

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

First Alert, Inc. and BRK Brands Inc.,
Petitioners

v.

Walter Kidde Portable Equipment Inc.,
Patent Owner

CASE: IPR2023-00896
U.S. PATENT NO. 7,123,158

**DECLARATION OF JOHN D. PRATT, Ph.D., P.E. IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW**

Mail Stop *Patent Board*
Patent Trial and Appeal Board
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

I, John Pratt, Ph.D., P.E., declare and state as follows:

I. GENERAL BACKGROUND

1. I have been retained as an expert witness by the law firm of K&L Gates, LLP, counsel for Petitioners, First Alert, Inc. and BRK Brands Inc., to provide expert opinions in the above-captioned *inter partes* review. I am being compensated for my time in connection with this action at my standard consulting rate, which is \$450 per hour. My compensation does not depend in any way on my opinions or the outcome of this litigation.

2. I understand that Petitioners are filing a petition for *inter partes* review involving U.S. Patent No. 7,123,158 (the “’158 Patent”) (Exhibit 1001).

3. It is my understanding that the earliest possible priority date of the ’158 Patent is August 29, 2003, the filing of the provisional parent application for the ’158 Patent, Provisional Application No. 60/499, 245. (Exhibit 1001).

4. I further understand that the ’158 Patent is currently assigned to Patent Owner Walter Kidde Portable Equipment Inc. (“Kidde” or “Patent Owner”), which is a competitor of Petitioners in at least the smoke alarm industry.

5. I have been asked to opine as to the obviousness of Claims 1-7 and 12-15 of the ’158 Patent (the “Challenged Claims”).

6. As I explain throughout this declaration, it is my opinion that a POSA would have made the combinations of references identified above in view of what I understand is the governing law regarding obviousness and combinability of prior art references.

7. As I explain throughout this declaration, it is my opinion that a POSA would have found the Challenged Claims to be obvious based on the grounds I outlined above.

8. Except as stated otherwise, the contents of this declaration are based on my personal knowledge and on my professional experience, and if called as a witness I am prepared to testify and would testify as to the contents of this declaration.

II. QUALIFICATIONS

9. I have a Bachelor's degree and a Master's degree in Mechanical Engineering from California State University, Fullerton, and a Ph.D. in Civil Engineering with a field of study in Structural Mechanics from the University of California, Irvine. My doctoral dissertation focused almost exclusively on the behavior of fasteners in flush-fastened joints. A copy of my CV is submitted herewith as Exhibit 1003.

10. During my time in industry and in my subsequent consulting practice I have gained extensive experience with various manufacturing techniques, including metal forming and machining as well as molding and 3D printing of plastic parts. I

have worked on the development of numerous mechanical structures, such as permanent and temporary fasteners, and their related tooling and equipment, for the aerospace, industrial and sporting goods markets from August 1969 through the present. I am the named inventor on 48 United States patents and many more counterpart foreign patents. Commercial devices made in accordance with my patents have been very successful, estimated to result in well over \$400 million in sales.

11. I served as the senior engineering executive for three medium-sized aerospace hardware companies from early 1979 through mid-2005. As an example, I served as Vice- President for Research & Development at Cherry Textron from about 1991-2000. While in that position, I had primary responsibility for research, new product development, existing product engineering, product testing, and qualification to Industry and Government/Military specifications and agencies. The products for which I was responsible included quick-change axles for in-line skates, threaded fasteners used to attach spikes to track and field shoes, machine screws and bolts for use in military aircraft, and a wide variety of other aerospace fasteners. I was also responsible for intellectual property matters related to the company's research and development efforts. Further, I was responsible analyzing competitors' patents to avoid inadvertent infringement and to determine the novelty of new engineering concepts.

12. During my time in the fastener industry I served as an active member of several fastener standards organizations, including the Aero-Mechanical Fasteners Requirements Group AMFRG (U. S. Air Force MIL-STD-1515), National Aerospace Standards Committee NASC, International Standards Organization (as International Chairman of ISO/TC20/SC4/WG8 for rivets, blind fasteners, threaded and swage pin-collar fasteners), Fastener Testing and Development Group FTDG (U.S. Navy, MIL-STD-1312), Fastener Engineering for Optimum Performance Standards FEOPS (U.S. Navy), MIL-HDBK-5 (DoD), MMPDS (DoD/FAA), and Industrial Fasteners Institute IFI (as Chairman of its Aerospace Fastener Technical Committee). While with the IFI I helped lead the development of TSO-C148 at the Federal Aviation Administration (“FAA”) for fasteners used in commercial transport aircraft.

13. Between 1972 and 1979 I worked on the design and development of, among other things, air-driven fastener installation tools. These included pneumatic tools such as the Olympic RV51G and air-over-hydraulic tools, such as the Olympic RV60G. These tools incorporate one or more shifting or rotatable valves used to direct the flow of fluids (air and/or hydraulic fluid) through channels in the tool’s housings and between chambers.

14. Between 1979 and mid-2000 I was focused on design and product engineering of aerospace fasteners and clamping mechanisms, as well as the air-driven tools needed to install them.

15. Between mid-2000 and late 2017, I worked on the development of mechanical and electro-mechanical latching and locking devices for aircraft, as well as development of fluid-driven tools for installation of aircraft assembly clamps. For example, in 2001, I co-invented and led the development of intrusion-resistant mechanical and electronic/electrical latches for flight deck doors and decompression panels. The mechanical versions have now been installed in half the world's fleet of commercial transport aircraft after the events of September 11, 2001.

16. During this period I was also intimately involved in the design and development of permanent and temporary fasteners for new aircraft. I have also served as an expert in recent patent litigation concerning captive panel fasteners, reversible electric strike mechanisms, magnetic door locks, reversible mortise locks, pressure responsive electrical switches, bulk scrap metal loading apparatus, shear wall reinforcement panels, keyboard support mechanisms, hurricane abatement systems, outdoor lighting fixtures, mint and toothpick dispensers, storm drain covers, box spring stapling machines, hook and loop fasteners, corded and cordless window coverings, folding lawn chairs, electrically-locked gun safes, television

consoles, threaded dental implants, combat helmets, and low profile aircraft engine nacelle latches, among other devices.

17. I am presently the Principal of Argos Forensic Engineering, a company I founded in June 2005 to provide product development support and litigation consulting. My focus since late 2017 has been litigation consulting on a part-time basis.

III. MATERIALS CONSIDERED

18. In preparing this declaration, I have considered at least the following materials:

Exhibit No.	Description
1001	U.S. Patent No. 7,123,158 (“the ’158 patent”)
1003	CV of John D. Pratt, Ph.D.
1004	File History of the ’158 Patent
1005	U.S. Patent No. 5,578,996 to Watson et al. (“Watson”)
1006	U.S. Patent No. 6,160,487 to DeLuca (“DeLuca ’487”)
1007	U.S. Patent No. 6,433,700 to Malewski (“Malewski”)
1008	Report of the Meeting of the Standards Technical Panel of UL for Smoke Detectors (“STP”), March 7, 2003 (“STP2003”)
1009	European Patent Application No. 1,045,354 to Byrne et al. (“Byrne ’354”)
1010	U.K. Patent No. 2,312,311 to Byrne (“Byrne ’311”)

Exhibit No.	Description
1011	<i>Reserved</i>
1014	What is a Standards Technical Panel (UL LLC ©2015)
1015	STP Process Flowchart
1016	UL 217 Single and Multiple Station Smoke Alarms (5th Ed., dated Oct. 12, 2001)
1018	Manual of Patent Examination Procedure § 2181
1019	Case No. 6:22-cv-00566-ADA-DTG, Claim Construction Order (Dkt. 65)
1021	Case No. 6:22-cv-00566-ADA-DTG, Scheduling Order (Dkt. 25)
1028	NFPA Journal, Volume 092 Issue 02 (March/April 1998)
1029	“Smoke alarms, fire deaths, and randomized controlled trials” (Guest Editorial), Roberts & Diguseppi, <i>Injury Prevention</i> 1999, 5:244
1030	1999 NFPA 72
1031	2000 International Fire Code Chapter 9
1032	UL 217 Single and Multiple Station Smoke Alarms (5th Ed., dated Feb. 21, 1997)
1033	U.S. Patent No. 4,315,594 (“Niederost”)
1034	WO 97/05586 (“Bayley”)
1036	U.S. Patent No. 4,870,395 to Belano (“Belano”)
1037	U.S. Patent No. 5,191,855 to Conforti (“Conforti”)
1038	NFPA Journal, Volume 093 Issue 01 (January/February 1999)

Exhibit No.	Description
1039	NFPA Journal, Volume 093 Issue 03 (May/June 1999)
1040	U.S. Patent No. 5,444,434
1041	U.S. Patent No. 5,793,295
1042	Low Capacity Lever Activation Switches – Goldhamer Inc., 1939

19. I have also considered any other materials discussed herein but not specifically identified above.

IV. RELEVANT LEGAL STANDARDS

20. I am not an attorney. For purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my analysis and opinions, as set forth below.

A. Claim Construction

21. I understand that claim terms are generally given their ordinary and customary meaning, which is the meaning that the term would have to a POSA (as I define that concept below) at the time of the invention, i.e., as of the earliest priority date of the patent application. I further understand that the POSA is deemed to read the claim term not only in the context of the particular claim in which a claim term appears, but in the context of the entire patent, including the specification and file history.

22. I am informed by counsel that the patent specification has been described as the best guide to the meaning of a claim term, and is thus relevant to interpretation of claim terms. And I understand for terms that do not have a customary meaning within the art, the specification usually supplies the best context of understanding the meaning of those terms. I also understand that claim terms should be understood in the context of the claim as a whole.

23. I understand that the prosecution history can further inform the meaning of the claim language by demonstrating how the inventors understood the invention and whether the inventors limited the invention in the course of prosecution, making the claim scope narrower than it otherwise would be. Extrinsic evidence may also be consulted in construing the claim terms, such as my experience and expert testimony.

24. I have not been asked to provide any specific definitions for any of the terms in the claims I have analyzed. Instead, I have been informed that a Court in Texas has already construed the claim terms as a matter of law; I have applied those constructions throughout my analysis. In particular, I understand that the Court has construed all the claim terms to have their plain and ordinary meanings as would have been understood by a POSA.

B. Obviousness

25. It is my understanding that a patent claim is invalid as obvious if all the claimed elements were known in the prior art and a POSA would have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to a POSA.

26. I understand that obviousness is different than the concept of “anticipation,” where the inquiry is whether the prior art explicitly or inherently discloses each claim element. I understand that each ground of review proposed here is based on obviousness, not anticipation.

27. Counsel also instructed me that an invalidity inquiry under the obviousness framework may involve assessing the motivation of a POSA to modify a prior art reference.

28. I understand that relevant considerations for a motivation to modify a prior art reference include at least the following:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of known techniques to improve similar devices, methods, or products in the same way;

- (D) Applying a known technique to a known device, method, or product ready for improvement to yield predictable results;
- (E) “Obvious to try,” which is choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to a POSA; and
- (G) Some teaching, suggestion, or motivation in the prior art that would have led a POSA to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention;
- (H) Universal motivations known in a particular field to improve technology even without a prior art reference suggesting such combination;
- (I) Where similar devices have been improved using a particular technique, and a person of skill in the art would recognize that such technique would improve similar devices in the same way.

29. I understand that I am to perform the task referenced in the preceding discussion without using “hindsight” reasoning. Instead, I was asked to consider the motivation to modify a particular prior art reference through the eyes of a POSA as of around September 2003.

30. I have also been informed that certain factors called “secondary considerations” can impact an obviousness analysis. These factors can include (1) the invention’s commercial success, (2) long felt but unresolved needs, (3) the failure of others, (4) skepticism by experts, (5) praise by others, (6) teaching away by others, (7) recognition of a problem, (8) copying of the invention by competitors, and (9) other relevant factors. I am not aware of any such “secondary considerations.”

Instead, the prior art I have cited herein, which seems to suggest that the industry was naturally moving in the direction of the concepts claimed in the '158 Patent, seems to indicate that the secondary considerations listed above did *not* apply. I reserve my right to address any secondary considerations evidence Kidde may present.

C. Person of Ordinary Skill in the Art

31. I have been informed that a person of ordinary skill in the art, which I have already referred to above by the acronym “POSA”), refers to a hypothetical person who is presumed to have known the relevant art at the time of the invention. I understand that many factors may be considered in determining the level of ordinary skill in the art. Those factors include: (1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field. I understand that a POSA is also a person of ordinary creativity, not an automaton.

32. I was asked to provide my opinion about the experience and background of a POSA for the Challenged Claims as of August 29, 2003.

33. It is my opinion that a person of ordinary skill in the art for the Challenged Claims would be someone who has an above average mechanical aptitude and formal training relating to mechanical engineering. Such person would

generally have at least a bachelor's of science degree in mechanical engineering or equivalent, which includes formal training at the baccalaureate level in a variety of disciplines, including knowledge of plastics design and fabrication, and electronic components, and at least two years' experience working with electronic circuits and designing electro-mechanical devices. In the event a person does not have the aforementioned academic experience, that person may nevertheless be a POSA if they have at least some post-high school education or vocational training in the fields described above, and have at least five or more additional years of experience working with electronic circuits and designing electro-mechanical devices.

34. Based on this definition, I believe I am qualified to provide opinions about how a POSA in 2003 or 2001 would have understood and interpreted the '158 Patent.

V. THE '158 PATENT

A. Overview of the '158 Patent

35. The '158 Patent describes the use of conventional components and mechanical features aimed at enabling the safe operation of a smoke detector¹ by ordinary residential-type consumers. (*See* Ex. 1001, 1:20-2:52).

¹ For purposes of this declaration, I will use the term "smoke detectors" to refer to various life-safety alarms.

36. Generally speaking, the claimed smoke detector can be attached to a mounting bracket, it can be activated,² and deactivated by the user. The '158 Patent describes this functionality as being well-known, which I agree with based on my review of, for example, Malewski, Watson, and STP2003. After deactivation, the claimed smoke detector cannot be reactivated and cannot be reattached onto the mounting bracket. (*See e.g., Id.*, Cl. 1, 12).

37. While the title of the '158 Patent refers to life safety alarms, and the dependent claims refer to a “life safety alarm” (*Id.*, Cl. 2 , 13), “a system to detect a life threatening condition”) (*Id.*, Cl. 3, 14), and a “smoke detection system” (*Id.*, Cl. 4, 15), the '158 Patent does not identify any inventive technology as it relates to the underlying detection of “life threatening conditions” or smoke in any way. Instead, as the '158 Patent makes clear, it is directed at solving problems associated with user installation of life safety alarms, such as smoke detectors. (*See Id.*, 1:20-2:52).

38. The '158 Patent acknowledges that bracket-mounted, battery operated smoke detectors, including sealed-battery smoke detectors, that could be activated before installation were well known in the prior art. (*See Id.* 1:20-2:52.) The '158 Patent makes no representations about the availability or unavailability of installation-activated smoke detectors in the art as of the date of the invention. As

² With activation taking place automatically upon attachment to the mounting bracket for independent claim 1 of the '158 Patent.

discussed below, smoke detectors, including battery operated smoke detectors that could be automatically activated as part of installation were well known in the art as of the date of the invention disclosed in the '158 Patent. The '158 Patent further confirms that smoke detectors with manual activation/deactivation mechanisms were well known in the art.

39. The '158 Patent does not represent that battery operated smoke detectors with reattachment prevention mechanisms were not known in the art, and as explained below, they were.

40. Much of the functionality claimed in the Challenged Claims (in particular in the independent claims) is admitted to be well-known by the '158 Patent itself. As a starting point, the *potential* differences between the claims and the prior art are miniscule, and reflect that the industry was already moving in a direction where further mechanical safety features to prevent human oversight/carelessness were part of the ordinary discourse.

B. The Challenged Claims

41. There are two relevant independent claims of the '158 Patent: claims 1 and 12. There are six relevant claims depending from claim 1 and three relevant claims depending from Claim 12.

42. Claims 1-7 of the '158 Patent recite the following:

1. An electronic device, comprising:
a first portion;
a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;
and cooperating features on the first portion and the second portion that automatically activate the second portion upon initial attachment of the second portion to the first portion;
wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second portion upon initial attachment of the second portion to the first portion;
wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and
wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.
2. The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.
3. The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.
4. The electronic device of claim 3, wherein the detection system comprises a smoke detection system.
5. The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

6. The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.
7. The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

43. Claims 12-15 of the '158 Patent recite the following:

12. An electronic device, comprising:
a first portion;
a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;
an activation mechanism to activate the second portion;
a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated;
wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and
a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated
13. The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.
14. The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition.

15. The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

C. The Texas Court's Claim Construction

44. I understand that the district court in the litigation pending in the Western District of Texas issued a claim construction order regarding several terms relating to the Challenged Claims. The constructions from that order (Ex. 1019) are reproduced below:

Claim term	Claims containing term	Construction
“automatically”	'158 Patent cl. 1	plain and ordinary meaning (agreed by the parties)
“manually”	'158 Patent cl. 1	plain and ordinary meaning (agreed by the parties)
“activate” / “activation”	'158 Patent cl. 1, 12	plain and ordinary meaning
“deactivate” / “deactivation”	'158 Patent cl. 1, 12	plain and ordinary meaning
“reactivated”	'158 Patent cl. 1	plain and ordinary meaning
“the second portion cannot be reactivated”	'158 Patent cl. 1	plain and ordinary meaning
“permanent deactivation” / “permanently deactivated”	'158 Patent cl. 12	plain and ordinary meaning
“activation mechanism”	'158 Patent cl. 12	plain and ordinary meaning as understood by a Person of Ordinary Skill in the Art in light of the specification.
“permanent deactivation mechanism”	'158 Patent cl. 12	plain and ordinary meaning as understood by a Person of Ordinary

Claim term	Claims containing term	Construction
		Skill in the Art in light of the specification.
“reattachment prevention mechanism”	’158 Patent cl. 12	plain and ordinary meaning as understood by a Person of Ordinary Skill in the Art in light of the specification.
“activate/deactivate system”	’158 Patent cl. 1	plain and ordinary meaning as understood by a Person of Ordinary Skill in the Art in light of the specification.
“cannot be reattached”	’158 Patent cl. 1	Plain and ordinary meaning within the mechanical arts
“prevent reattachment”	’158 Patent cl. 12	Plain and ordinary meaning within the mechanical arts
“configured for one-way movement”	’158 Patent cl. 5	Plain and Ordinary Meaning

45. I have applied these claim constructions in forming my opinions.

VI. OVERVIEW OF THE PRIOR ART

A. DeLuca ’487 (Ex. 1006)

46. DeLuca ’487, issued on December 12, 2000, describes a “lockout mechanism” for a battery compartment used in smoke detectors with replaceable batteries. (Ex. 1006, 2:9-18). The spring-loaded lockout mechanism contains an actuator 56 and tab 64 that move to an obstructing position when the smoke detector does not have batteries in order to prevent attachment of the smoke detector to the mounting bracket. (*Id.*, 4:35-5:10).

B. Malewski (Ex. 1007)

47. Malewski, issued August 13, 2002, describes a battery-powered smoke detector (referred to as a “hazard detector” and not limited to smoke) that has an “on/off switch mechanism” that “engaged or disengaged whenever the device/detector is installed or uninstalled, respectively.” (Ex. 1007, Abstract, 1:6-10). The smoke detector described in Malewski is mountable to a bracket. (*Id.*, 3:32-35).

48. Malewski discusses Watson in great detail. For example, Malewski refers to rotatable switch features in Watson which are used to activate and deactivate the detector and to “drain” the battery at the end of the detector’s useful life. (*Id.*, 1:35-58, 2:35-38).

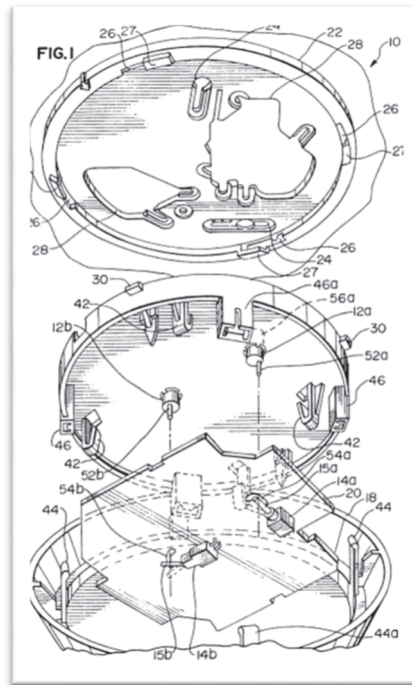
49. Malewski discloses embodiments which utilize different activation and deactivation features. One embodiment includes components to cause activation upon installation onto the mounting bracket, and deactivation upon removal. (*Id.*, 3:24-50). Another embodiment utilizes an attached key that is manually pushed in for activation and pulled out for deactivation. (*See Id.*, 3:54-61, 7:29-8:44). The pulling out of the key prevents attachment of the smoke detector to the bracket. (*Id.*, 8:2-9).

50. Malewski incorporates Watson by reference. (Ex. 1007, 2:35-39). This incorporation is consistent with my general obviousness opinions in which the

industry in 2003 was building only incrementally on existing, and well known, smoke detector techniques and designs.

51. Watson describes a sealed battery-powered smoke detector (referred to as a “condition detector” and not limited to smoke that has an activation mechanism that can be operated one time. (Ex. 1005, 1:35-58).

52. The smoke detector includes a mounting flange 22 (or bracket) and a detector 10. (*Id.*, FIG.1; 2:44-48). Detector 10 has a base which contains the electronics 20 of the detector, and a cover 18, and is configured to be attached to the mounting flange 22. (*Id.*) Watson further describes a variety of activation and deactivation mechanisms and components, including single-pole, single throw (SPST) switches, reed-relay mechanisms, single-use slide switches, and toggle-type switches. (*Id.*, 2:35-39, 4:56-5:10, 5:19-33).



(Ex. 1005, Fig. 1).

C. STP2003 (Ex. 1008)

53. I understand that a Standards Technical Panel (“STP”) of Underwriters Laboratories (“UL”) is responsible for defining UL regulations pertaining to smoke alarms, and consists of a variety of interests, including producers/manufacturers, consumers, governments, and more. (Ex. 1014, 1).

54. STP2003 is a document dated April 4, 2003. On its face, STP2003 describes a meeting of the Standards Technical Panel for Smoke Detectors and Alarms, which was held on March 7, 2003. (Ex. 1008, 1). The document says that it was disseminated to members of the STP, subscribers to UL’s Standards Service for

UL217, UL268, and UL268A, and “other interested parties.” (Ex. 1008, 1; *see also* Ex. 1015, 1).

55. STP2003 describes proposed changes to the then-existing UL standard, including a requirement for non-replaceable battery-type smoke alarms to include an indication that the battery has been deactivated, and that the deactivation means of such alarms “shall require the use of a tool, or equivalent, and shall render the unit incapable of being reinstalled.” (Ex. 1008, 5-6).

56. STP2003 also, therefore, describes the collective thinking of the industry prior to Patent Owner filing the application which led to the ’158 patent. I understand that Kidde (and, indeed, inventor Joseph DeLuca) were attendees at the STP meeting in March, 2003.

57. This is consistent with the fact that in the ’158 Patent, the description of the admitted prior art mirrors what the STP2003 document describes as being required by past versions of the standard. (Ex. 1008, 6).

58. The provisional application which led to the ’158 Patent was filed nearly six months after the proposed changes to the UL standard were discussed at the March 2003 meeting.

D. Byrne ’354 (Ex. 1009)

59. Byrne ’354, published October 18, 2000, describes an alarm device 1, such as a smoke or heat alarm device, with an alarm body 3 that slides onto a base

2. (Ex. 1009, Cover, ¶¶[0001], [0022]). In one embodiment, as the base 2 is rotated onto the alarm body 3, both a mechanical and electrical connection is made to both hold the alarm body 3 to the base 2 and activate the alarm body 3. (*Id.*, Cover, ¶¶[0005], [0031]).

60. Byrne '354 further describes a battery compartment in the alarm body which “comprises safety means to prevent connection of the alarm body to the base without a battery present.” (Ex. 1009, ¶¶[00018], [0029]). Byrne '354 also describes alarms which do not require battery replacement, and therefore do not require a battery compartment. (*Id.*, ¶[0028]).

E. Byrne '311 (Ex. 1010)

61. Byrne '311, published in October 1997, describes a “control circuit with a push-button (53) which causes a sloping surface (54) to push a sliding switch member (71) to the left.” (*Id.*, Cover, 1:19-25). Byrne '311 also describes a method for deactivating the alarm, by “disconnecting the power supply when it has reached the end of its useful life.” (*Id.*, Cover, 1:25-29). According to Byrne '311, activation occurs via “a one-way activation or ON switch 30” and deactivation occurs via “a one-way deactivation or OFF switch 29.” (*Id.*, 2:10-28, 4:20-22, 5:27-31).

62. To activate the alarm, the user must open the cover 3 and press the button 53, which slides along a tapered ramp 54. (*Id.*, 5:20-6:7). The sliding switch “may be pushed only once and may not be pushed back to the OFF position.” (*Id.*,

5:27-31) At the end of the life of the alarm, the user activates the “OFF switch 29,” in which the user cuts an exposed wire. (*Id.*, 4:31-5:19). This “is to the user clearly a destructive operation and is not reversible.” (*Id.*, 5:15-19).

VII. OVERVIEW OF THE STATE OF THE ART

63. As discussed below, smoke detectors of all sorts utilize a variety of similar components beyond the underlying “smoke detection” and “smoke alarm” features that facilitate their placement and their operation. There are some universal interests associated with smoke detectors, such as ensuring that only operational smoke detectors are installed, and ensuring that smoke detectors that have been made non-operational cannot be installed such that they appear to be operational.

64. By the late 1990s and certainly before the alleged invention of technology disclosed in Provisional Application No. 2005/008311 A1 (which became the ’158 Patent), the danger of household fires causing significant damage or injury because of the prevalence of non-operational smoke detectors installed in homes was an issue of national importance. (Ex. 1028, 102-104, 107-108). Despite efforts to ensure that homes had smoke detectors, such as through giving away free smoke detectors or legislation requiring smoke detectors, there remained a danger of installed smoke detectors that were made non-operational (i.e. deactivated) by the users. (*Id.*; Ex. 1029, p. 1). A significant factor was the disconnecting or removing of batteries from these existing, installed smoke detectors. (Ex. 1028, 102-104, 107-

108; Ex. 1029, 1). Users reported removing batteries because of repeated “nuisance” alarms, i.e. alarms not associated with real danger (such as cooking smoke), and because of low-battery chirping. (Ex. 1028, 102-104, 107-108; Ex. 1029, 1). Accordingly, at the time of the alleged invention, the life-safety industry was well aware that there was a need to ensure that smoke detectors, which were certified and thereafter marketed as *safety* devices, did the job they promised. Of course, when the products are made for consumers, the variable of misuse is always a concern.

65. The National Fire Protection Association (“NFPA”) noted that from about 1980 through 1995 “there was a slight downward trend in the estimated impact of smoke detectors, which may be attributable to increased problems in keeping them operational.” (Ex. 1028, 102). A 1995 study conducted by the Consumer Product Safety Commission (“CPSC”) found that the 20 percent of residential smoke alarms did not make noise during fires, and 60 percent of those non-working alarms were disconnected. (Ex. 1038, 51). In a 1999 letter to the NFPA, the marketing manager for Ultralife Batteries, Inc., noted that the CPSC survey showed that 5 percent of all alarms had dead batteries, and 15 percent of all alarms (most of which were battery-operated) had disconnected power sources, and of those with missing or disconnected batteries, more than 45 percent were the result of consumer failure to replace the battery, and 32 percent were the result of removal to stop nuisance alarms. (Ex. 1039, 24).

66. The life safety industry, as well as state legislatures, commenced identifying a variety of ways to ensure that people had operational smoke detectors installed in their homes such as proposals to require hardwired smoke detectors in housing or requiring smoke detectors to utilize 10-year batteries so that the smoke detectors could simply be disposed of after 10 years. (Ex. 1038, 51-52). The Oregon Fire Marshall, for example, emphasized that alarms should be as “low-maintenance and tamper-proof as possible.” (*Id.*, 52).

67. Industry representatives acknowledged that even simply requiring a 10-year smoke detector was not enough, and that consumer misuse and nuisance alarms that are not indicative of a real emergency remained a concern. (*See Id.*, 53). (National Electrical Manufacturers Association representative Ric Erdeheim noting, “The bottom line with nuisance alarms is that if you put alarms in the wrong places, if you don’t clean them and if you don’t replace them after 10 years, you’re going to have them. Clearly there’s a need for education. Consumers have to assume some responsibility.”) In a 1999 letter to the NFPA, Jim Crawford, the Portland, Oregon Fire Marshall emphasized that legislation “makes the retail outlets a partner in raising the level of technology because of their own liability concerns.” (Ex. 1039, 18).

68. The life safety industry acknowledged that consumer practices were a variable that was necessary to consider when developing smoke detectors in order

to ensure that they were used most effectively. The following patents and products, discussed in greater detail below include references to the user-variable that impacts smoke detector safety:

- Belano, filed in 1988, refers to the need to avoid mounting a smoke detector that, when mounted, appears as if it is operational, even though it is not. (Ex. 1036, 1:13-24).
- Conforti, dated in 1990, discusses the need to ensure that users are able to readily ascertain that smoke detectors that are not operational, for example, because they lack batteries, are indeed non-operational. (Ex. 1037, 1:13-68).
- U.S. Patent No. 5,444,434, filed in 1992, which is incorporated by Malewski, discusses the various efforts including from the life-safety industry and the news media to ensure that people properly use operational smoke detectors in their home. (Ex. 1040, 1:12-2:19).
- U.S. Patent No. 5,793,295, filed in 1996, which is also incorporated by Malewski, discusses improvements to make it “simpler” to ensure that smoke and gas detectors are operational. (Ex. 1041, 1:63-2:12).
- Byrne ’311, filed in 1996, discusses the benefits and concerns relating to sealed, battery-operated smoke detectors, including the fact that there is a “safety hazard” when the “alarm device is not operating when the user thinks it is.” (Ex. 1010, 1:11-18).
- Watson, filed in 1996, discusses the importance of ensuring that users know whether or not they have an operational smoke detector in their home. (Ex. 1005, 1:13-36).
- DeLuca ’487, filed in 1999, discusses various examples of industry developing features to ensure that users are properly using smoke detectors. (Ex. 1006, 1:15-61). Specifically, it refers to the goal of ensuring that users are made aware that their smoke detectors are not operable because they lacked batteries. (*Id.*).

- Byrne '354, filed in 2000, discusses the need to ensure that smoke detectors are simpler to install. (Ex. 1009, [¶0004]).
- Malewski, filed in 2002, discusses refers to a smoke detector that cannot operate unless it is properly installed, and cannot be in a deactivated state when it is properly installed. (Ex. 1007, 3:40-50).

69. By early 2003, members of the life safety industry, such as the UL 217 STP, acknowledged that dangers associated with non-replaceable battery smoke detectors in which users may deactivate the battery when they are alerted to the end of the smoke detector's useful life, and then return the smoke detector to its mount rather than discard it. (Ex. 1008, 5).

70. The '158 Patent, like the patents, products, and articles relating to smoke detectors that were published years before its filing, acknowledges that the industry is well aware of the potential for "user mistakes or improper use during installation as well as during the life of the alarm." (Ex. 1001, 1:59-62).

71. The continued efforts by the life safety industry to improve the user experience of smoke detectors to ensure that they operate in a way that prevents misuse and perform as designed, i.e. to keep people safe, establishes that the introduction of new technology into a smoke detector, such as a sealed battery, would result in the smoke detector-industry working to identify any and all potential for misuse, and introduce features that would combat such misuse. It would have been obvious to look to implementation of similar features in similar products, such

as smoke detectors with removable batteries, for analogous features that may likewise ensure the safe operation of smoke detectors with batteries that cannot be removed.

72. In addition to industry doing its part to keep people safe, standards and model codes that predate the alleged invention of the asserted patents include requirements to ensure that only operational smoke detectors are installed on customer premises.

73. NFPA 72 is the National Fire Alarm and Signaling Code® promulgated by the National Fire Protection Association (“NFPA”³).⁴ NFPA 72 “covers the application, installation, location, performance, inspection, testing, and maintenance of fire alarm systems, supervising station alarm systems, public emergency alarm reporting systems, fire and carbon monoxide detection and warning equipment, and emergency communications systems (ECS) and their components.”⁵

³ According to its website, the National Fire Protection Association (“NFPA”) is an organization that provides an assortment of resources related to fire protection. It “delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering [its] mission. NFPA membership totals more than 50,000 individuals around the world. <https://www.nfpa.org/About-NFPA>

⁴ <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=72>

⁵ <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=72>, at “View Document Scope.”

74. The 1999 version of NFPA 72 is available online.⁶ All of the following references to NFPA 72 refer to the 1999 version unless otherwise stated.

75. NFPA 72 8-1.2.2 Provides performance criteria for smoke alarms, which includes various placement and operational characteristics such as “provid[ing] a sound that is audible in all occupiable dwelling areas.” (Ex. 1030, 72-102). In other words, compliance with NFPA 72 presumes that an installed smoke detector is operational or can be made operational. A device that is no longer operational and cannot be made operational would not comply with NFPA 72 8-1.2.2.

76. NFPA 72 8-1.4.1.5.2 contains an exception to installation requirements for smoke detectors, providing that “existing battery-powered smoke alarms. . . shall be permitted where the facility has demonstrated . . . that the testing, maintenance, and battery replacement programs will ensure reliability of power to the smoke alarm.” (Ex. 1030, 72-103).

77. A smoke detector with a sealed battery that has been permanently deactivated and then reinstalled onto the ceiling would therefore not comply with the exception to the installation requirements of the NFPA 72. (*See Id.*).

⁶ [Free Access - NFPA 72: National Fire Alarm and Signaling Code®](#)

78. In the context of a sealed-battery smoke detector that cannot be reactivated, a structural impediment to reinstallation is an obvious way to ensure reliability of power to the smoke alarm because it prevents a smoke detector that cannot be powered from being installed.

79. Section 8-2.1 of NFPA 72 contains various performance criteria relating to the operation of signals that are emitted from a smoke alarm. (*Id.*). Section 8-2.2.2 provides that “Equipment designed and installed such that the required operation is obtained shall be considered [an] acceptable [method of verifying compliance with the performance criteria of Section 8-2.1].” (Ex. 1030, 72-104).

80. A smoke detector with a sealed battery that has been permanently deactivated and then reinstalled onto the ceiling would not satisfy the performance criteria of NFPA 72 8-2.1 because the required operation (i.e. signals alerting of fire) cannot be obtained. (*See* Ex. 1030, 72-104).

81. In order to avoid running afoul of this provision, it would be obvious to modify a smoke detector that can be so reattached after being permanently deactivated such that permanent deactivation results in an inability to reattach the smoke detector. This approach generally reflects the motivations of those of skill in the art as of the August, 2003 timeframe, and in particular reflects the general approach that mechanical structures to protect against human laziness/carelessness were preferred.

82. Section 8-3.5 of NFPA 72 provides that smoke detectors “shall not remain in service longer than 10 years from the date of installation.” (Ex. 1030, 72-104). The specification of the Challenged Claims acknowledges that the intent is for these patents to apply to smoke detectors with 10-year batteries sealed inside, though this is not limited by the claims. (Ex. 1001, 2:9-13, 4:48-53; 6:1-2).

83. The design of a sealed-battery smoke detector that cannot be activated more than once is logical in light of the 10 year requirement of NFPA 72 Section 8-3.5. If a smoke detector can be deactivated and reactivated over its life, then a user may inadvertently keep the smoke detector in service for longer than ten years. And even if a 10-year battery is intended to be a fail-safe to ensure that a device with new smoke-sensing electronics are installed by the 10-year mark, a smoke detector that can be activated and deactivated may result in the smoke detector’s electronics lasting much longer than its safety features (for example, if a sensor has an expiration date). The natural, and dangerous result would be that people would install non-operational smoke detectors after they have been deactivated despite them not being able to actually *detect* smoke. As discussed below, smoke detectors that could only be activated one time were well known in the art before the Challenged Claims.

84. The 2000 International Fire Code, which provides model code regulations⁷ includes provisions aimed at ensuring only operable smoke detectors are installed. (*See* Ex. 1031). For example Section 901.4.4 prohibits non-operational devices that appear to be life safety or fire protection devices.⁸ (*Id.*, 61). In other words, permanently deactivated smoke detectors that can be mounted onto the wall such that they appear to be operational smoke detectors would not comply with Section 901.4.4 of the International Fire Code.

85. The Fifth edition of the Standard for Safety for Single and Multiple Station Smoke Alarms, UL 217 dated February 21, 1997 is the initial publication of the Fifth Edition of UL 217. (Ex. 1032). There is a revised Fifth Edition of UL 217 dated October 12, 2001. (*See* Ex. 1016). The Fifth Edition of UL 217, demonstrates a goal of ensuring that users are made aware of smoke detectors that have been rendered non-operable by the user, such as by removal of batteries. (*See e.g.*, Ex. 1032, §8). This standard provides that removal of a battery from any battery-operated smoke detector must cause a warning flag, a cover that prevents closure, or “an equivalent arrangement.” (*Id.*) The Fifth Edition of UL 217 additionally contemplates the use of long-life batteries in smoke detectors such that the “battery

⁷ [PREFACE, 2000 International Fire Code \(IFC\) | ICC Digital Codes \(iccsafe.org\)](#)

⁸ [2000 International Fire Code \(IFC\) - CHAPTER 9 \(iccsafe.org\)](#)

is not required to be replaceable.” (*Id.* § 15.1.4). The state of the art by the time of the invention disclosed in the ’158 Patent incorporated many developments, including various attachment mechanisms to ensure proper mounting, attachment prevention mechanisms to prevent mounting an inoperable smoke detector to the mounting bracket or prevent the battery compartment of an installed, but inoperable, smoke detector from closing and appearing to be operational, and various activation and deactivation mechanisms, activate/deactivate systems. Examples of features in the prior art are discussed below.

