



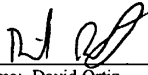
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DELUCA ET AL.
Docket: 13835.142USU1
Title: A LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EV372667809US
Date of Deposit: August 12 2004

I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: 
Name: David Ortiz



Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We are transmitting herewith the attached:

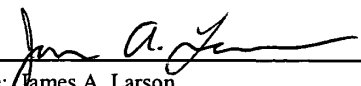
- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ Utility Patent Application: Spec. 10 pgs; 29 claims; Abstract 1 pgs.
The fee has been calculated as shown below in the 'Claims as Filed' table.
- ☒ 8 sheets of informal drawings
- ☒ An unsigned Combined Declaration and Power of Attorney
- ☒ A check in the amount of \$1276.00 to cover the Filing Fee
- ☒ Application Data Sheet, 3 pages.
- ☒ Return postcard

CLAIMS AS FILED

Number of Claims Filed		In Excess of:		Number Extra		Rate		Fee
Basic Filing Fee								\$770.00
Total Claims								
29	-	20	=	9	x	18.00	=	\$162.00
Independent Claims								
7	-	3	=	4	x	86.00	=	\$344.00
MULTIPLE DEPENDENT CLAIM FEE								\$0.00
TOTAL FILING FEE								\$1276.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
(612) 332-5300

By: 
Name: James A. Larson
Reg. No.: 40,443
Initials: JLAson:PLSklg

23552

PATENT TRADEMARK OFFICE

(PTO TRANSMITTAL - NEW FILING)

A LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

5

PRIORITY DATA

This application claims the benefit of U.S. Provisional Application No. 60/499,245 filed August 29, 2003.

FIELD OF THE INVENTION

10

The invention relates to battery powered electronic devices. More particularly, the invention relates to battery powered electronic devices, especially life safety alarms, for example smoke alarms and carbon monoxide alarms, where the batteries are sealed inside the device to prevent access to the batteries.

15

BACKGROUND OF THE INVENTION

Electronic devices that are powered by one or more batteries are well known. These devices are often designed to permit installation of the batteries, as well as replacement of the batteries as needed.

In certain battery powered electronic devices it is especially important that the batteries be properly installed and that the batteries have sufficient power for proper operation of the device. One example of such an electronic device is a battery powered life safety alarm. Life safety alarms that detect potential life-threatening conditions and generate a warning signal are well known. Examples of such alarms includes smoke alarms, flame detectors, carbon monoxide alarms, and other life safety alarms that detect a potential life threatening condition and provide a warning signal to warn of the possible life threatening condition.

The batteries in many battery powered life safety alarm are often replaceable so that when the battery power is sufficiently depleted, the user can remove the depleted batteries and install fresh batteries. One consequence of having replaceable batteries is that the user must periodically access the alarm and change the batteries. When the alarm is mounted high on a

ceiling or is located in a relatively inaccessible location, battery replacement can be difficult.

Battery replacement can present other challenges as well. The user may inadvertently install new batteries that are depleted such that they have insufficient power for proper alarm operation. Further, the new batteries may be improperly installed or not installed at all. If any of these mistakes occur, the alarm will not function, or will not function properly, which is highly dangerous.

Some battery operated alarms are designed so that the batteries are not replaceable. Some of these alarm designs permit the user to deactivate the alarm and to subsequently reactivate the alarm after it has been deactivated. This deactivation and activation can occur as many times as the user desires. Further, some of these alarm designs require the user to manually activate the alarm before the alarm can be attached to the mounting bracket.

There is a need for a smoke alarm or other life safety alarm having an extended life, and which is less prone to user mistakes or improper use during installation as well as during the life of the alarm.

15

SUMMARY OF THE INVENTION

The invention relates to a life safety alarm that is battery powered and has an extended life. The invention further relates to a life safety alarm that is less prone to user mistakes. The batteries are sealed inside the alarm portion whereby the batteries cannot be accessed by the user. As a result, the batteries are not replaceable. Rather, the alarm portion is replaced at the end of the alarm life, for example after expiration of a predetermined time period. Because the batteries are not replaceable, the difficulties and mistakes that accompany battery replacement are eliminated.

The alarm preferably has a long life in order to reduce the time period between alarm body replacement. For example, in the preferred embodiment, the batteries and other alarm components are intended to have a life-span of ten years. The alarm could have other life-spans as well.

In addition, the alarm is designed to automatically activate when the user attaches the alarm portion to the mounting bracket. At the end of the alarm life, the alarm will emit a signal

to indicate that the alarm portion needs replacement. The user then removes the alarm portion from the mounting bracket and slides a switch on the alarm to deactivate the alarm. Deactivation of the alarm removes power from the alarm circuitry and drains remaining power from the batteries. Further, when deactivated, the alarm portion is mechanically prevented from being
5 mounted back on the mounting bracket.

Alarm activation is automatic, and no user interaction, other than attaching the alarm portion to the mounting bracket, is necessary in order to activate the alarm. Therefore, the user cannot mistakenly forget to activate the alarm. Further, the alarm is designed so that the user can only change the alarm from an ON condition to the DEACTIVATED condition. Once in the
10 DEACTIVATED condition, the alarm cannot be changed back to the ON condition without breaking the alarm. However, even if the alarm is changed back to the ON condition after being deactivated, the alarm is designed to prevent reattachment of the alarm portion to the mounting bracket.

The concepts described herein can be utilized on numerous life safety alarms. Examples
15 of life safety alarms to which the concepts described herein could be applied includes smoke alarms, flame detectors, carbon monoxide alarms, and other life safety alarms that detect a potential life threatening condition and provide a warning signal to warn of the possible life threatening condition.

These and various other advantages and features of novelty which characterize the
20 invention are pointed out with particularity in the claims annexed hereto and forming a part hereof. However, for a better understanding of the invention, its advantages and objects obtained by its use, reference should be made to the drawings which form a further part hereof, and to the accompanying description, in which there is described a preferred embodiment of the invention.

25 **DESCRIPTION OF THE DRAWINGS**

These and other features of the invention will now be described with reference to the drawings of preferred embodiments, which are intended to illustrate and not to limit the invention and in which:

Figure 1 is a view of a perspective view of a smoke alarm according to the present invention.

