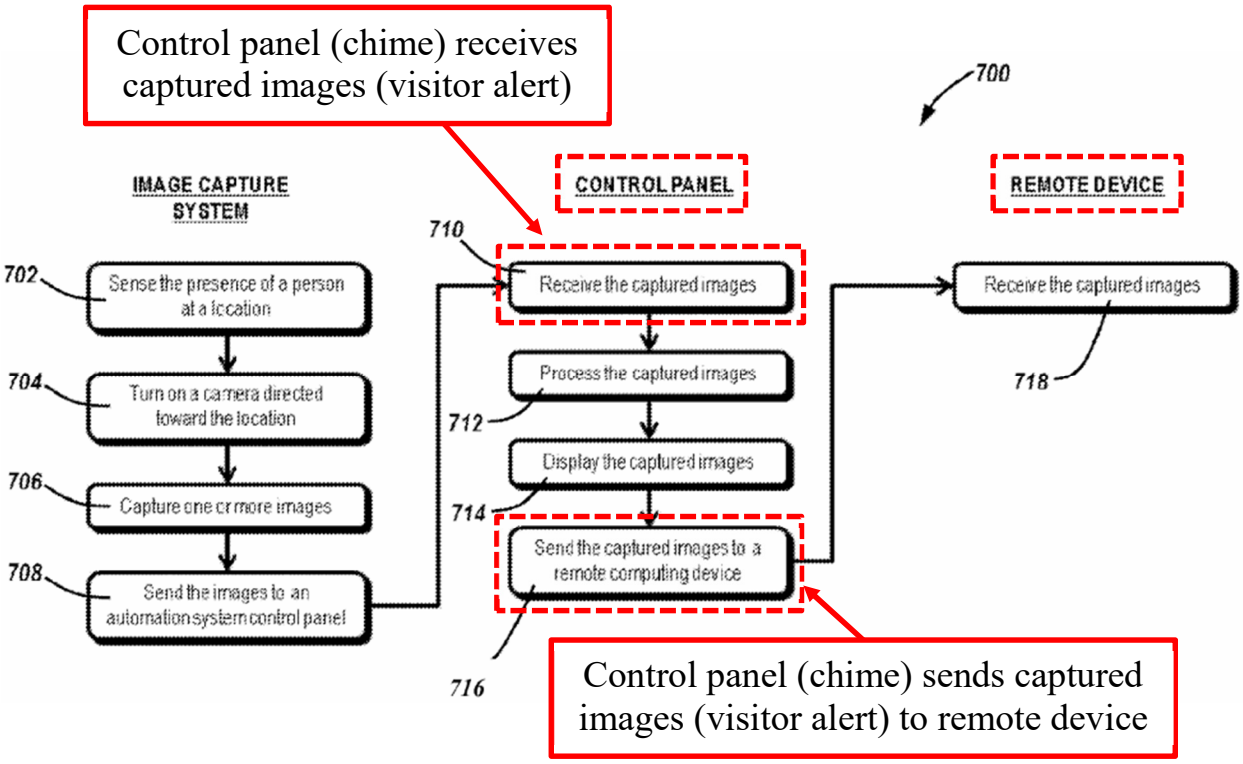
[19.4] ***"a first communication from the doorbell to the chime, wherein the first communication comprises a visitor alert; and"***

This claim element is substantively identical to claim element [1.3], and thus for the reasons discussed in association with [1.3], Child discloses this claim

element. *See* RING-1003, pp. 163-168.

[19.5] ***"a second communication from the chime to the remote computing device, wherein the second communication comprises the visitor alert."***

Child discloses this limitation because it teaches, as illustrated in Fig. 7 (annotated below), that after the control panel (chime) receives the images captured of the visitor, "the captured image(s) may be sent to a remote computing device in block 716." RING-1007, ¶ [0099].



RING-1007, Fig. 7 (annotated); RING-1003, p. 169.

Child further explains that after the control panel receives the image data of the visitor, "the control panel may send the image data to a remote source (e.g., a mobile device)." RING-1007, ¶ [0044].