A. State of the Art: Activation Mechanisms

86. Activation mechanisms were well known in the prior art by the time of the filing of the application which led to the ’158 Patent. Beyond the admission that activation mechanisms are in the prior art (*see* Ex. 1001, 1:51-58) (referring to some smoke detectors requiring activation before mounting, which suggests an activation mechanism that may operate during mounting (i.e. an automatic activation mechanism) or after mounting). This is further confirmed by the examiner during prosecution. (Ex. 1004, 127). The following are examples of activation mechanisms in smoke detectors that existed in the prior art.

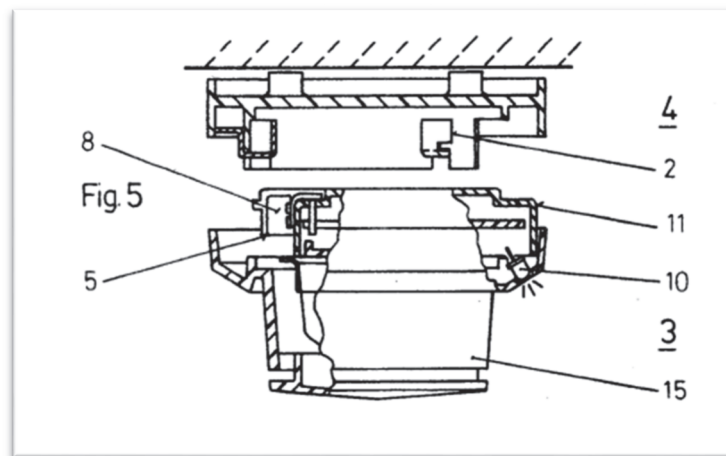
1. Niederost

87. Niederost, filed in January 1980 and issued in February 1982, discloses a socket-based activation mechanism that also functions as an activation mechanism that automatically activates the smoke detector. (*See* Ex. 1033, Abstract).

[T]he connection apparatus for a fire alarm, as contemplated by the present development, is manifested by the features of an arrangement of at least three connection elements at the circumference of the socket portion and grooves having contact springs arranged around the circumference of the side of the fire alarm insert confronting the socket portion. The connection elements and the grooves engage with one another such that during a first partial rotation of the fire alarm insert there is established the mechanical connection and during a subsequent, second partial rotation of the fire insert, in the same rotational sense, there is established the electrical connection.

(Ex. 1033, 2:55-68).

Activation Mechanism of Niederost



(Ex. 1033, Fig. 5).

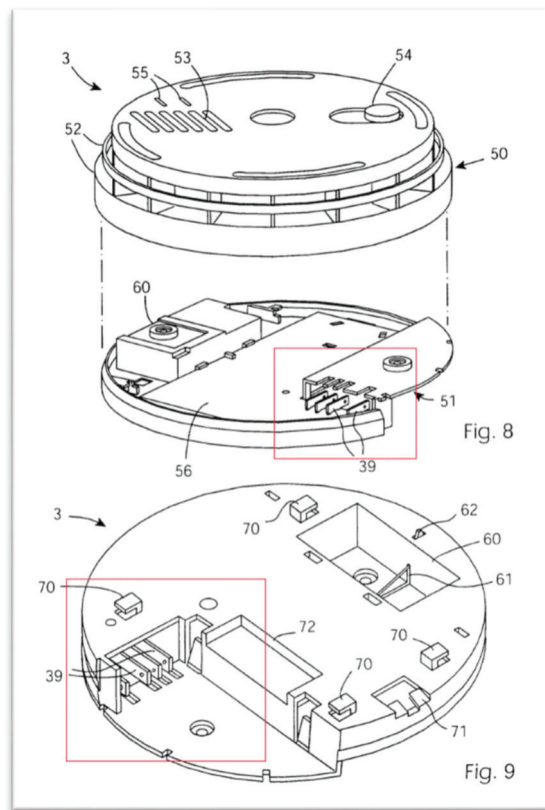
2. Byrne '354

88. Byrne '354, published in October 2000, discloses an activation mechanism in a smoke detector that results in automatic activation when the device is mounted onto its mounting bracket. Specifically, Byrne '354 discloses a smoke detector with a base and a body, which “comprise co-operating mechanical and electrical connections means whereby the alarm body may be electrically connected to the base in a push-fitting action.” (Ex. 1009, Cl. 1, ¶¶25-34). Additionally,

the electrical connection means comprises a plurality of alarm body terminals in the base terminal block, each alarm body terminal comprising a pair of leaves spring-biased together, and terminal spades on the alarm body each associated with an alarm body terminal, the terminals and terminal spades being configured whereby the leaves press against a terminal spade which has been pushed into the terminal.

(*Id.*, ¶11).

Activation Mechanism of Byrne '354



(Ex. 1009, Figs. 8, 9 (annotated)).

3. Watson

89. Watson discloses an activation mechanism in a smoke detector that can only be used once. “The detector includes an activation switch mechanism having a single use turn-on or activation characteristic. The activation switch switches the energy source once from a non-conducting state into electrical conduction with the control unit.” (Ex. 1005, 1:48-52). Watson further describes several types of single-use activation mechanisms:

A first embodiment of a long-life battery-powered detector 10 is disclosed in FIGS. 1-5, which incorporates a one-time activation switch mechanism. The detector 10 has a switch mechanism including rotatable, frangible or break-away members 12a, 12b and associated single-pole, single-throw (SPST) energizing and deenergizing switches 14a and 14b respectively.

Switch 14a provides one-time activation of the detector 10 when it is placed in service. Switch 14b discharges and deactivates the detector 10 at the end of its useful service life.

(*Id.*, 2:33-43).

Other embodiments of the one-time activation switch mechanism 12a are shown in FIGS. 6 through 9. FIG. 6 illustrates a reed-relay mechanism, shown generally at 100. A first relay portion 102, a magnet, is mounted to the mounting flange 22. A second relay portion 104, a relay body with closable contacts, is mounted to the base 16.

When the first and second relay portions 102 and 104 are brought into close proximity, one with the other, the relay contacts close and activate the detector 10.

Another embodiment of a one-time activating switch mechanism 110 is illustrated in FIG. 7. In this embodiment, an activating switch 112 is located within the base 16, mounted inside the detector 10 to a wall portion 114 of the base 16. The switch 112 is a single use slide-switch, with at least a part of the stem portion 116 extending through a slot 118 formed in the sidewall 114.

In this embodiment, the detector 10 is activated by mounting the detector 10 to the mounting flange 22. When the base 16 is rotated to mount the base 16 to the flange 22, the stem portion 116 engages the L-shaped projection 27 and is moved into an activating position.

The stem portion 116 may be frangible. That is, once the base 16 is fully engaged with mounting flange 22, the stem portion contacts and end 120 of the slot 118, and the stem portion 116 is broken off from the switch 112. This configuration prevents inadvertent movement of the switch 112 if the base 16 is removed from the mounting flange 22.

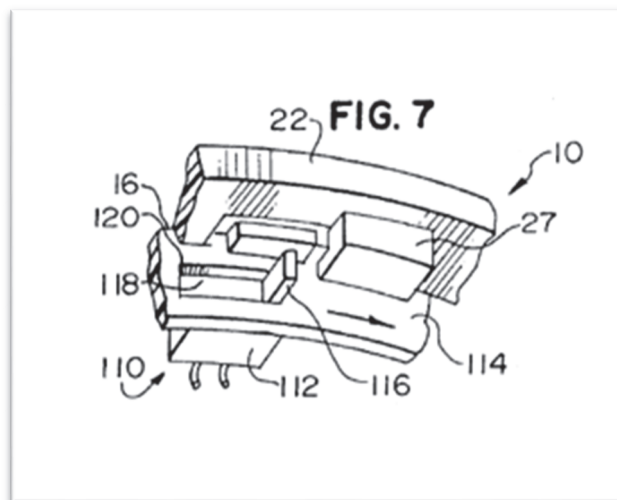
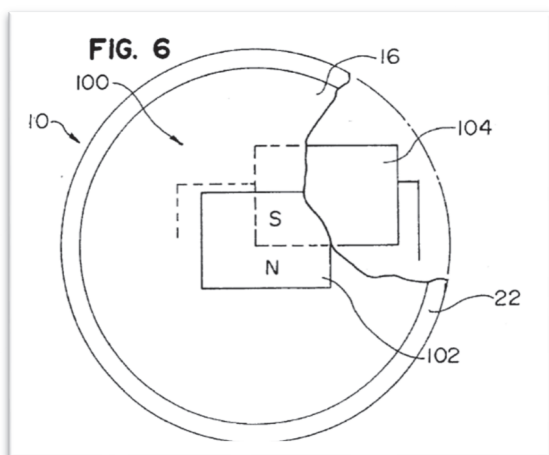
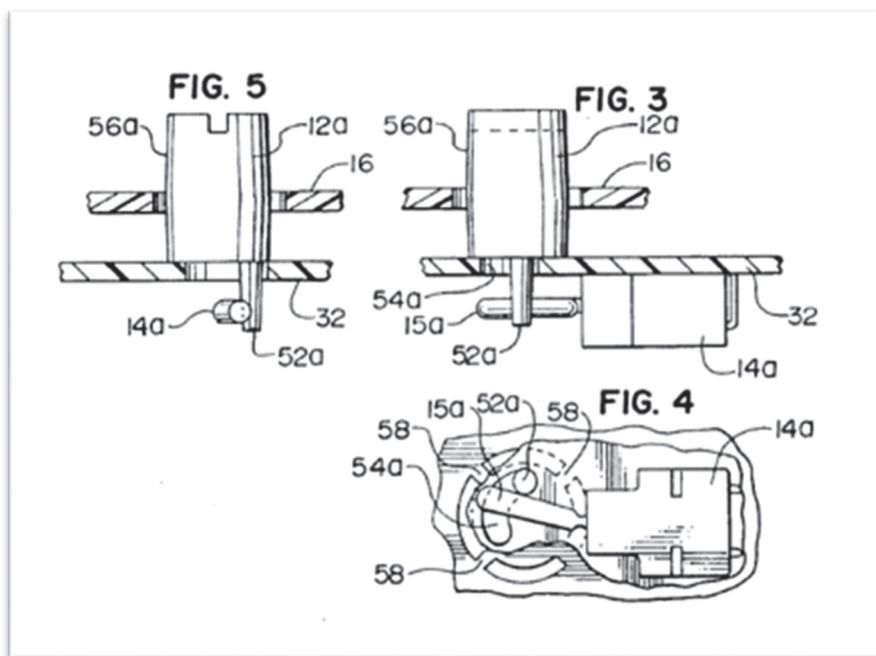
Alternatively, the switch 112 can include an internal ratchet permitting a single movement of the arm 116.

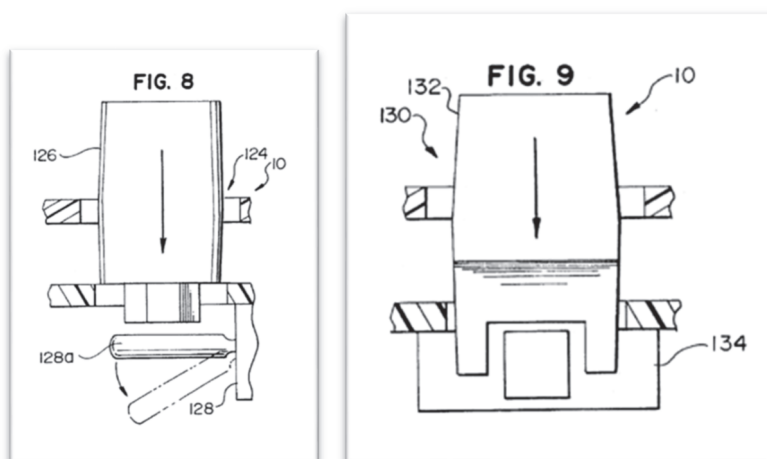
FIGS. 8 and 9 illustrate other embodiments of a one-time activating switch mechanism. The mechanism 124 shown in FIG. 8 includes a frangible plunger-type member 126 which, when pushed inward of the base 16, engages a toggle-type activating switch 128. The member 126 moves a switch arm 128a from an open circuit to a closed circuit, activation condition. Similar to the embodiment illustrated in FIGS. 1 through 5, the plunger 126 can, but need not then be removed from the detector 10 and discarded.

The embodiment of the switch mechanism 130 illustrated in FIG. 9 also employs a plunger-type frangible member 132. When member 132 is pushed inward of the detector 10, it engages a slide-type activating switch 134. As with the previous embodiments, the plunger member 132 can then be removed from the detector 10 and discarded.

(*Id.*, 4:57-5:33).

Activation Mechanisms of Watson





(Ex. 1005, Figs. 3-9).

90. Additionally, at least one of the activation mechanisms disclosed in Watson is an automatic activation mechanism:

Another embodiment of a one-time activating switch mechanism 110 is illustrated in FIG. 7. In this embodiment, an activating switch 112 is located within the base 16, mounted inside the detector 10 to a wall portion 114 of the base 16. The switch 112 is a single use slide-switch, with at least a part of the stem portion 116 extending through a slot 118 formed in the sidewall 114.

In this embodiment, the detector 10 is activated by mounting the detector 10 to the mounting flange 22. When the base 16 is rotated to mount the base 16 to the flange 22, the stem portion 116 engages the L-shaped projection 27 and is moved into an activating position.

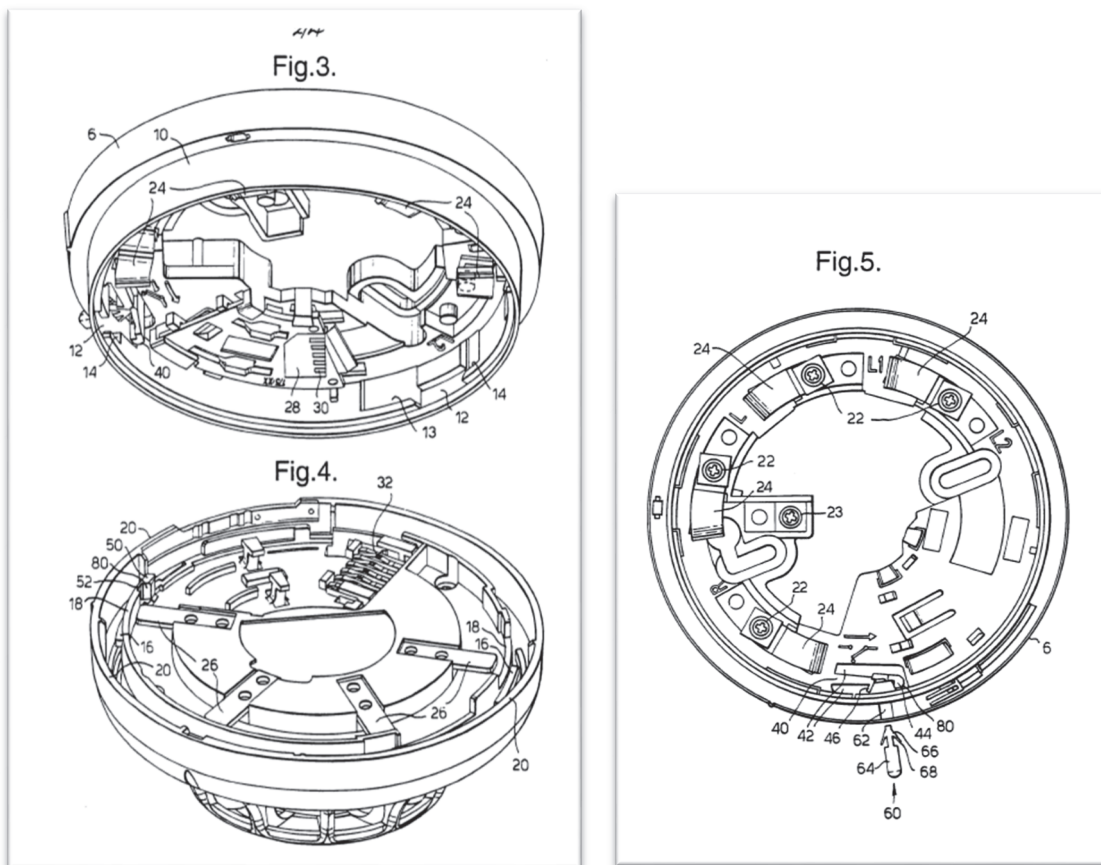
(Ex. 1005, 4:66-5:10).

4. Bayley

91. Bayley, filed in January 1996 and issued in February 1997, discloses a smoke detector with an activation mechanism. (See Ex. 1034, 2:23-25). (“means for

releasably securing together the base unit and detector unit by placing the units together and rotating the detector through a first arc of rotation to a position in which the detector is operative.”).

In figures 3, 4 and 5, details of electrical connections for field wiring are shown. The base unit 6 has four terminals 22 spaced around its periphery, and a further inwardly positioned terminal 23. Each terminal 22 has a strip extension 24 with a leaf spring arrangement (not shown) for electrically contacting contact blades 26 (figure 4) mounted on detector unit 8 when the detector unit is rotated to its operative position. Contact blades 26 are coupled to electronics mounted within the detector unit.



(Ex. 1034, Figs. 3-5).

5. Byrne '311

92. Byrne '311, published in October 1997, discloses a smoke detector with an activation mechanism. Specifically, the activation mechanism of Byrne '311 uses a user-initiated button to cause a sliding switch member to activate the smoke detector. (Ex. 1010, 5:30-6:7). Additionally, Byrne '311 discloses an alarm device with

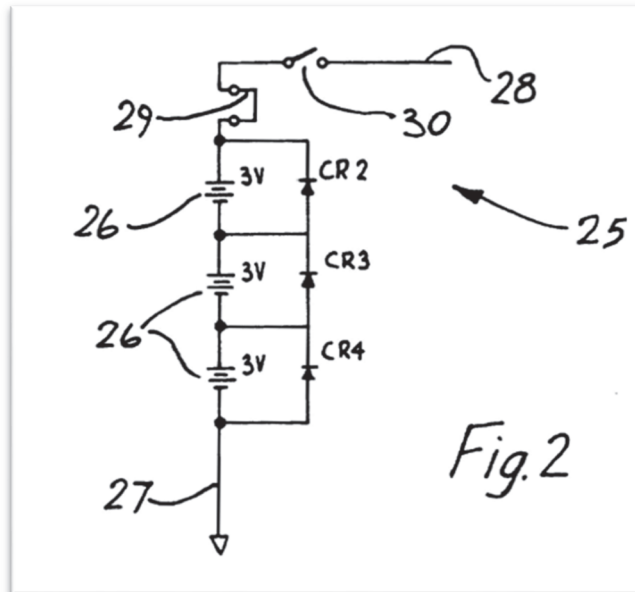
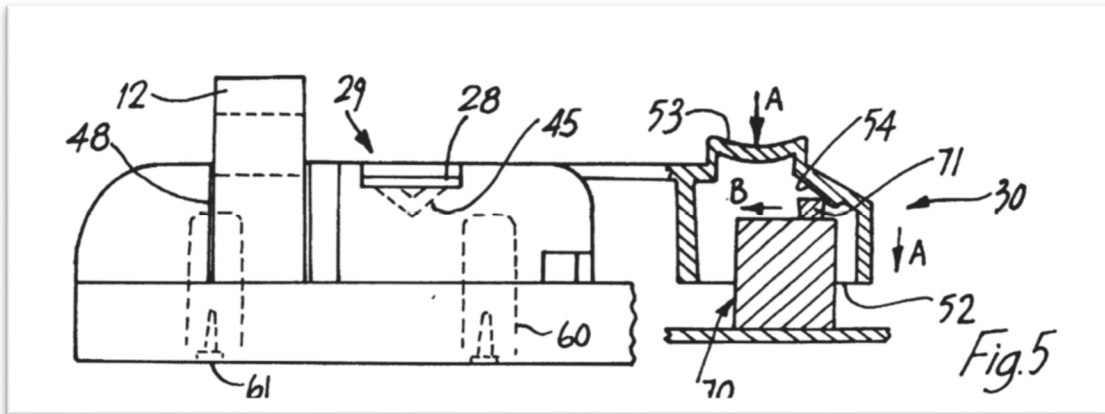
A battery chamber within which the battery is located to prevent user access to the battery, a one-way switch for activation of the control circuit, and a one-way switch for de-activation of the control circuit. In one embodiment, the activation switch comprises a movable switch member mounted on the control circuit and an interface which covers the switch member and allows interaction on the switch member in one direction only.

(*Id.*, 2:10-19). Byrne '311 further states:

In order for the user to activate the alarm 1, all he or she must do is open the cover 3 and press the button 53. This causes the sliding switch to slide to the ON position and connect the batteries 26 to the circuit. This may not be reversed because the interface 50 allows the sliding switch to be pushed in one direction only. Again, the ON switch 30 is provided in an extremely simple manner by an integral extension of the housing 40 and a conventional sliding switch which is inexpensive to purchase.

(*Id.*, 5:30-6:7).

Activation Mechanism of Byrne '311



(Ex. 1010, Fig. 2, Fig. 5).

6. Malewski

93. Malewski, filed in February 2001 and issued August 13, 2002, discloses a smoke detector with at least two different activation mechanisms. (*See generally* Ex. 1007.)

94. Malewski discloses an activation mechanism that facilitates automatic activation upon connection of the smoke detector to its mounting bracket as well as

another activation mechanism that utilizes a “key” that is inserted into the device.

(Ex. 1007, at 3:13-17; 3:58-61).

According to the invention, one (major) portion of the device or detector (hereinafter, “sensor” shall apply only to a specific element) contains essentially all the operative circuitry, power source, and sensor elements, including its protective cover. Within the circuitry an interrupt is provided consisting of a simple, single-point break embodied by two exposed, set-apart conductive points on a circuit board that contains and supports the aforesaid circuitry, power source, and sensor elements. **The major portion is designed for contact and mating with its complement, the primary functions of the latter being to serve as a surface-mountable bracket and to securely retain the major portion. The mating, which is achieved by both contact and rotation (two steps) of the device's two mentioned portions, securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation. This facility advantageously assures that the device is not electrically activated until its two major portions are mated consistent with proper installation.** Another advantage of this construction is that it nominally prevents the device from being inadvertently mounted in a deactivated state once properly installed. An unmating, by counter-rotating the major portion (one step) will immediately cause the switch to open. Thus, the switch is activated only when the major portion and its complement are mated. The installed device is deactivated merely by applying a single counter rotation motion to its protective cover.

The switch mechanism includes a shorting element and is spring-biased in a position apart from the aforesaid interrupt, and a mating of the two portions of the device urges the shorting element into contact with it. **In another embodiment, the interrupt is spring-biased to extend to a prospective shorting strip location that is attained by the strip only upon full mating of the aforementioned portions. In another embodiment, the switch mechanism includes a conductive key. The device is activated only upon inserting the key fully into the device, thereby electrically connecting two or more contact springs.**

(Ex. 1007, 3:24-62 (emphasis added) (*see also Id.*, 6:61-9:4).

Activation Mechanisms of Malewski

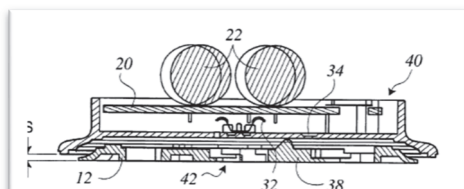


FIG. 3

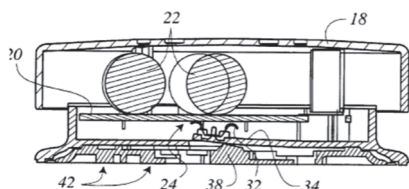


FIG. 4

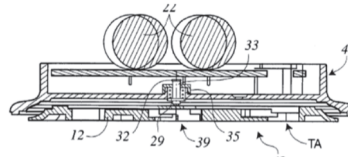


FIG. 6

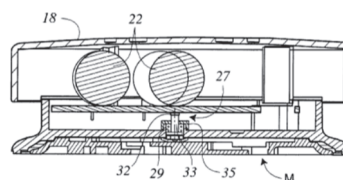


FIG. 7

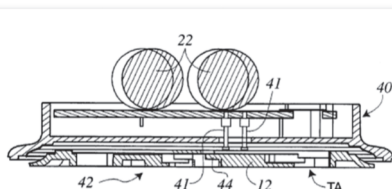


FIG. 9

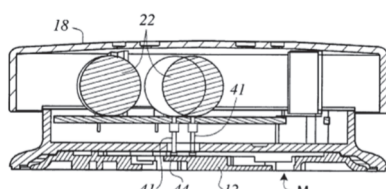


FIG. 10

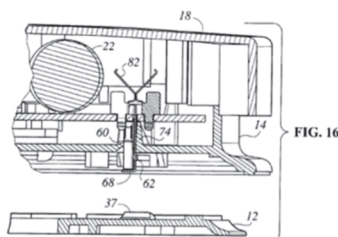


FIG. 16

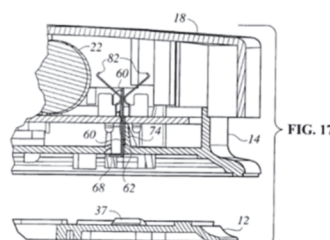


FIG. 17

(Ex. 1007, Figs. 3-4, 6-7, 9-10, 16-17 (showing embodiments in activated and deactivated states), *see also generally* Ex. 1007.)

B. State of the Art: Deactivation Mechanisms

95. Deactivation mechanisms, as well as permanent deactivation mechanisms, were well known in the art at the time of the alleged invention. Below are several examples of such deactivation mechanisms in smoke detector devices.⁹

96. Beyond the admission that deactivation mechanisms are in the prior art (*see* Ex. 1001, 1:51-58) (referring to smoke detectors that can be deactivated and reactivated suggests a deactivation mechanism). This is further confirmed by the examiner during prosecution. (Ex. 1004, 128). The following are examples of deactivation mechanisms in smoke detectors that existed in the prior art.

1. Watson

97. Watson discloses a permanent deactivation mechanism involving the use of switches. (*See e.g.*, Ex. 1005, 2:40-43) (Switch 14b discharges and deactivates the detector 10 at the end of its useful service life). Watson provides additional discussion of the permanent deactivation mechanism:

As previously discussed, and as best seen in FIG. 1, the base 16 is formed with frangible members 12a and 12b. Each of the members 12a and 12b is formed with a stub or post 52a or 52b, respectively, which projects upward from its respective member 12a, 12b, inward of the detector.

⁹ Deactivation mechanisms are of course not limited to smoke detectors. *See* U.S. Patent No. 5,359,168.

The stubs 52a and 52b extend through curvilinear slots 54a and 54b formed in the board 20. Mounted to the board 20, adjacent to the curvilinear slots, 54a, 54b, are the activating switch 14a and end-of-life deactivating switch 14b.

Various types of switches may be used. In the embodiments shown in FIGS. 1 through 5 and 8, toggle-type switches are shown to illustrate the principles of the present invention. It is to be noted that in this embodiment frangible member 12a has a rear portion 56a which extends rearward of the base 16 as further discussed below.

The configuration in which the stubs 52a and 52b extend through the curvilinear slots 54a and 54b permits the stubs 52a and 52b to coact with the activation switch 14a and deactivation switch 14b, respectively.

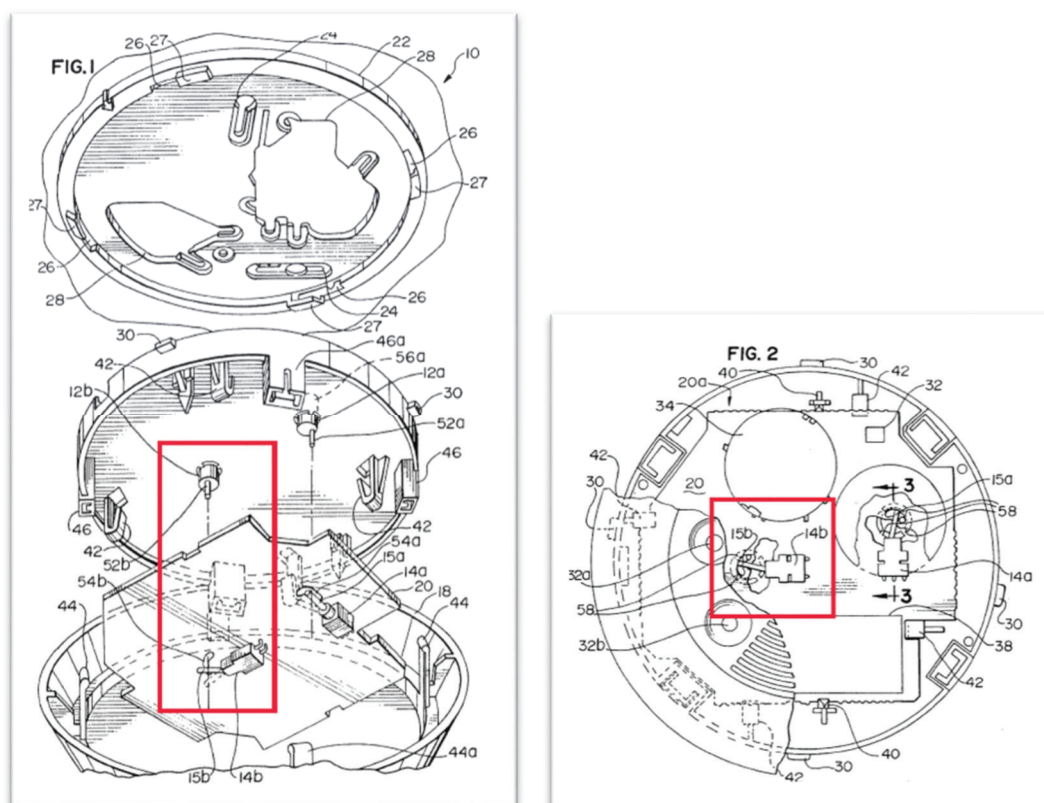
(Ex. 1005, 3:45-65).

Once the detector has reached its useful life, which is contemplated to be about ten years, the detector 10 will emit a low battery power signal. Methods and designs for providing such a low battery power signal are well known in the art and are not part of this invention.

The detector 10 is then removed from the mounting flange 22. The frangible member 12b which activates the deactivating switch 14b is rotated in the same manner as member 12a.

(Ex. 1005, 4:35-43).

Permanent Deactivation Mechanism of Watson



(Ex. 1005, Figs. 1, 2 (annotated)).

98. Watson's deactivation mechanism not only enables the user to manually deactivate the smoke detector, but also serves as a permanent deactivation mechanism that deactivates the smoke detector. (*See e.g.*, Ex. 1005, 3:56-4:56). Not only is Watson's activation mechanism "single use" which results in the deactivation mechanism being a permanent deactivation mechanism. (*Id.*, 1:48-58). Watson's deactivation mechanism also discharges the battery. (*Id.*, 2:40-43).

2. Byrne '311

99. Byrne '311 discloses a smoke detector with a manual, permanent deactivation mechanism. Byrne '311 provides, “[f]or deactivation, the user simply

cuts an exposed lead (2). Again, this is simple and not reversible.” (Ex. 1010, ¶ 57).

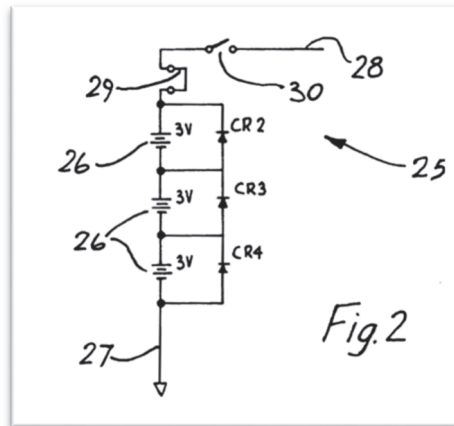
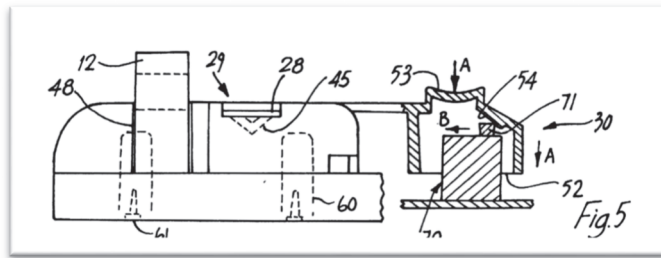
Byrne ’311 further discloses:

When the chamber 40 is mounted over the batteries 26, the positive lead 28 from the batteries is trained over the barrier 45 and retained by the retainers 46 so that it is exposed in a manner whereby it may be cut by the user, while at the same time the barrier 45 prevents access to the remainder of the inside of the chamber 41. The parts of the OFF switch 29 are thus extremely simple as they comprise parts which are integral with the housing 40, and a positive lead 28 which *is* required in any event. Further the OFF switch 29 is not reversible and as it is highly unlikely that the user will be able to re-connect the lead. In summary, the OFF switch 29 allows the alarm 1 to be de-activated in an extremely simple manner, which is not reversible and which is provided in an inexpensive manner. Further, cutting of a wire is to the user clearly a destructive operation and is not reversible.

(Ex. 1010, 5:4-19).

100. Even if a POSA would not view the act of cutting a wire to be a mechanism, Byrne ’311’s reference to such deactivation as an “OFF switch” teaches that a mechanism may be included in the Byrne ’311 device to permanently deactivate the device such that the user is not required to use a sharp object to permanently deactivate the smoke detector. Additionally, it would be obvious to a POSA to modify the wire cutting feature of Byrne ’311 to a deactivation mechanism so as to avoid requiring the use of a sharp object while deactivating a ceiling-mounted smoke detector.

Deactivation Mechanism of Byrne ’311



(Ex. 1010, Fig. 2, Fig. 5).

3. Malewski

101. Malewski, “provid[es] to a device, a hazard detector, an on/off switching mechanism that has a physical multiple use (multiuse) capability, i.e., it can be used, repeatedly, to activate/deactivate an electrical circuit.” (Ex. 1007, 3:13-17). Malewski discloses several different deactivation mechanisms. For example:

According to the invention, one (major) portion of the device or detector (hereinafter, “sensor” shall apply only to a specific element) contains essentially all the operative circuitry, power source, and sensor elements, including its protective cover. Within the circuitry an interrupt is provided consisting of a simple, single-point break embodied by two exposed, set-apart conductive points on a circuit board that contains and supports the aforesaid circuitry, power source, and sensor elements. The major portion is designed for contact and mating with its complement, the primary functions of the latter being to serve as a surface-mountable bracket and to securely retain the major

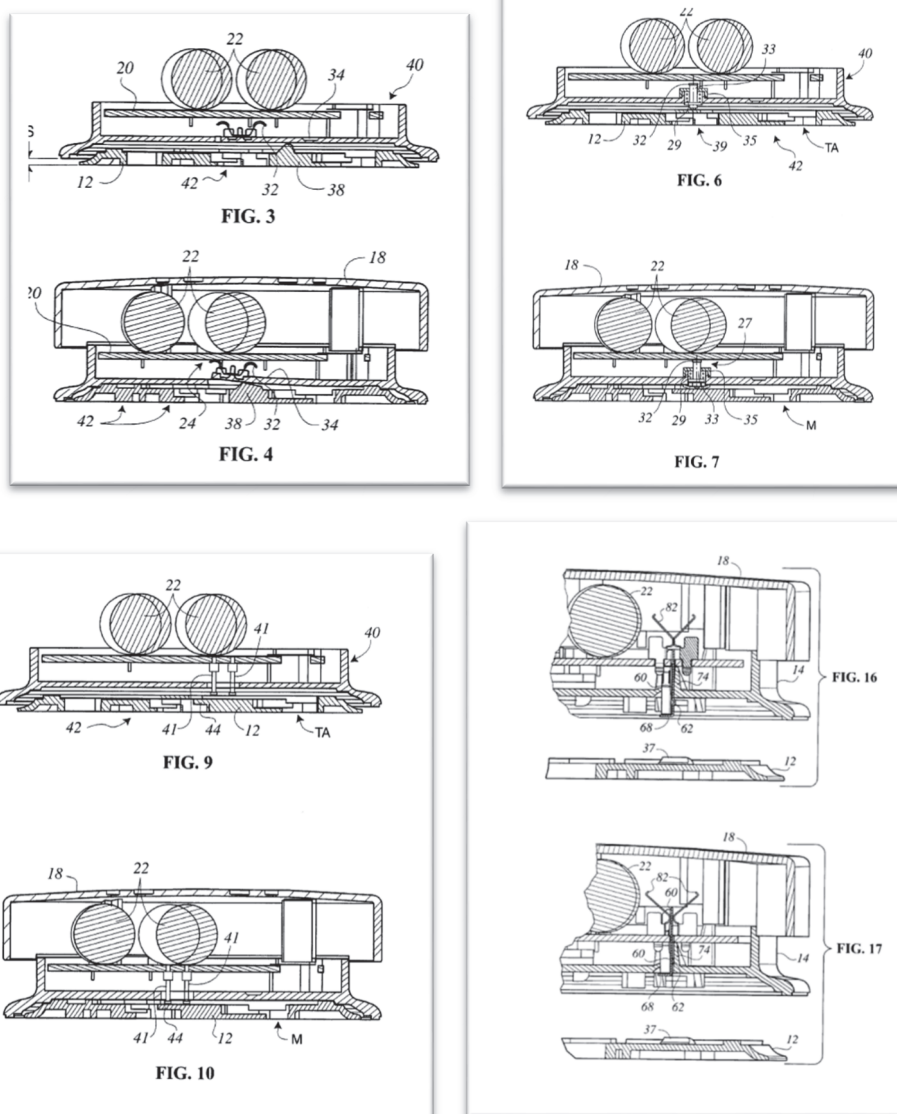
portion. The mating, which is achieved by both contact and rotation (two steps) of the device's two mentioned portions, securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation. This facility advantageously assures that the device is not electrically activated until its two major portions are mated consistent with proper installation. Another advantage of this construction is that it nominally prevents the device from being inadvertently mounted in a deactivated state once properly installed. **An unmating, by counter-rotating the major portion (one step) will immediately cause the switch to open. Thus, the switch is activated only when the major portion and its complement are mated. The installed device is deactivated merely by applying a single counter rotation motion to its protective cover.**

The switch mechanism includes a shorting element and is spring-biased in a position apart from the aforesaid interrupt, and a mating of the two portions of the device urges the shorting element into contact with it. In another embodiment, the interrupt is spring-biased to extend to a prospective shorting strip location that is attained by the strip only upon full mating of the aforementioned portions. In another embodiment, the switch mechanism includes a conductive key. The device is activated only upon inserting the key fully into the device, thereby electrically connecting two or more contact springs.