Figure 2 is a view of the mounting bracket of the smoke alarm with the alarm portion removed.

5 Figure 3 is a view of the top side (i.e. the side that faces the mounting bracket) of the alarm portion.

Figure 4 is a view similar to Figure 3, but with the top enclosure removed to illustrate components of the activate/deactivate system.

Figure 5 is a view of the interior of the alarm portion with the bottom enclosure removed
10 and looking upward toward the alarm portion as it would be mounted on the mounting bracket.

Figures 6A and 6B illustrate the components of the activate/deactivate system in a preactivated position.

Figures 7A and 7B illustrate the components of the activate/deactivate system in an activated or ON position.

15 Figures 8A and 8B illustrate the components of the activate/deactivate system in a DEACTIVATED position.

Figure 9 is a detailed view of a portion of the activate/deactivate system.

Figure 10 illustrates a label that covers the hole in the top of the upper enclosure to control access to the deactivate portion of the activate/deactivate system.

20

DETAILED DESCRIPTION OF THE INVENTION

The invention relates to a battery powered electronic device in which the batteries are sealed within the device to prevent access to the batteries by the user, whereby the batteries are not intended to be replaceable. For convenience, the inventive concepts will be described herein
25 with respect to a life safety alarm, in particular a smoke alarm. However, it is to be realized that the inventive concepts could be applied equally as well to other life safety devices, for example a carbon monoxide alarm or a flame detector. In addition, for convenience, the smoke alarm will be described herein as having a plurality of batteries. However, it is to be realized that the inventive concepts described herein could be utilized in alarms having a single battery.

In general, the electronic device according to the invention includes a first portion, and a second portion configured for attachment to the first portion. The second portion includes electronics to operate the device and at least one battery for powering the electronics. Further, cooperating features on the first portion and the second portion automatically activate the second
5 portion upon initial attachment of the second portion to the first portion. When activated, the device is able to function and operate as intended by the design of the device.

The device can also include a manual deactivation mechanism to permit manual deactivation of the second portion after the second portion has been activated and preventing reactivation once the second portion is deactivated. When deactivated, the device is no longer
10 functional. Moreover, when deactivated, the second portion is prevented from being reactivated and from being reattached to the first portion.

With reference to Figure 1 and the other figures, a specific implementation of the inventive concepts according to the invention will be described in relation to a smoke alarm 10. The alarm 10 includes an alarm portion 12 which in use will house the smoke detection system, alarm electronics, and the batteries necessary for operation of the alarm 10. The specifics of the
15 smoke detection system and the alarm electronics are not necessary for a proper understanding of the inventive concepts. Suitable smoke detection systems and alarm electronics for use in the alarm 10, as well as the operation of a smoke alarm, would be known to those of skill in the art having read this specification. The alarm 10 further includes a mounting bracket 14 which in use
20 is fixed to, for example, a ceiling (not shown) and to which the alarm portion 12 is attached.

With continued reference to Figure 1, the alarm portion 12 includes a top enclosure 16 and a bottom enclosure 18 that is connected to the top enclosure 16. When connected to each other, the top enclosure 16 and the bottom enclosure 18 enclose the smoke detection system, the alarm electronics, the batteries and other components of the alarm portion including the
25 activate/deactivate system to be later described. As used herein, the terms “top”, “bottom” and the like, are in reference to the smoke alarm in use as it is mounted on a ceiling of a building. Therefore, the top enclosure 16 is generally closer to the ceiling than is the bottom enclosure 18, and the bottom enclosure 18 is the portion of the alarm that, in use, will face downward toward the floor of the building.

The alarm portion 12 is designed to be detachably connected to the mounting bracket 14. In the illustrated embodiment, the portion 12 is connected to the bracket 14 via a twist on/twist off connection system of a type that is well known in smoke alarms. Details of the connection system will be described with reference to Figures 2 and 3. As shown in Figure 2, the bracket 14 includes four circumferentially spaced grooves or channels 20 each of which is defined in part by a flange 22. One end 24 of each channel 20 is open and the opposite end is closed by a stop 26. Turning to Figure 3, the upper surface of the top enclosure 16 includes an upstanding circular flange 28 with four equally spaced tabs 30 projecting outwardly from the flange 28. The tabs 30 are designed to fit within the channels 20 to secure the alarm portion 12 to the bracket 14. When the alarm portion 12 is brought toward the bracket 14 in the proper orientation, and the portion 12 is rotated in the proper direction, the tabs 30 enter the open ends 24 of the channels 20, with the flanges 22 retaining the tabs 30 in the channels 20. Rotation continues until the tabs 30 contact the stops 26, at which time the portion 12 is securely attached to the bracket 14.

The alarm portion 12 is powered by one or more batteries 32 that are disposed therein. In the illustrated embodiment, the alarm 10 includes three CR 2/3 type batteries 32 that are available from FDK America Inc., of San Jose, CA. A larger or smaller number of batteries, as well as different battery types, could be used. The batteries 32 are sealed within the alarm portion 12 and are not intended to be replaceable. By "sealed" Applicant means that the batteries cannot normally be accessed by the user absent the user breaking or destructing some portion of the alarm portion 12. At the end of the alarm life, the alarm portion 12 will emit a signal, for example an audible "chirp", to indicate that the alarm portion 12 needs replacement. At that time, the user removes the alarm portion 12 from the bracket 14 and installs a new alarm portion. Alarm life is preferably measured by the expiration of a predetermined time period, for example ten years. Therefore, the batteries preferably have enough power to operate the alarm for the entire alarm life, for example up to ten years.

To simplify alarm operation, the alarm 10 is designed to automatically activate when the alarm portion 12 is attached to the bracket 14. Further, at the end of the alarm life, or prior to that time if desired, the user can deactivate the alarm. The activation and deactivation of the alarm 10 is controlled by an activate/deactivate system 33, which is best seen in Figures 3-8.

Referring initially to Figure 5, the system 33 includes a rotate activate component 34 which forms a portion of an activation mechanism, a rotate deactivate component 36 which forms a portion of a manual, permanent deactivation mechanism, and an activate/deactivate slider 38 which is part of both the activation mechanism and the deactivation mechanism.