Thus, the images captured by the image capture system (doorbell) sent from

the control panel (chime) to the remote device, where the images are intended to notify a user of the presence of a person at an entry, as taught by Child, discloses "a second communication from the chime to the remote computing device, wherein the second communication comprises the visitor alert." *See* RING-1003, pp. 168-170.

Claim 20

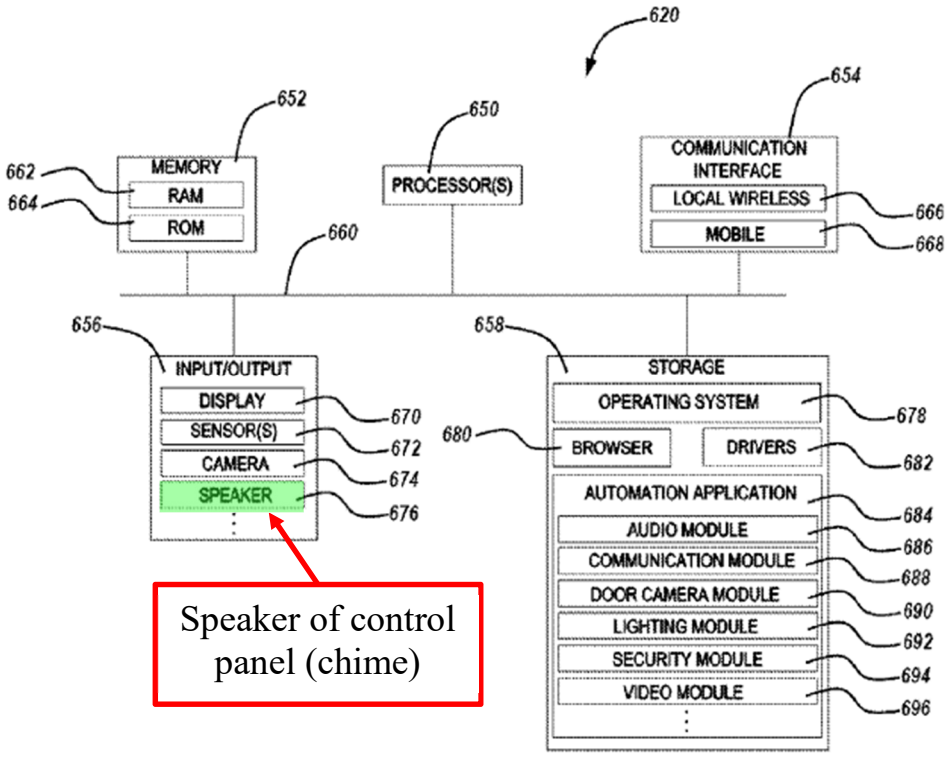
"The doorbell system of claim 19, wherein the visitor alert comprises a video taken by a camera of the doorbell."

As discussed above more fully in association with claim 2, Child teaches that its image capture system includes a doorbell camera and that captures video of a visitor. RING-1007, ¶¶ [0026], [0061], [0094], [0096]. Thus, Child discloses this claim. *See* RING-1003, pp. 171-172.

Claim 23

"The doorbell system of claim 19, further comprising a sound emitted by a speaker of the chime in response to the doorbell detecting an indication of a presence of a visitor."

First, Child teaches that the control panel (chime) includes a "speaker," as illustrated in Fig. 6. RING-1007, ¶ [0084].



RING-1007, Fig. 6 (annotated); RING-1003, p. 174.