(Ex. 1007, 3:24-61) (emphasis added).

102. Malewski discloses another deactivation mechanism that utilizes a key in the form of a tab made of or coated with conductive material that is pulled out and disconnects the electronics. (*See* Ex. 1007, 7:29-8:10) (“When [activation] key 20 [(sic)] is in the off position, bottom ledge 68 protrudes from base 14, where it interferes with making the bayonet-type connection between base 14 and mounting bracket 12.”).

Deactivation Mechanisms of Malewski



(Ex. 1007, Figs. 3-4, 6-7, 9-10, 16-17) (showing embodiments in activated and deactivated states). While Malewski's explicit embodiments do not disclose a permanent deactivation mechanism; however Malewski describes and incorporates Watson, which, as discussed above, in Section VII.B.1, discloses a permanent deactivation mechanism.

C. State of the Art: Activate/Deactivate System

103. Activate/deactivate systems were known in the art before the alleged invention of the '158 Patent. Below are examples of activate/deactivate systems.

1. Watson

104. As discussed above in Section VII.A.3 and Section VII.B.1, Watson discloses an activation mechanism and a deactivation mechanism. (Ex. 1005, 1:48-52, 2:33-43, 4:57-5:33 (activation mechanism); 2:40-43, 3:45-65, 4:35-43 (deactivation mechanism)). These mechanisms form structures that operate to control activation and deactivation of the smoke detector.

105. The activate/deactivate system of Watson is configured to automatically activate the detector 10 upon its attachment to the mounting flange 11. (See Ex. 1005, 5:5-10) (“In this embodiment, the detector 10 is activated by mounting the detector 10 to the mounting flange 22. When the base 16 is rotated to mount the base 16 to the flange 22, the stem portion 116 engages the L-shaped projection 27 and is moved into an activating position.”).

[A]nother embodiment of a one-time activating switch mechanism 110 is illustrated in fig. 7. in this embodiment, an activating switch 112 is located within the base 16, mounted inside the detector 10 to a wall portion 114 of the base 16. the switch 112 is a single use slide-switch, with at least a part of the stem portion 116 extending through a slot 118 formed in the sidewall 114.

(Ex. 1005, 4:66-5:05).

106. The deactivation mechanism of Watson is part of a an activate/deactivate system that is configured to enable the user to manually deactivate the second portion:

The detector 10 is then removed from the mounting flange 22. The frangible member 12b which activates the deactivating switch 14b is rotated in the same manner as member 12a.

(Ex. 1005, 4:40-43).

2. Malewski

107. As discussed above in Section VII.A.6 and Section VII.B.3, Malewski discloses an activate/deactivate system that uses cooperating features on both the first and second portions (the mounting bracket and the smoke detector) to control activation and deactivation of the smoke detector. (Ex. 1007, 3:24-61, 7:29-8:10).

108. As discussed above with respect an activation mechanism disclosed in Malewski, the activate/deactivate system of Malewski is configured to automatically activate the second portion upon initial attachment of the second portion to the first portion utilizing cooperating features on the first and second portions:

The major portion is designed for contact and mating with its complement, the primary functions of the latter being to serve as a surface-mountable bracket and to securely retain the major portion. The mating, which is achieved by both contact and rotation (two steps) of the device's two mentioned portions, securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation. This facility advantageously assures that the device is not electrically activated until its two major portions are mated consistent with proper installation.

(*See* Ex. 1007, 3:33-43).

109. Malewski further discloses an activate/deactivate system that is configured to enable the user to deactivate the second portion:

An unmating, by counter-rotating the major portion (one step) will immediately cause the switch to open. Thus, the switch is activated only when the major portion and its complement are mated. The installed device is deactivated merely by applying a single counter rotation motion to its protective cover.

(Ex. 1007, 3:45-50).

110. The deactivation is accomplished by a user in similar fashion to the automatic activation associated with mounting the device. (*See Id.*).

111. Malewski discloses another activate/deactivate system that uses a key-based activation and deactivation system. The key is in the form of a tab made of or coated with conductive material that is inserted to activate, and pulled out to deactivate. (Ex. 1007, 7:29-8:10).

112. Additionally, while the “key” based activation and deactivation mechanism is disclosed in an embodiment that is different than the “installation” based activation and deactivation, it would take little effort or ingenuity to combine these activation and deactivation mechanisms, such that activation takes place through installation, and deactivation takes place by removing the smoke detector from the mounting bracket, pulling out the key and disconnecting the device.

D. State of the Art: Reattachment Prevention

113. Model codes dating before the invention of the '158 Patent imply that reattachment prevention features are required for permanently deactivated smoke detectors such as those with sealed batteries. Specifically, an installed smoke detector that has been permanently deactivated would not be compliant with at least NFPA 72 (1999) §§ 8-1.2.2, 8-2.1, and 8-2.2.2 (Ex. 1030), which require installed smoke alarms to be operational. Similarly, such a device would not comply with Section 901.4.4 of the International Fire Code. (Ex. 1031).

114. Despite only dependent claim 7 requiring a sealed battery, the title of the '158 Patent is “Life safety alarm with a sealed battery power supply.” Thus, unlike those smoke detectors with removable batteries, which can be made operational again with the insertion of a new battery, and which can appear non-operational by virtue of a flag or open door which informs the user that batteries must be installed in order to reactivate the smoke detector, a sealed smoke detector would appear operational even when it is deactivated.

115. The requirements of the 1999 version of NFPA 72 and the 2000 International Fire Code therefore confirm that the state of the art at least, included a requirement that permanent deactivation of a smoke detector at least required some way to ensure awareness that such permanently deactivated devices were not

operational. A common sense and obvious way to achieve this goal is the inclusion of a mechanism that prevents reattachment after deactivation.

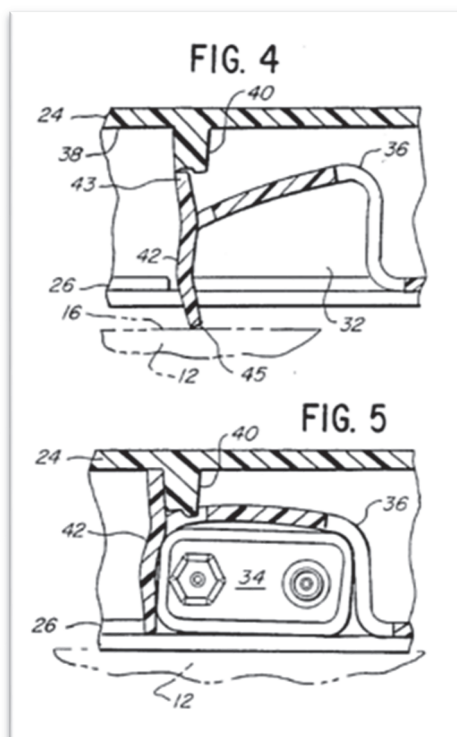
116. With such a requirement, the mechanical arts in the smoke detector field dating even before the 1999 NFPA 72 and the 2000 International Fire Code very clearly inform how a person of ordinary skill in the art would include a feature to prevent reattachment of a sealed battery smoke detector to the bracket after deactivation.

117. Attachment prevention mechanisms and reattachment prevention mechanisms to prevent attachment of a smoke detector to its mounting features (usually a bracket of some sort) or to prevent closure of its cover, have been a common element of smoke detectors since long before the alleged invention of the Challenged Claims. The following are several examples of smoke detectors that recite mechanical features that prevent the attachment of the smoke detector to a mounting bracket or closure of its cover, which predate the Challenged Claims.

1. Belano

118. Belano discloses a reattachment prevention mechanism in order to achieve its expressly disclosed objective of providing “an improved battery powered smoke alarm that cannot be properly assembled in an operative location without first installing a battery.” (Ex. 1036, 1:26-30). Belano discloses a reattachment prevention mechanism comprising a finger 42 on one end of a battery clamp that

abuts against boss 40 when no battery is present, preventing the body 22, containing the alarm electronics, from being attached to the mounting bracket 12. (*Id.*, 2:32-54). When a battery is present the finger 42 is free to move into a non-obstructing position. (*Id.*, 2:32-63).

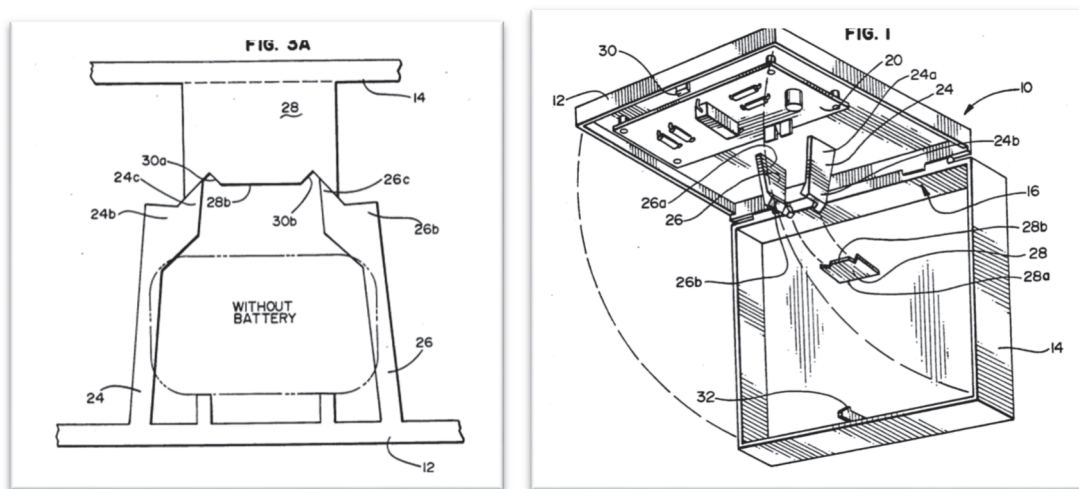


(Ex. 1036, Fig. 4, Fig. 5) (showing attachment prevention mechanism without battery, and the movement of the finger upon insertion of a battery to enable attachment).

2. Conforti

119. Conforti discloses a reattachment prevention mechanism comprising battery retaining members 24 and 26 that prevent attachment/closure of the alarm's

cover portion to the alarm electronics if the battery is missing by interference with cover blocking member 28. (Ex. 1037, 3:04-61).



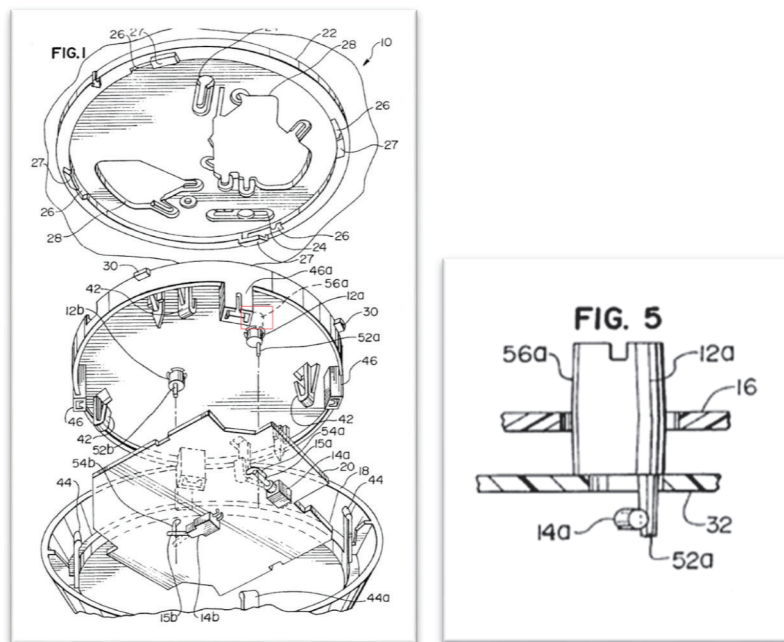
(Ex. 1037, Fig. 1, Fig. 3A).

120. While Conforti’s reattachment prevention mechanism prevents the cover from being closed when batteries are removed, the mechanical components inform how a reattachment prevention mechanism may be used to prevent reattachment of a smoke detector onto its bracket.

3. Watson

121. Watson discloses an attachment prevention mechanism that “blocks mounting of the detector on the surface” “[u]ntil the detector has been energized.” (Ex. 1005, Abstract). An attachment prevention mechanism disclosed in Watson is interconnected with an activation mechanism (discussed below). Specifically, the Watson attachment prevention mechanism includes a frangible member 12a with a

rear portion 56a that extends beyond the base, and, like the finger in Belano, “interferes with the base 16 mounting to the mounting flange 22.” (*See Id.*, 4:28-34). Activation of the smoke detector involves turning and removing member 12a from the device, and thus removes the impediment to mounting. (*See Id.*).

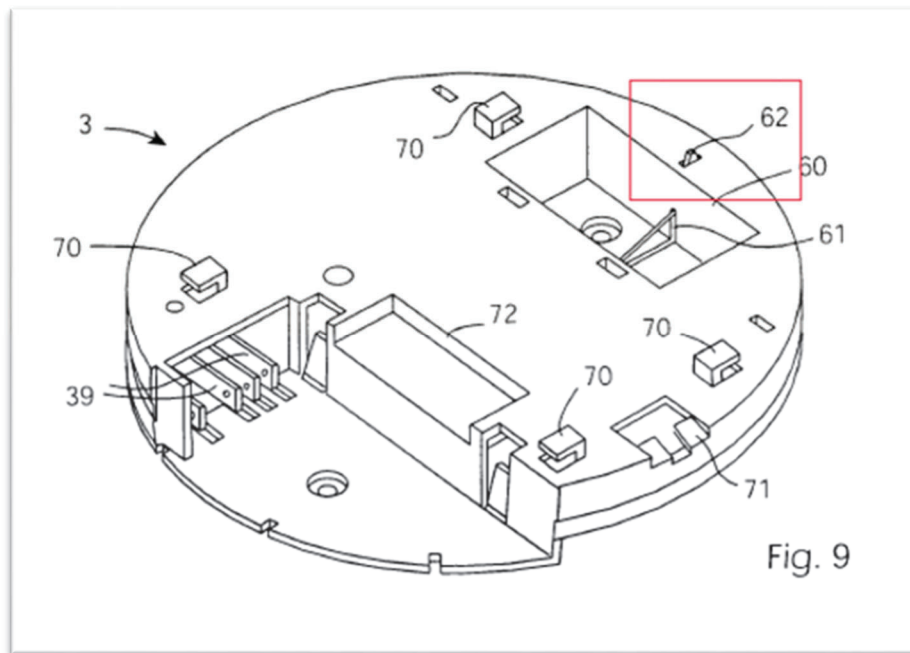


(Ex. 1005, Fig. 1, Fig. 5).

122. Watson’s attachment prevention mechanism is indicative of an industry-wide interest in ensuring that inoperable smoke detectors cannot be mounted. It further suggests obvious ways to impede reattachment to the mounting bracket after the device has been removed from the mounting bracket and deactivated should one desire to implement such a feature.

4. Byrne '354

123. Byrne '354 discloses a reattachment prevention mechanism comprising a safety catch 61 in the battery compartment which is operatively connected to prong 62. If the battery is missing prong 62 prevents alarm body 3 from being engaged with the base ("mounting bracket") 2 by blocking the sideways sliding action necessary to attach the alarm body to the base. (See Ex. 1009, ¶¶[18, 29]).



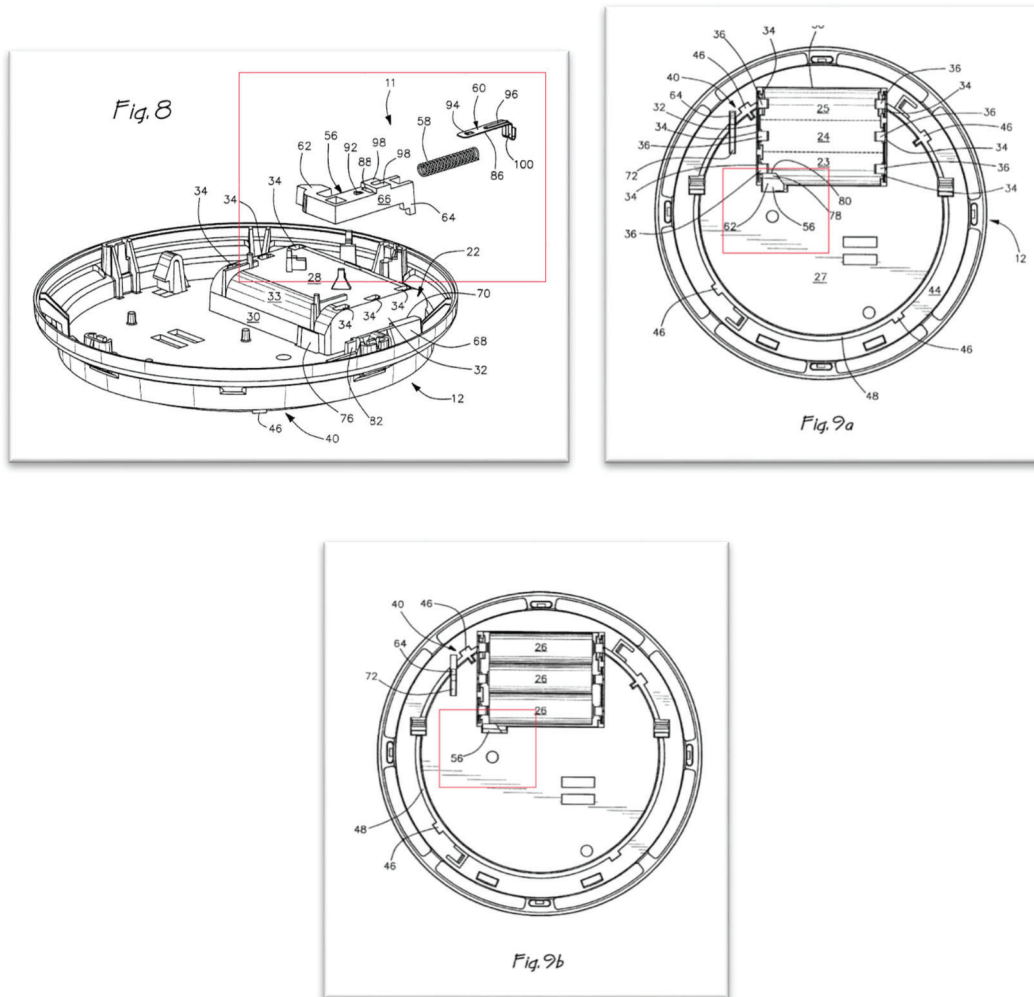
(Ex. 1009, Fig. 9) (annotated).

124. Byrne '354 is directed at a hard-wired smoke detector that also has a battery backup system. The reattachment prevention mechanism prevents reattachment after the batteries have been removed. The inclusion of an attachment-prevention mechanism in Byrne '354 further demonstrates the goal of ensuring the

mounting of smoke detectors that are fully operable inclusive of their safety back-up system.

5. DeLuca '487

125. DeLuca '487 discloses a smoke “detector of the bracket mounted type” with a reattachment prevention mechanism that “prevents the detector base from being mounted to a wall or ceiling affixed bracket” “when fewer than all batteries are present in the [battery] compartment.” (Ex. 1006, Abstract). The attachment prevention mechanism of DeLuca '487 discloses a “lockout mechanism” made up of several components, including a “lockout actuator” with a “battery sensing portion 62, a lockout tab portion 64 and a sliding guide or pilot portion 66” that work together to ensure that the interfere with the mating of the base and the smoke detector when fewer than all batteries are installed into the smoke detector. (*See* Ex. 1006, 4:35-5:30).



(Ex. 1006, Figs. 8, 9a, 9b) (annotated).

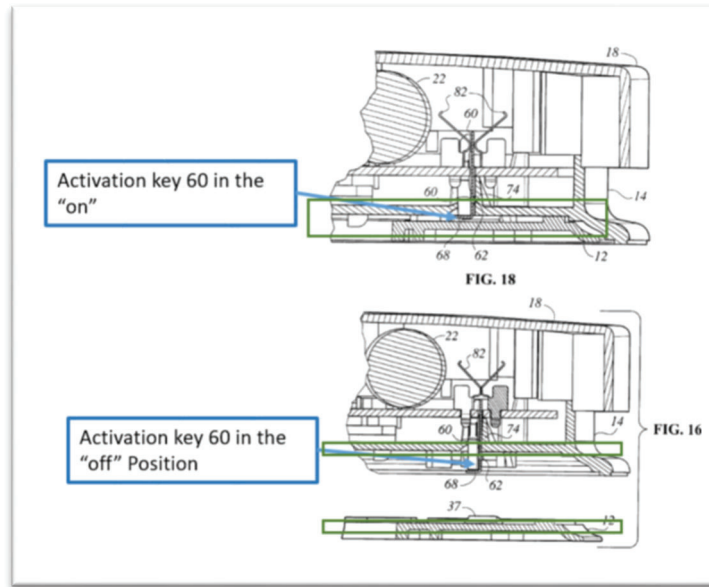
126. DeLuca '487 acknowledges the evolution of the goals associated with ensuring the installation of operable smoke detectors. It refers both to patents that prevent battery compartment lids from closing when batteries are not installed as well as other smoke detectors that prevent attachment when batteries are not installed, including, for example, Belano. (*See e.g.*, Ex. 1006, 4:35-5:30).

127. The “main objective” of DeLuca ’487 is not to present a new type of attachment prevention mechanism, but instead, to limit the number of attachment prevention mechanisms in a smoke detector when a device utilizes a battery compartment that houses multiple batteries. (*Id.*, 1:64-67).

6. Malewski

128. Malewski discloses a reattachment prevention mechanism which causes the base of the alarm, i.e. the second portion, to be incapable of reattachment to the mounting bracket. In one embodiment, a user pulls a key 60 to the “off position” to interrupt the connection of the power source to the alarm electronics. (Ex. 1007, 7:51-8:4). In the off position, the key “protrudes from the base 14, where it interferes with making the bayonet-type connection between base 14 and mounting bracket 12.” (Ex. 1007, 8:4-9.) An alarm deactivated in this manner is incapable of attachment to the mounting bracket while the key 60 is in the “off position,” as illustrated by FIGS. 16 and 18 below. (Ex. 1007, 3:43-45, 7:51-8:4, FIGS. 16 and 18).

Reattachment Prevention Mechanism of Malewski



(Ex. 1007, FIGS. 16 and 18 (annotated)).

VIII. THE OBVIOUSNESS GROUNDS

129. Below is a table showing the references and combinations I have considered in forming my opinion and the claims that I have analyzed for each.

Ground	References	Challenged Claims
1	STP2003 (Ex. 1008) in view of the knowledge of a POSA	1-7, 12-15
2	Malewski (Ex. 1007) in view of the knowledge of a POSA	1-7, 12-15
3	Malewski and DeLuca '487 (Ex. 1006)	1-7, 12-15
4	Malewski and STP2003	1-7, 12-15
5	Byrne '354 (Ex. 1009) and Byrne '311 (Ex. 1010)	1-7, 12-15
6	DeLuca '487 and Byrne '311	12-15

A. Ground 1: Claims 1-7 and 12-15 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious Over STP2003

1. Claims 1-7 and 12-15 are Obvious over STP2003 and the Technical Expertise of a POSA

a. *Independent Claim 1*

i. [1Pre] An electronic device, comprising:

130. UL, a standard governing organization, oversees the issuing of standards regulating smoke alarms, including electronic smoke alarms powered by battery. (Ex. 1008, 1, 5-6). STP2003 describes proposed changes to UL217, the UL standard regulating smoke alarms. (*Id.*). Therefore, to the extent the preamble is limiting, the prior art would render it obvious.

ii. [1a] a first portion;

131. STP2003 expresses concern over users of covered or sealed smoke alarms “deactivat[ing] the battery and then plac[ing] the unit back into its normal mounting location.” (Ex. 1008, 1, 5-6). STP2003 does not, however, describe the structure or installation of said smoke alarm. A POSA would have thus been motivated to look to a reference that describes said structure and installation method. A POSA would have known one common structure and installation method of smoke alarms provides for having separate alarm device portion and mounting bracket portions. In fact, the ’158 Patent identifies a bracket-mounted detector as prior art.

(*See* Ex. 1001, 1:56-58). Accordingly, STP2003 in view of the knowledge of a POSA, therefore, renders this claim feature obvious.

- iii. [1b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics; and

132. A POSA would have known of smoke alarms having a two-piece construction, where one piece is a mounting bracket, and the second piece is an alarm portion. (Ex. 1008, 5-6). The “unit” referred to in STP2003 is the “second portion” “configured for attachment.” The background of the ’158 Patent describes how some prior art alarms required activation of the alarm before mounting to the bracket, necessitating all electronics to be in the alarm portion or else it would not be activatable prior to mounting. (*See* Ex. 1001, 1:56-58).

133. Smoke detectors with separate mounting brackets and electronic devices were well known in the art before the alleged invention of the ’158 Patent. For example, Malewski teaches a hazard detector 10 made up of a major portion and its complement the mounting bracket to which the major portion is configured to be mounted. (Ex. 1007, 3:33-35, 4:63-66). The major portion of the hazard detector 10 has a base 14, an essentially electronics/power/sensor (EPS) section 16 and protective cover 18. (Ex. 1007, 4:63-66). The EPS section 16 “contains fundamentally all of the necessary circuitry (not shown) that would be typical of the

particular hazard detector. This circuitry is disposed in a circuit board 20, which also is adapted to secure batteries 22 thereto.” (Ex. 1007, 4:66-5:4).

134. In another example, Watson clearly discloses an alarm portion with the operational electronics and battery inside and a separate mounting bracket. (Ex. 1005, 2:44-48, 2:56-59). Watson describes the alarm portion as “support[ing] the electronics 20a of the detector 10 including the control unit 32, audible output device 34, sensor 36, and permanently connected battery unit 38.” (Ex. 1005, 2:61-64).

135. Further, DeLuca ’487 describes a detector comprising a bracket 20 and a detector base 12, “which houses various electronic equipment 14, 16 such as a sensor, an alarm, and various signal processing circuitry....” (Ex. 1006, 3:23-34, Fig. 6).

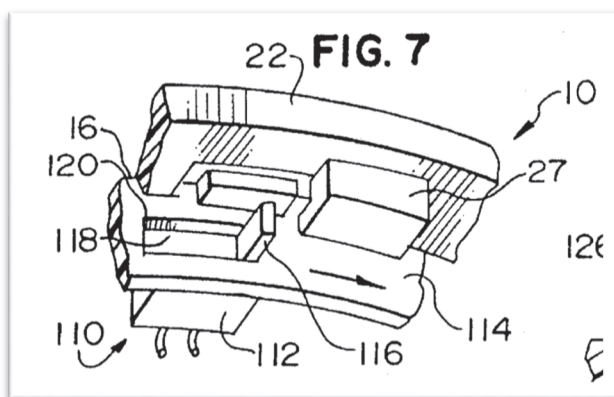
136. Additionally, STP2003 describes proposed changes to UL217 with regards to battery-operated smoke alarms with non-replaceable batteries. (Ex. 1008, 5-6). Accordingly, a POSA would understand that battery-powered smoke alarms having a two-piece construction, including a mounting bracket and an alarm portion would include a battery for powering the electronics of the device in the alarm portion of the device. STP2003, in view of the knowledge of a POSA, therefore, renders this claim feature obvious.

- iv. [1c] cooperating features on the first portion and the second portion that automatically activate the second

portion upon initial attachment of the second portion to the first portion;

137. STP2003 discloses a “means to activate the power” of non-replaceable-battery smoke alarms. (Ex. 1008, 6). A POSA would understand “means to activate the power” of a smoke alarm could include cooperating features on the first and second portions that automatically activate the second portion upon attachment.

138. An example of these cooperating features is also described in Watson, namely “L-shaped projections 27” on the mounting bracket and a stem portion 116 of an activating switch 112 on the alarm. (Ex. 1005, 2:51-53, 4:66-5:10). These cooperating features are shown in Fig. 7 of Watson, reproduced below.



(Ex. 1005, FIG. 7).

139. STP2003, in view of the knowledge of a POSA, therefore, renders this claim element obvious.

- v. [1d] wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second

portion upon initial attachment of the second portion to the first portion;

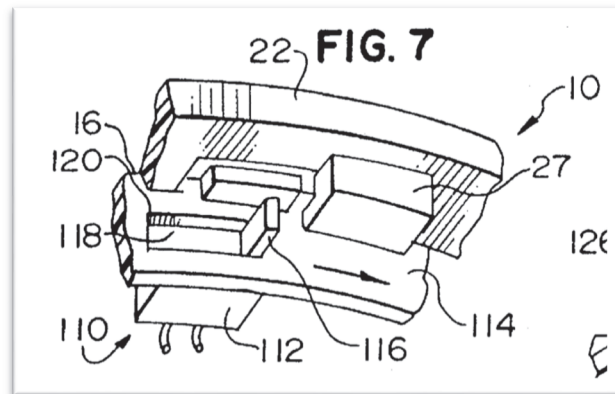
140. I understand that in the Related Litigation, the District Court determined that the claim term “activate/deactivate system” should be given its plain and ordinary meaning. (*See* Ex. 1019, 4-5). The claim language further provides that the claimed “activate/deactivate system” can do several things. For this claim element, the activate/deactivate system is “configured to automatically activate the second portion upon initial attachment of the second portion to the first portion.” (Ex. 1001, cl. 1).

141. STP2003 identifies a “means to activate the power” of non-replaceable-battery smoke alarms. (Ex. 1008, 6). A POSA at the time of the invention would have understood this “means to activate” to include features on the first and second portions that automatically activate the second portion upon initial attachment, thereby comprising an “activation system.”

142. STP2003 also identifies “a means to deactivate the power when the batteries had reached the end of their useful life.” (Ex. 1008, 6). Like with the “activation system” above, a POSA at the time of the invention would have understood this “means to deactivate” to include a deactivation system, as STP2003 describes a system of components that deactivate the alarm device. (Ex. 1008, 6). Accordingly, STP2003 discloses an activation means to activate the power of the

alarm portion of an alarm device and a deactivating means to “deactivate that battery at the end of useful battery life.” STP2003, therefore renders this claim element obvious.

143. An example of these cooperating features comprising an activate/deactivate system is also described in Watson, namely “L-shaped projections 27” on the mounting bracket and a stem portion 116 of an activating switch 112 on the alarm. (Ex. 1005, 2:51-53, 4:66-5:10). These cooperating features are shown in Fig. 7 of Watson, reproduced below.



(Ex. 1005, FIG. 7).

144. During prosecution, the examiner concluded that Watson taught the activate/deactivate system as claimed. (Ex. 1004, 125 (citing Ex. 1005, 5:1-18, 4:40-51)).

- vi. [1e] wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and

145. STP2003 describes “a means to deactivate the power when the batteries had reached the end of their useful life.” (Ex. 1008, 6). A POSA would understand that this deactivation means described by STP2003 would be used to deactivate, for example, the alarm portion of two-piece smoke alarm that had been previously activated by the activation means taught by STP2003. (*See Id.*).

146. Additionally, STP2003 describes that the “deactivation means shall require the use of a tool, or equivalent.” (*Id.*). A POSA would understand that the prescribed use of a tool or equivalent of the deactivation means provides a means via which a user is able to manually deactivate the alarm portion of an activated alarm device. (*Id.*).

147. STP2003, therefore, renders this claim feature obvious.

- vii. [1f] wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.

148. STP2003 further provides that the “activation means and the deactivation means shall be designed to operate one time only.” (Ex. 1008, 6). A POSA would understand that single-use activation and deactivation means would have the effect of rendering the alarm unable to be reactivated.

149. Additionally, STP2003 notes “[t]he deactivation means shall also serve to completely discharge the battery(ies),” (Ex. 1008, 6). The inclusion of a

requirement to discharge the batteries further renders obvious the “cannot be reactivated” aspect of this claim element.”

150. STP2003 also states that “[t]he deactivation means...shall render the unit incapable of being reinstalled.” (Ex. 1008, 6). In other words, in an alarm comprising a mounting bracket, i.e. first portion, and an alarm portion, i.e. second portion, an alarm portion “incapable of being reinstalled” cannot be reattached to the first portion. (*See Id.*). STP2003, therefore, renders obvious the claimed second portion that, when deactivated, cannot be reactivated and cannot be reattached to the first portion.

b. *Dependent Claims 2-7*

- i. Claim 2: The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm

151. As mentioned above, STP2003 describes installed smoke alarm devices (Ex. 1008, 1, 5-6), however, does not provide detail regarding how installation occurs, leading a POSA to look to another reference. As described above, a POSA would know that this includes well-known devices having a life safety alarm with a separate mounting bracket. The ’158 Patent itself identifies such a device, stating that a bracket-mounted detector with a separate mounting bracket and alarm portion

was known, prior art. (Ex. 1001, 1:56-58). Accordingly, STP2003 in view of the knowledge of a POSA, renders each element of claim 2 obvious.

- ii. Claim 3: The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.

152. STP2003 describes standards, and proposed changes to the standards, governing smoke alarms, devices known to a POSA for detecting life threatening conditions, such as smoke or heat. (Ex. 1008, 1, 5-6). STP2003, therefore, renders this claim obvious.

- iii. Claim 4: The electronic device of claim 3, wherein the detection system comprises a smoke detection system.

153. STP2003 describes standards, and proposed changes to the standards, governing smoke alarms. (Ex. 1008, 1, 5-6). STP2003, therefore, renders this claim obvious.

- iv. Claim 5: The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

154. STP2003 describes means to both activate and deactivate the alarm portion. (Ex. 1008, 6). A POSA would understand that there are various ways to achieve to achieve activation and deactivation of the alarm portion of an electronic device and that selection of such means may be a design choice that depends on other design constraints of the device.

155. For example, Watson describes many different activation and deactivation switch and slider designs. (*See, e.g.*, Ex. 1005, 3:56-57). In one such example, Watson describes the use of a “single use slide-switch” which is a slider and switch combination configured for one-way movement via, for example, a blocking mechanism¹⁰ or internal ratchet. (Ex. 1005, 5:3-18). STP2003 in view of the knowledge of a POSA, therefore, discloses an activation/deactivation system comprising a slider configured for one-way movement.

156. Additionally, during prosecution, the examiner explained that the slider configured for one way movement was obvious:

Watson discloses all of the claimed limitations except for the claimed activate/deactivate system comprises a slider configured for one-way movement and having three positions and a three position switch connected to the slider. Watson does teach that various switches may be used to facilitate the activate/deactivate switches. One of ordinary skill in the art would have used any kind of switch that would accomplish the desired result. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a slider configured for one-way movement attached to a switch that has three positions.

(*See* Ex. 1004, 131).

157. As noted in Watson, UL standards require that detectors ship in a deactivated state. (Ex. 1005, 3:38-44). Accordingly, a POSA would understand that

¹⁰ *See* section IX.A.2.a

this shipment deactivated comprises one of three states of a smoke detector described by STP2003, along with the activated state and the deenergized state. Thus, in view of STP2003, a POSA would have recognized that these three states could be enabled through use of a well-known, three-position switch, as opposed to, for example, separate single-pole, single-throw energizing and deenergizing switches. (*See* Ex. 1005, 2:35-43). A slider configured for one-way movement having three positions using, for example, an internal ratchet, or a blocking mechanism¹¹, was well known in the art at the time of the invention. STP2003 in view of a POSA, therefore, renders this claim feature obvious.

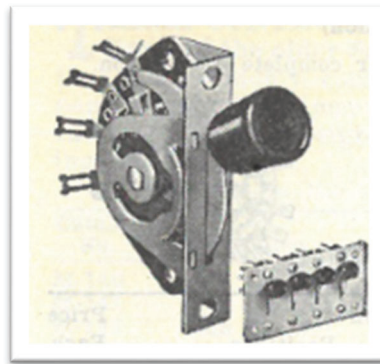
- v. Claim 6: The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.

158. As noted above in Sections VIII.A.1.a.iv, VIII.A.1.a.v, VIII.A.1.a.vi, and VIII.A.1.a.vii, STP2003 requires activation and deactivation means, and, as noted in Watson, UL approval required (and continues to require) three distinct states: (1) a shipment deactivated state, (2) an activated state, and (3) a deenergized state. (Ex. 1008, 6; *see also* Ex. 1005, 2:40-41, 3:38-44, 4:22-23, 4:47-51). A POSA would have recognized that these three states could be enabled through use of any of a variety of well-known sliders and switches, such as a well-known, three-position

¹¹ *See* Section IX.A.2.a

switch, as opposed to separate activation and deactivation switches. (Ex. 1005, 2:35-43).