5 The components 34, 36, 38 are shown in Figure 5 in their preactivated or shipping positions. The activate component 34 is designed to rotate in a counterclockwise direction, as shown by the arrow in Figure 5, upon attachment of the base 12 to the bracket 14. Rotation of the component 34 actuates the slider 38 so that it slides to the left in Figure 5 to an activated or ON position (shown in Figures 7A and 7B). During this initial movement of the slider 38, the
10 component 36 does not rotate. Further movement of the slider 38 to the left in Figure 5, which is caused manually by the user, places the slider 38 in the DEACTIVATED position (shown in Figures 8A and 8B). At the same time, the slider 38 engages the component 36 causing the component 36 to rotate counterclockwise to a locked position (shown in Figures 8A and 8B).

With reference to Figures 3, 4, and 9, the activate component 34 includes a boss 40 that is
15 disposed within a hole 42 in the top of the top enclosure 16. In the preactivated position shown in Figure 3, the boss 40 is positioned slightly outside the circumference of the flange 28 on the enclosure 16. The activate component 34 further includes an actuating boss 41 that has a "D"-shaped cross-section with a flat side 43. As shown in Figure 9, the boss 41 projects past the top surface of the top enclosure 16, with the flat side 43 of the boss 41 facing generally radially
20 outwardly.

When the alarm portion 12 is attached to the bracket 14, the flat side 43 of the boss 41 is engaged by a portion of one of the flanges 22 which actuates the boss 41 inward closer to the circumference of the flange 28. As shown in Figure 4, the boss 40 is engaged with the end of the slider 38, so that the movement of the boss 41 causes rotation of the activate component 34,
25 which in turn causes the sliding movement of the slider 38 to the ON position.

Returning to Figure 5, the slider 38 includes a pair of bosses 44a, 44b that project therefrom. A switch actuating tab 46 is disposed between the bosses 44a, 44b, with the tab 46 being connected to an electronic switch 48 associated with the alarm electronics. Movement of the slider 38, which is caused by the boss 40, results in movement of the tab 46 which in turn

actuates the switch 48. Actuation of the switch 48 activates the alarm. In this manner, attachment of the alarm portion 12 to the bracket 14, which actuates the boss 40 which in turn actuates the slider 38, automatically activates the alarm.

As seen in Figures 5-8, the end of the slider 38 opposite the end engaged by the boss 40 is formed into a pair of resilient arms 50a, 50b. Each arm 50a, 50b includes a lock tab 52 having a sloped surface 54 at the front and a lock surface 56 at the rear. The tabs 52 cooperate with lock bosses 58 (only one boss 58 is visible in Figures 5-8) which define the ON and DEACTIVATED positions of the slider 38. Each boss 58 comprises a first sloped surface 60 at the front end, a recess 62 at the central portion, a second sloped surface 64, and a rear surface 66.

It is preferred that the slider 38 be designed for one-way movement only. In the preactivated position of the slider 38, the sloped surfaces 54 of the tabs 52 are engaged with the sloped surfaces 60 of the bosses 58, as shown in Figures 6A and 6B. As the slider 38 is actuated by the boss 40, the resilient arms 50a, 50b flex inwardly as a result of the sloped surfaces 54, 60 until the tabs 52 drop into the recesses 62, as shown in Figures 7A and 7B. This defines the ON position of the slider 38. Engagement between the lock surfaces 56 of the bosses 58 and the vertical wall of the recesses 62 prevents movement of the slider 38 back to the preactivated position.

At the ON position, the alarm 10 is activated and operates for a predetermined period of time, for example 10 years. To deactivate the alarm, the user must break out a section of a product label 68, a portion of which is shown in Figure 10, that covers a hole 70 in the top of the top enclosure 16. The hole 70 permits access to the top of the slider 38 which includes a slot 72 formed therein. This is the only access the user has to the slider 38. It is to be noted that this access to the slider 38 is only permissible when the alarm portion 12 is detached from the bracket 14.

Prior to activation, the slot 72 is not accessible in the hole 70. However, when the slider 38 is at the ON position, the slot 72 is positioned in the hole 70 so that it can be accessed by the user, as shown in Figure 7B, once the section of the product label is broken out. Using a tool, such as the tip of a screwdriver, engaged in the slot 72, the user is able to slide the slider 38 to the DEACTIVATED position shown in Figure 8A. This movement of the slider 38 deactivates the

switch 48 which deactivates the alarm 10. At the DEACTIVATED position, the engagement between the lock surfaces 56 and the rear surfaces 66 of the bosses 58 prevents movement of the slider 38 back to the ON position to prevent reactivation of the alarm portion. In addition, when the switch 48 is deactivated, a circuit in the alarm portion automatically drains remaining power
5 from the batteries.

As shown in Figure 4, the end of the slider 38 includes a tab 74. In addition, the rotate deactivate component 36 includes a tab 76. At the preactivated position of the slider 38, there is a gap between the tab 74 and the tab 76 so that the movement of the slider 38 to the ON position does not cause movement of the rotate deactivate component 36. However, at the ON position,
10 the tabs 74, 76 are engaged, and the movement of the slider 38 to the DEACTIVATED position causes the rotate deactivate component 36 to rotate counterclockwise to a locked position.

With reference to Figure 6A, the rotate deactivate component 36 includes a resilient arm 78 with an enlarged end 80. The end 80 is engaged with a boss 82. The rotate deactivate component 36 further includes a tab 86 that projects upwardly through a hole 88 in the top of the
15 top enclosure 16. At the initial position of the rotate deactivate component 36, the tab 86 is aligned with the flange 28 of the top enclosure 16 as shown in Figures 3, 6B and 7B. As the rotate deactivate component 36 is rotated by the slider 38 to the locked position, the arm 78 flexes to enable the end 80 to move past the boss 82 and snap into place behind the boss 82, as shown in Figure 8A. At the same time, the tab 86 moves outwardly beyond the circumference of
20 the flange 28, as shown in Figure 8B.