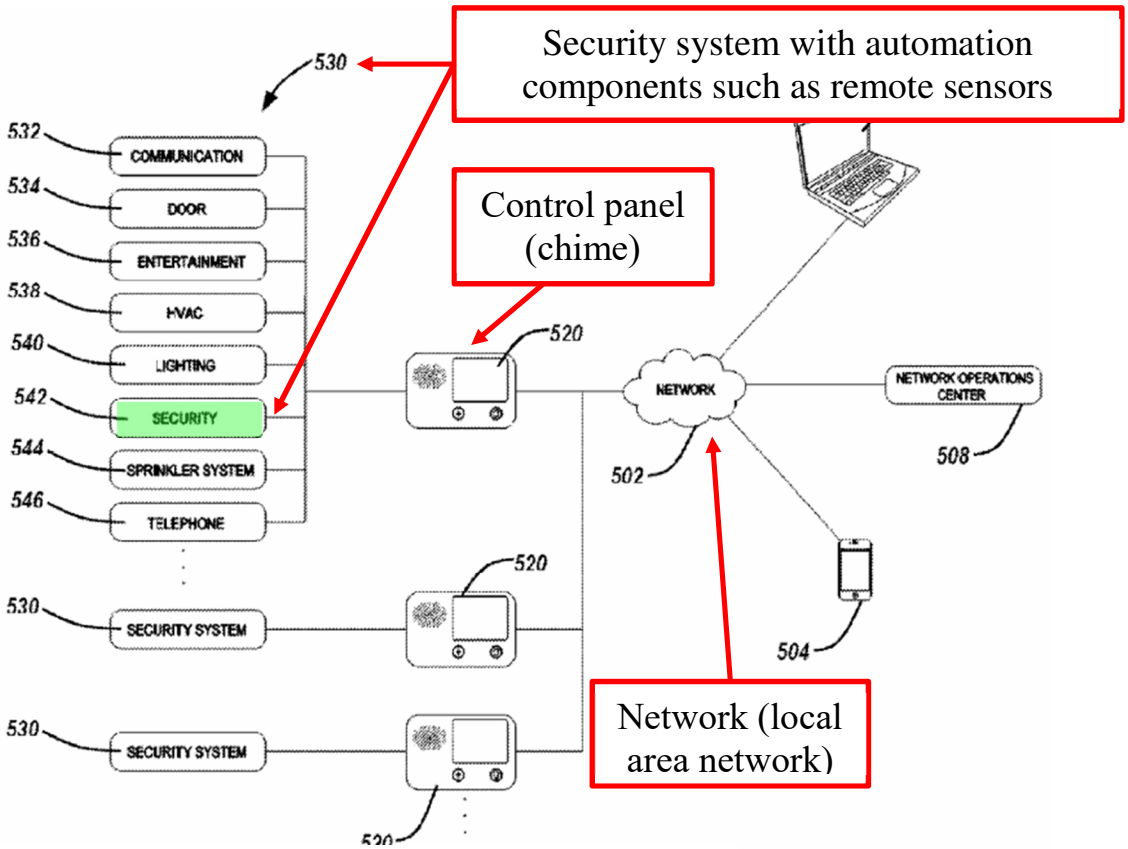
Second, Child teaches that the "control panel 220 may detect when the doorbell 212 is depressed" and, in response, "may play a chime or other sound." RING-1007, ¶ [0036]. Thus, Child discloses this claim. *See* RING-1003, pp. 173-174.

Claim 28

[28.1] ***"The doorbell system of claim 19, further comprising a remote sensor having at least one of a fire detector, a smoke detector, and a carbon monoxide detector, wherein the remote sensor is communicatively coupled to the chime,"***

First, Child teaches that the control panel (chime) "communicates with a security system 530," which includes "a variety of automation components (ACs) for performing any of one or more functions." RING-1007, ¶ [0065]. In particular, the "the ACs of the security system 542 may include … sensors that detect smoke

or fire." RING-1007, ¶ [0066] (emphasis added).



RING-1007, Fig. 5 (annotated); RING-1003, p. 177.

Second, Child teaches that the "the control panel 520 may be equipped to use one or more different communication protocols in communicating with the ACs of the security system 530," including "wireless communication protocols (e.g., WiFi, LightwaveRF, etc.)." RING-1007, ¶ [0075] ("the ACs use a wireless system for communicating with the control panel 520").

Thus, the automation components including sensors that detect smoke or fire, where the automation components are communicatively coupled to the control panel (chime), as taught by Child, disclose "a remote sensor having at least one of

a fire detector, a smoke detector, and a carbon monoxide detector, wherein the remote sensor is communicatively coupled to the chime." *See* RING-1003, pp. 175-177.