159. The inventor of the '158 Patent does not claim to have invented a slider or a three-position switch. Indeed, three-position switches with sliding elements had been known in the electro-mechanical arts for at least sixty years before the alleged invention disclosed in the '158 Patent. *See* Ex. 1042 (Centralab 3-way selector switch for musical instruments).



(Ex. 1042).

160. Use of a slider connected to the switch would have been an obvious design choice to allow for a sealed alarm design that still allows for the external control over the inaccessible internal electronics. (*See* Ex. 1005, 1:40-41 (“A sealed, ambient condition detector having no user accessible parts, and being disposable is disclosed.”)). Alternatively, as also described by Watson, the use of a slider would allow for frangible detachment of the slider after the alarm had been activated and/or deactivated, as taught by Watson. (Ex. 1005, 1:53-57). Alternatively, a POSA would

have recognized the that frangible rotatable elements 12a and 12b could have been replaced by equivalent frangible slidable elements. STP2003 in view of a POSA, therefore renders all the features of this claim obvious.

- vi. Claim 7: The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

161. STP2003 addresses a variety of changes to the requirements for smoke alarms with “non-replaceable primary batter[ies].” (Ex. 1008, 5-6). STP2003 therefore confirms that smoke alarms with non-replaceable batteries were already known in the art. A POSA would understand that smoke alarms with non-replaceable batteries are often called sealed battery devices, as the battery is generally provided in a sealed compartment that is not user accessible. (*See, e.g.*, Ex. 1005, 1:53-57). STP2003, in view of the knowledge of a POSA, therefore renders this claim obvious.

c. *Independent Claim 12*

- i. [12Pre] An electronic device, comprising:

162. To the extent the preamble is limiting, STP2003 renders this limitation obvious, per Section VIII.A.1.a.i.

- ii. [12a] a first portion;

163. STP2003 renders this limitation obvious, per Section VIII.A.1.a.ii.

- iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to

operate the device and at least one battery for powering the electronics;

164. STP2003 renders this limitation obvious, per Section VIII.A.1.a.iii.

iv. [12c] an activation mechanism to activate the second portion;

165. STP2003 discloses a “means to activate the power” of non-replaceable-battery smoke alarms. (Ex. 1008, 6). A POSA would understand “means to activate the power” of a smoke alarm would include an activation mechanism. In fact, the MPEP recognizes that “mechanism” is often a nonce word substitute for the work “means.” (Ex. 1018, §2181). STP2003, therefore, teaches “an activation mechanism to activate the second portion,” as recited in claim 12.

v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

166. STP2003 discloses “a means to deactivate the power when the batteries had reached the end of their useful life.” (Ex. 1008, 6). STP2003 further provides that the “activation means and the deactivation means shall be designed to operate one time only.” (Ex. 1008, 6). A POSA would understand that single-use activation and deactivation means would have the effect of permanently deactivating the alarm.

167. Additionally, STP2003 notes “[t]he deactivation means shall also serve to completely discharge the battery(ies),” (Ex. 1008, 6). The inclusion of a

requirement to discharge the batteries further renders obvious the “permanent deactivation” aspect of this claim element.”

168. STP2003 teaches the claimed “deactivation mechanism” by virtue of this “means to deactivate.” While the activation means activate the power, the deactivating means “deactivate that battery at the end of useful battery life.” (Ex. 1008, 6). A POSA would understand that the deactivation means taught by STP2003 would be useful after the second portion has been activated, by virtue of the fact that the activating means activate power, whereas the deactivating means deactivate power “at the end of useful battery life.”

169. Further, STP2003 also describes that the “deactivation means shall require the use of a tool, or equivalent....” (Ex. 1008, 6). A POSA would understand that prescribed the use of a tool or equivalent suggests the deactivation means described in STP2003 are accessible when the first and second portions are detached. It is my opinion that STP2003, therefore, renders this claim limitation obvious.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

170. STP2003 states, “[t]he deactivation means...shall render the unit incapable of being reinstalled.” (Ex. 1008, 6). As described above, the “rather conventional” detector as described by DeLuca ’487 includes a base with the associated electronics, and a mounting bracket. (Ex. 1006, 3:25-34). Therefore, a

POSA would understand that deactivation means which render the conventional detector, comprising first and second portions, incapable of being reinstalled could include some mechanism for preventing the second portion, i.e. the base, from engaging with the first portion, i.e. the bracket.

171. Additionally, DeLuca '487 discloses one example of such a “reattachment prevention mechanism” in describing its alarm device having a lockout actuator 56, including “a battery sensing portion 62, a lockout tab portion 34 and a sliding guide or pilot portion 66,” which may move between obstructing and non-obstructing positions. (Ex. 1006, 4:45-47, 2:23-25). When in the obstructing position, this lockout tab 64 prevents the base of the alarm device from being reattached to the bracket and indicates that the device does not have the requisite power for operation, i.e. all battery receiving regions do not contain a battery. (Ex. 1006, 4:63-67, 5:1-10).

172. Accordingly, a POSA would be understand that the teachings of STP2003 combined with the knowledge of a POSA at the time of the invention disclose the recited claim feature. A POSA would thus find this element obvious in view of STP2003 and the POSA’s technical knowledge.

d. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and

the second portion comprises an alarm portion of the life safety alarm.

173. As described in Section VIII.A.1.b.i, STP2003 renders this limitation obvious.

ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

174. As described in section VIII.A.1.b.ii, STP2003 renders this limitation obvious.

iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

175. As described in section VIII.A.1.b.iii, STP2003 renders this limitation obvious.

B. Ground 2: Claims 1-7 and 12-15 are Unpatentable Under 35 U.S.C. ¶ 103(a) as Obvious over Malewski

176. Because Malewski discusses and incorporates Watson by reference, I discuss the various ways Malewski and Watson, render obvious all of the Challenged Claims.

177. In light of the existing standards and model codes, discussed in Section VII, a POSA would have read Malewski in a way that the trivial differences (if any) between Malewski and the Challenged Claims would have been ordinary modifications not reflective of inventiveness, but rather obviousness, of the Challenged Claims. In that regard, I provide herein several readily available

modifications to Malewski that would have been well within the skill of a POSA. Those modifications draw from express embodiments in Malewski and Watson that would require little, if any, experimentation and would give an expectation of success. *See* Sections IX.A.1 (Malewski - all Challenged Claims) IX.A.2.a (Watson - all Challenged Claims); IX.A.2.b (Watson – Claims 1-4, 7, 12-15), IX.A.2.c (Watson – Claims 1-4, 7, 12-15), IX.A.2.d (Watson – Claims 1-4, 7, 12-15). I have not relied on hindsight, but rather ordinary skill as of the filing date of the '158 Patent (and the knowledge of a POSA) to provide several examples of what those of skill in the art would have thought about when reading Malewski.

1. Claims 1-7 and 12-15 are obvious over Malewski and the Technical Expertise of a POSA

178. It is my opinion that the scope of the prior art includes Malewski and as well as the technical knowledge of a POSA. Malewski discloses bracket-mounted, battery-operated electronic devices such as smoke detectors. (Ex. 1007, Abstract; Ex. 1005, 2:44-48). Malewski, in view of the knowledge of a POSA, describes and renders obvious all of the features of the Challenged Claims.

179. Additionally, because Watson is incorporated into Malewski by reference (Ex. 1007, 2:35-39), I explain how features from Watson render obvious all of the features of the challenged claims.

a. *Independent Claim 1*

i. [1Pre] An electronic device, comprising:

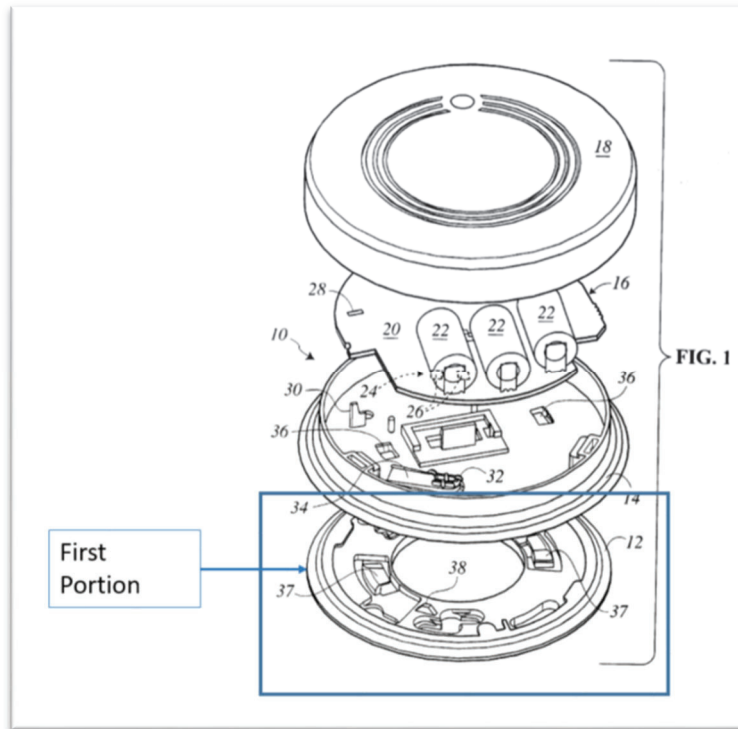
180. Malewski is directed at a hazard detector, which, as it includes the “necessary circuitry” “disposed in a circuit board 20, which also is adapted to secure batteries,” is an electronic device. (Ex. 1007, 1:5-10, 4:66-5:4).

181. Additionally, Watson describes a long life detector, namely a smoke alarm, which is an electronic device. (Ex. 1005, 1:5-10, 2:33-35) The device comprises at least detector electronics, a control unit, and a permanently connected battery unit. (Ex. 1005, 2:61-64).

182. Therefore, to the extent the preamble is limiting, the prior art would render it obvious. (Ex. 1005, 1:5-10, 2:33-35).

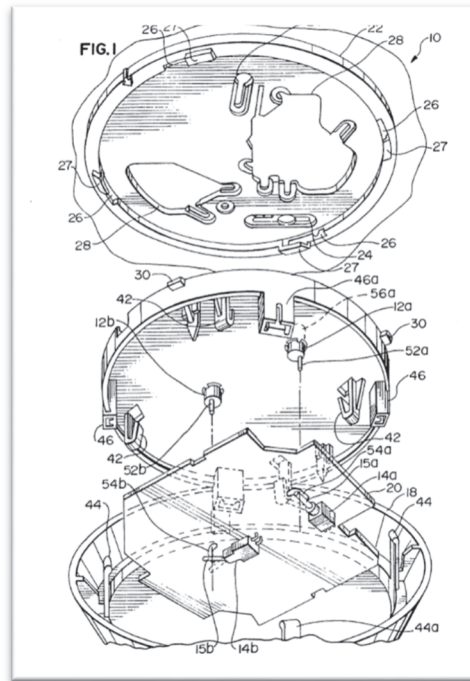
ii. [1a] a first portion;

183. Malewski describes the mating of “major portion” with “its complement, the primary functions of the latter being to serve a surface-mountable bracket and to securely retain the major portion.” (Ex. 1007, 3:33-35). As illustrated below in FIG. 1 of Malewski, this “complement” is analogous to the “first portion” of the ’158 patent.



(Ex. 1007, Fig. 1 (annotated)).

184. Additionally, Watson discloses an alarm device comprising of a mounting flange 22 or bracket onto which the rest of the alarm device may be installed. (Ex. 1005, 2:44-48). Mounting flange 22, as shown below in FIG. 1 of Watson, is analogous to a first portion of an electronic device. (Ex. 1005, 2:44-48).



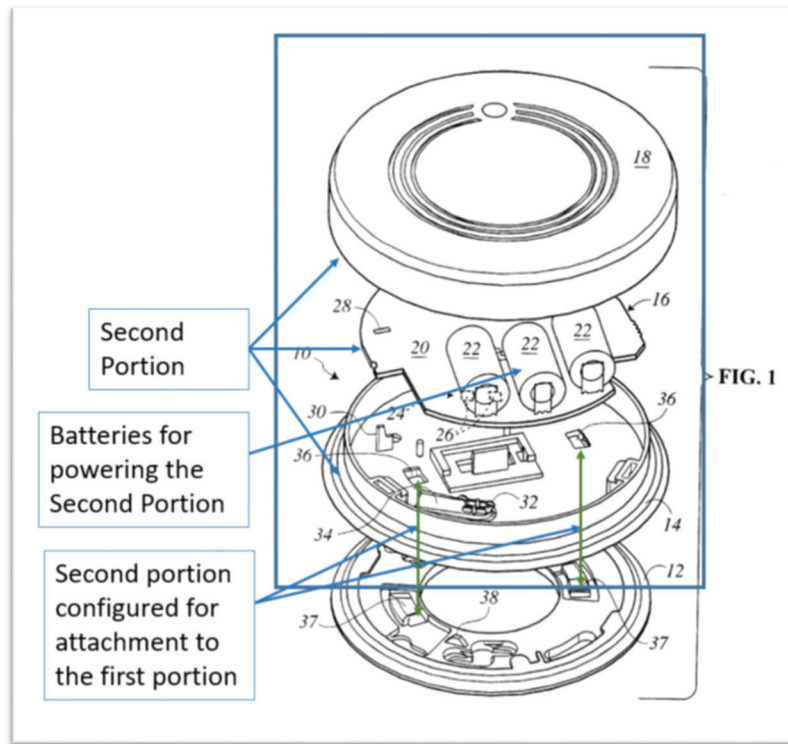
(Ex. 1005, Fig. 1).

185. Accordingly, Malewski discloses the recited first portion.

- iii. [1b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics; and

186. Malewski discloses a hazard detector 10 made up of a major portion and its complement the mounting bracket to which the major portion is configured to be mounted. (Ex. 1007, 3:33-35, 4:63-66). The major portion of the hazard detector 10 has a base 14, an essentially electronics/power/sensor (EPS) section 16 and protective cover 18. (Ex. 1007, 4:63-5:02). The EPS section 16 “contains fundamentally all of the necessary circuitry (not shown) that would be typical of the

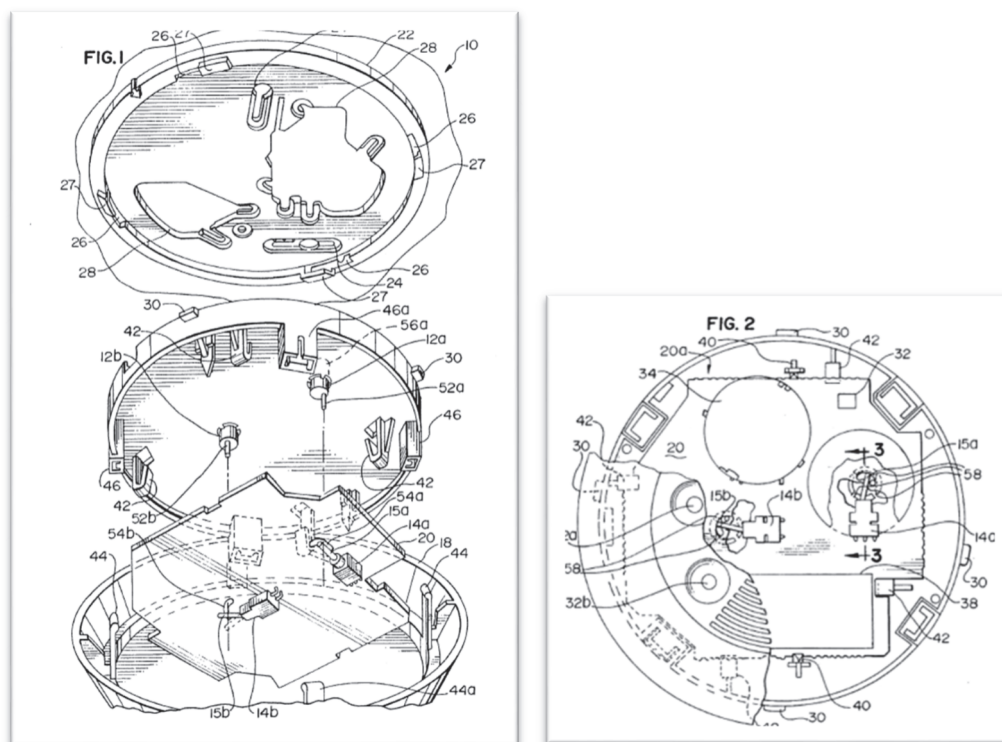
particular hazard detector. This circuitry is disposed in a circuit board 20, which also is adapted to secure batteries 22 thereto.” (Ex. 1007, 4:66-5:4).



(Ex. 1007, Fig. 1 (annotated)).

187. Additionally, Watson describes an alarm device, which includes an alarm portion (detector 10) having a base. (Ex. 1005, 2:44-48). Base 16, as shown below in FIG. 1 of Watson, contains features, such as projections 30, for “securing the base 16 to the [mounting] flange 22,” attaching the alarm portion of the electronic device to the bracket portion (“bracket 22” / “flange 22”). (Ex. 1005, 2:44-48, 2:56-60).

188. Watson also describes base 16 as supporting “the electronics 20a of the detector 10 including the control unit 32, audible output device 34, sensor 36, and permanently connected battery unit 38,” which is coupled to the control unit and other appropriate circuitry. (Ex. 1005, 2:61-64, 5:57-60). Additional embodiments described in Watson disclose a base 16 comprising electronics including an activating switch 112. (Ex. 1005, 4:66-5:10). Such embodiment mounts detector 10, which includes the alarm portion and base, to the mounting flange 22, as can be seen in FIGS. 1 and 2 of Watson.



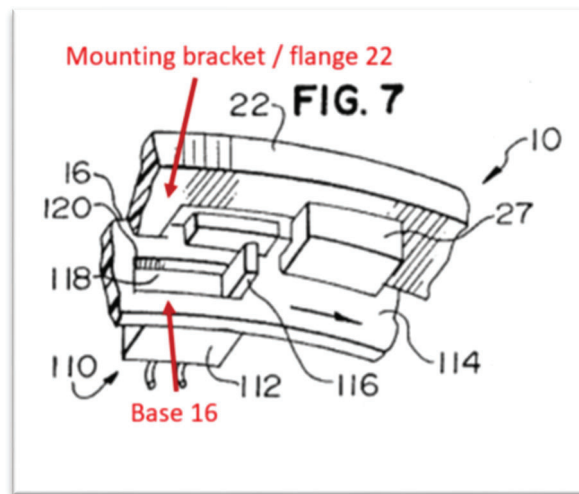
(Ex. 1005, Figs. 1 and 2).

189. A POSA would thus understand Malewski to teach the subject matter of this claim feature.

- iv. [1c] cooperating features on the first portion and the second portion that automatically activate the second portion upon initial attachment of the second portion to the first portion;

190. Malewski teaches the “mating” of the “major portion” and the “surface mountable bracket” which “securely retain[s] the major portion.” (Ex. 1007, 3:24-42). Such mating “securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation.” (Ex. 1007, 3:24-42).

191. Watson also describes that mounting flange 22, analogous to the first portion, includes “slotted channels 26 formed by L-shaped projections 27, for rotatably mounting the base 16 thereto.” (Ex. 1005, 2:51-53). These projections 27 on the mounting flange 22 are designed to engage an activating switch 112, specifically a stem portion 116 of the switch, located within the base 16. This is depicted in figure 7 of Watson below.



(Ex. 1005, FIG. 7) (annotated).

192. As the base 16 (the base 16, cover 18 and components therein being analogous to the second portion) is rotated onto the mounting flange 22 (analogous to the first portion), for attachment, the activating switch 112 is moved into an active position. (Ex. 1005, 4:66-5:10). As such, Watson describes the first portion and the second portion having cooperating features that automatically activate the second portion upon initial attachment of the second portion to the first portion. (Ex. 1005, 2:51-53, 4:66-5:10).

193. Malewski, therefore, renders this limitation obvious.

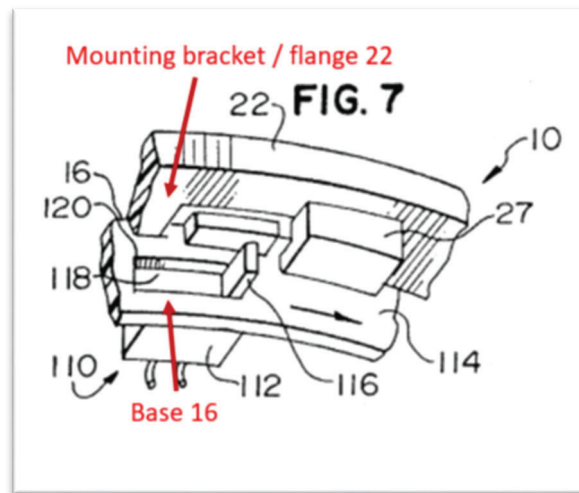
- v. [1d] wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second portion upon initial attachment of the second portion to the first portion;

194. I understand that in the Related Litigation, the District Court determined that the claim term “activate/deactivate system” should be given its plain and ordinary meaning. (*See* Ex. 1019, 4-5). The claim language further provides that the claimed “activate/deactivate system” is “configured to automatically activate the second portion upon initial attachment of the second portion to the first portion.” (Ex. 1001, cl. 1).

195. Malewski teaches the connecting or “mating,” which includes contact and rotation, of a “major portion” comprising a hazard detector with a “surface mountable bracket.” (Ex. 1007, 3:24-42). The contact and rotation ensures that the mounting bracket securely retains the alarm portion. (Ex. 1007, 3:24-42). Such mating “securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation.” (Ex. 1007, 3:24-42).

196. With respect to the deactivation, Malewski discloses multiple deactivating mechanisms. For example, Malewski teaches deactivation “merely by applying a single counter rotation motion to its protective cover.” (Ex. 1007, 3:49-50). Malewski also teaches the use of an activation key 60 which, when inserted facilitates a closed circuit to activate the device, and when removed, opens that circuit to deactivate the device. (Ex. 1007, 7:6-11, 7:29-31, 7:51-8:2, 8:11-15).

197. Watson teaches that “[w]hen the base 16 is rotated to mount the base 16 to the flange 22, the stem portion 116 [of an activating switch 112] engages the L-shaped projection 27 and is moved into an activating position.” (Ex. 1005, 4:66-5:10). “In this embodiment, the detector is activated by mounting the detector 10 to the mounting flange 22.” (*Id.*, 5:5-10). Several of these components are cooperating features of the first and second portions. For example, the stem portion 116 is a feature of the base 16, and the L-shaped projection 27 is a feature of the mounting bracket 22. These features are configured to cooperate to automatically activate the second portion (the base 16, cover 18, and components contained therein) upon the initial attachment of the operational element of the smoke detector (base 16, cover 18 and components contained therein) to the mounting bracket 22. (*See e.g.*, Ex. 1005, 5:5-10).



(Ex. 1005, Fig. 7) (annotated).

198. Watson also teaches a deactivating switch 14b. (Ex. 1005, 3:61-65). “Continued turning of the member 12b brings stub 52b into contact with and moves switch handle 15b of deenergizing switch into the closed, or deenergized position.” (Ex. 1005, 4:40-51). This “‘drains’ the battery unit 38 of any remaining power.” (Ex. 1005, 4:50-51). Therefore, Watson discloses cooperating features on the first portion and the second portion comprising an activate/deactivate system configured to automatically activate the second portion upon initial attachment of the second portion to the first portion.

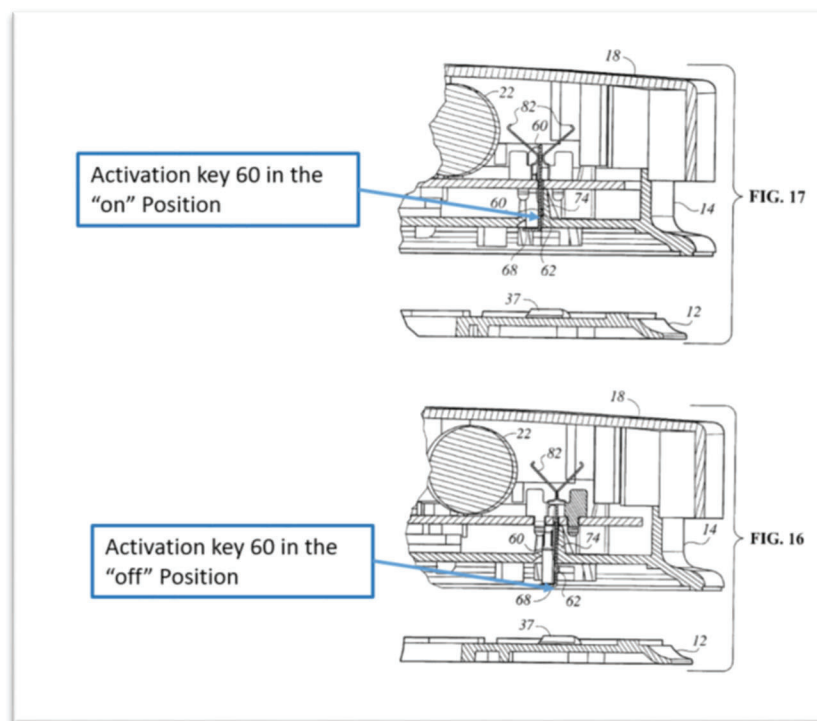
199. During prosecution, the examiner found that Watson teaches this limitation. (Ex. 1004, 125 (citing Ex. 1005, 5:1-18, 4:40-51)).

200. Therefore, a POSA would find the subject matter of this claim feature to be obvious in view of Malewski.

- vi. [1e] wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and

201. Additionally, Malewski teaches an “activation key 60” that “is made of or coated with, a conductive material.” (Ex. 1007, 7:29-31). The activation key is configured to bridge the gap between “pairs of spring contacts 82 linked in parallel” such that when at least one pair is bridged by the activation key 60 (i.e. electrically closed), the device of Malewski is activated. (Ex. 1007, 7:6-11).

202. In the “on” position, the activation key “resides among, in electrical contact with, spring contacts 82.” (Ex. 1007, 8:11-15). The activation key 60 can be pulled from the “on” or activated position to the “off” position such that the “key 60 is not in contact with the spring contacts 82” and the device is deactivated, as illustrate below in FIGS. 16 and 17. (Ex. 1007, 7:51-8:2).



(Ex. 1007, Figs. 16 and 17 (annotated)).

203. Malewski discloses another manual deactivation mechanism including a “single-use, frangible, and rotatable switch mechanism” that is connected to the circuit board and battery. (Ex. 1007, 1:38-42, 1:50-53). This activation mechanism involves using screwdriver to “rotate the frangible restraint, thus closing the switch and activating the detector.” (Ex. 1007, 1:42-47. Malewski additionally describes

using a screwdriver to rotate a frangible member to a deactivation or battery ‘drain’ position in which a second switch may be actuated to drain the battery.” (Ex. 1007, 1:49-53; *see also* Ex. 1005, 4:44-51). By using a screwdriver to rotate the switch to a battery “drain” position, one is manually deactivating the electronic device.

204. Additionally, Watson further describes that a user may use a screwdriver or other tool to manually engage the deenergizing, deactivating switch 14b via “continued turning of the member 12b” to move switch handle 15b into the closed position.” (Ex. 1005, 4:40-51). Moving the deactivating switch 14b into the closed position “‘drains’ the battery unit 38 of any remaining power.” (Ex. 1005, 4:44-51). The base 16 of the alarm portion, i.e. second portion, supports battery unit 38 and the other device electronics, which are drained of power and deactivated upon user engagement of the deactivating switch. (Ex. 1005, 2:61-64; 4:44-51).

205. Accordingly, Malewski discloses an activate/deactivate system configured to enable the user to manually deactivate the second portion, and therefore renders this claim obvious. (Ex. 1007, 3:24-50).

- vii. [1f] wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.

206. This claim element discloses two specific features: (1) “when deactivated, the second portion cannot be reactivated”; and (2) “the second portion cannot be reattached to the first portion.” I address each in turn.

207. In describing Watson, which is fully incorporated into Malewski, Malewski describes activation using a single use switch that is turned on using a “single-use” frangible, and rotatable switch mechanism” that is used to activate and then deactivate the smoke detector. (Ex. 1007, 1:35-58). In describing various embodiments of this single-use switch, Malewski states that “retrograde motion [of the single-use switch] is foreclosed” preventing any type of reactivation and implying one-way movement. (Ex. 1007, 1:54-58). A POSA would understand such a “single-use” switch as referring to the ability to activate the electronic device one time, and thus incapable of being activated a second time.

208. Additionally, in its description of Watson, Malewski refers to Watson disclosing the continued rotation of the activation switch to a position that drains the battery and the device is discarded. (Ex. 1007, 1:50-54). A POSA would understand that moving the device out of the activated state into a battery-drain state would include deactivating the device as well. Malewski further describes embodiments where retrograde motion [of the deactivation switch] is foreclosed.” (Ex. 1007, 1:50-58). This shows that once the off switch is engaged, it cannot be disengaged, and, therefore, Malewski discloses the second portion cannot be reactivated.

209. Additionally, Watson, which is expressly incorporated into Malewski discloses a “detector 10 [with] a switch mechanism including rotatable, frangible, or break-away members 12a, 12b and associated single-pole, single-throw (SPST)

energizing and deenergizing switches 12a and 14b respectively. Switch 14a [which] provides one-time activation of the detector 10 when it is placed into service. Switch 14b discharges and deactivates the detector 10 at the end of its useful service life.” (Ex. 1005, 2:35-43). Watson teaches that the continued turning of member 12b by a user activating the deactivating switch results in breaking the “the bridge-like connections 58 between the member 12b and the base 16.” (Ex. 1005, 4:44-51). After deactivation, member 12b “may be removed from the detector 10 and discarded,” as “[t]he members 12a and 12b are not intended to be reused.” (Ex. 1005, 4:9-11).

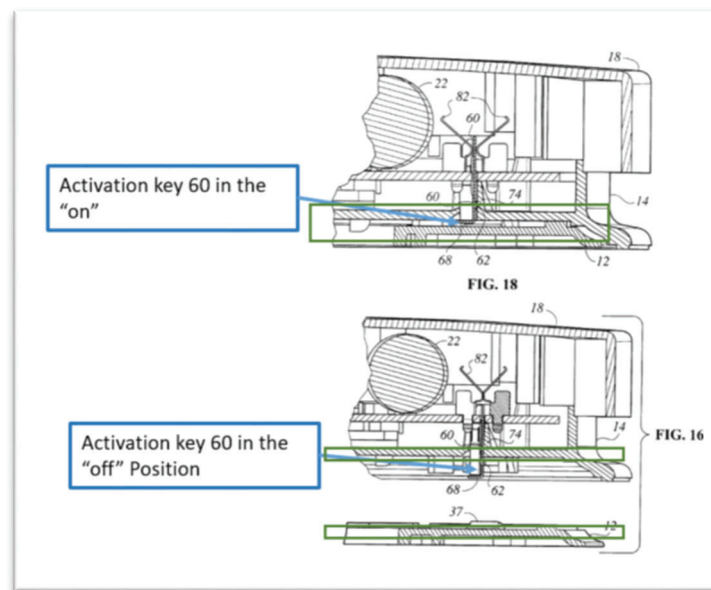
210. As I have stated above, where activation is one-time, the deactivation is necessarily permanent, and Malewski discloses a smoke detector that cannot be reactivated after it has been deactivated.

211. Additionally, the deactivating switch of Watson drains the battery unit, being “non-removably coupled to the control unit” and which is sealed off from the user. (Ex. 1005, 4:52-56). When the battery unit is depleted, the detector is “disposed of and a new detector is installed in its place.” (*Id.*). As member 12b is broken off and sealed battery unit 38 is drained of power during deactivation, the alarm portion of the detector 10 cannot be reactivated once deactivated using deactivating switch 14b. (Ex. 1005, 4:44-55).

212. Additionally because a device with a drained battery cannot function, a POSA would view the inclusion of a battery drain feature as resulting in a smoke

detector that cannot be reactivated after deactivation. The battery drain feature further renders obvious the “cannot be reactivated” aspect of this claim element.

213. Additionally, Malewski discloses a deactivation mechanism of the alarm device which causes the base of the alarm, i.e. the second portion, to be incapable of reattachment to the mounting bracket. Specifically, in Malewski, a user pulls a key 60 to the “off position” to interrupt the connection of the power source to the alarm electronics. (Ex. 1007, 7:51-8:4). . In the off position, the key “protrudes from the base 14, where it interferes with making the bayonet-type connection between base 14 and mounting bracket 12.” (Ex. 1007, 8:4-9.) An alarm deactivated in this manner is incapable of attachment to the mounting bracket while the key 60 is in the “off position,” as illustrated by FIGS. 16 and 18 below. (Ex. 1007, 3:43-45, 7:51-8:9, FIGS. 16 and 18).

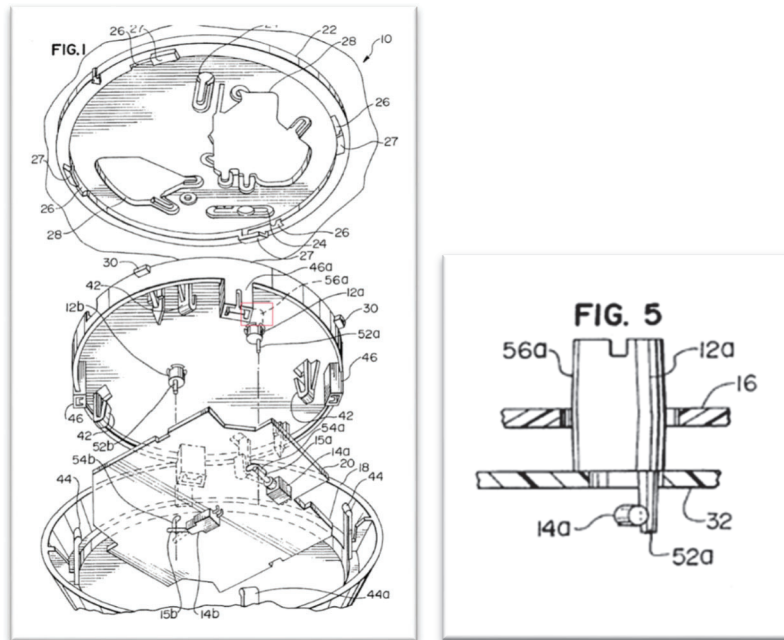


(Ex. 1007, FIGS. 16 and 18 (annotated)).

214. Additionally, in discussing U.S. Patent No. 4,444,434, which, like Watson, is expressly incorporated into Malewski, discloses an electronic device that is discarded after deactivation. (Ex. 1007, 1:50-54). This demonstrates an intention to avoid remounting a device after it has been deactivated. Malewski further identifies a desire to “prevent[] the device from being inadvertently mounted in a deactivated state once properly installed.” (Ex. 1007, 3:43-45).

215. Relatedly, Watson describes preventing inoperable detectors from being attached to the mounting bracket. For example, Watson discloses a detector including a switch, connecting a control element to a battery, the switch having “a first, inoperative state and a second, operative state.” (Ex. 1005, 8:4-8). The switch carries an operable member which interferes with attaching the alarm portion to the mounting flange when the switch is in its first, inoperative state and does not interfere with attaching the alarm portion to the mounting flange when the switch is in its second, operative state. (Ex. 1005, 8:2-20).

216. Also, Watson teaches that the “rear portion 56a [of the alarm portion of the detector 10] extends rearward beyond the base and while in place, interferes with the base mounting to the mounting flange.” (Ex. 1005, 4:27-34). Activation of the smoke detector involves turning and removing member 12a from the device, and thus removes the impediment to mounting. (*See Id.*).



(Ex. 1005, Fig. 1, Fig. 5).

217. Although Watson discloses an alarm portion, i.e. second portion, which cannot be attached to the mounting bracket, i.e. first portion, when the switch is in the first, inoperative state, Watson does not appear to expressly describe an alarm portion which cannot be reattached to a mounting bracket after deactivation. (Ex. 1005, 4:27-34, 8:4-20).

218. Watson, however, suggests that that it is not desirable for an unactivated smoke detector to be installed. (Ex. 1005, 4:33-34) (attachment prevention mechanism “reduces the possibility that an unactivated detector will be installed”). After deactivation, the detector of Watson is “disposed of and a new detector is installed in its place.” (Ex. 1005, 4:52-56).

219. The 1999 version of NFPA 72 and the 2000 version of the International Fire Code, echo this sentiment and go a step further by requiring only operable smoke detectors from being mounted. (Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4).

220. The UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). The 1997 UL 217 included a requirement that one of three “prominent indications” were implemented when a battery-only device with a removable battery was deactivated (i.e. when the battery was removed)¹². (Ex. 1032, § 8). Specifically, UL 217 required a warning flag if the cover was closed, a hinged cover that could not be closed with the battery removed, or “an equivalent arrangement.” (*Id.*, § 8.1(a)-(c)).

221. Watson is a sealed battery smoke detector that includes a deactivation mechanism, battery drain after deactivation, and expressly discloses disposal after its deactivation. (*See* Ex. 1005, 4:52-56; 5:57-64). In other words, without a feature to prevent reattachment, the design of Watson enables a user to violate the 1999

¹² UL 217 refers to battery-operated smoke detectors and those that are AC-powered with battery back-up. For those devices that are completely battery-operated, removal of a battery may deactivate the smoke detector.

version of NFPA 72 and the 2000 version of the International Fire Code. Watson should therefore be modified in order to comply with these standards.

222. A POSA, taking account of Malewski and the requirements of NFPA 72 and the International Fire Code which restrict approved smoke detectors to those which are operable (Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4), would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled.

223. A POSA would have considered the state of the art and existing smoke detector requirements to come up with a compliant smoke detector that cannot be deactivated and still appear operational.