With the end 80 positioned behind the boss 82, the rotate deactivate component 36 is prevented from being actuated clockwise back to its initial unlocked position. Further, with the tab 86 positioned beyond the circumference of the flange 28, the alarm portion 12 is prevented from being reattached to the bracket 14. As a result, when deactivated, the alarm portion cannot
25 be reattached to the bracket. Further, the user is unable to actuate the rotate deactivate component 36 out of the locked position.

With the alarm 10, activation is automatic, which eliminates the need for user interaction in order to activate the alarm portion other than attaching the alarm portion to the bracket. Thus,

the chance of a user making a mistake in activating the alarm is reduced. In addition, the alarm portion is designed so that it cannot be reactivated after it has been deactivated.

Further, if the user forces the slider 38 from the DEACTIVATED position to the ON position by breaking the one-way directional features of the slider 38, the rotate deactivate
5 component 36 does not move and remains in place to prevent reattachment of the alarm portion to the mounting bracket. Therefore, a deactivated alarm portion cannot be installed on the bracket.

Moreover, the three operational states of the alarm 10, preactivated, activated, and deactivated, are accomplished using one, three position switch. Some current alarm designs
10 require the use of two switches to accomplish the same three operational states. Therefore, the invention provides a more cost effective solution.

The embodiments of the inventions disclosed herein have been discussed for the purpose of familiarizing the reader with novel aspects of the invention. Although preferred embodiments have been shown and described, many changes, modifications, and substitutions may be made by
15 one having skill in the art without necessarily departing from the spirit and scope of the invention.

WHAT IS CLAIMED IS:

1. An electronic device, comprising:
a first portion;
a second portion configured for attachment to the first portion, the second portion
5 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.
- 10 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
15 detect a life threatening condition.
4. The electronic device of claim 3, wherein the detection system comprises a smoke
detection system.
- 20 5. The electronic device of claim 1, wherein the cooperating features comprise an
activate/deactivate system, and wherein the activate/deactivate system is configured to
automatically activate the second portion upon initial attachment of the second portion to the first
portion.
- 25 6. The electronic device of claim 5, wherein the activate/deactivate system is
configured to enable the user to manually deactivate the second portion.
7. The electronic device of claim 6, wherein when deactivated, the second portion

cannot be reactivated and the second portion cannot be reattached to the first portion.

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

5

9. The electronic device of claim 8, wherein the device electronics comprises a three position switch connected to the slider.

10. The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.

10

11. The electronic device of claim 1, further comprising means for manually deactivating the second portion after the second portion has been activated, wherein the means for manually deactivating is accessible when the first and second portions are disconnected.

15

12. The electronic device of claim 11, further comprising means for preventing reactivation of the second portion after the second portion has been deactivated, and means for preventing reattachment of the first and second portions after the second portion has been deactivated.

20

13. 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; and
a manual deactivation mechanism to permit manual deactivation of the second portion after the second portion has been activated and preventing reactivation once the second portion is deactivated.

25

14. The electronic device of claim 13, wherein the manual deactivation mechanism is accessible when the second portion is detached from the first portion, and further comprising means to prevent reattachment of the second portion to the first portion once the second portion is deactivated.

5

15. The electronic device of claim 14, 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.

10 16. The electronic device of claim 15, wherein the alarm portion includes a system to detect a life threatening condition.

17. The electronic device of claim 16, wherein the detection system comprises a smoke detection system.

15

18. 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;
20 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
25 portions once the second portion is permanently deactivated.

19. The electronic device of claim 18, 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.

20. The electronic device of claim 19, wherein the alarm portion includes a system to detect a life threatening condition.

5 21. The electronic device of claim 20, wherein the detection system comprises a smoke detection system.

22. An electronic device, comprising:
a first portion;
10 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;
a deactivation mechanism associated with the second portion configured to permit deactivation of the second portion once the second portion has been activated;
a label covering a portion of the deactivation mechanism, wherein at least a portion of the
15 label must be broken in order to access the deactivation mechanism.

23. The electronic device of claim 22, 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.

20 24. The electronic device of claim 23, wherein the alarm portion includes a system to detect a life threatening condition.

25 25. The electronic device of claim 24, wherein the detection system comprises a smoke detection system.

26. A method comprising:
providing an electronic device that includes a first portion and a second portion that is attachable to the first portion, the second portion including device electronics and at least one

battery for powering the electronics, the battery being sealed inside the second portion so that it cannot be replaced by a user, and the second portion having a predetermined life;

attaching the second portion to the first portion;

at the end of the predetermined life detaching the second portion from the first portion

5 and disposing of the second portion; and

attaching a new second portion to the first portion.

27. The method of claim 26, comprising automatically activating the new second portion when it is attached to the first portion.

10

28. A method comprising:

providing an electronic device that includes a first portion and a second portion that is attachable to the first portion, the second portion including device electronics, at least one battery for powering the electronics, and an activate/deactivate system; and

15 automatically activating the second portion by attaching the second portion to the first portion.

29. A method comprising:

providing an electronic device that includes a first portion and a second portion that is
20 attachable to the first portion, the second portion including device electronics and at least one battery for powering the electronics, the battery being sealed inside the second portion so that it cannot be replaced by a user, and the second portion having a predetermined life;

activating the second portion;

attaching the second portion to the first portion;

25 detaching the second portion from the first portion;