[28.2] ***"the doorbell system further comprising a third communication from the remote sensor to the chime."***

As discussed above, Child teaches a first communication between the doorbell and control panel (chime), and a second communication between the control panel and the remote devices. Child also teaches a third communication between a sensor and the control panel in the form of information about a security event: "When the security system 542 components detect a certain event (e.g., a security-related event such as a break-in, a fire, etc.), the ***ACs [sensors] may communicate the information to the control panel 520 [chime]***." RING-1007, ¶ [0069] (emphasis added); *see* RING-1003, pp. 177-178.

VIII. CONCLUSION

For the reasons set forth above, Petitioner has established a reasonable likelihood that claims 1-4, 10-13, 19-25, and 28 of the '987 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 13,651. 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. 9,160,987
RING-1002	Prosecution History of U.S. Patent No. 9,160,987
RING-1003	Declaration of Vijay Madisetti, Ph.D., Under 37 C.F.R. § 1.68
RING-1004	Curriculum Vitae of Vijay Madisetti, Ph.D.
RING-1005	U.S. Patent Application Publication No. 2015/0163463 to Hwang *et al.* ("Hwang")
RING-1006	U.S. Patent Application Publication No. 2015/0109111 to Lee *et al.* ("Lee")
RING-1007	U.S. Patent Application Publication No. 2014/0267716 to Child *et al.* ("Child")
RING-1008	Wayback Machine Archive Page, "wall wart Definition from PC Magazine Encyclopedia," archived May 10, 2013, https://web.archive.org/web/20130510122555/https://www.pcmag.com/encyclopedia/term/60246/wall-wart
RING-1009	Wayback Machine Archive Page, "Honeywell RCWL105A1003/N Plug-in Wireless Door Chime and Push Button – Wireless Doorbell – Amazon.com," archived Nov. 7, 2014, https://web.archive.org/web/20141107160251/http://www.amazon.com/Honeywell-RCWL105A1003-Plug-Wireless-Button/dp/B001G0MATM ("Honeywell")
RING-1010	Reserved
RING-1011	U.S. Patent Application Publication No. 2010/0225455 to Claiborne *et al.* ("Claiborne")
RING-1012	U.S. Patent Application Publication No. 2007/0008081 to Tylicki *et al.* ("Tylicki")
RING-1013	Wayback Machine Archive Page, "SadoTech Model C Wireless Doorbell," archived Nov. 28, 2014,

	https://web.archive.org/web/20141128200807/https://www.amazon.com/SadoTech-Wireless-Doorbell-Operating-Batteries/dp/B00FR4YQYK ("SadoTech")
RING-1014	Nikolay Zheludev, Commentary, *The Life and Times of the LED — A 100-Year History*, 1 Nature Photonics 189 (2007)
RING-1015	F.K. Yam & Z. Hassan, *Innovative Advances in LED Technology*, 36 Microelectronics J. 129 (2005)
RING-1016	U.S. Patent Application Publication No. 2014/0267740 to Almomani *et al.* ("Almomani")
RING-1017	U.S. Patent No. 6,930,599
RING-1018	U.S. Patent No. 6,928,461
RING-1019	U.S. Patent No. 5,602,580
RING-1020	U.S. Patent Application Publication No. 2014/0266669
RING-1021	U.S. Patent No. 9,978,260
RING-1022	Wayback Machine Archive Page, "Local-Area Network (LAN) - A Webopedia Small Business IT Definition," archived August 3, 2013, https://web.archive.org/web/20130803110533/https://www.webopedia.com/TERM/L/local_area_network_LAN.html
RING-1023	Affidavit of Christopher Butler and Archived Webpages corresponding to RING-1008, RING-1009, RING-1013

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. 9,160,987
Certificate of Word Count
Petitioner's Exhibit List
Exhibits RING-1001 through RING-1009 and RING-1011 through RING-1023

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