224. It would be obvious to combine the single-use activation with the reattachment prevention after deactivation, both of which are disclosed in Malewski. Such obviousness is demonstrated not only in the 1999 version of NFPA 72, the 2000 version of the International Fire Code, and the 1997 UL 217 standard, but also is evident given the well-known goal of the safety industry to implement features into smoke detectors that were aimed at preventing users from misusing their smoke detectors (*See* Section VII).

225. It would have been obvious to further modify the reattachment prevention “key” mechanism of Malewski to ensure that it cannot be reinserted into the smoke detector once removed.

226. Unlike a smoke detector with replaceable batteries that would benefit from either reattachment prevention, a flag, or other visual indication of the smoke detector's temporary inoperability, the sealed smoke detector disclosed in Watson, once deactivated, cannot be reactivated. (Ex. 1005, 4:44-56).

227. An obvious way to prevent misuse, and ensure that a deactivated sealed-battery smoke detector cannot appear operable on the mounting bracket would be to incorporate features that would ensure that it could not be reattached after being rendered inoperable by the user. Attachment prevention features and mechanisms were well known in the art at the time of the alleged invention of the Challenged Claims. *See* Section VII.D.

228. It is my opinion that, as a POSA would understand the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector from being reinstalled, the subject matter of this claim feature would have been obvious to a POSA in view of the attachment prevention and deactivation mechanisms of Malewski which result in the inability to reactivate or reattach the second portion after the second portion has been deactivated. I discuss examples of such modifications consistent with this obviousness below in Section IX.A.

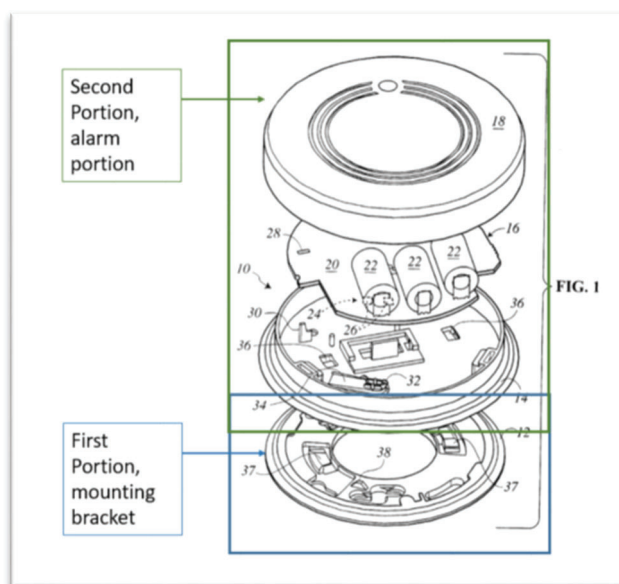
229. Malewski therefore renders obvious an electronic device with a second portion that when deactivated, cannot be reactivated, and cannot be reattached to the first portion.

b. *Dependent Claims 2-7*

- i. Claim 2: The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm

230. Malewski describes its device as relating “generally to operational electric switches for wall-or ceiling mounted devices such as hazard detectors,” such as “fire, smoke, [and] gas” detectors among the hazard detectors known in the art.” (Ex. 1007, 1:5-8, 1:12-13, 2:13-38).

231. Malewski also describes its hazard detector as comprising a major portion and a complementary mounting bracket 12 to which the major portion is mounted. (Ex. 1007, 3:33-35, 4:63-66). Malewski’s major portion of the detector, analogous to the second portion, has a base 14, an electronics/power/sensor (EPS) section 16, and protective cover 18. (Ex. 1007, 4:63-66). As shown below in FIG. 1, the EPS section 16 “contains fundamentally all of the necessary circuitry (not shown) that would be typical of the particular hazard detector). This circuitry is disposed in a circuit board 20, which also is adapted to secure batteries 22 thereto.” (Ex. 1007, 4:66-5:4).



(Ex. 1007, Fig. 1 (annotated)).

232. Additionally, Watson teaches an electronic device which includes a “sensor, such as a gas, smoke, or fire sensor, and a control unit coupled to the sensor” that is “powered by an energy source which is non-removably coupled to the control unit.” (Ex. 1005, 1:39-47). Watson also describes a “mounting flange or bracket 22” by which the rest of the electronic device may be mounted to a surface. (Ex. 1005, 2:44-48, Fig. 1). The base 16 of Watson “supports the electronics 20a of the detector 10 including the control unit 32, audible output device 34, sensor 36, and permanently connected battery unit 38.” (Ex. 1005, 2:61-64, 2:44-48, 3:17-25, 5:40-48).

233. A POSA at the time of invention would understand the plain and ordinary meaning of “life safety alarm” includes hazard detectors such as smoke detectors. Therefore, Malewski renders this claim obvious.

- ii. Claim 3: The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.

234. Malewski states that it “relates generally to operational electric switches for wall-or ceiling mounted devices such as hazard detectors.” (Ex. 1007, 1:5-10). Malewski further includes “fire, smoke, [and] gas” detectors among the hazard detectors known in the art.” (Ex. 1007, 1:12-13). A POSA, at the time of the invention, would know that the permeation of fire, smoke, and gas is a life threatening condition.

235. Additionally, Watson describes the electronic device being a detector including “a sensor, such as a gas, smoke, or fire sensor.” (Ex. 1005, 1:39-42). The presence of gas, smoke, or fire in an enclosed space may create life threatening conditions. Therefore, detecting gas, smoke, or fire is detecting a life threatening condition. The base 16 of the alarm portion of Watson “supports the electronics 20a of the detector 10 including the control unit 32, audible output device 34, sensor 36, and permanently connected battery unit 38.” (Ex. 1005, 2:61-64).

236. A POSA would understand the hazard detector recited in Malewski to include a system to detect a life threatening condition, rendering this claim obvious.

- iii. Claim 4: The electronic device of claim 3, wherein the detection system comprises a smoke detection system.

237. Malewski states that it “relates generally to operational electric switches for wall-or ceiling mounted devices such as hazard detectors.” (Ex. 1007, 1:5-10). Malewski further includes “fire, smoke, [and] gas” detectors among the hazard detectors known in the art.” (Ex. 1007, 1:12-13). Malewski further cites “smoke alarms” as representing the “current state-of-the art.” (Ex. 1007, 2:13-38). It is my opinion that a POSA would know that the hazard detector recited in Malewski includes a smoke detection system.

238. Additionally, Watson describes the electronic device being a detector including “a sensor, such as a gas, smoke, or fire sensor.” (Ex. 1005, 1:39-42).

239. Accordingly, Malewski renders this claim obvious.

- iv. Claim 5: The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

240. Malewski incorporates Watson, which describes a variety of slider and switch designs may be implemented as activating/deactivating systems. (Ex. 1007, 1:38-42, 2:35-38; Ex. 1005, 3:56-57). For example, Watson describes a “single use slide-switch” which is a slider and switch combination configured for one-way

movement via a frangible stem portion or internal ratchet. (Ex. 1005, 5:3-18). Watson additionally notes that UL requires detectors ship in the deactivated state, meaning three states were necessarily described: (1) the shipment deactivated state, (2) the activated state, and (3) the deenergized state. (*Id.*, 3:38-44, 4:22-23, 4:47-51).

241. In addition to the description of the switch as being “single use,” because Malewski refers to embodiments of such a switch where “retrograde motion is foreclosed,” the switch is configured for one way movement. (Ex. 1007, 1:42-47, 1:54-58). Malewski additionally describes the use of a screwdriver to rotate a frangible member to a battery ‘drain’ position in which a second switch may be actuated to drain the battery. (*Id.*, 1:49-57).

242. Additionally, Watson describes that various slider and switch designs may be implemented as part of activate/deactivate systems. (Ex. 1005, 3:56-57). One such example is a “single use slide-switch” which is a slider and switch combination configured for one-way movement via a frangible stem portion or internal ratchet. (Ex. 1005, 5:3-18). The replacement of rotatable switch and actuator with a slider attached to a switch would be one of design and would be relatively simple to implement.

243. Watson notes that UL requires detectors ship in the deactivated state, meaning three states were necessarily described: (1) the shipment deactivated state, (2) the activated state, and (3) the deenergized state. (Ex. 1005, 3:38-44, 4:22-23).

A POSA would have recognized the three states described by Watson could be achieved through use of a variety of switches well-known in the art, including a three-position switch, as opposed to separate single-pole, single-throw energizing and deenergizing switches. (Ex. 1005, 2:35-43).

244. Additionally, during prosecution of the '158 Patent, the examiner explained that the slider configured for one way movement was obvious:

Watson discloses all of the claimed limitations except for the claimed activate/deactivate system comprises a slider configured for one-way movement and having three positions and a three position switch connected to the slider. Watson does teach that various switches may be used to facilitate the activate/deactivate switches. One of ordinary skill in the art would have used any kind of switch that would accomplish the desired result. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a slider configured for one-way movement attached to a switch that has three positions.

(See Ex. 1004, 131).

245. A slider configured for one-way movement, e.g., via a frangible stem portion or internal ratchet, and having three positions was well-known in the art.

246. Furthermore, as I discuss below in Sections IX.A.1, and IX.A.2.a, straightforward modifications of Malewski's "key" based embodiment and Watson's automatic activation embodiment, would result in devices that incorporate the above-claimed one-way slider as part of the activate/deactivate system.

- v. Claim 6: The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.

247. Malewski, through Watson, describes that various slider and switch designs that may be implemented as activating/deactivating systems. (Ex. 1007, 2:35-38; Ex. 1005, 3:56-57). Watson additionally notes that UL requires detectors ship in the deactivated state, meaning three states were necessarily described: (1) the shipment deactivated state, (2) the activated state, and (3) the deenergized state. (Ex. 1005, 3:38-44, 4:22-23, 4:47-51). Malewski discloses a “single-use, frangible, and rotatable switch mechanism.” (Ex. 1007, 1:38-47, 1:50-53). Because a rotatable switch mechanism is merely an actuator, a POSA would have known that a linear switch mechanism with a slider could be used instead because the manner of operation (in this case rotational or linear) is usually a design issue as opposed to the functionality of the device. A POSA would have further recognized the three states described by Watson could be enabled through use of a well-known, three-position switch, as opposed to separate single-pole, single-throw energizing and deenergizing switches. (Ex. 1005, 2:35-43, 6:66-7:10).

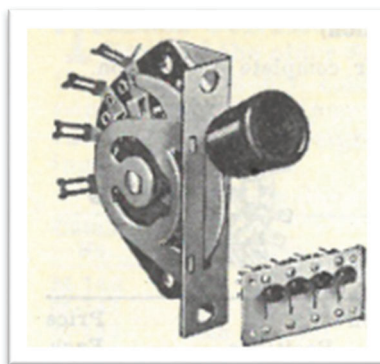
248. In fact, during prosecution of the '158 Patent, the examiner came to this very conclusion:

Watson discloses all of the claimed limitations except for the claimed activate/deactivate system comprises a slider configured for one-way movement and having three positions and a three position switch connected

to the slider. Watson does teach that various switches may be used to facilitate the activate/deactivate switches. One of ordinary skill in the art would have used any kind of switch that would accomplish the desired result. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a slider configured for one-way movement attached to a switch that has three positions.

(*See* Ex. 1004, 131).

249. The inventor of the '158 Patent does not claim to have invented a slider or a three-position switch. Indeed, three-position switches with sliding elements had been known in the electro-mechanical arts for at least sixty years before the alleged invention disclosed in the '158 Patent. *See* Ex. 1042 (Centralab 3-way selector switch for musical instruments).



(Ex. 1042).

250. Furthermore, as I discuss below in Sections IX.A.1, and IX.A.2.a, straightforward modifications of Malewski's "key" based embodiment and Watson's automatic activation embodiment, would result in devices that incorporate

the above-claimed one-way slider connected to a three-position switch as part of the activate/deactivate system.

251. Malewski and the knowledge of a POSA renders this claim element obvious

- vi. Claim 7: The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

252. Malewski discloses an electronic device with a circuit board which “secures a hard wired, long life battery.” (Ex. 1007, 1:35-43). Malewski further describes this device reaching the end of its useful life, and “discarded” after the battery is drained. (Ex. 1007, 1:50-53).

253. Additionally, Watson describes a detector which is “powered by an energy source which is non-removably coupled to the control unit.” (Ex. 1005, 1:44-45). Watson describes the device as a “sealed unit” in which the circuitry and other components of the detector are not user accessible. (Ex. 1005, 3:17-25). Additionally, at the end of the detector's service life, it is disposed of and a new detector is installed in its place. (Ex. 1005, 4:35-39).

254. A POSA would therefore understand Malewski to disclose the claim feature “wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.”

c. *Independent Claim 12*

i. [12Pre] An electronic device, comprising:

255. To the extent the preamble is limiting, Malewski discloses an electronic device as discussed in Section VIII.B.1.a.i.

ii. [12a] a first portion;

256. Malewski discloses a first portion as discussed in Section VIII.B.1.a.ii.

iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;

257. Malewski renders this claim limitation obvious per Section VIII.B.1.a.iii.

iv. [12c] an activation mechanism to activate the second portion;

258. I understand that in the Related Litigation, the District Court determined that the claim term “activation mechanism” should be given its plain and ordinary meaning.

259. Malewski describes the “mating” of the “major portion” with the “surface mountable bracket” which “securely retain[s] the major portion.” (Ex. 1007, 3:24-42). Such mating “securely engages at least two mutually-borne, interleaving tabs, or captures two or more bayonet connectors, and effects simultaneous switch activation.” (Ex. 1007, 3:24-42).

260. Additionally, Watson describes a number of examples of activation mechanisms to activate the alarm portion of the smoke detector. (Ex. 1005, 3:54-60, 4:57-65, 5:1-35). For example, some of these mechanisms include, “rotatable, frangible or break-away members 12a, 12b and associated single-pole, single throw (SPST) energizing and deenergizing switches 14a and 14b respectively” (Ex. 1005, 2:33-41), a “reed-relay mechanism” that activates when “the first and second relay portions 102 and 104 are brought into close proximity, one with the other” (*Id.*, 4:57-65), “a one-time activating switch mechanism 110 [including] an activating switch 112 located within the base 16 [that] engages the L-shaped projection 27 and is moved into an activating position” (*Id.*, 4:66-5:10), “a frangible plunger-type member 126 which...engages a toggle-type activating switch 128” (*Id.*, 5:20-57), and “a plunger-type frangible member 132 [which] engages a slide-type activating switch 134.” (*Id.*, 5:28-33). Each of these various example switches and relays are activation mechanisms which activate the detector 10 or alarm portion of the device.

261. Malewski, therefore, renders this limitation obvious.

- v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

262. In its description of Watson, Malewski refers to Watson disclosing the continued rotation of the activation “switch mechanism” to a position that drains the

battery. (Ex. 1007, 1:38-40; 1:50-53). A POSA would understand that moving the device out of the activated state into a battery-drain state would likely include deactivating the device as well. Malewski further describes embodiments where retrograde motion [of the deactivation switch] is foreclosed.” (Ex. 1007, 1:50-58). This shows that once the off switch is engaged, it cannot be disengaged, and, therefore, Malewski discloses the claimed permanent deactivation mechanism.

263. Additionally, Watson discloses a “detector 10 [with] a switch mechanism including rotatable, frangible, or break-away members 12a, 12b and associated single-pole, single-throw (SPST) energizing and deenergizing switches 12a and 14b respectively. Switch 14a [which] provides one-time activation of the detector 10 when it is placed into service. Switch 14b discharges and deactivates the detector 10 at the end of its useful service life.” (Ex. 1005, 2:35-43). Watson teaches that the continued turning of member 12b by a user activating the deactivating switch results in breaking the “the bridge-like connections 58 between the member 12b and the base 16.” (Ex. 1005, 4:44-51). After deactivation, member 12b “may be removed from the detector 10 and discarded,” as “[t]he members 12a and 12b are not intended to be reused.” (Ex. 1005, 4:9-11).

264. Additionally, the deactivating switch of Watson drains the battery unit, being “non-removably coupled to the control unit” and which is sealed off from the user. Ex. 1005, 4:52-56). When the battery unit is depleted, the detector is “disposed

of and a new detector is installed in its place.” (Ex. 1005, 4:52-56). As member 12b is broken off and sealed battery unit 38 is drained of power during deactivation, the alarm portion of the detector 10 cannot be reactivated once deactivated using deactivating switch 14b. (Ex. 1005, 4:44-55).

265. As I have stated above, where activation is one-time, the deactivation is necessarily permanent, and a POSA would understand the switches described for deactivation as permanent deactivation mechanisms because reactivation is not possible by virtue of the activation switch being single-use.

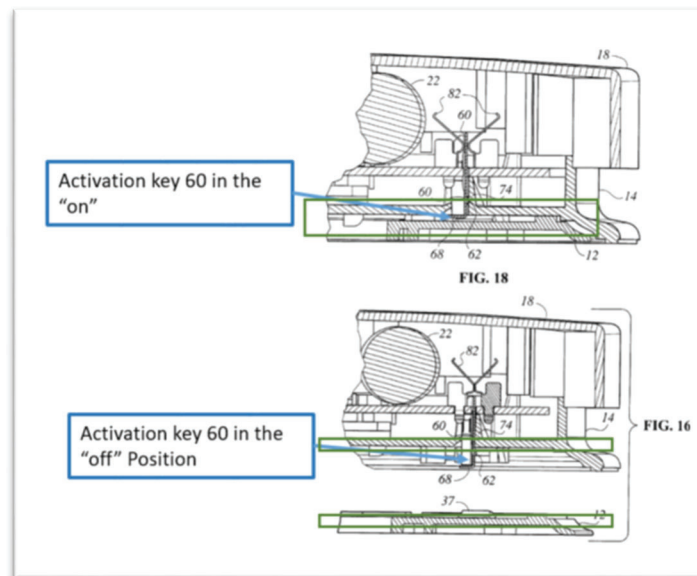
266. Additionally because a device with a drained battery cannot function, a POSA would view the inclusion of a battery drain feature as resulting in a smoke detector that cannot be reactivated after deactivation. The battery drain feature further renders obvious the “permanent deactivation” aspect of this claim element.

267. Malewski further describes removing the smoked detector from the mounting bracket in order to access the permanent deactivation mechanism. (Ex. 1007, 1:50-54; *see also* Ex. 1005, 2:41-43; 4:9-13, 4:34-51). Therefore, a POSA at the time of the invention would understand that the permanent deactivation mechanism of Malewski is accessible when the first and second portions are detached.

268. Accordingly, a POSA at the time of the invention would find the subject matter of this claim feature to be obvious.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

269. Malewski discloses a reattachment prevention mechanism as part of the deactivation mechanism. Malewski, a user pulls a key 60 to the “off position” to interrupt the connection of the power source to the alarm electronics. (Ex. 1007, 7:51-8:4). An alarm deactivated in this manner is incapable of attachment to the mounting bracket, as illustrated by FIGS. 16 and 18 below. (Ex. 1007, 3:43-45, 7:51-8:7 FIGS. 16 and 18).

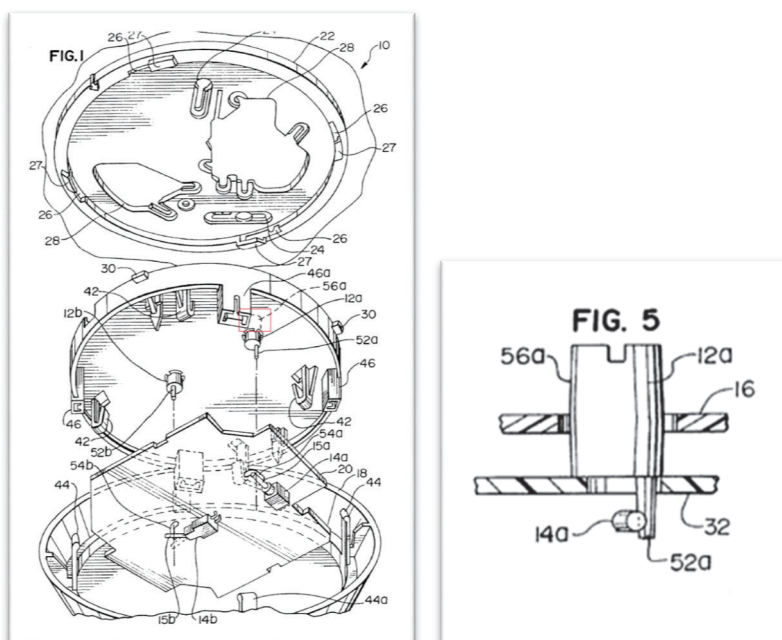


(Ex. 1007, FIGS. 16 and 18 (annotated)).

270. Moreover, Malewski discloses an electronic device that is discarded after deactivation. (Ex. 1007, 1:50-54). This demonstrates an intention to avoid remounting a device after it has been deactivated. Malewski further identifies a

desire to “prevent[] the device from being inadvertently mounted in a deactivated state once properly installed.” (Ex. 1007, 3:43-45).

271. Additionally, Watson discloses an attachment prevention mechanism that prevents attachment of the smoke detector before it has been activated (Ex. 1005, 4:28-34). Specifically, the Watson attachment prevention mechanism includes a frangible member 12a with a rear portion 56a that extends beyond the base, and, like the finger in Belano, “interferes with the base 16 mounting to the mounting flange 22.” (*See Id.*, 4:28-34). Activation of the smoke detector involves turning and removing member 12a from the device, and thus removes the impediment to mounting. (*See Id.*).



(Ex. 1005, Fig. 1, Fig. 5).

272. After deactivation, the detector of Watson is “disposed of and a new detector is installed in its place.” (Ex. 1005, 4:52-56). As such, Watson does not describe a reattachment prevention mechanism for preventing users from reattaching an alarm portion to a mounting bracket after permanent deactivation.

273. Watson’s attachment prevention mechanism, however is indicative of an industry-wide interest in ensuring that inoperable smoke detectors cannot be mounted. It further suggests ways to impede reattachment to the mounting bracket after the device has been removed from the mounting bracket and deactivated should one desire to implement such a feature. For example, configuring the deactivation mechanism to cause a projection to extend from the base that interferes with reattachment to the bracket in the same way the activation mechanism 12a interferes with attachment until it is removed.

274. Watson is a sealed battery smoke detector that includes a deactivation mechanism, battery drain after deactivation, and expressly discloses disposal after its deactivation. (*See* Ex. 1005, 4:52-56; 5:57-64). In other words, without a feature to prevent reattachment, the design of Watson enables a user to violate the 1999 version of NFPA 72 and the 2000 version of the International Fire Code. Watson should therefore be modified in order to comply with these standards.

275. A POSA, taking account of Malewski and the requirements of NFPA 72 and the International Fire Code which restrict approved smoke detectors to those

which are operable (Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4), would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled.

276. A POSA would have considered the state of the art and existing smoke detector requirements to come up with a compliant smoke detector that cannot be deactivated and still appear operational.

277. In light of the Watson detector's disposable design, a POSA would understand the importance of preventing the (re)installation of a smoke detector that has been deactivated by the user. In fact, for replaceable-battery alarms, the operative UL standard at that time required "a readily apparent and prominent visual indication" that the device was in an inoperable state. (Ex. 1016, 20). Furthermore the NFPA 72 and International Fire Code have requirements that only operable smoke detectors can be installed. (*See* Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4).

278. Additionally, as discussed in Section VII, it was a well-known goal of the safety industry to implement features into smoke detectors that were aimed at preventing users from misusing their smoke detectors.

279. Unlike a smoke detector with replaceable batteries that would benefit from either reattachment prevention, a flag, or other visual indication of the smoke

detector's temporary inoperability, the sealed smoke detector disclosed in Watson, once deactivated, cannot be reactivated. (Ex. 1005, 4:44-56).

280. In order to prevent misuse, and ensure that a deactivated smoke detector cannot appear operable on the mounting bracket, a POSA would have looked to incorporate features into the smoke detector disclosed by Malewski that would ensure that it could not be reattached after being rendered inoperable by the user.

281. Once the Watson smoke detector is rendered permanently inoperably by its deactivation, the most obvious way to ensure that it does not appear operable would be to ensure that it cannot be remounted onto the mounting bracket.

282. Attachment or reattachment prevention mechanisms were well known in the art at the time of the alleged invention of the Challenged Claims. *See* Section VII.D.

283. A POSA would have considered the state of the art and existing smoke detector requirements to come up with a compliant smoke detector that cannot be appear operational once it has been deactivated.

284. It is my opinion that, as a POSA would understand the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled, the subject matter of this claim feature would have been obvious to a POSA in view of the attachment prevention and deactivation

mechanisms of Malewski which prevents reattachment of the first and second portions once the second portion has been deactivated.

285. The most obvious way to implement a feature that ensures that a smoke detector that has been permanently deactivated would remain detached from the mounting bracket, would be to utilize a reattachment prevention mechanism.

286. Below, in Section IX.A, I describe examples of straightforward modifications that meet this claim element.

d. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.

287. Malewski renders this claim obvious per Section VIII.B.1.b.i.

- ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

288. Malewski renders this claim obvious per Section VIII.B.1.b.ii.

- iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

289. Malewski renders this claim obvious per Section VIII.B.1.b.iii.

C. Ground 3: Claims 1-7 and 12-15 are Unpatentable Under 35 U.S.C. ¶ 103(a) as Obvious over Malewski in view of DeLuca '487

1. Basis for the Combination of Malewski in view of DeLuca '487

290. Even if Malewski alone, in light of the state of the art, is not sufficient to render obvious the Challenged Claims, the combination of Malewski view of DeLuca '487 is both proper and would render the claims obvious.

291. Malewski and DeLuca '487 both describe battery-operated life safety alarms, specifically, smoke alarms, which comprise an alarm portion and a separate mounting bracket. (Ex. 1005, 2:44-48; Ex. 1006, 3:26-34, Ex. 1007, 3:24-40). Each of Malewski and DeLuca '487 teach an alarm portion which includes a battery and alarm-related electronics and a bracket or flange to which the alarm portion mounts. (Ex. 1005, 2:44-48; Ex. 1006, 3:26-34, Ex. 1007, 4:63-5:13). While Malewski refers to sealed-battery alarms, it identifies switch mechanisms that allow the alarm to be turned on and off. (*See* Ex. 1007, 3:13-23). This is similar to DeLuca '487's battery replacement, which allows the user to activate and deactivate the alarm in a repeatable manner (by inserting and removing batteries). (Ex. 1006, 3:42-46, 3:65-4:2).

292. Because Malewski and DeLuca '487 are both directed towards bracket-mounted, battery-operated smoke detector systems, in my opinion, a POSA would have readily looked to their teachings when evaluating the prior art and would have

been motivated to pull features from both Malewski and DeLuca '487 to arrive at an improved smoke detector device for users. (*See* Ex. 1005, 2:44-48; Ex. 1006, 3:26-34, Ex. 1007, 3:24-40, 8:2-8).

293. Additionally, both Malewski and DeLuca '487 teach alarm devices that may ship in an inactive state, as required by UL. (Ex. 1005, 3:38-44; *See* Ex. 1006, 3:42-50; Ex. 1007, 3:32-43). Specifically, Malewski discloses a battery that is sealed off from the user, which the user activates via an activation switch. (Ex. 1005, 4:14-25; Ex. 1007, 2:5-13, 3:13-23). DeLuca '487 discloses an alarm device powered by a replaceable battery or batteries, which the user inserts into “battery receiving regions” to activate the device. (Ex. 1006, 3:42-46, 3:65-4:2). The devices described in Malewski and DeLuca '487 include embodiments which require a user to activate the alarm portion of the device before installing it onto the mounting bracket. (Ex. 1005, 4:25-36; Ex. 1006, 4:62-5:19, 6:61-8:9).

294. Also, when the detector's battery reaches end of life, Malewski (citing Watson) teaches that a switch on the alarm portion is rotated “to a battery ‘drain’ position.... Thereafter the unit is discarded.” (Ex. 1007, 1:50-54). Malewski (through Watson) describes features, specifically frangible member 12a, which prevent attachment of the alarm portion to the mounting bracket portion until the alarm portion has been activated. (Ex. 1005, 4:27-34). Malewski further describes features, which until activation “safeguard against installing the device without activating it”

causing interference “with making the bayonet-type connection between the base 14 and mounting bracket 12.” (Ex. 1007, 8:2-9). Malewski includes an embodiment with features that prevent mounting to a bracket after deactivating by using a key element that can move between activated and deactivated positions. (Ex. 1007, 8:2-9). However, although the reattachment prevention in this embodiment is incorporated into the deactivation mechanism, the deactivation mechanism of this embodiment does not result in permanent deactivation. (Ex. 1007, 8:2-9).

295. Through Watson, however, Malewski discloses a smoke detector that is permanently deactivated. (Ex. 1005, 4:9-13, 4:35-43; Ex. 1007, 1:35-40). DeLuca ’487 also describes features which prevent mounting an alarm portion of a detector device to a bracket portion after it has been deactivated (i.e. after the batteries have been removed). (Ex. 1006, 4:62-5:19, 5:31-43).

296. The 1999 NFPA 72 and the 2000 International Fire Code which restricting approved smoke detectors to those that are operable (Ex. 1030, 72 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4) provide the basis for combining Malewski with DeLuca ’487 as it relates to the reattachment prevention features disclosed in DeLuca ’487.

297. It is my opinion that a POSA would have been motivated to combine a reattachment prevention mechanism such as one similar to that described in DeLuca ’487 with the alarm device of Malewski. The spring-loaded reattachment prevention

mechanism of DeLuca '487 prevents an alarm from being re-mounted to a bracket when in the deactivated state. (Ex. 1006, 4:35-5:10). This mechanism prevents reattachment by interfering with the connection between the alarm portion and the mounting bracket. (*Id.*)

298. As the respective disclosures of Malewski and DeLuca '487 disclose ordinary mechanical and electrical components, and function in the same manner as in their respective sources and the other similarities of the two alarm devices, a POSA would have been able combine these references with an expectation of success without overly-burdensome experimentation. Accordingly, a POSA would have had motivation to combine the known reattachment prevention mechanism of DeLuca '487 with the alarm device of Malewski.

299. A smoke detector that combines the teachings of Malewski and DeLuca '487 would include a lockout mechanism that prevents reattachment to the mounting bracket once the smoke detector is deactivated. One example would be a spring-loaded lockout mechanism, such as the spring-loaded mechanism in DeLuca '487, which extends beyond the rim of the alarm portion and prevents engagement with the mounting bracket when “key 60 is not in contact with the spring contacts 82.” (Ex. 1007, 7:51-8:2). In other words, similar to when a user pulls a battery out in DeLuca '487, a user may move the key of Malewski to deactivate the alarm to a

position that releases the spring-loaded lockout mechanism, and the mechanism extends, preventing reattachment.

300. A POSA would have been motivated to combine, and would easily have been able to combine, Malewski and DeLuca '487 to incorporate the DeLuca '487 lockout mechanism into Malewski.

301. Because Malewski discusses and incorporates Watson by reference, I discuss the various ways Malewski (with some references to Watson) and Watson (independently), each in view of DeLuca '487 render obvious all of the Challenged Claims.

302. I have designed an example of a modification to Malewski in view of DeLuca '487 in Section IX.B that addresses all of the Challenged Claims and shows that it would have been obvious to modify Malewski in view of DeLuca '487 expectation of success, avoiding excessive or overly-burdensome experimentation. I have not relied on hindsight, but rather ordinary skill as of the filing date of the '158 Patent (and the knowledge of a POSA) to provide several examples of what those of skill in the art would have thought about when reading Malewski in view of DeLuca '487.

303. Because Malewski's extensive discussion of, and incorporation by reference of Watson results in the inclusion of the Watson's embodiments within the Malewski reference, Malewski discloses electronic devices with all of the elements

of claims 1-7, and 12-15 of the '158 Patent, and if not, such features would be obvious in light of the technical expertise of a POSA. To the extent Malewski alone is not sufficient to render these claims obvious, the inclusion of DeLuca '487 renders them obvious.

2. Claims 1-7 and 12-15 are Obvious over Malewski, and the Technical Expertise of a POSA, and if Necessary, DeLuca '487.

a. Independent Claim 1

i. [1Pre] An electronic device, comprising:

304. To the extent the preamble is limiting, Malewski discloses an electronic device as described in Section VIII.B.1.a.i.

ii. [1a] a first portion;

305. Malewski renders this claim limitation obvious per Section VIII.B.1.a.ii.

iii. [1b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics; and

306. Malewski renders this claim limitation obvious per Section VIII.B.1.a.iii.

iv. [1c] cooperating features on the first portion and the second portion that automatically activate the second portion upon initial attachment of the second portion to the first portion;

307. Malewski renders this claim limitation obvious per Section VIII.B.1.a.iv.

- v. [1d] wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second portion upon initial attachment of the second portion to the first portion;

308. Malewski renders this claim limitation obvious per Section VIII.B.1.a.v.

- vi. [1e] wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and

309. Malewski renders this claim limitation obvious per Section VIII.B.1.a.vi.

- vii. [1f] wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.

310. Malewski renders this claim limitation obvious per Section VIII.B.1.a.vii.

311. Furthermore, for the same reasons discussed in Section VIII.B.1.a.vii, a POSA, taking account of Malewski, would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled. (*See* Ex. 1001, 1:35-50).

312. The UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). Additionally, as discussed in Section VII, it was a well-known goal of the safety industry to implement features into smoke detectors that were aimed at preventing users from misusing their smoke detectors. (Ex. 1001, 1:35-50).

313. Unlike a smoke detector with replaceable batteries that would benefit from either reattachment prevention, a flag, or other visual indication of the smoke detector’s temporary inoperability, the sealed smoke detector disclosed in Watson, once deactivated, cannot be reactivated. (Ex. 1005, 4:44-56).

314. The most obvious way to prevent misuse, and ensure that a deactivated smoke detector cannot appear operable on the mounting bracket would be to incorporate features into the smoke detector disclosed by Malewski that would ensure that it could not be reattached after being rendered inoperable by the user.

315. Attachment prevention features were well known in the art at the time of the alleged invention of the Challenged Claims. *See* Section VII.D.

316. A POSA would therefore have looked to references teaching this required visual indication, including reattachment prevention, such as DeLuca ’487. (*See* Ex. 1006). The lockout mechanism of DeLuca ’487, which is engaged when the

smoke detector is deactivated by the removal of batteries (albeit temporarily) is analogous to the “permanent” deactivation operation in Watson.

317. DeLuca ’487 discloses an alarm device having a spring-loaded lockout actuator 56, including “a battery sensing portion 62, a lockout tab portion 34 and a sliding guide or pilot portion 66,” which may move between obstructing and non-obstructing positions. (Ex. 1006, 4:35-61, 2:23-25). When in the obstructing position, this lockout tab 64 prevents the base of the alarm device from being reattached to the bracket. (Ex. 1006, 5:2-9). The lockout tab or actuator being in an obstructing position indicates the device does not have the requisite power for operation, i.e. all battery receiving regions do not contain a battery. (Ex. 1006, 4:63-67, 5:1-10).

318. Accordingly, a POSA would be understand that the combined teachings of Malewski and DeLuca ’487 as disclosing the recited claim feature. A POSA would thus find this element obvious in view of Malewski and DeLuca ’487.

b. *Dependent Claims 2-7*

- i. Claim 2: The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm

319. Malewski renders this claim obvious per Section VIII.B.1.b.i.

- ii. Claim 3: The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.

320. Malewski renders this claim obvious per Section VIII.B.1.b.ii.

- iii. Claim 4: The electronic device of claim 3, wherein the detection system comprises a smoke detection system.

321. Malewski renders this claim obvious per Section VIII.B.1.b.iii.

- iv. Claim 5: The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

322. Malewski renders this claim obvious per Section VIII.B.1.b.iv.

- v. Claim 6: The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.

323. Malewski renders this claim obvious per Section VIII.B.1.b.v.

- vi. Claim 7: The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

324. Malewski renders this claim obvious per Section VIII.B.1.b.vi.

c. *Independent Claim 12*

- i. [12Pre] An electronic device, comprising:

325. To the extent the preamble is limiting, Malewski discloses an electronic device as discussed in Section VIII.B.1.c.i.

- ii. [12a] a first portion;

326. Malewski discloses a first portion as discussed in Section VIII.B.1.c.ii.

- iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;

327. Malewski renders this claim limitation obvious per Section VIII.B.1.c.iii.

- iv. [12c] an activation mechanism to activate the second portion;

328. Malewski renders this claim limitation obvious per Section VIII.B.1.c.iv.

- v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

329. Malewski renders this claim limitation obvious per Section VIII.B.1.c.v.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

330. Malewski renders this claim limitation obvious per Section VIII.B.1.c.vi.

331. Furthermore, for the same reasons discussed in Section VIII.B.1.c.vi, a POSA, taking account of Malewski, would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from

being reinstalled. (*See* Ex. 1001, 1:35-50). The UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). A POSA would therefore have looked to references teaching this required visual indication, including reattachment prevention mechanisms, such as DeLuca ’487. (*See* Ex. 1006).

332. DeLuca ’487 discloses an alarm device having a spring-loaded lockout actuator 56, including “a battery sensing portion 62, a lockout tab portion 34 and a sliding guide or pilot portion 66,” which may move between obstructing and non-obstructing positions. (Ex. 1006, 4:35-61, 2:23-25). When in the obstructing position, this lockout tab 64 prevents the base of the alarm device from being reattached to the bracket. (Ex. 1006, 5:2-9). The lockout tab or actuator being in an obstructing position indicates the device does not have the requisite power for operation, i.e. all battery receiving regions do not contain a battery. (Ex. 1006, 4:63-67, 5:1-10). Accordingly, a POSA would be understood that the combined teachings of Malewski and DeLuca ’487 as disclosing the recited claim feature. A POSA would thus find this element obvious in view of Malewski and DeLuca ’487.

d. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.