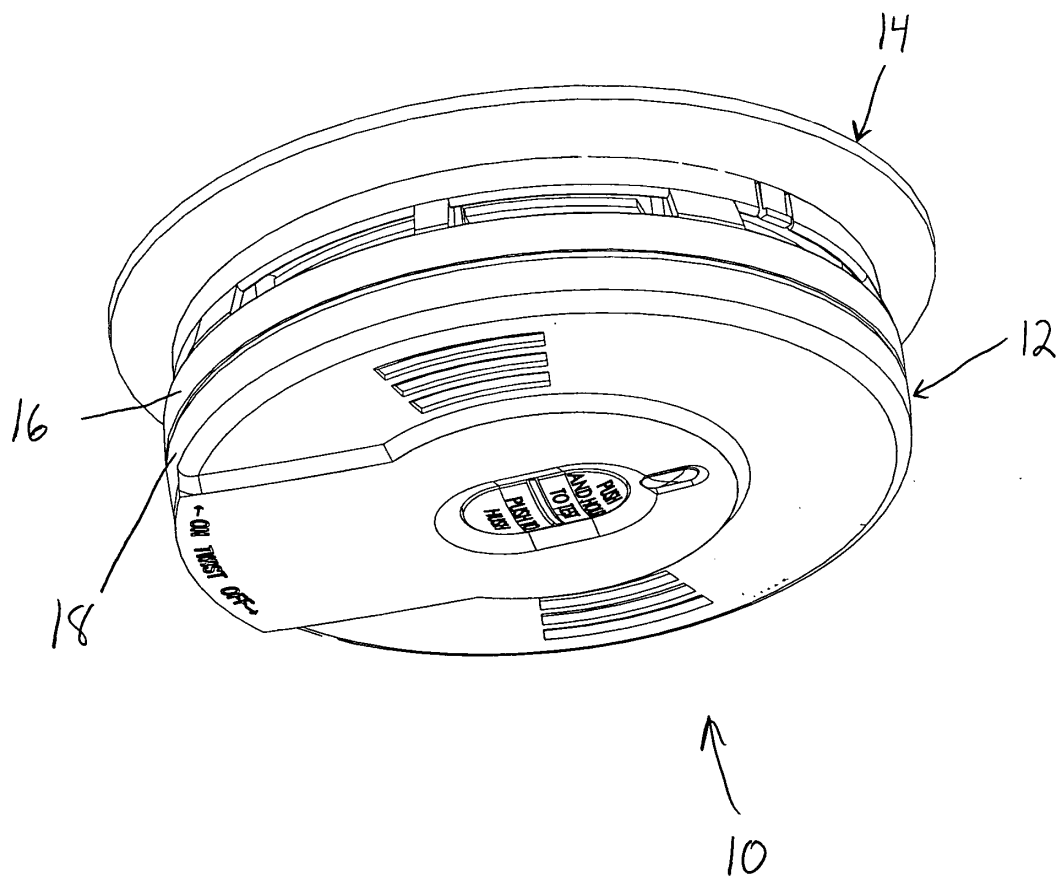
deactivating the second portion; and

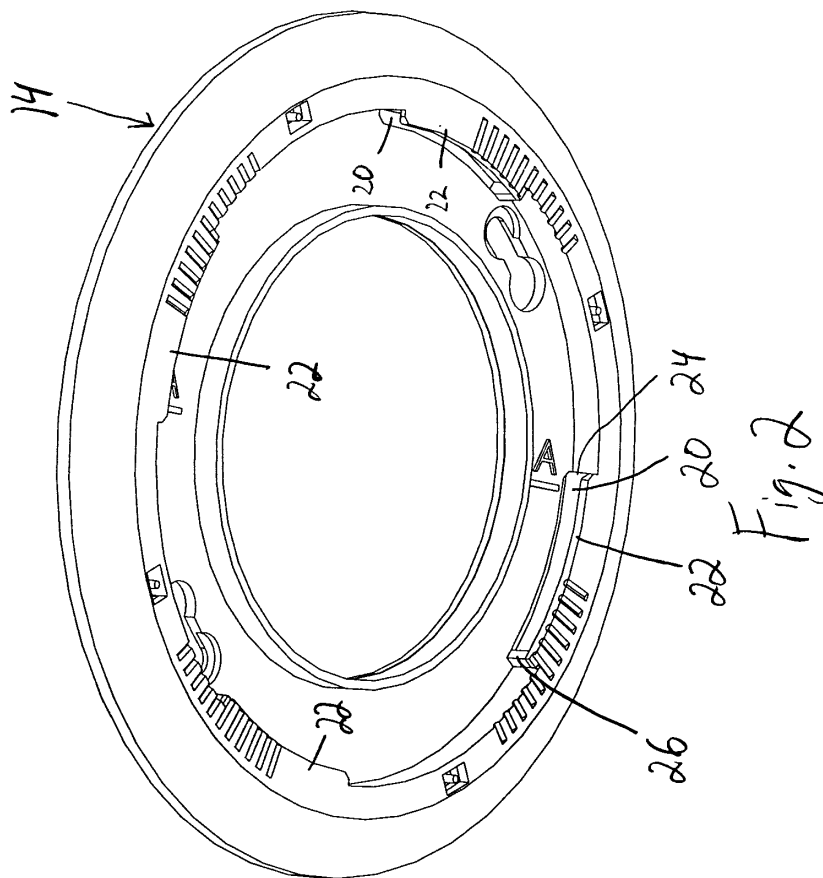
preventing reactivation of the second portion once the second portion is deactivated.