333. Malewski renders this claim obvious per Section VIII.B.1.d.i.

- ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

334. Malewski renders this claim obvious per Section VIII.B.1.d.ii.

- iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

335. Malewski renders this claim obvious per Section VIII.B.1.d.iii.

D. Ground 4: Claims 1-7 and 12-15 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious over Malewski in view of STP2003

1. Basis for the Combination of Malewski in further view of STP2003

336. Each of Malewski and STP2003 disclose structures and functions of battery-operated life safety alarms, namely smoke detectors. (Ex. 1007, Abstract; Ex. 1005, 2:44-48; Ex. 1008, 1, 5-6). STP2003 describes proposed changes to the UL 217 requirements governing smoke alarms, such as the smoke alarms described in Malewski. (Ex. 1005, 3:38-44; Ex. 1008, 1, 5-6). As disclosed, the embodiments of Malewski would not comply with the new STP2003 requirements because, for example, the device is designed to be reactivated after deactivation. (*See e.g.* Ex. 1007, 1:4-9). Equipped with the knowledge that the new UL standards may require a such a device to be designed such that it cannot be reactivated after deactivation, and that it cannot be remounted after deactivation, a POSA would have known to combine elements already disclosed in Malewski, in view of STP2003 in order to

comply with future standards, or at a minimum, would have envisioned how the alarms would be modified in case the proposed changes became effective. The this combination is especially obvious against the backdrop of the NFPA 72 and IFC 2000 model codes which require that smoke detectors that are mounted and appear operational actually be operational. (*See* Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4). Additionally, given that Malewski discloses several explicit designs for smoke detectors, and STP2003 discloses requirements for future smoke detectors, a POSA would have been motivated to combine these references in order to achieve the recited device of the Challenged Claims. A POSA would have, therefore, found the Challenged Claims to be obvious in view of Malewski and STP2003.

337. In addition to the following discussion in which I explain that a POSA would know to modify Malewski in view of STP2003 in a way that meets all of the Challenged Claims. In that regard, I provide herein several readily available modifications to Malewski that would have been well within the skill of a POSA. Those modifications draw from express embodiments in Malewski and Watson that would require little if any experimentation and would give an expectation of success. *See* Sections IX.A.1 (Malewski - all Challenged Claims) IX.A.2.a (Watson - all Challenged Claims); IX.A.2.b (Watson – All Challenged Claims), IX.A.2.c (Watson – All Challenged Claims), IX.A.2.d (Watson – All Challenged Claims). I have not

relied on hindsight, but rather ordinary skill as of the filing date of the '445 Patent (and the knowledge of a POSA) to provide several examples of what those of skill in the art would have thought about when reading Malewski and when reading Malewski in view of STP2003.

2. Claims 1-7 and 12-15 are Obvious over Malewski, STP2003, and the Technical Expertise of a POSA

a. *Independent Claim 1*

i. [1Pre] An electronic device, comprising:

338. To the extent the preamble is limiting, Malewski discloses an electronic per Section VIII.B.1.a.i.

ii. [1a] a first portion;

339. Malewski discloses this claim limitation per Section VIII.B.1.a.ii.

iii. [1b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics; and

340. Malewski discloses this claim limitation per Section VIII.B.1.a.iii.

iv. [1c] cooperating features on the first portion and the second portion that automatically activate the second portion upon initial attachment of the second portion to the first portion;

341. Malewski discloses this claim limitation per Section VIII.B.1.a.iv.

v. [1d] wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second

portion upon initial attachment of the second portion to the first portion;

342. Malewski discloses this claim limitation per Section VIII.B.1.a.v.

- vi. [1e] wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and

343. Malewski disclose this claim limitation obvious per Section VIII.B.1.a.vi.

- vii. [1f] wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.

344. Malewski renders this claim limitation obvious per Section VIII.B.1.a.vii.

345. Furthermore, for the same reasons discussed in Section VIII.B.1.a.vii, a POSA taking account of Malewski, would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled. (*See* Ex. 1001, 1:35-50). The UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). A POSA would therefore have looked to references teaching this required visual indication, including a reattachment prevention means, such as STP2003. (*See* Ex. 1008).

346. STP2003 refers to changing the UL Standards to require a “prominent visual indication that” an “alarm employing a non-replaceable primary battery” is “not in operating condition.” (Ex. 1008, 5). STP2003 notes that a user of a sealed battery smoke detector might place a smoke detector back onto the mounting location after deactivating the battery. (Ex. 1008, 5). STP2003 therefore merely confirms that sealed-battery smoke detectors may likewise suffer from the same concerns addressed by the earlier operative UL standards which required “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20).

347. STP2003 proposes a change to the standards to include “deactivation means shall require the use of a tool, or equivalent, and shall render the unit incapable of being reinstalled.” (Ex. 1008, 5). Additionally STP2003 states that “Both the activation and deactivations means shall be designed to operate one time only.” *Id.* STP2003 correctly presumes that members of the life safety industry have the mechanical capabilities to incorporate these feature into its products. The most obvious “deactivation means” that would render the unit incapable of being reinstalled would be some type of “deactivation mechanism” that incorporates well known elements to achieve the goal recited in STP2003.

348. A POSA would, therefore, understand the combined teachings of Malewski and STP2003 to teach this claim limitation, rendering it obvious.

b. *Dependent Claims 2-7*

- i. Claim 2: The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm

349. Malewski renders this claim obvious per Section VIII.B.1.b.i.

- ii. Claim 3: The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.

350. Malewski renders this claim obvious per Section VIII.B.1.b.ii.

- iii. Claim 4: The electronic device of claim 3, wherein the detection system comprises a smoke detection system.

351. Malewski renders this claim obvious per Section VIII.B.1.b.iii.

- iv. Claim 5: The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

352. Malewski renders this claim obvious per Section VIII.B.1.b.iv.

- v. Claim 6: The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.

353. Malewski renders this claim obvious per Section VIII.B.1.b.v.

- vi. Claim 7: The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

354. Malewski renders this claim obvious per Section VIII.B.1.b.vi.

c. *Independent Claim 12*

- i. [12Pre] An electronic device, comprising:

355. To the extent the preamble is limiting, Malewski discloses an electronic device as discussed in Section VIII.B.1.c.i.

- ii. [12a] a first portion;

356. Malewski discloses a first portion as discussed in Section VIII.B.1.c.ii.

- iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;

Malewski renders this claim limitation obvious per Section VIII.B.1.c.iii.

- iv. [12c] an activation mechanism to activate the second portion;

357. Malewski renders this claim limitation obvious per Section VIII.B.1.c.iv.

- v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

358. Malewski renders this claim limitation obvious per Section VIII.B.1.c.v.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

359. Malewski renders this claim limitation obvious per Section VIII.B.1.c.vi.

360. Furthermore, for the same reasons discussed in Section VIII.B.1.c.vi, a POSA taking account of Malewski, would recognize the importance of preventing a permanently deactivated (i.e. made permanently non-operational) detector, from being reinstalled. (*See* Ex. 1001, 1:35-50). The UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). A POSA would therefore have looked to references teaching this required visual indication, including a reattachment prevention means, such as STP2003. (*See* Ex. 1008).

361. STP2003 refers to changing the UL Standards to require a “prominent visual indication that” an “alarm employing a non-replaceable primary battery” is “not in operating condition.” (Ex. 1008, 5). STP2003 notes that a user of a sealed battery smoke detector might place a smoke detector back onto the mounting location after deactivating the battery. (Ex. 1008, 5). STP2003 therefore merely confirms that sealed-battery smoke detectors may likewise suffer from the same concerns addressed by the earlier operative UL standards which required “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20).

362. STP2003 proposes a change to the standards to include “deactivation means shall require the use of a tool, or equivalent, and shall render the unit incapable of being reinstalled.” (Ex. 1008, 5). A POSA would easily understand that

configuring said “deactivation means” to “render the unit incapable of being reinstalled” includes a reattachment prevention mechanism.

363. A POSA would therefore understand the combined teachings of Malewski and STP2003 to teach this claim limitation, rendering it obvious.

d. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.

364. Malewski renders this claim obvious per Section VIII.B.1.d.i.

- ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

365. Malewski renders this claim obvious per Section VIII.B.1.d.ii.

- iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

366. Malewski renders this claim obvious per Section VIII.B.1.d.iii.

E. Ground 5: Claims 1-7 and 12-15 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious over Byrne '354 in view of Byrne '311

1. Basis for the Combination of Byrne '354 and Byrne '311

367. The combination of prior art references Byrne '354, Byrne '311, and the technical expertise of a POSA collectively describes all of the claim elements of the Challenged Claims.

368. Byrne '354 and Byrne '311 both are directed toward user-activated life safety alarms. (Ex. 1009, Cover, ¶[0001]; Ex. 1010, Cover, 1:11-18, 5:20-33). A user activates the Byrne '354 alarm by the user twisting and pressing the alarm body onto a mounting base (Ex. 1009, Cover, ¶¶[0005]-[0006], [0031]); a user activates the Byrne '311 by the user pressing a button on the enclosure of the alarm body. (Ex. 1010, 5:20-33).

369. As both references are directed to user-activated life safety alarms (as well share an inventor), a POSA would have looked for advantages by combining the alarm of Byrne '354 with alarm features of Byrne '311 and vice versa. As demonstrated throughout this declaration, the life safety industry incorporated a variety of features into smoke detectors such that smoke detectors by the date of the alleged invention of the '158 Patent were essentially combinations of other smoke detectors that came before them, and the various features were widely available in the art. (See Section VII). Accordingly, a POSA would have been motivated to combine Byrne '354 and Byrne '311.

2. Claims 1-7 and 12-15 are Obvious over Byrne '354 in view of Byrne '311

a. Independent Claim 1

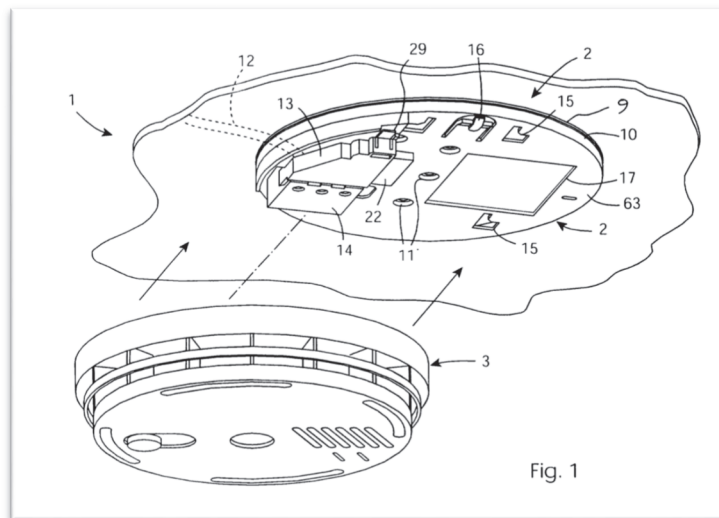
i. [1Pre] An electronic device, comprising:

370. Byrne '354 is directed to a smoke alarm device that is mains-powered with a battery backup. Accordingly, Byrne '354 discloses an electronic device. (Ex.

1009, ¶¶[0001]-[0002], [0004], [0022]). To the extent the preamble is limiting, the prior art renders this limitation obvious.

ii. [1a] a first portion;

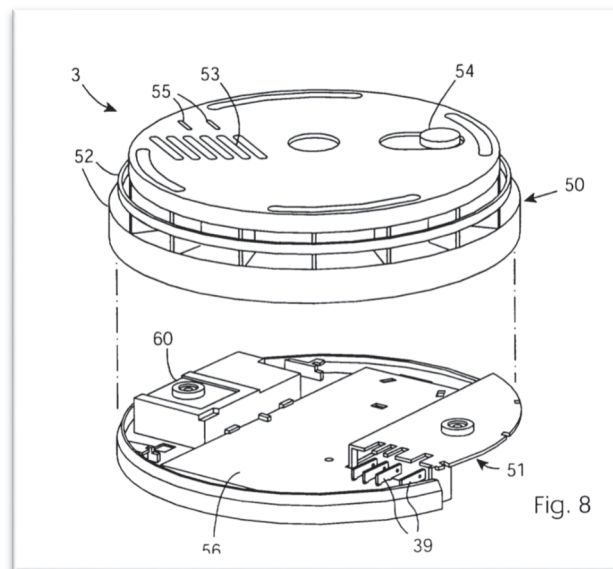
371. The device described by Byrne '354 includes a base and an alarm body. As illustrated below in Fig. 1 of Byrne '354, the base includes a base plate for mounting the device to a wall or ceiling and “means for mechanical connection to the alarm body 3.” (Ex. 1009, ¶¶[0022]-[0023], Fig. 1). This base can be construed as analogous to the first portion recited in claim 1 of the '158 patent. Accordingly, Byrne '354 discloses a first portion.



(Ex. 1009, Fig. 1).

iii. [1b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics; and

372. The device described by Byrne '354 includes a base and an alarm body. (Ex. 1009, ¶[0022]). The base 2 comprises features that allow for mechanical connection to the alarm body 3, specifically a set of four connection apertures 15 and a snap-fitting fastener 16.” (Ex. 1009, ¶[0023]). Additionally, the alarm body 3, which may be construed as analogous to the second portion recited by claim 1 of the '158 patent, “comprises a battery compartment 60 and it houses a sensor circuit 56 which support the terminal spades 39,” as illustrated below in Fig. 8 of Byrne '354. (Ex. 1009, ¶[0028]).



(Ex. 1009, Fig. 8).

373. Therefore, the device of Byrne '354 teaches a second portion configured for attachment to the first portion, i.e. base 2, the second portion

including electronics to operate the device and at least one battery for powering the electronics.

- iv. [1c] cooperating features on the first portion and the second portion that automatically activate the second portion upon initial attachment of the second portion to the first portion;

374. Byrne '354 additionally teaches attaching the alarm body 3 to the base 2 in order to activate the device. (Ex. 1009, ¶[0031]). Activating the device involves “bringing the alarm body 3 “into proximity to the base 2 and push[ing] against it until the lips 70 of the alarm body 3 are engaged within the apertures 15 of the base 2.” (Ex. 1009, ¶[0031]). “[T]his action causes the terminal spades 39 to enter the mouths 32 and 35 of the alarm body terminals to create an electrical connection.” (*Id.*) Accordingly, Byrne '354 teaches the first and second portions, i.e. the base and alarm body, having cooperating features, such as apertures 15 and lips 70, that automatically activate the second portion upon initial attachment of the second portion to the first portion, and the subject matter of this claim feature would have been obvious to POSA at the time of invention.

- v. [1d] wherein the cooperating features comprise an activate/deactivate system, the activate/deactivate system being configured to automatically activate the second portion upon initial attachment of the second portion to the first portion;

375. I understand that in the Related Litigation, the District Court determined that the claim term “activate/deactivate system” should be given its plain and ordinary meaning. (*See* Ex. 1019, 4-5). The claim language further provides that the claimed “activate/deactivate system” can do several things. For this claim element, the activate/deactivate system is “configured to automatically activate the second portion upon initial attachment of the second portion to the first portion.” (Ex. 1001, cl. 1).

376. As described above, activating the device of Byrne ’354 involves “bringing the alarm body 3 “into proximity to the base 2 and push[ing] against it until the lips 70 of the alarm body 3 are engaged within the apertures 15 of the base 2.” (Ex. 1009, ¶[0031]). “[T]his action causes the terminal spades 39 to enter the mouths 32 and 35 of the alarm body terminals to create an electrical connection.” (*Id.*). Additionally, it would have been readily apparent to a POSA that by disconnecting the alarm body from the base, whether by rotating the alarm in the opposite direction from attachment or by disengaging lips 70 of the alarm body from the apertures 15 of the base 2, the device would be deactivated, as one is removing the connection between a power source and the alarm electronics. (*Id.*). Accordingly, Byrne ’354 describes the subject matter of this claim feature, rendering it obvious to a POSA.

- vi. [1e] wherein the activate/deactivate system is configured to enable the user to manually deactivate the second portion; and

377. Byrne '311 describes an alarm comprising a control circuit having a “one-way de-activation or OFF switch 29” and a “one-way activation or ON switch 30.” (Ex. 1010, 4:20-22). Actuation of the one-way deactivation switch exposes a wire lead of the alarm and presents it for cutting or removal of the wire from the device. (Ex. 1010, 5:4-9). The “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (*Id.*). Byrne '311, therefore, discloses an activate/deactivate system which enables a user to manually deactivate the second portion, i.e. the alarm body. Accordingly, Byrne '311 describes the subject matter of this claim feature, rendering it obvious to a POSA.

- vii. [1f] wherein, when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion.

378. As mentioned above, Byrne '311 discloses one-way deactivation switch, which when actuated exposes a wire lead of the alarm to be cut. (Ex. 1010, 5:4-9, 5:15-19, 6:21-24). This “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (Ex. 1010, 5:4-9).

379. Additionally, Byrne '354 discloses an alarm device comprising a base and an alarm body (Ex. 1009, ¶[0022]), these components being connectable by attaching the alarm body to the base to “[cause] the terminal spades 39 to enter the

mouths 32 and 35 of the alarm body terminals to create an electrical connection,” thereby activating the device. (Ex. 1009, ¶¶[0022], [0023], [0031]).

380. It is my opinion that a POSA would understand that the deactivation mechanism of the alarm device of Byrne ’311 could be applied to the alarm device of Byrne ’354. Such application would result in the physical elimination of the connection between the power source, such as the power mains terminated in main terminals 25 in terminal block 14 on the base (i.e. the first portion), and the control circuitry of the alarm, such as the sensor circuit housed in the alarm body (i.e. the second portion). (Ex. 1010, 5:4-9; Ex. 1009, ¶[0028]). As the deactivation mechanism involves physically disabling the device by destroying the connection between the power source and the device electronics, a POSA would understand that this mechanism may result in an alarm body that is incapable of being re-mounted to the base once deactivated.

381. Additionally, the 1999 version of NFPA 72 and the 2000 version of the International Fire Code, echo this sentiment and go a step further by requiring only operable smoke detectors from being mounted. (Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4).

382. In fact, the UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). The 1997 UL 217 included a requirement that

one of three “prominent indications” were implemented when a battery-only device with a removable battery was deactivated (i.e. when the battery was removed)¹³. (Ex. 1032, § 8). Specifically, UL 217 required a warning flag if the cover was closed, a hinged cover that could not be closed with the battery removed, or “an equivalent arrangement.” (*Id.*, § 8.1(a)-(c)).

383. Therefore, even if cutting the power source does not render the body incapable of being re-mounted, the requirements of NFPA 72 and the 2000 IFC would result in a feature that ensures such a smoke detector deactivated as disclosed in Byrne ’311 cannot be mounted and appear operational. A straightforward way to ensure this is the case would be to include an attachment prevention mechanism that ensures that the smoke detector cannot be re-mounted. The exact design of such a mechanism would depend on the goals of the designer, but could involve modifying Byrne ’311’s wire-cut deactivation feature to incorporate a switch that deactivates the device and activates a mechanism that blocks the ability for the smoke detector to mount onto the mounting bracket. Several examples of reattachment prevention mechanism are discussed above in Section VII.D and below in Section IX.

¹³ UL 217 refers to battery-operated smoke detectors and those that are AC-powered with battery back-up. For those devices that are completely battery-operated, removal of a battery may deactivate the smoke detector.

384. As such, in view of the combination of Byrne '311 and Byrne '354, a POSA would find the subject matter of this claim feature to be obvious.

b. *Dependent Claims 2-7*

- i. Claim 2: The electronic device of claim 1, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm

385. As described above, Byrne '354 discloses an alarm device comprising an alarm body and a base. (Ex. 1009, ¶[0022]). The base, i.e. the first portion, contains a base plate for mounting the device to wall or ceiling, while the alarm body contains a battery compartment and the sensor circuit. (Ex. 1009, ¶¶[0022]-[0023], [0028]). Also, Byrne '354 describes the alarm device as a smoke or heat alarm. (Ex. 1009, ¶[0001]). Accordingly, Byrne '354 renders the subject matter of this claim feature obvious to a POSA.

- ii. Claim 3: The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.

386. Byrne '354 describes the alarm device as a smoke or heat alarm. (Ex. 1009, ¶[0001]). A POSA would understand that the permeation of smoke or heat is a signal of a life threatening condition. Accordingly, a POSA would understand the device of Byrne '354 to teach an alarm portion that includes a system to detect a life threatening condition.

- iii. Claim 4: The electronic device of claim 3, wherein the detection system comprises a smoke detection system.

387. Byrne '354 describes the alarm device as a smoke or heat alarm. (Ex. 1009, ¶[0001]). Therefore, Byrne '354 discloses the subject matter of this claim feature such that it would have been obvious to a POSA at the time of invention.

- iv. Claim 5: The electronic device of claim 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.

388. Byrne '311 teaches a one-way ON switch for activating the device comprising “a sliding switch 70 housing a sliding member on the circuit 3.” (Ex. 1010, 5:20-31). The sliding switch “may only be pushed once and may not be reversed back to the OFF position.” (*Id.*). A POSA would have recognized the need for a multi-position switch and used any kind of switch to achieve the desired result while meeting any additional, requisite design requirements. Further, the concept of using a switch to activate the device in order to avoid power drain in the batteries, such as the backup batteries of Byrne '354 or the sealed power source of Byrne '311, before the user desired the alarm to be operational would have been obvious to a POSA at the time of invention. (Ex. 1010, 1:19-25, 4:13-20; Ex. 1009, ¶[0028], Ex. 1005, 3:38-44). In view of the combination of Byrne '354 and Byrne '311, a POSA would find the subject matter of this claim feature to be obvious.

- v. Claim 6: The electronic device of claim 5, wherein the device electronics comprises a three position switch connected to the slider.

389. As mentioned above, Byrne '311 teaches a one-way ON switch for activating the device comprising “a sliding switch 70 housing a sliding member on the circuit 3.” (Ex. 1010, 5:20-31). This sliding switch “may only be pushed once and may not be reversed back to the OFF position.” (*Id.*). A POSA would have recognized the need for a multi-position switch and used any kind of switch, including a three position switch connected to a slider, to achieve the desired result while meeting any additional, requisite design requirements. Accordingly, the subject matter of this claim feature would have been obvious to a POSA at the time of invention.

- vi. Claim 7: The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

390. Byrne '311 describes an alarm comprising long-life lithium batteries, housed in a compartment 20, powering a control circuit with a one-way activation switch. (Ex. 1010, 4:13-22). “The compartment 20 comprises a rectangular chamber 40 enclosing the three batteries 26 and preventing user access.” (Ex. 1010, 4:23-26, 6:12-14)

391. Also, Byrne '354 includes a battery compartment for alarms which include a replaceable battery (Ex. 1009, ¶¶[0017]-[0018]); however, Byrne '354 also

notes that “[t]he battery compartment is not needed in a different version of the product having rechargeable batteries which do not need to be replaced.” (Ex. 1009, ¶[0028]). Furthermore, with permanent deactivation, there would be no need to access the batteries. A POSA would thus not provide for user access to the battery.

392. Accordingly, in view of the combined teachings of Byrne ’311 and Byrne ’354, a POSA would have found the subject matter of this claim feature to be obvious at the time of invention.

c. *Independent Claim 12*

i. [12Pre] An electronic device, comprising:

393. To the extent the preamble is limiting, Byrne ’354 renders this claim feature obvious per Section VIII.E.2.a.i.

ii. [12a] a first portion;

394. Byrne ’354 renders this claim feature obvious per Section VIII.E.2.a.ii.

iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;

395. Byrne ’354 renders this claim feature obvious per Section VIII.E.2.a.iii.

iv. [12c] an activation mechanism to activate the second portion;

396. Byrne ’354 describes attaching an alarm body 3 to a base 2 for activation including bringing the alarm body 3 “into proximity to the base 2 and

push[ing] against it until the lips 70 of the alarm body 3 are engaged within the apertures 15 of the base 2.” (Ex. 1009, ¶[0031]). “[T]his action causes the terminal spades 39 to enter the mouths 32 and 35 of the alarm body terminals to create an electrical connection,” thereby activating the alarm body upon attachment. (*Id.*).

397. Byrne ’311 also discloses a one-way ON switch for activating the device comprising “a sliding switch 70 housing a sliding member on the circuit 3,” and which “may only be pushed once and may not be reversed back to the OFF position.” (Ex. 1010, 5:20-31).

398. The combination of Byrne ’354 and Byrne ’311, therefore, discloses an activation mechanism to activate the second portion.

- v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

399. Byrne ’311 describes an alarm comprising a control circuit having a “one-way de-activation or OFF switch 29.” (Ex. 1010, 4:20-22). Actuation of the one-way deactivation switch exposes a wire lead of the alarm and presents it to a user for cutting or removal of the wire from the device. (Ex. 1010, 5:4-9, 1010, 5:15-19). The “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (*Id.*). This means of providing a wire for a user to cut to deactivate the device is a permanent deactivation mechanism. In fact, the MPEP recognizes that

“mechanism” is often a nonce word substitute for the word “means.” (Ex. 1018, §2181). Thus, Byrne ’311 discloses a permanent deactivation mechanism (“means”) to permit the deactivation of the second portion.

400. Even if a POSA would not view the act of cutting a wire to be a mechanism, Byrne ’311’s reference to such deactivation as an “OFF switch” suggests that a mechanism may be included in the Byrne ’311 device to permanently deactivate the device such that the user is not required to use a sharp object to permanently deactivate the smoke detector. Additionally, it would be obvious to a POSA to replace the wire cutting feature of Byrne ’311 to a deactivation mechanism like an electrical switch so as to avoid requiring the use of a sharp object while deactivating a ceiling-mounted smoke detector.

401. A POSA would understand that this permanent deactivation mechanism may be applied to a conventional alarm structure, such as the alarm structure described in Byrne ’354, in order that the permanent deactivation mechanism may not be accessible unless the alarm body is removed from the base/mounting bracket, i.e. the second portion detached from the first portion. The combination of Byrne ’354 and Byrne ’311, therefore, discloses a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

402. As mentioned above, Byrne '311 discloses one-way deactivation switch, which when actuated exposes a wire lead of the alarm to be cut. (Ex. 1010, 6:21-24, 5:4-9). This “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (Ex. 1010, 5:4-9, 5:15-19).

403. Additionally, Byrne '354 discloses an alarm device comprising a base and an alarm body, these components being connectable by attaching the alarm body to the base to “[cause] the terminal spades 39 to enter the mouths 32 and 35 of the alarm body terminals to create an electrical connection,” thereby activating the device. (Ex. 1009, ¶¶[0022], [0023], [0031]).

404. It is my opinion that a POSA would understand that the deactivation mechanism of the alarm device of Byrne '311 could be applied to the alarm device of Byrne '354. Such application would result in the physical elimination of the connection between the power source, such as the power mains terminated in main terminals 25 in terminal block 14 on the base (i.e. the first portion), and the control circuitry of the alarm, such as the sensor circuit housed in the alarm body (i.e. the second portion). (Ex. 1010, 5:4-9; Ex. 1009, ¶[0028]).

405. Additionally, the 1999 version of NFPA 72 and the 2000 version of the International Fire Code, echo this sentiment and go a step further by requiring only

operable smoke detectors from being mounted. (Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4).

406. In fact, the UL standard at the time of invention required, “a readily apparent and prominent visual indication” that the device was in an inoperable state. (Ex. 1016, 20; Ex. 1005, 3:38-44). The 1997 UL 217 included a requirement that one of three “prominent indications” were implemented when a battery-only device with a removable battery was deactivated (i.e. when the battery was removed)¹⁴. (Ex. 1032, § 8). Specifically, UL 217 required a warning flag if the cover was closed, a hinged cover that could not be closed with the battery removed, or “an equivalent arrangement.” (*Id.*, § 8.1(a)-(c)).

407. Therefore, the requirements of NFPA 72 and the 2000 IFC would require a feature that ensures such a smoke detector deactivated as disclosed in Byrne ’311 cannot be mounted while appearing operational. It would therefore be obvious to incorporate a means to prevent reattachment of the smoke detector once it has been deactivated. A straightforward way to ensure this is the case would be to include a reattachment prevention mechanism that ensures that the smoke detector cannot be re-mounted or a hinged cover that cannot be closed. And because

¹⁴ UL 217 refers to battery-operated smoke detectors and those that are AC-powered with battery back-up. For those devices that are completely battery-operated, removal of a battery may deactivate the smoke detector.

attachment prevention mechanisms were well known in the art, a POSA would evaluate the product and determine the most appropriate type of reattachment prevention mechanism for the device.

408. As such, in view of the combination of Byrne '311 and Byrne '354, a POSA would find the subject matter of this claim feature to be obvious.

d. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.

409. Byrne '354 renders the preamble obvious per Section VIII.E.2.b.i.

- ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

410. Byrne '354 renders this limitation obvious per Section VIII.E.2.b.ii.

- iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

411. Byrne '354 renders this limitation obvious per Section VIII.E.2.b.iii.

F. **Ground 6: Claims 12-15 are Unpatentable Under 35 U.S.C. § 103(a) as Obvious Over Byrne '311 in view of DeLuca '487**

1. **Basis for the Combination of Byrne '311 and DeLuca '487**

412. Both Byrne 311 and DeLuca '487 are directed to life safety detectors, namely smoke detectors, the same field of invention of the '158 patent. These

references disclose battery-operated life safety alarms. (Ex. 1006, 3:26-34; Ex. 1010, 1:1-10). Additionally, both references express concern for situations where a user mistakenly thinks an inactive/deactivated alarm is operational. (Ex. 1006, 1:15-44; Ex. 1010, 1:15-18). Accordingly, a POSA would have looked to incorporate the known functionality of installation prevention as taught in DeLuca '487, with the “extremely simple” deactivation method taught in Byrne '311.

413. As demonstrated throughout this declaration, the life safety industry incorporated a variety of features into smoke detectors such that smoke detectors by the date of the alleged invention of the '158 Patent were essentially combinations of other smoke detectors that came before them, and the various features were widely available in the art. (*See* Section VII). Therefore, a POSA would have been motivated and able to combine these references with an expectation of success, with little, if any experimentation. A POSA would have, therefore, looked to combine these references.

2. Claims 12-15 are Obvious Over Byrne '311 in View of DeLuca '487

a. *Independent Claim 12*

i. [12Pre] An electronic device, comprising:

414. Byrne '311 describes an electronic, battery-powered alarm device. (Ex. 1010, cover, 1:1-10). Similarly, DeLuca '487 is directed to a battery-powered smoke or carbon monoxide alarm, which is an electronic device. (Ex. 1006, 3:23-34, 3:42-

46). To the extent the preamble is limiting, the prior art renders this claim feature obvious.

ii. [12a] a first portion;

415. Byrne '311 describes a detector, but does not specify how it would be mounted to a wall or ceiling. A POSA would understand a common means of mounting a detector like that of Byrne '311 would be to use a mounting bracket or other attachment hardware. A POSA may additionally look to other detectors, such as the detector of DeLuca '487, for mounting solutions. DeLuca '487 describes a detector comprising a detector base 12, which houses the various electronic equipment and a bracket 20 to which the detector base is mounted. (Ex. 1006, 3:23-34).

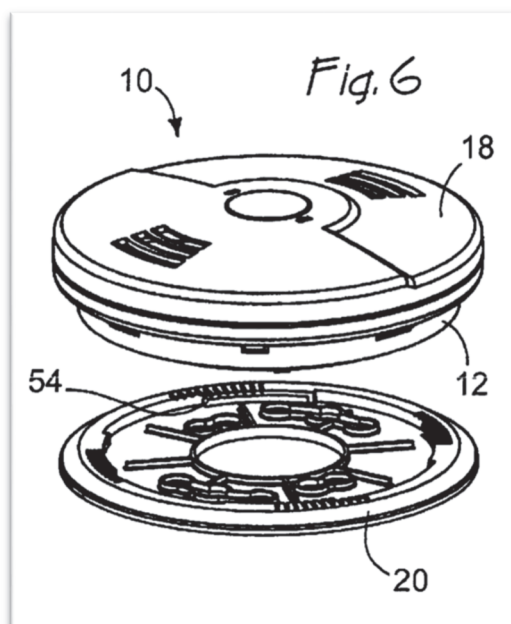
416. The prior art therefore, discloses “the first portion,” as recited in the claim.

iii. [12b] a second portion configured for attachment to the first portion, the second portion including electronics to operate the device and at least one battery for powering the electronics;

417. Byrne '311 teaches a portion of the detector with electronics to operate the device and at least one battery. (Ex. 1010, cover, 1:1-10, 2:6-14). Byrne '311 does not, however, teach how that detector is mounted to a wall or ceiling. POSA would understand a common means of mounting a detector like that of Byrne '311

would be to use a mounting bracket or other attachment hardware. A POSA may additionally look to other detectors, such as the detector of DeLuca '487, for mounting solutions.

418. As shown below in Fig. 6, DeLuca '487 describes a detector comprising a bracket 20 and a detector base 12, “which houses various electronic equipment 14, 16 such as a sensor, an alarm, and various signal processing circuitry....” (Ex. 1006, 3:23-34).



(Ex. 1006, Fig. 6).

419. DeLuca '487 further describes the detector base 12 having a “multiple battery compartment that provides a plurality of battery receiving regions 23-25 for receiving individual batteries,” for powering the detector 10. (Ex. 1006, 3:42-46).

420. DeLuca '487, therefore, discloses the claimed second portion, as recited in the claim.

- iv. [12c] an activation mechanism to activate the second portion;

421. Byrne '311 refers to a one-way ON switch to activate a detector that has a sliding switch which “may only be pushed once and may not be reversed back to the OFF position.” (Ex. 1010, 4:20-22, 5:20-31). Byrne '311, therefore, teaches the activation mechanism to activate the second portion.

422. Additionally, DeLuca '487 describes a replaceable battery device which is activated when the user inserts batteries into the “battery receiving regions 23-25 for receiving individual batteries 26.” (Ex. 1006, 3:42-46). A POSA would understand that inserting batteries into all of the battery receiving regions would activate the smoke detector described by DeLuca '487.

423. Accordingly, DeLuca '487 in view of Byrne '311 renders this claim feature obvious.

- v. [12d] a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached; and

424. Byrne '311 describes using a one-way ON switch to activate a detector comprising a sliding switch which “may only be pushed once and may not be

reversed back to the OFF position.” (Ex. 1010, 4:20-22, 5:20-31). Also, as mentioned above, Byrne ’311 discloses one-way deactivation switch, which when actuated exposes a wire lead of the alarm to be cut. (Ex. 1010, 6:21-24, 5:4-9). This “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (Ex. 1010, 5:4-9, 5:18-19).

425. Even if a POSA would not view the act of cutting a wire to be a mechanism, Byrne ’311’s reference to such deactivation as an “OFF switch” teaches that a mechanism may be included in the Byrne ’311 device to permanently deactivate the device such that the user is not required to use a sharp object to permanently deactivate the smoke detector. Additionally, it would be obvious to a POSA to modify the wire cutting feature of Byrne ’311 to a deactivation mechanism so as to avoid requiring the use of a sharp object while deactivating a ceiling-mounted smoke detector.

426. Additionally, DeLuca ’487 describes a detector comprising a bracket portion 20 and a base portion 12, “which houses various electronic equipment.” (Ex. 1006, 3:23-34). A POSA would understand that the combination of the permanent deactivation of the alarm via the means described in Byrne ’311 and the alarm structure of DeLuca ’487 to suggest, “a permanent deactivation mechanism to permit permanent deactivation of the second portion after the second portion has been

activated, wherein the permanent deactivation mechanism is accessible when the first and second portions are detached.”

427. Accordingly, these references disclose the subject matter of this claim feature, rendering it obvious.

- vi. [12e] a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated

428. Byrne '311 describes using a one-way ON switch to activate a detector comprising a sliding switch which “may only be pushed once and may not be reversed back to the OFF position.” (Ex. 1010, 4:20-22, 5:20-31). Also, as mentioned above, Byrne '311 discloses one-way deactivation switch, which when actuated exposes a wire lead of the alarm to be cut. (Ex. 1010, 6:21-24, 5:4-9). This “cutting of a wire is to the user clearly a destructive operation and is not reversible.” (Ex. 1010, 5:4-9, 5:18-19).

429. While Byrne '311 does not specify how it would be mounted to a wall or ceiling, a POSA would understand a common means of mounting a detector like that of Byrne '311 would be to use a mounting bracket or other attachment hardware. A POSA may additionally look to other detectors, such as the detector of DeLuca '487, for mounting solutions. DeLuca '487 describes a detector comprising a detector base 12, which houses the various electronic equipment and a bracket 20 to which the detector base is mounted. (Ex. 1006, 3:23-34). Looking to DeLuca's

mounting solution would further identify the means to prevent mounting in order to ensure that the device does not appear to be operational while it is mounted after deactivation so that it complies with the relevant model codes. (*See* Ex. 1030, 8-1.2.2, 8-1.4.1.5.2, 8-2.2.1, 8-2.2.2; Ex. 1031, 901.4.4).

430. DeLuca '487 discloses an alarm device having a lockout actuator 56, including “a battery sensing portion 62, a lockout tab portion 34 and a sliding guide or pilot portion 66,” which may move between obstructing and non-obstructing positions. (Ex. 1006, 4:45-47, 2:23-25). When in the obstructing position, this lockout tab 64 prevents the base of the alarm device from being reattached to the bracket. (Ex. 1006, 5:2-9). The lockout tab or actuator being in an obstructing position indicates the device does not have the requisite power for operation, i.e. all battery receiving regions do not contain a battery. (Ex. 1006, 4:63-67, 5:1-10).

431. Accordingly, these references disclose the subject matter of this claim feature, rendering it obvious.

b. *Dependent Claims 13-15*

- i. Claim 13: The electronic device of claim 12, wherein the electronic device is a life safety alarm, the first portion comprises a mounting bracket of the life safety alarm, and the second portion comprises an alarm portion of the life safety alarm.

432. As discussed above, Byrne '311 does not specify how it would be mounted to a wall or ceiling, a POSA would understand a common means of

mounting a detector like that of Byrne '311 would be to use a mounting bracket or other attachment hardware. A POSA may additionally look to other detectors, such as the detector of DeLuca '487, for mounting solutions. DeLuca '487 describes a detector comprising a detector base 12, which houses the various electronic equipment and a bracket 20 to which the detector base is mounted. (Ex. 1006, 3:23-34).

433. DeLuca '487 discloses a detector with a bracket 20, for mounting the detector to a ceiling or wall, and a base 12, “which houses various electronic equipment 14, 16 such as a sensor, an alarm, and various signal processing circuitry....” (Ex. 1006, 3:23-42). DeLuca '487, therefore, describes the subject matter of this claim.

- ii. Claim 14: The electronic device of claim 13, wherein the alarm portion includes a system to detect a life threatening condition;

434. Byrne '311 and DeLuca '487 describe a detector to detect a life threatening condition, such as smoke or carbon monoxide. (Ex. 1006, 3:23-26, Ex. 1010, cover, 1:1-10, 4:1-12). The prior art, therefore, discloses the subject matter of this claim.

- iii. Claim 15: The electronic device of claim 14, wherein the detection system comprises a smoke detection system.

435. Byrne '311 and DeLuca '487 describe detectors that comprise a smoke detection system. (Ex. 1006, 3:23-26; Ex. 1010, cover, 1:1-10, 4:1-12). The prior art, therefore, discloses the subject matter of this claim.

IX. MODIFICATIONS IN SUPPORT OF GROUNDS

436. I have designed several examples of modifications to the prior art which demonstrate the ease and feasibility the various grounds for invalidity discussed above. These are not intended to represent a comprehensive discussion of all potential alternatives, and are merely demonstrative of the ease by which a POSA would be able to implement well known features in the art to the specific prior art discussed.

A. Malewski in View of the Technical Expertise of a POSA and Malewski in view of STP2003 (Grounds 2 and 4).

1. Malewski

437. A POSA would have modified Malewski to incorporate features that results in a product that meets every element of the Challenged Claims. Such modifications are drawn primarily from the fourth embodiment of Malewski. (*See* Ex. 1007, 6:61-9:4).

438. A POSA would realize that one could simply arrange for attachment of the detector base 14 to the bracket 12 to push the key into the activation position as the detector base 14 is pushed against the bracket 12 before the rotational connection

of tabs 36 and 37 that facilitate the attachment of the smoke detector to the bracket. (See Ex. 1007, 5:20-24), thereby making the unit auto-activating in the same manner as Malewski discloses for the other three embodiments - upon attachment of the detector to the bracket.

439. This modification still uses a conductive “activation key” 60 which, along with the spring contacts 82 forms the switch (*see* Ex. 1007, 6:61-7:5), and which is attached to a one-way slider that moves in three positions, from “preactivated” to “activated” to “deactivated.” The activation key and the slider are referred to as the “key assembly.”

440. Selected regions of the key assembly and spring contacts may be coated with conductive material or alternatively with insulating material to close and open activation circuits and battery draining circuits to achieve the result of activation and deactivation. For example, the three adjacent spring contacts may be in conductive contact whereas the two remaining adjacent spring contacts (one for directing power to the electronics and the other for directing current to the battery drain circuit) would need to be insulated from contact with each other. Alternatively regions of the key assembly may be coated with conductive material in order to ensure that only the desired circuits (e.g. activation or battery draining) are closed as the key assembly is pressed into the smoke detector.

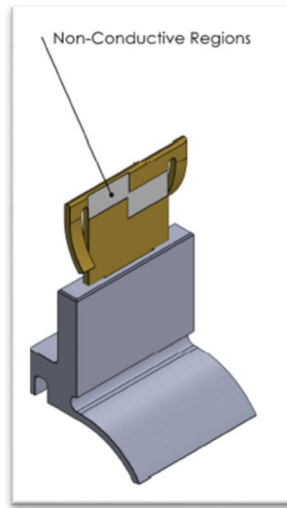


FIGURE 1: Key Assembly – After Deactivation

441. The key assembly in the “preactivated,” (i.e. as-shipped), state is positioned within the detector such that the key 60 is shy of contact with the spring contacts 82. The key assembly does not close the circuit between the batteries and the sensor electronics.

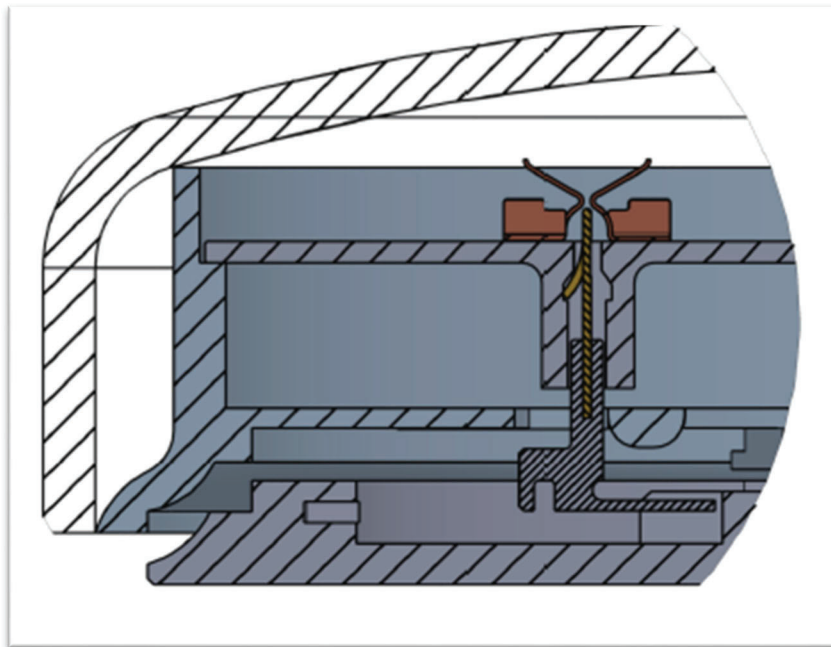


FIGURE 2: Preactivated Position

442. Upon attachment of the detector to the mounting bracket (axial mating followed by slight rotation to engage tabs 36 and 37) the 3-position slider is moved further into the detector establishing contact between the batteries and the sensor. Specifically, pressing the detector base 14 against the bracket 12 during attachment pushes the key assembly (slider and conductive key 60) further into the detector base 14, completing the switch circuit of the spring contacts 82, such that it makes contact between the positive battery terminals and the sensor's electronics. A "bent tang" feature maintains the conductive key element in position. Such a feature is similar to "tabs 66" which prevent the key from being removed from the smoke detector. (See Ex. 1007, 7:48.)

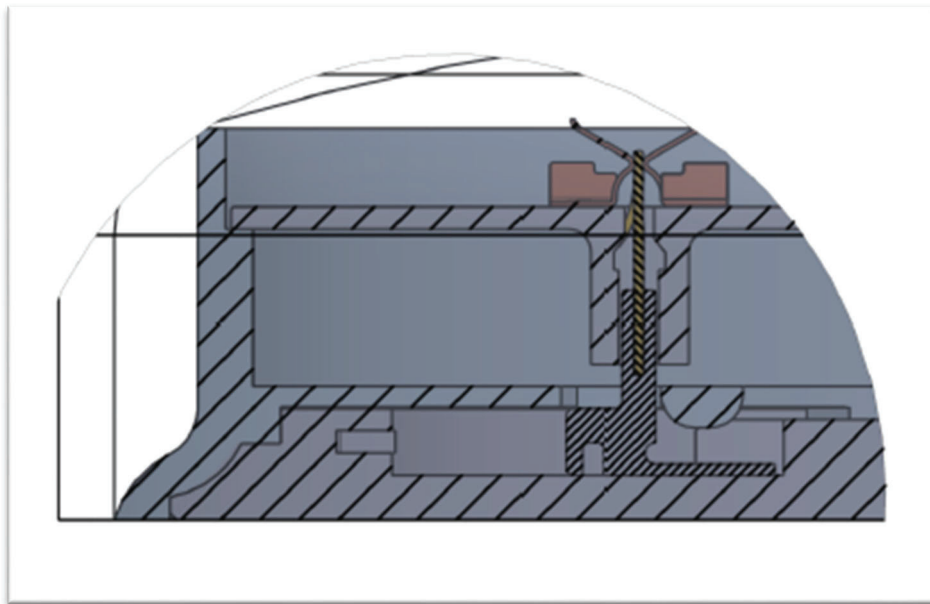


FIGURE 3: Activated Position

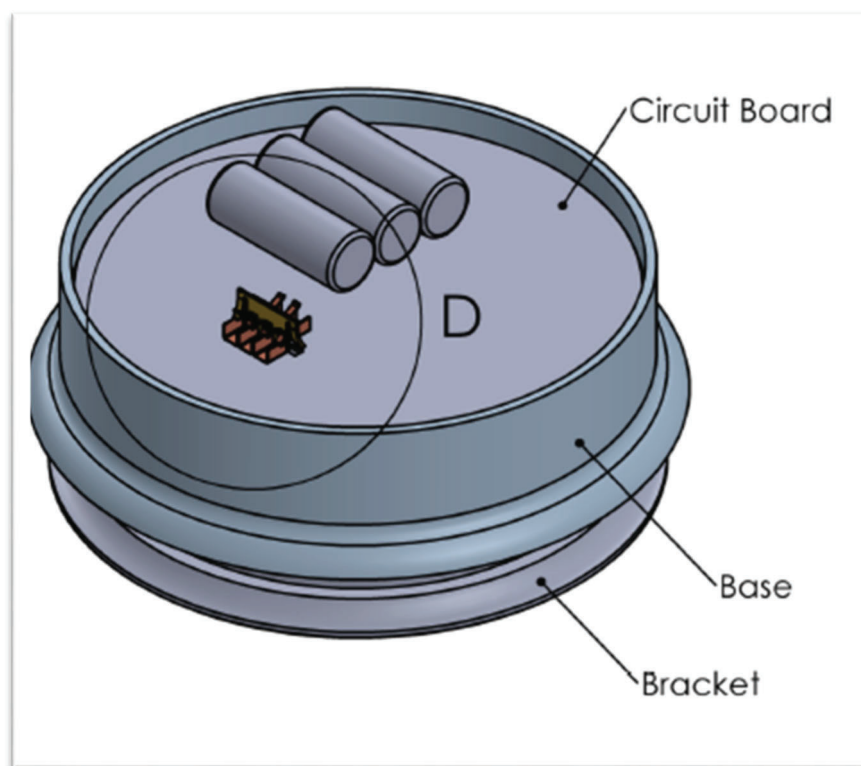


FIGURE 4: Smoke detector in attached, activated position with notation showing activation key inserted into spring contacts.

443. Upon removal of the detector from the mounting bracket the user is instructed to push the 3-position slider further into the detector (position 3) which opens the circuit connected to the smoke detector operational components (i.e. disconnects the power from the smoke detector) and closes a circuit configured to drain the batteries.

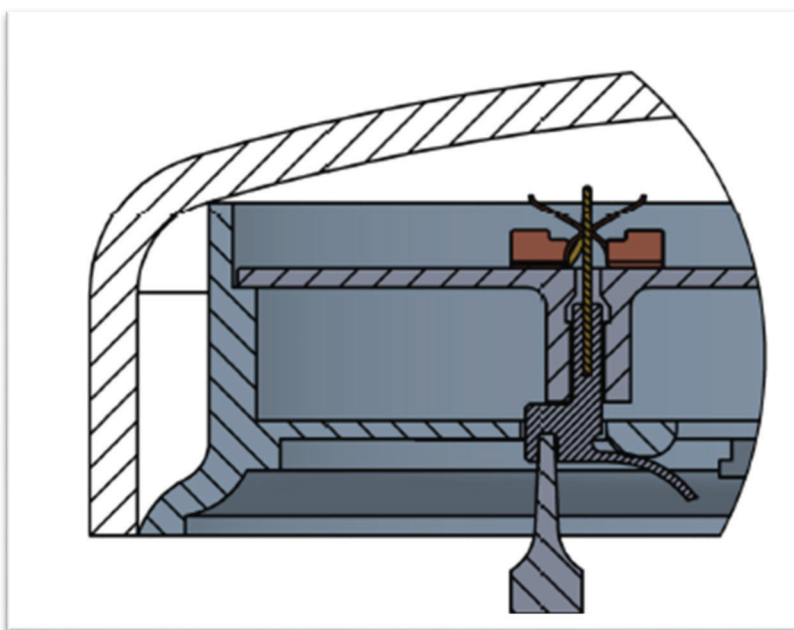


FIGURE 5: Deactivated position with tool pressing key assembly.

444. The spring contacts are configured to supply power to the sensor electronics in the second (activated) position and to drain the battery in the third (deactivated) position.

445. While Malewski's fourth embodiment discloses a key feature that enables reactivation after deactivation, the key 60 can be easily further modified to permanently deactivate the detector. Key 60 is further modified so that upon removal of the detector base 14 from the bracket 12 for deactivation, the consumer is instructed to use a tool (e.g., screwdriver) to push the key assembly further into the unit to the slider's third, deactivated position. In this position, the non-conductive regions of key 60 are against the switch's spring contacts 82, and as a result, the circuit controlling activation of the detector base 14 is broken, and the detector is

deactivated. Additionally, there may be a second conductive region on the key 60 that completes a battery draining circuit so the device can be fully drained for safe disposal.

446. The key 60 has been further modified to prevent reactivation. Specifically, when pushed into the activated or deactivated positions, the tangs of key 60 engages surfaces of the printed circuit board that prevent withdrawal of the key to a previous position.

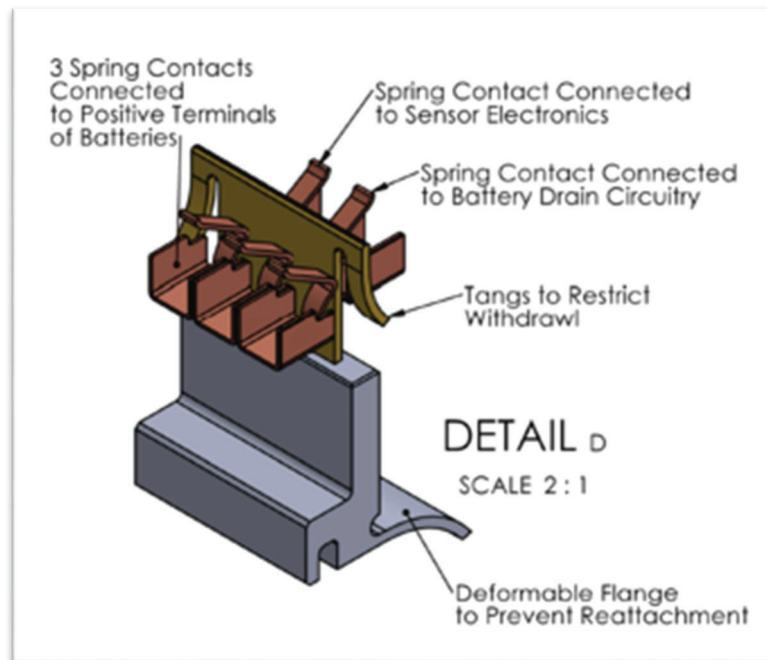


FIGURE 6: Key Assembly

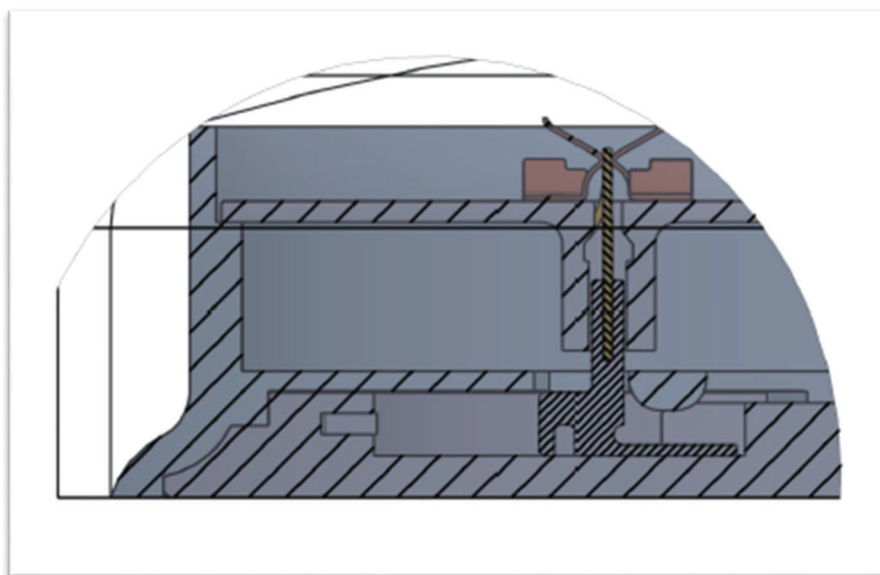


FIGURE 7: Activated Position

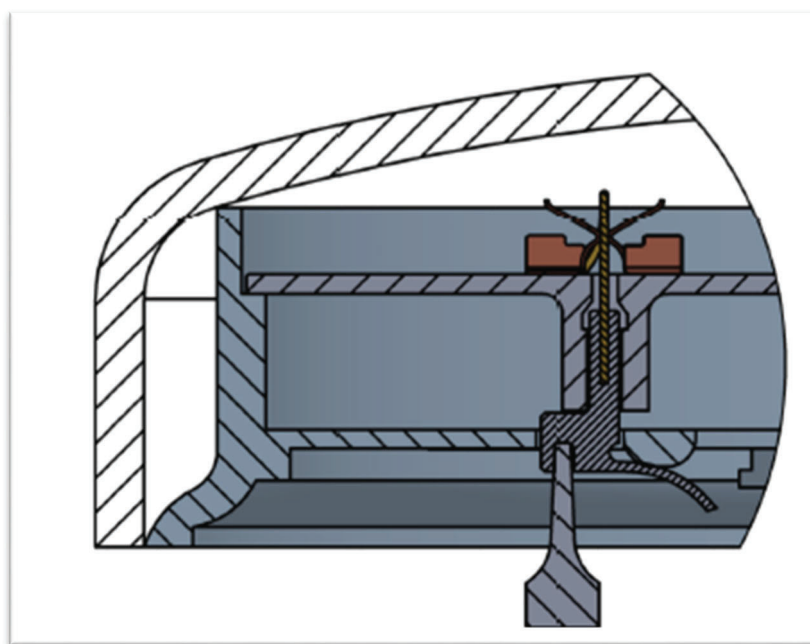


FIGURE 8: Deactivated Position

447. The use of a tool (screwdriver) to push the slider member and attached key member to the third position causes a flange on the slider to deform by virtue of the slider pushing against an abutment feature. This deformation bends or folds a piece of the slider that prevents the reattachment of the smoke detector to the bracket. (See Ex. 1007, 5:20-24). Upon attempted reattachment of the detector 14 to the bracket 12, the deformed flange nests into a recess in the bracket's interior and prevents rotation of the detector base 14 relative to the bracket (12). This prevents tabs 36 from engaging projecting tabs 37 in the bracket.

448. The smoke detector, therefore cannot be reattached onto the mounting bracket after it has been deactivated.

449. Considering these modifications into consideration alongside the discussion of Malewski , this modification of Malewski results in a device that meets all of the Challenged Claims.

2. Watson

450. Below are four examples of modifications of simple modifications of Watson, which is incorporated into Malewski, that meet certain of the Challenged Claims.

451. These are not exhaustive modifications, and further modifications may be made to meet additional claims.

a. Watson Modification 1

452. A POSA would have modified Watson to incorporate well known features that results in a product that meets all of the Challenged Claims.

453. For example, a simple and obvious modification to Watson's automatic activation switch (*See* Ex. 1005, 4:66-5:10) results in an activate/deactivate system that utilizes a one-direction, three position slider connected to a three-position switch.

454. In the preactivated position, the circuit-board mounted switch is supplied in the far left position with the slider attached to the switch's handle. The slider has a slotted arm that prevents spring biased blocking element from extending outwardly and through an opening in the base. The spring biased element has a step in it, and in the preactivated position, the end of the slider is situated along the extended part of the step.

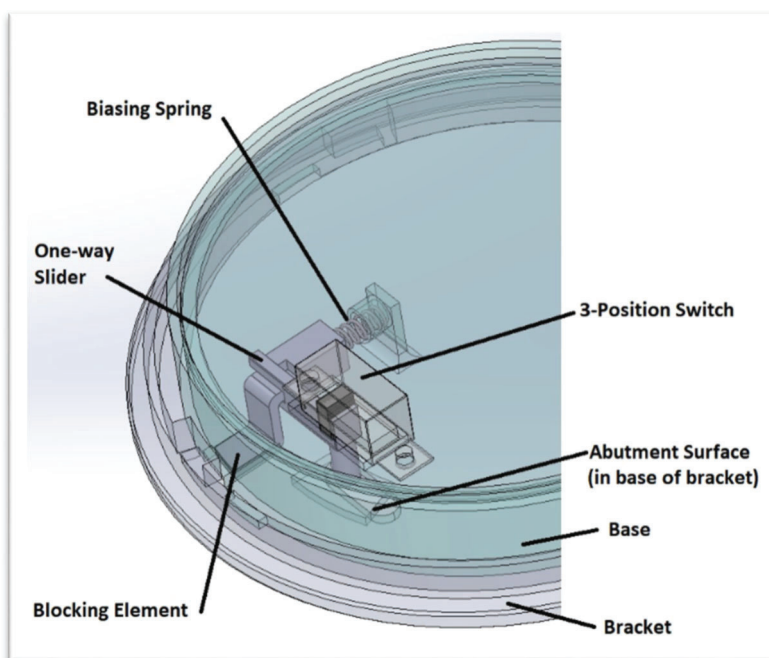


FIGURE 9: Preactivated Position

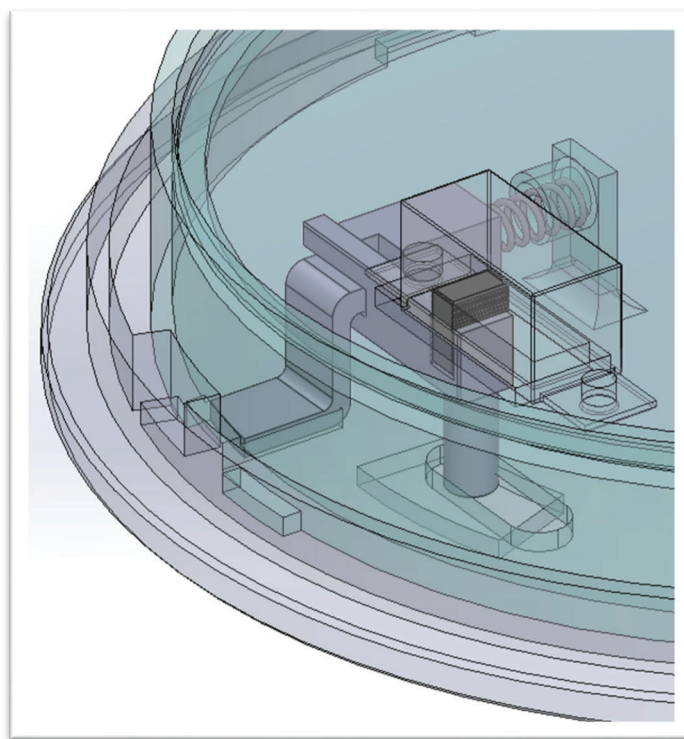


FIGURE 10: Preactivated Position

455. The detector is automatically activated upon rotational attachment to the bracket when an abutment surface on the bracket's inner surface comes into contact with and moves the slider (which is attached to the switch handle) to the second position (the middle position). Movement to this position closes the circuit to activate the alarm's electronics. As the slider moves, the spring biased blocking element moves forward and the arm of the slider engages the step of the spring biased blocking element. The relationship between the slider and the step in the spring biased element prevents movement of the slider back to the original preactivated position. In this position, the slider continues to restrain the blocking element from extending outwardly and through an opening in the base.

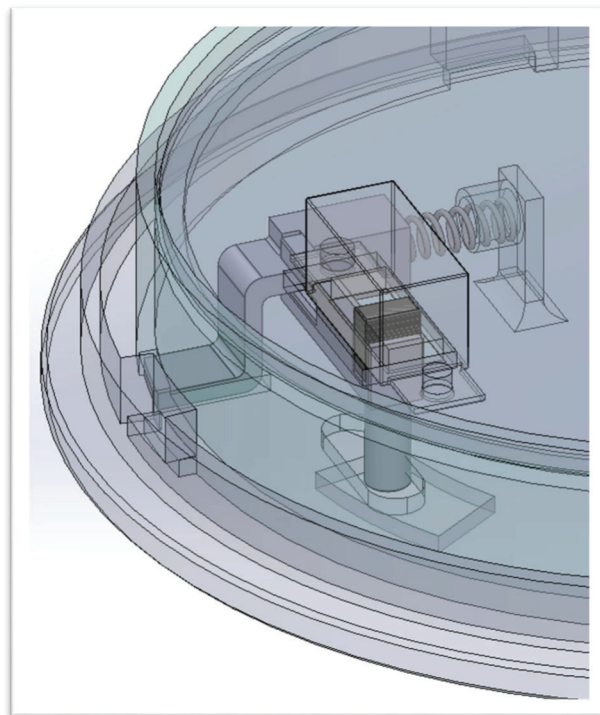


FIGURE 11: Activated Position

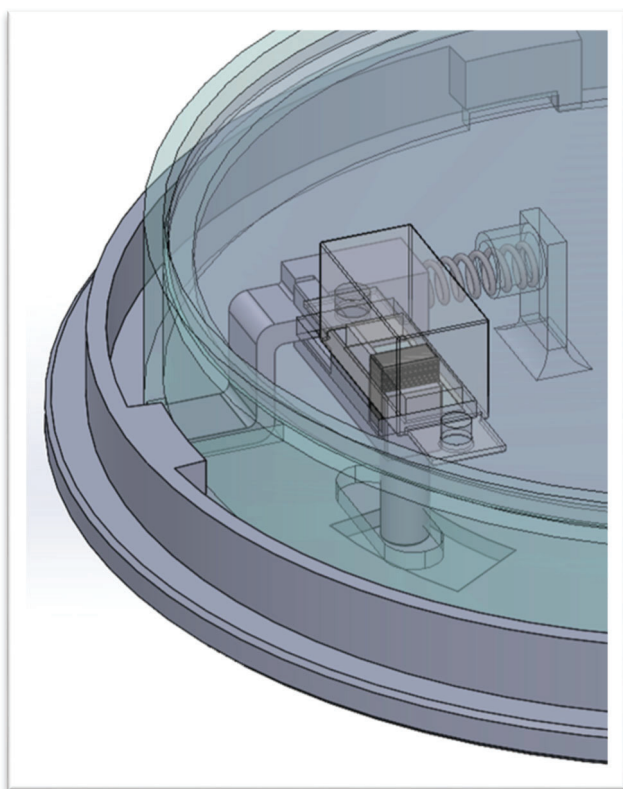


FIGURE 12: Activated Position

456. At the device's end of life, the base is removed from the bracket. The user then manually moves the slider to the deactivated position, which cuts the power to the alarm circuits and it may additionally close a circuit to drain the battery. The movement also disengages the slider from the step of the spring biased element which then frees the blocking element to extend outwardly to block attachment of the base to the bracket. Once it has been moved to the deactivated position, the switch cannot be reactivated because the blocking element has moved out of engagement with the slot in the slider and cannot be re-engaged. Even if the user manually depresses the blocking element in an effort to reattach the base, the spring

biased blocking element will extend outwardly into the bracket's L-shaped projection preventing rotation of the base into the bracket to engage the fittings.

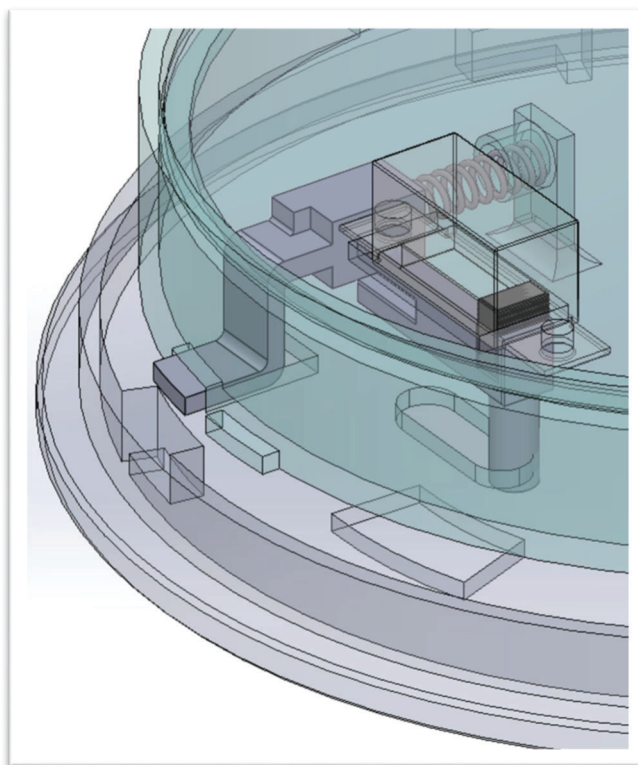


FIGURE 13 Deactivated Position

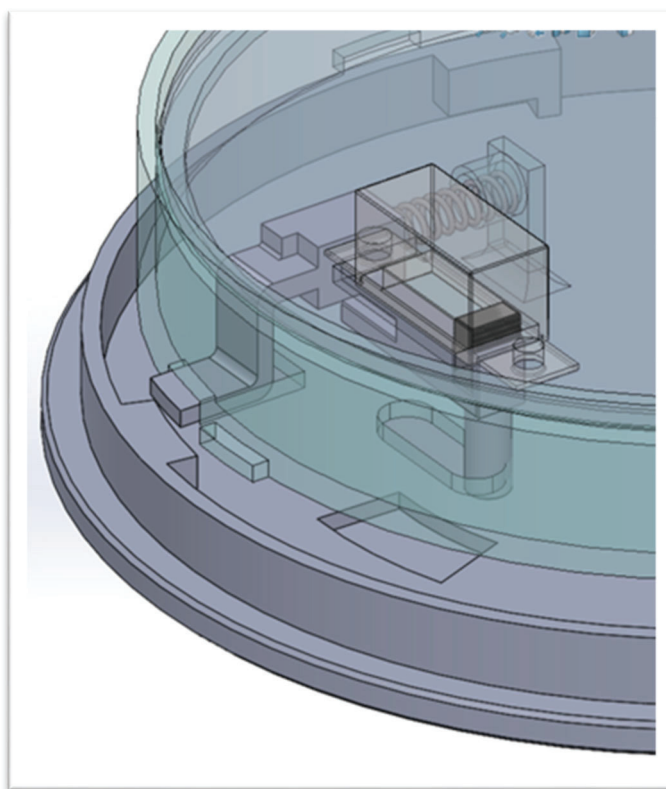


FIGURE 14: Deactivated Position

b. *Watson Modification 2*

457. A POSA would have modified Watson to incorporate well known features that results in a product meeting Challenged Claims Nos. 1-4, 7, and 12-15.

458. For example, a simple and obvious modification to Watson's deactivation mechanism (*See* Ex. 1005, 2:33-43; 3:45-4:13; 4:44-50) prevents reattachment of the detector base 16 to the mounting bracket 22.

459. Specifically, the modification comprises replacing the frangible breakaway deactivating member (12b) with a member that stays rotationally attached to the base 16, and having two posts - one which toggles the deactivating

switch 14b, and one that releases a blocking element when the deactivating switch 14b is rotated.

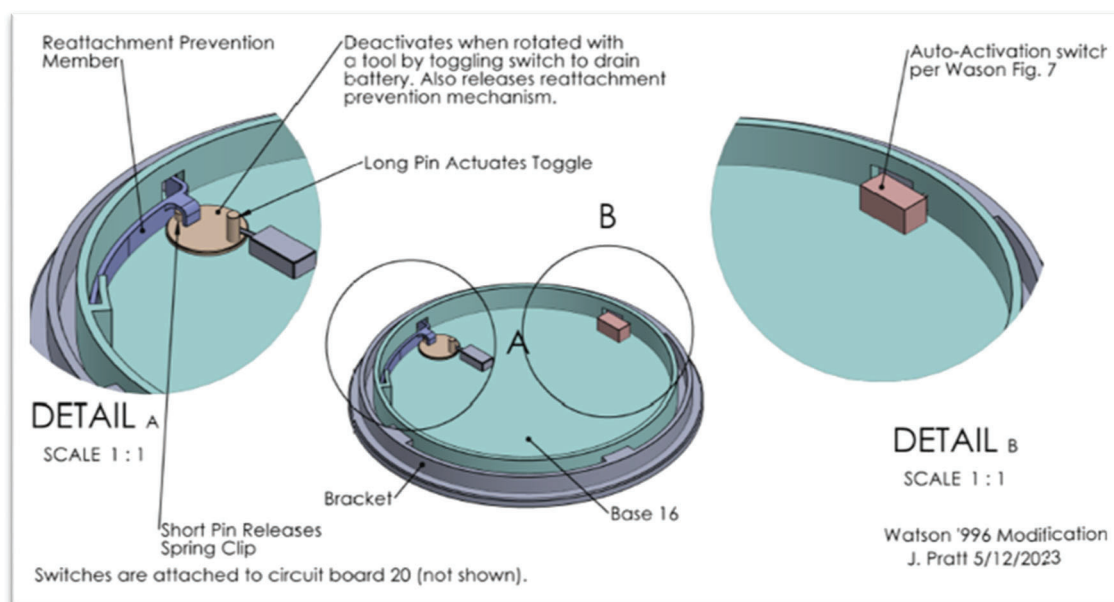


FIGURE 15



FIGURE 16

460. The release of the blocking element results in the protrusion of the blocking element beyond the flange of the base 16 such that the base 16 can no longer be rotated onto the mounting bracket 22.

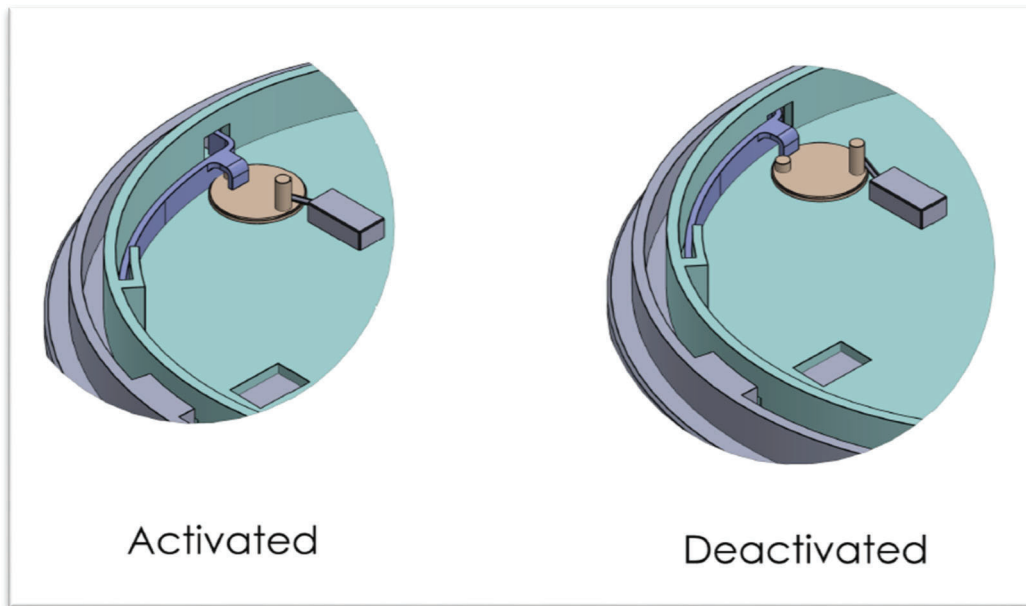


FIGURE 17

461. This modification simply adds a reattachment prevention mechanism that is connected to the deactivation mechanism which results in preventing reattachment of the smoke detector once the smoke detector has been deactivated (and likewise when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion).

c. *Watson Modification 3*

462. The following is another simple and obvious modification of Watson that would incorporate well known features that results in a product that meets Challenged Claims Nos. 1-4, 7, and 12-15.

463. This second modification would be to substitute the frangible break away deactivation mechanism (i.e., frangible member 12b and switch 14b) with a second slide switch, similar to Watson's single use activation slide switch (*see* Ex. 1005, 4:66-5:10 and Fig. 7).

464. This modification would involve placing the second slide switch opposite to the single use activation slide switch. When activated, the second slide switch would deactivate the smoke detector by moving a blocking element through an opening in the flange of base 16 such that base 16 can no longer be rotated into mounting bracket 22, and it may also operate to drain the batteries.