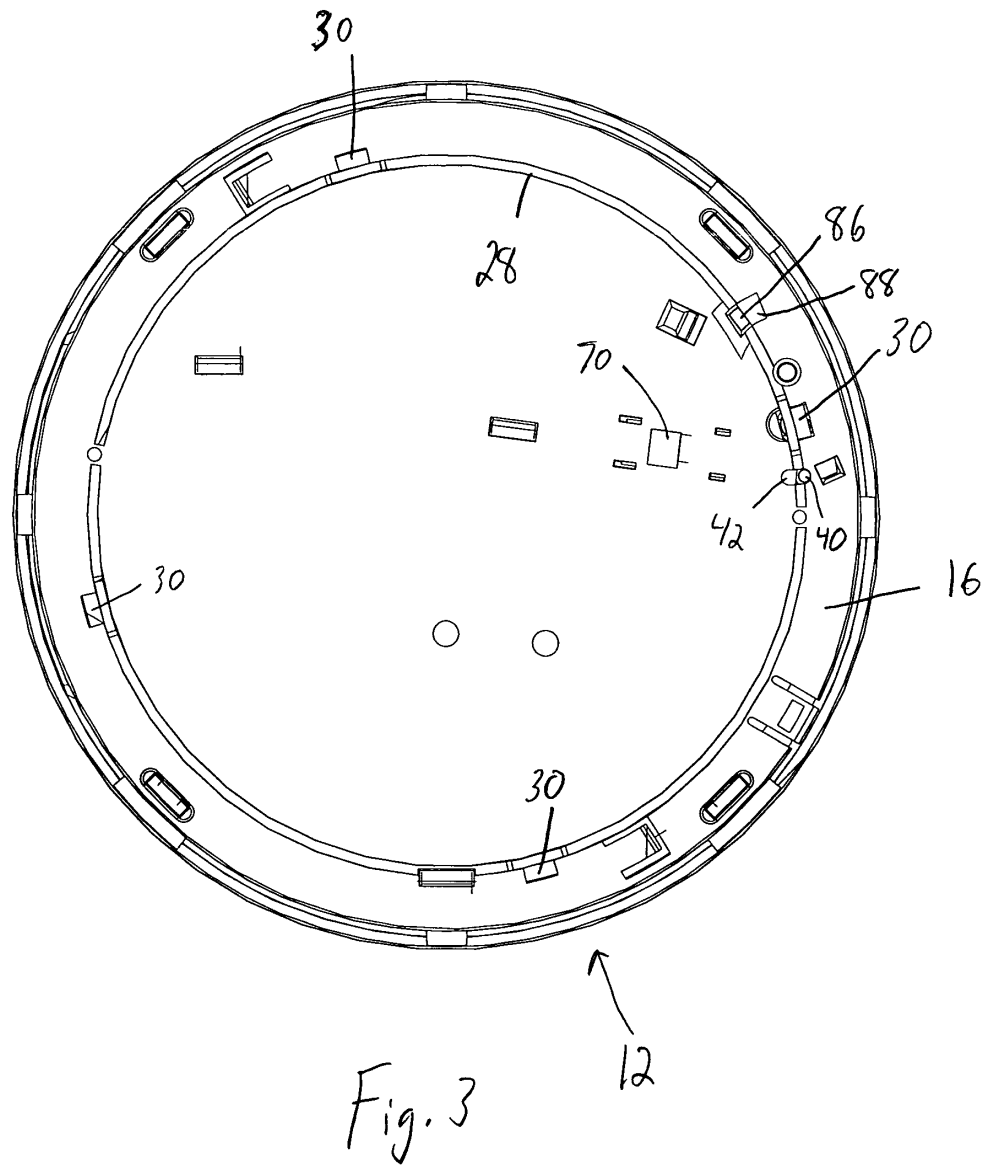
ABSTRACT

A life safety alarm, for example a smoke alarm, that is battery powered, has an extended life, and is less prone to user mistakes. The batteries are sealed inside the alarm portion so that the batteries cannot be accessed by the user. As a result, the batteries are not replaceable.

- 5 Rather, the alarm portion is replaced at the end of the alarm life, for example after expiration of a predetermined time period, such as ten years. The alarm is designed to be automatically activated upon initial attachment of the alarm portion to the bracket. The alarm can be manually deactivated, but once deactivated, the alarm cannot be reactivated and the alarm portion cannot be reattached to the bracket.







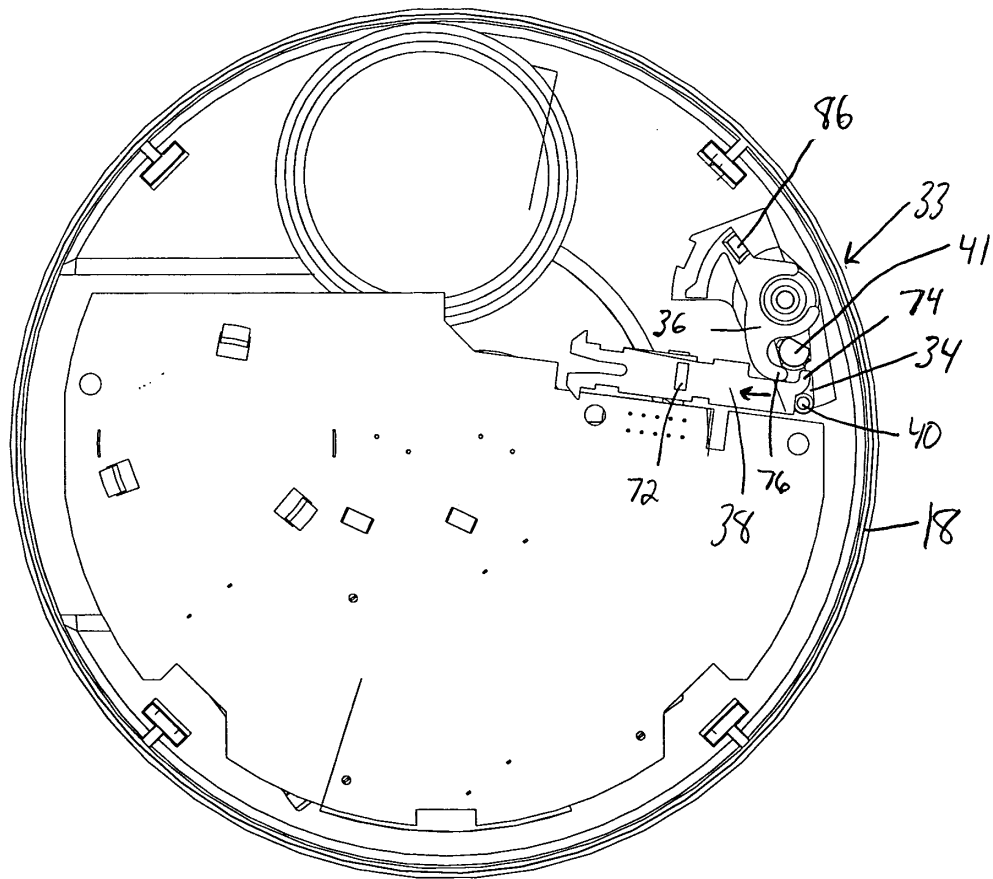


Fig. 4

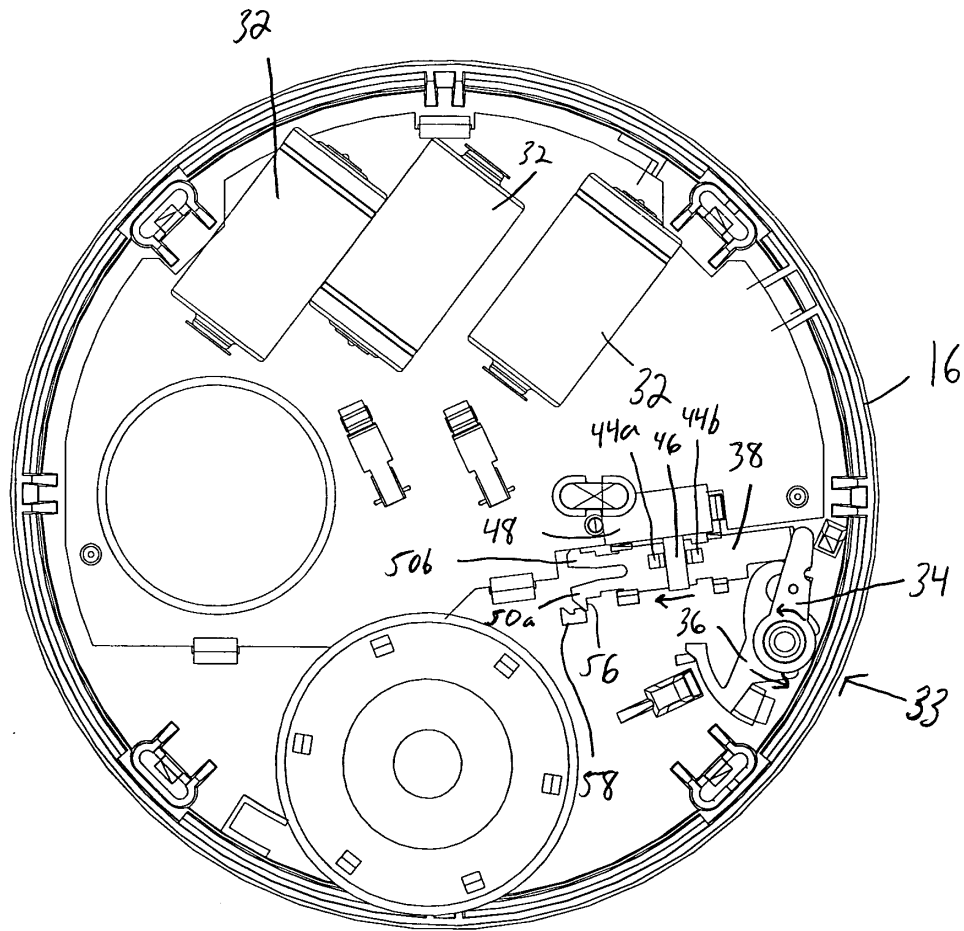
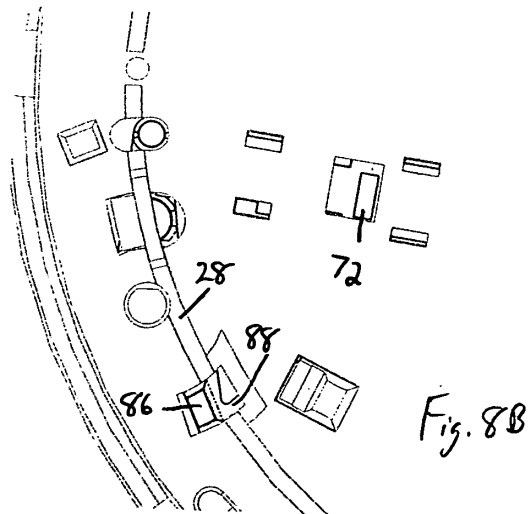
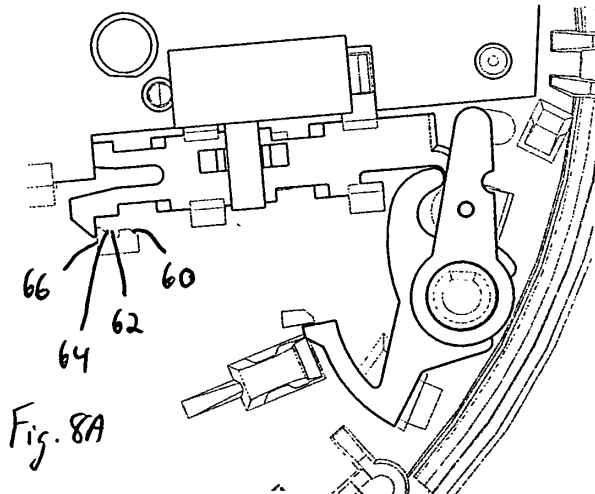
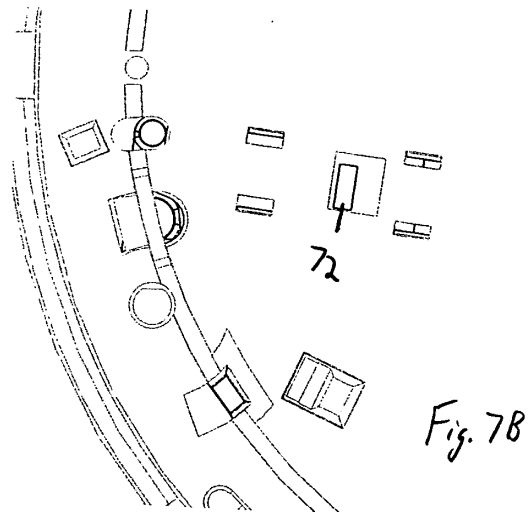