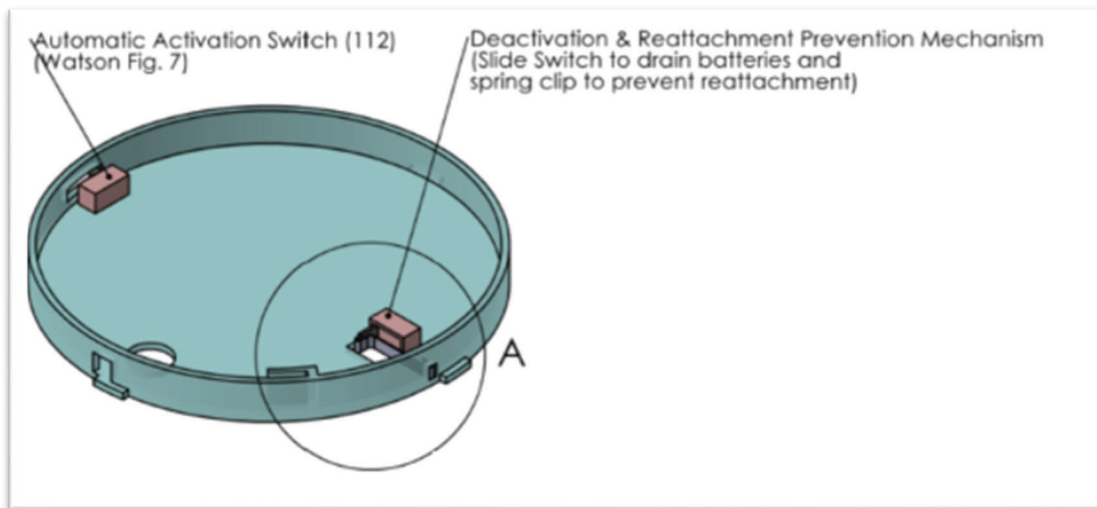


FIGURE 18

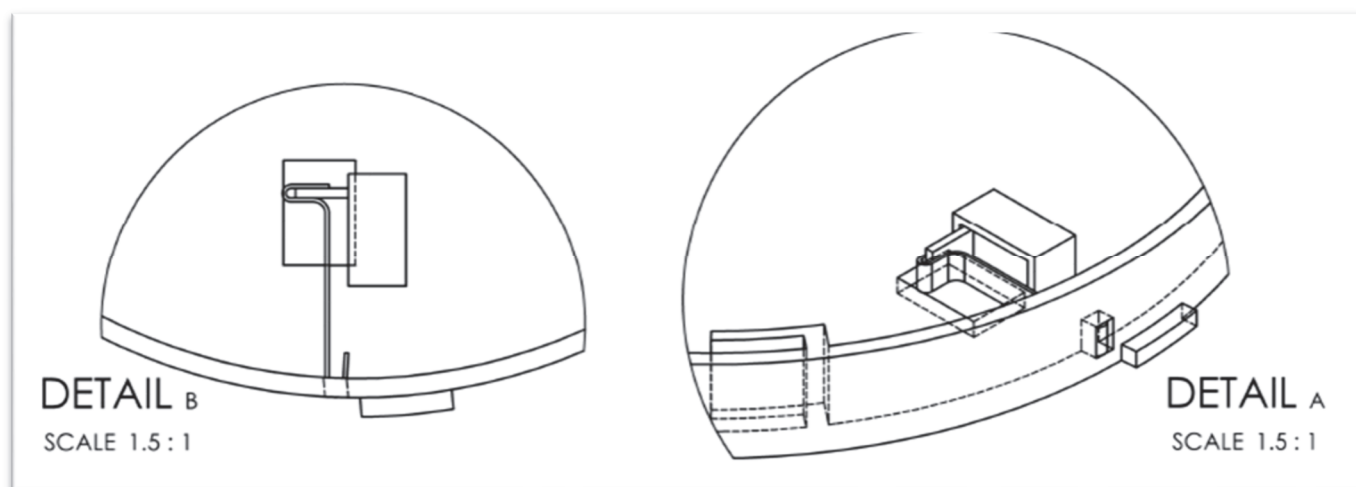


FIGURE 19

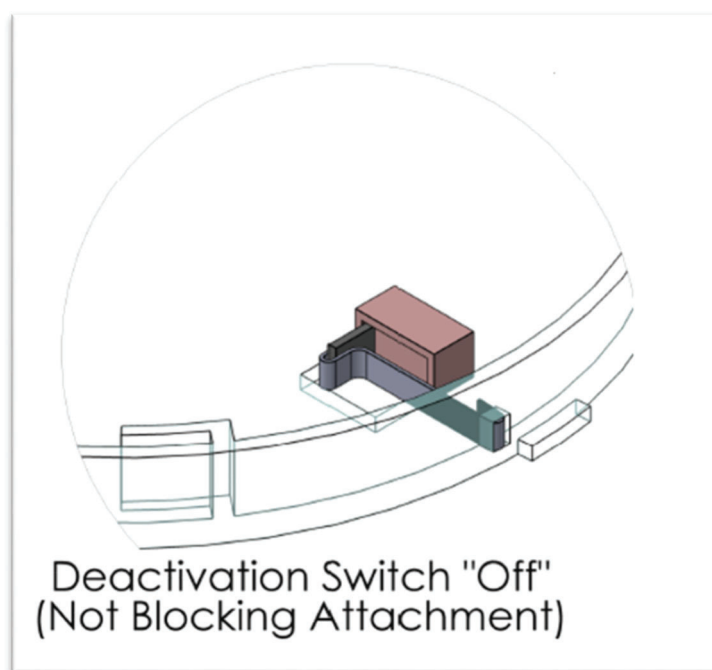


FIGURE 20

465. The slide switch is activated upon the use of a tool to actuate the switch and move the blocking element through an opening in the flange and in the way of the mounting bracket such that the base 16 can no longer be mounted back onto the

bracket. The blocking element further has a tang that prevents the blocking element from being able to pass back through the opening in the flange. This prevents reactivation and reattachment of the base onto the mounting bracket.

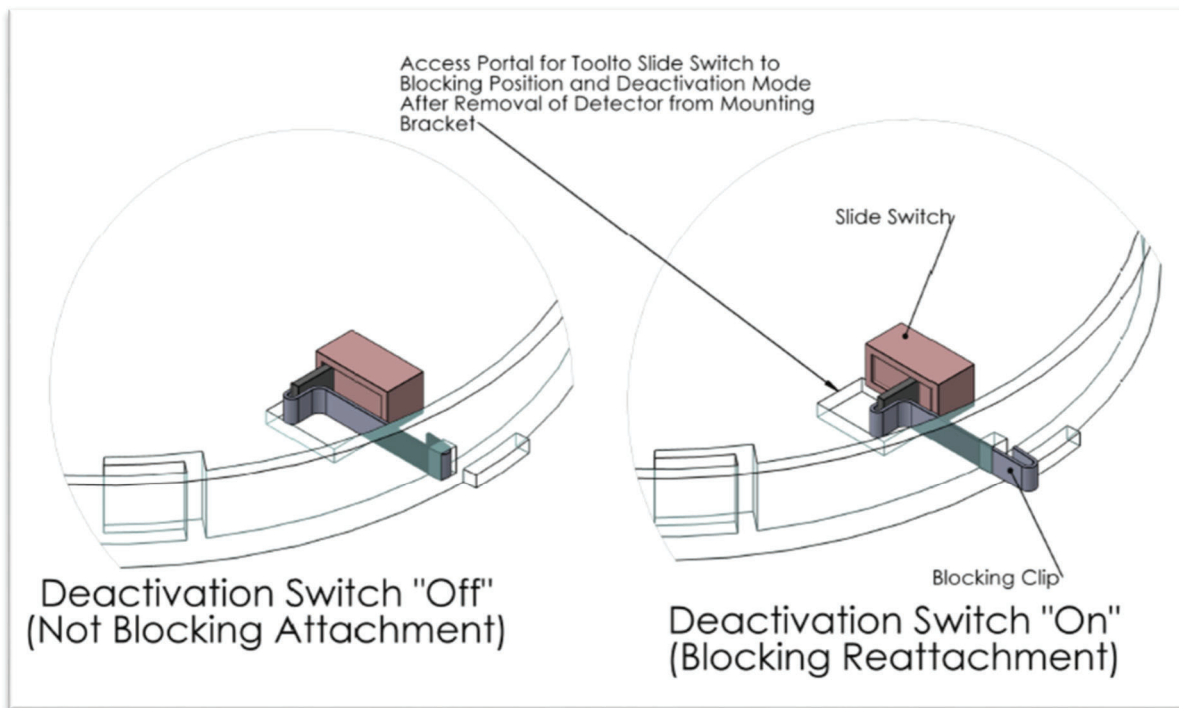


FIGURE 21

466. This modification simply adds a reattachment prevention mechanism that is connected to the deactivation mechanism which results in preventing reattachment of the smoke detector once the smoke detector has been deactivated (and likewise when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion).

d. *Watson Modification 4*

467. The following is another simple and obvious modification of Watson that would incorporate well known features that results in a product that meets claims 1-4, 7, and 12-15.

468. This modification would modify the frangible deactivation mechanism disclosed in Watson to remain rotationally attached to the base 16. Specifically, the deactivation mechanism includes a spring-biased cylindrical and hollow rotational deactivator component having opposed flat surfaces on its exterior, and partially engaged with a similarly shaped hole in the “upper” surface of the base. The biasing spring bears against the circuit board. In the pre-activated state the orientation of the deactivator component is at 90-degrees to the through hole so that it is incapable of extending through the hole under the action of the biasing spring.

469. Access is gained to a screwdriver slot in the upper end of the deactivator once the base is removed from the mounting bracket. When rotated 90-degrees, the deactivator component becomes aligned with the through hole in the base and is able to extend through that hole under the action of the biasing spring. This extension beyond the upper surface of the base interferes with any attempt to reattach the base to the mounting bracket—particularly when a relatively strong spring is employed.

470. As an option, the mounting bracket could additionally be configured with a similarly-shaped cavity into which the extended deactivator nests upon bringing the base back into contact with the bracket. This mating would then prevent

rotating the base with respect to the mounting bracket in order to engage projections 30 into slotted channels 26.

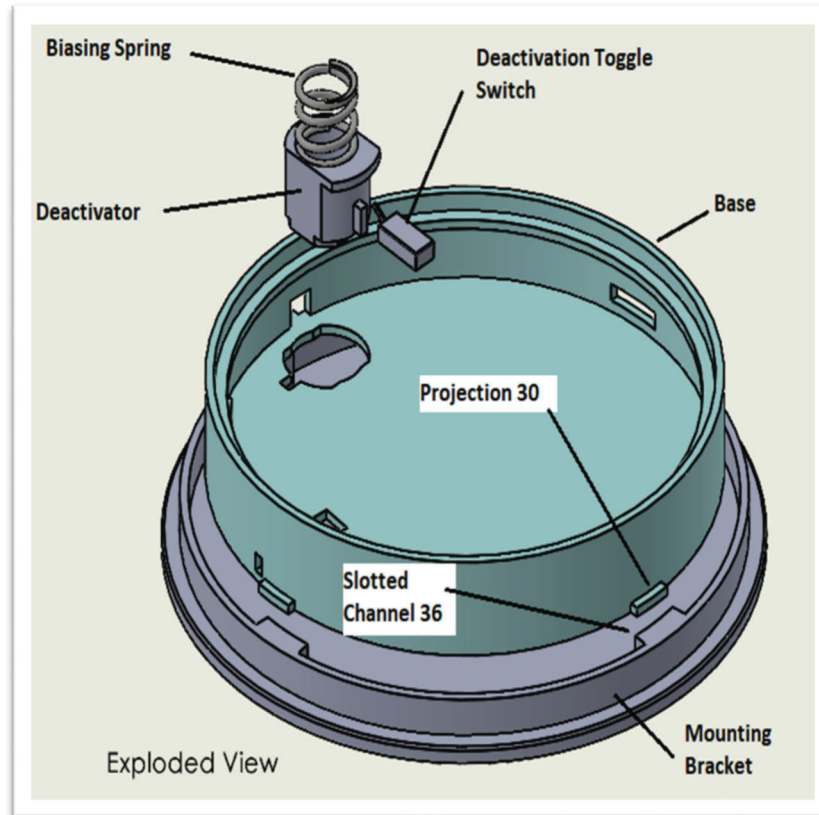


FIGURE 22: Exploded View (Circuit Board Not Shown)

471. Deactivation of the smoke detector involves the user using a screwdriver or coin in a slot at the top of the rotational deactivator component. This rotation results in the protruding tab actuating the deactivation toggle switch and releasing the rotational deactivator component from the tab-based connection with the base 16, and the spring pushes the rotational deactivator component through the upper portion of base 16 such that it protrudes from the smoke detector. A flange on

one (lower) end prevents the rotational deactivator component from being removed from the smoke detector.

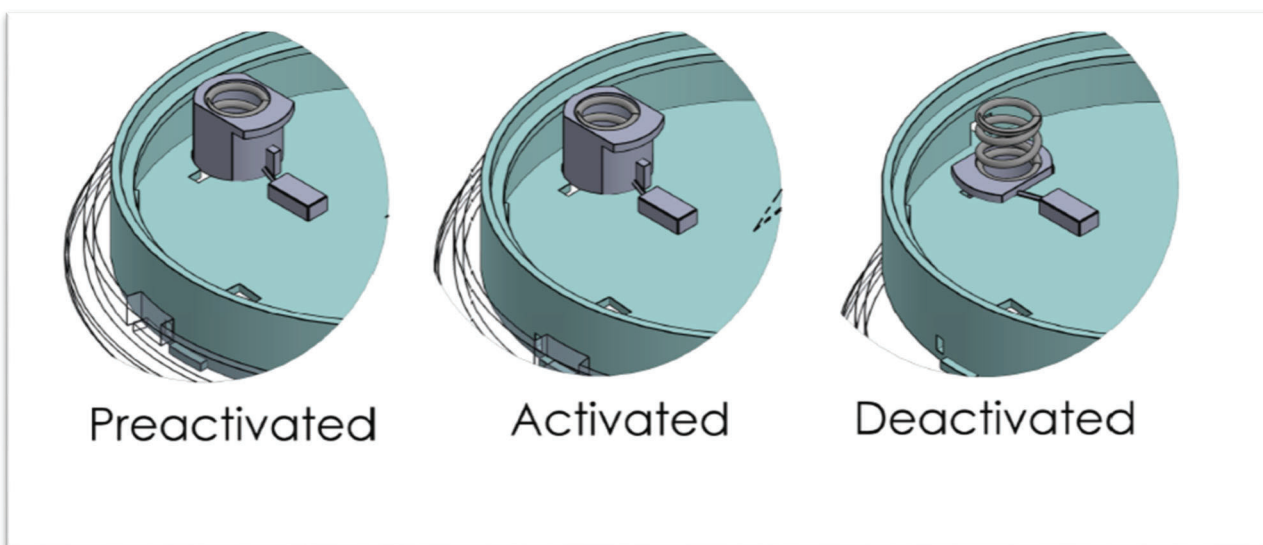


FIGURE 23: (Circuit Board Not Shown)

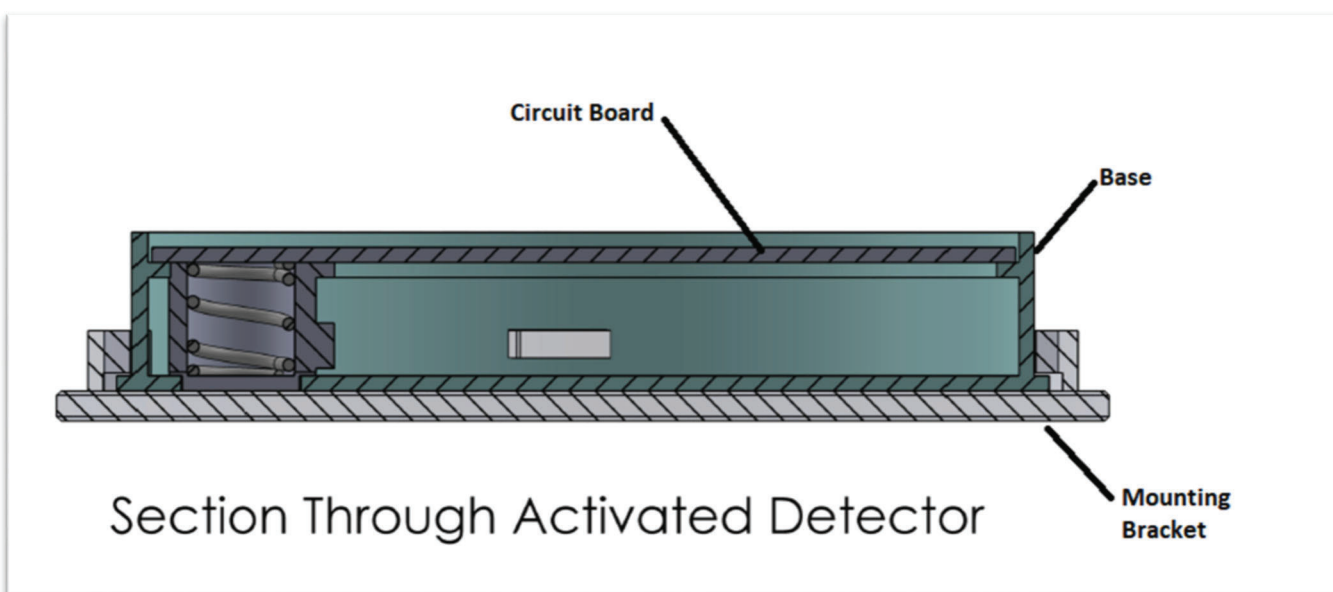


FIGURE 24: Section Through Detector in Activated Position

472. This modification simply adds a reattachment prevention mechanism that is connected to the deactivation mechanism which results in preventing reattachment of the smoke detector once the smoke detector has been deactivated (and likewise when deactivated, the second portion cannot be reactivated and the second portion cannot be reattached to the first portion).

B. Modification to Malewski in View of DeLuca '487

473. A POSA would have combined Malewski and DeLuca '487 to build a smoke detector that incorporates features that results in a product that meets every element of the Challenged Claims. Such modifications are drawn primarily from the fourth embodiment of Malewski (*See* Ex. 1007, 6:61-9:4) and DeLuca '487's lockout mechanism. (*See generally*, Ex. 1006).

474. The spring lockout mechanism of DeLuca '487 operates through the use of a spring-loaded lock-out tab that releases when there is a void in the battery compartment. *See* Ex. 1006, 4:35-5:10. It would be obvious for a POSA to utilize this concept and apply it to Malewski's key-based activation and deactivation system.

475. This example further modifies the Malewski modification I discuss above to incorporate a spring lockout mechanism. Specifically, this modification incorporates a key assembly similar to that described above with respect to Malewski alone.

476. This modification still uses a conductive “activation key” 60 which, along with the spring contacts 82 forms the switch (*see* Ex. 1007, 6:61-7:5), and which is attached to a one-way slider that moves in three positions, from “preactivated” to “activated” to “deactivated.” The activation key and the slider are referred to as the “key assembly.

477. Selected regions of the key assembly and spring contacts may be coated with conductive material or alternatively with insulating material to close and open activation circuits and battery draining circuits to achieve the result of activation and deactivation. For example, the three adjacent spring contacts may be in conductive contact whereas the two remaining adjacent spring contacts (one for directing power to the electronics and the other for directing current to the battery drain circuit) would need to be insulated from contact with each other. Alternatively regions of the key assembly may be coated with conductive material in order to ensure that only the desired circuits (e.g. activation or battery draining) are closed as the key assembly is pressed into the smoke detector.

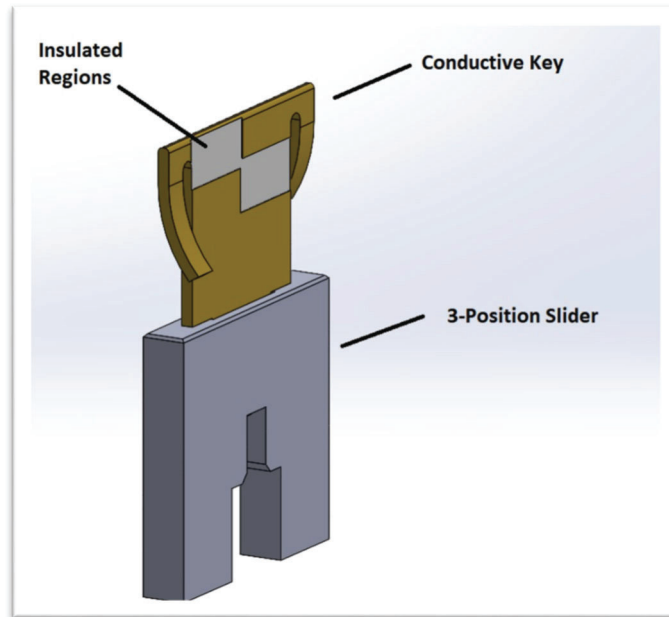


FIGURE 25: Key Assembly

478. The key assembly in the “preactivated,” (i.e. as-shipped), state is positioned within the detector such that the key 60 is shy of contact with the spring contacts 82. The key assembly does not close the circuit between the batteries and the sensor electronics.

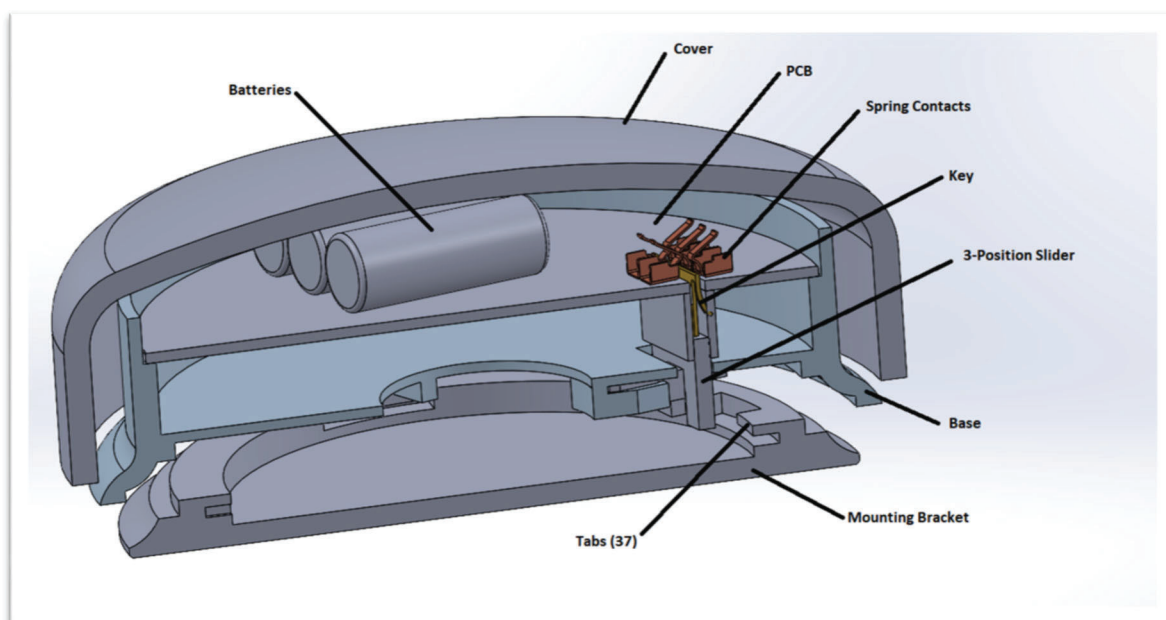


FIGURE 26: Cross Section of Smoke Detector and Mounting Bracket in Preactivated Position

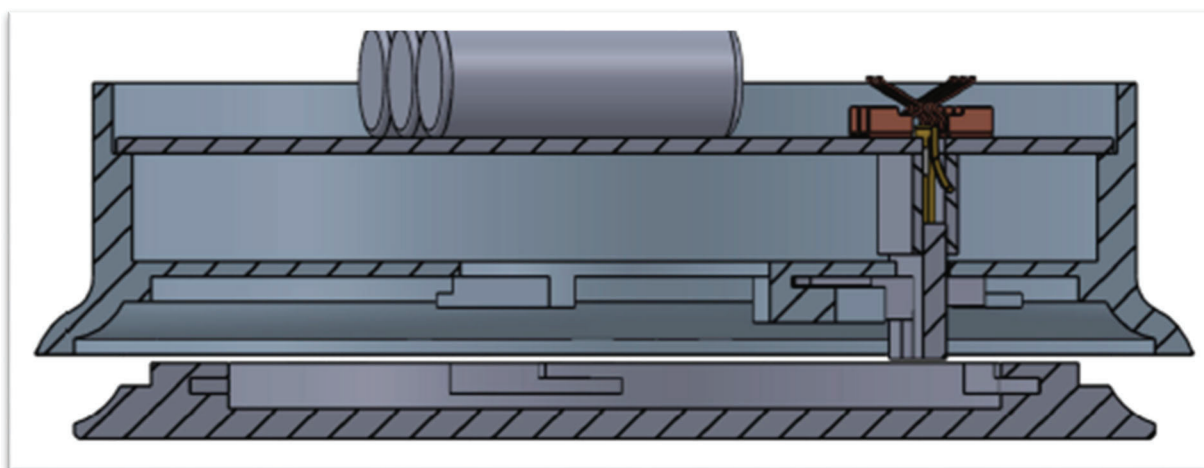


FIGURE 27: Preactivated Position

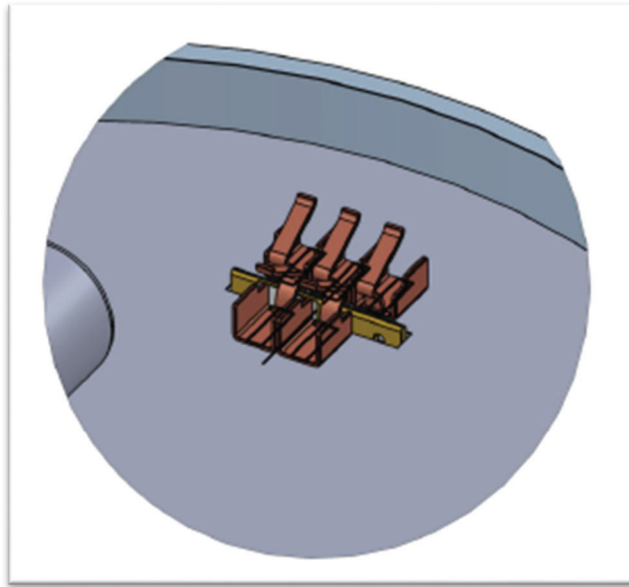


FIGURE 28: Key Assembly In relation to Spring Contacts in Preactivated Position

479. Upon attachment of the detector to the mounting bracket (axial mating followed by slight rotation to engage tabs 36 and 37 the 3-position slider is moved further into the detector establishing contact between the batteries and the sensor.

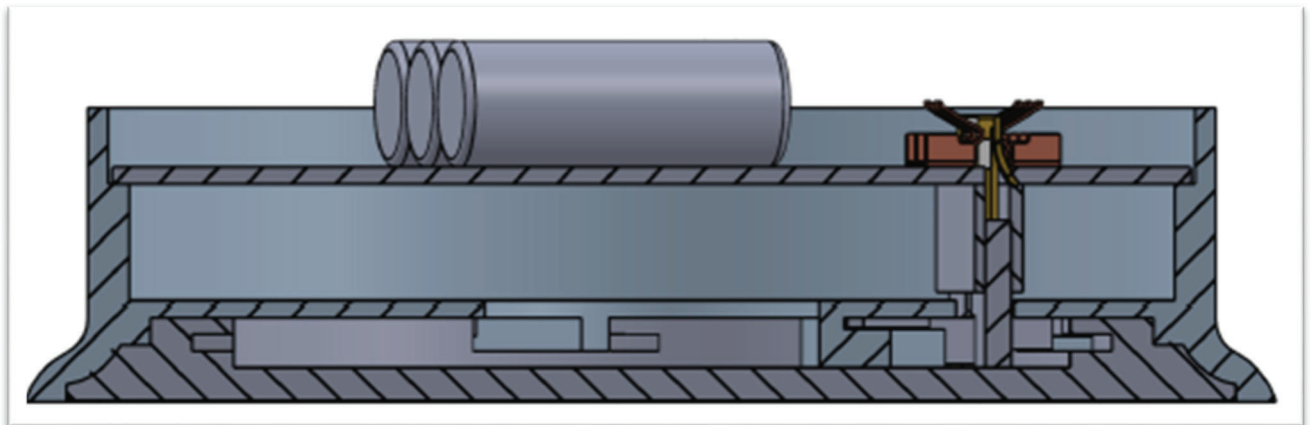


FIGURE 29: Activated Position

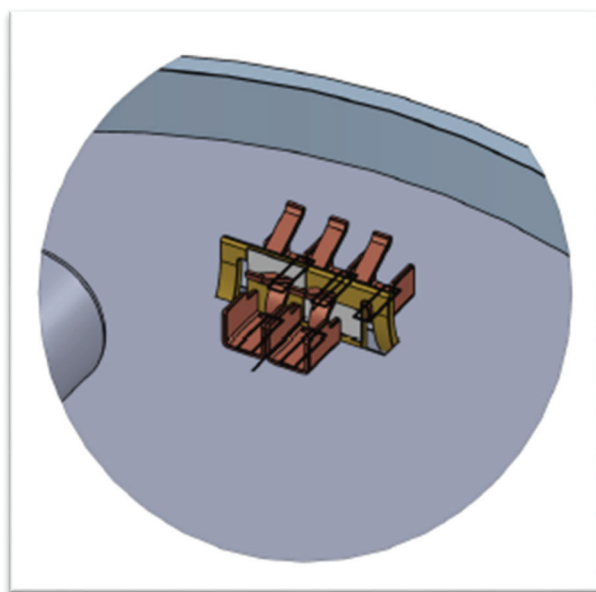


FIGURE 30: Key Assembly In relation to Spring Contacts in Activated Position

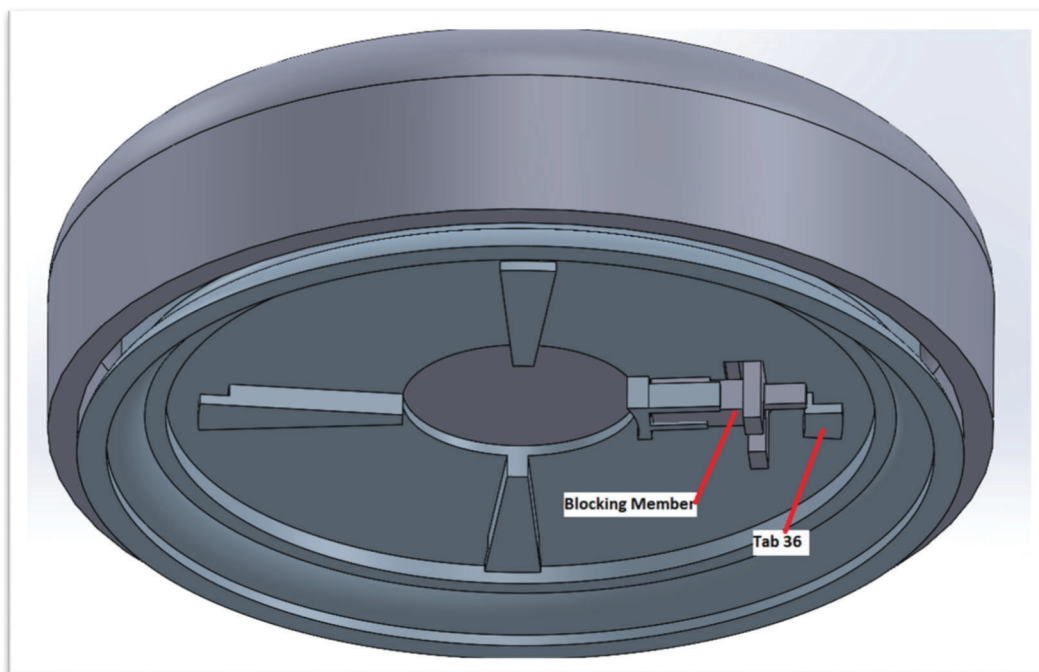


FIGURE 31: Preactivated & Activated Position (Bracket not shown) Spring-loaded blocking member not released

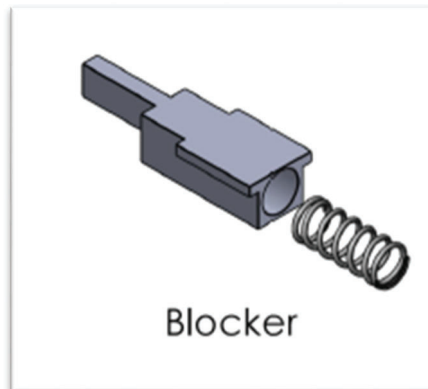


FIGURE 32: Blocking Member

480. Upon removal of the detector from the mounting bracket the user is instructed to push the 3-position slider further into the detector (position 3) which opens the circuit connected to the smoke detector operational components (i.e. disconnects the power from the smoke detector) and closes a circuit configured to drain the batteries. This third position also releases a spring-biased blocking element which moves outwardly adjacent tab 36 to block any future attempt to reattach the detector to the mounting bracket.

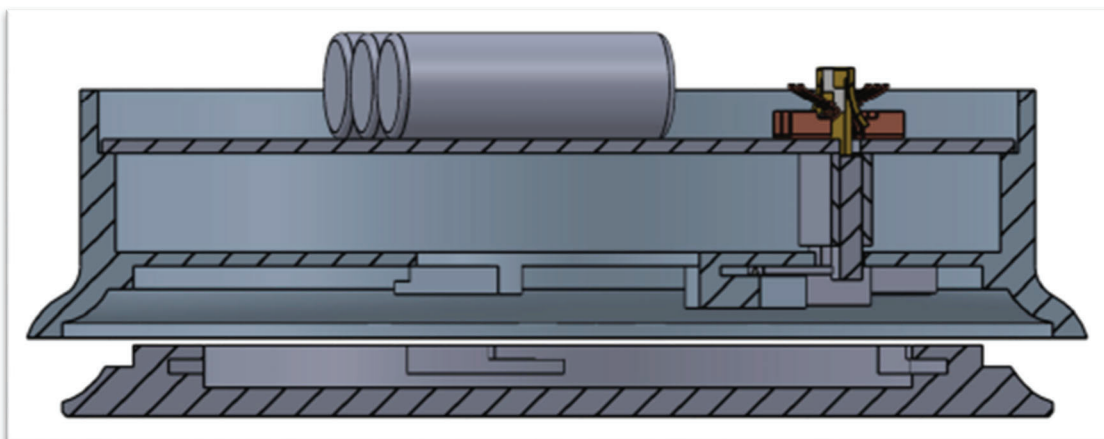


FIGURE 33: Deactivated Position

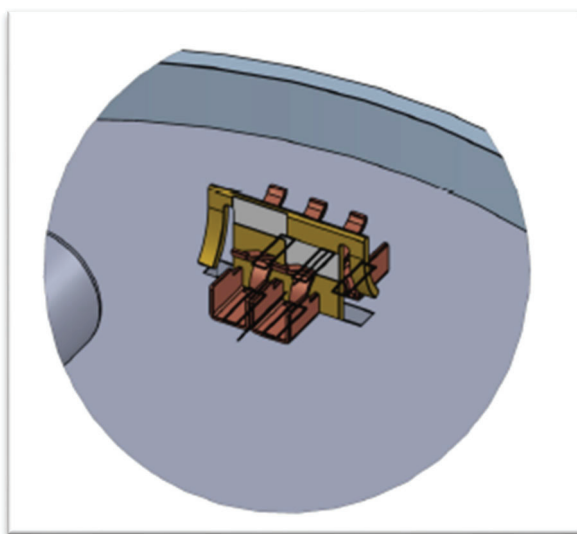


FIGURE 34: Key Assembly and Spring Contacts in Deactivated Position (Battery Drain)

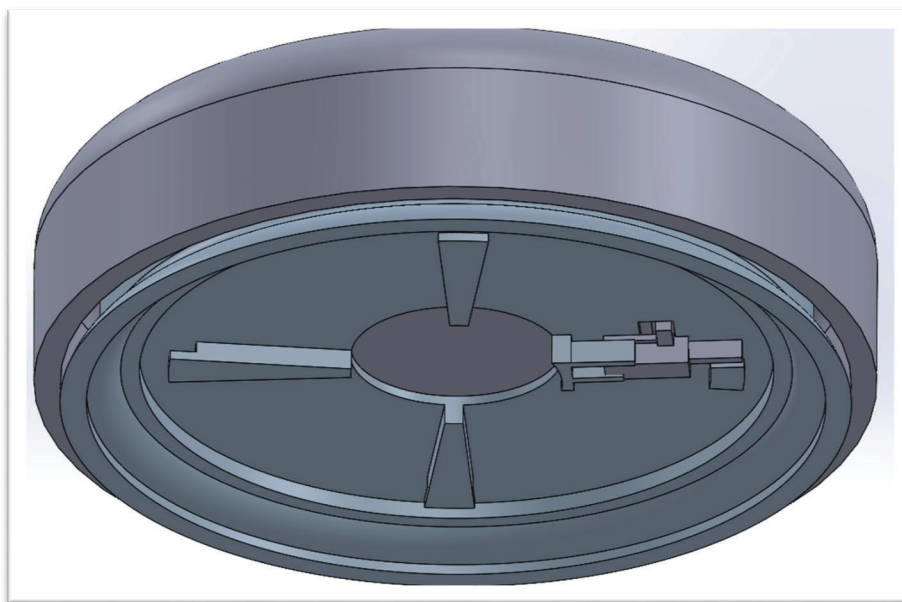


FIGURE 35: Deactivated Position Blocking Mechanism released (Bracket not shown)

X. CONCLUSION

481. The alleged invention is little more than the obvious continuation of the practice of implementing well-known mechanical design elements into smoke detectors in order to ensure that such smoke detectors cannot appear to be operational after they have been activated. None of the claim elements are inventive and none require any meaningful experimentation to achieve the desired result.

482. It is therefore my opinion that the Challenged Claims are rendered obvious by the aforementioned prior art and combinations thereof.

483. I reserve the right to respond to any additional evidence that Patentee is allowed to present.

484. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: June 1, 2023


John Pratt, Ph.D., P.E.