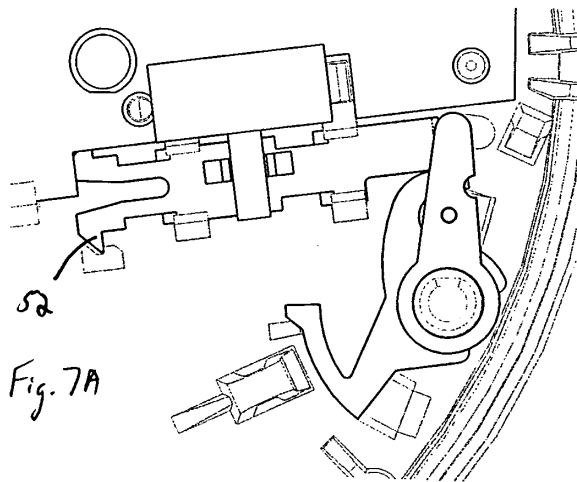
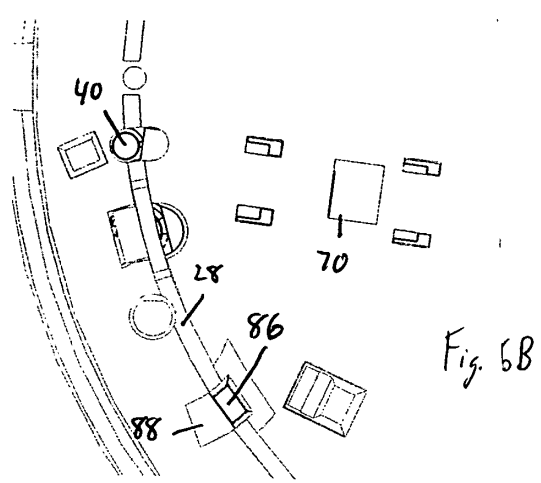
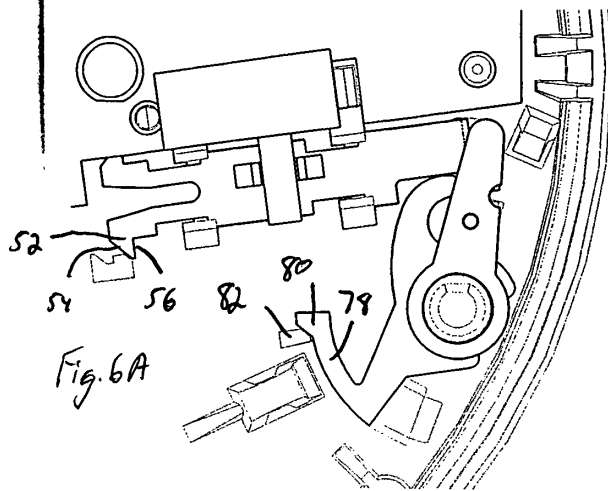
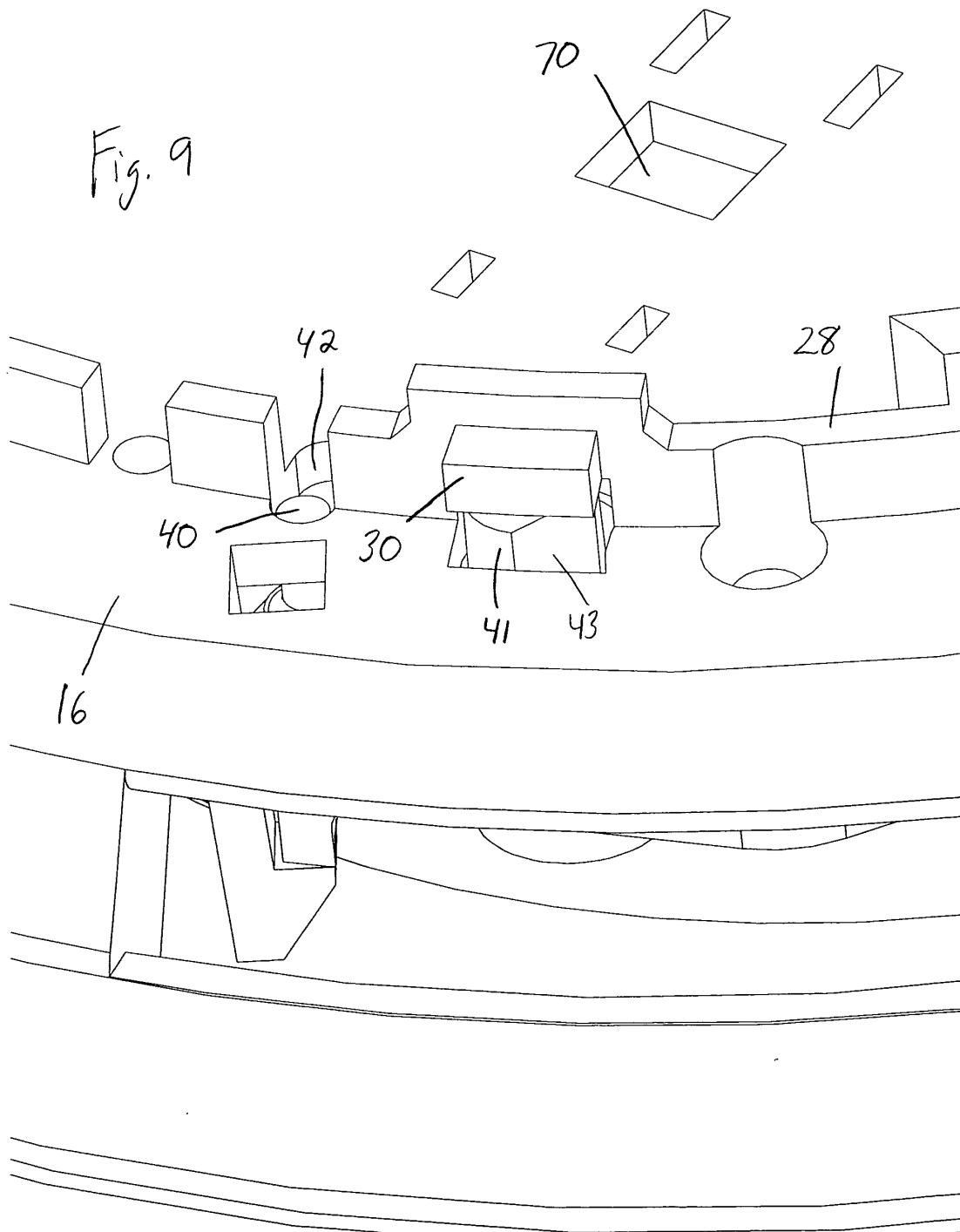


Fig. 5





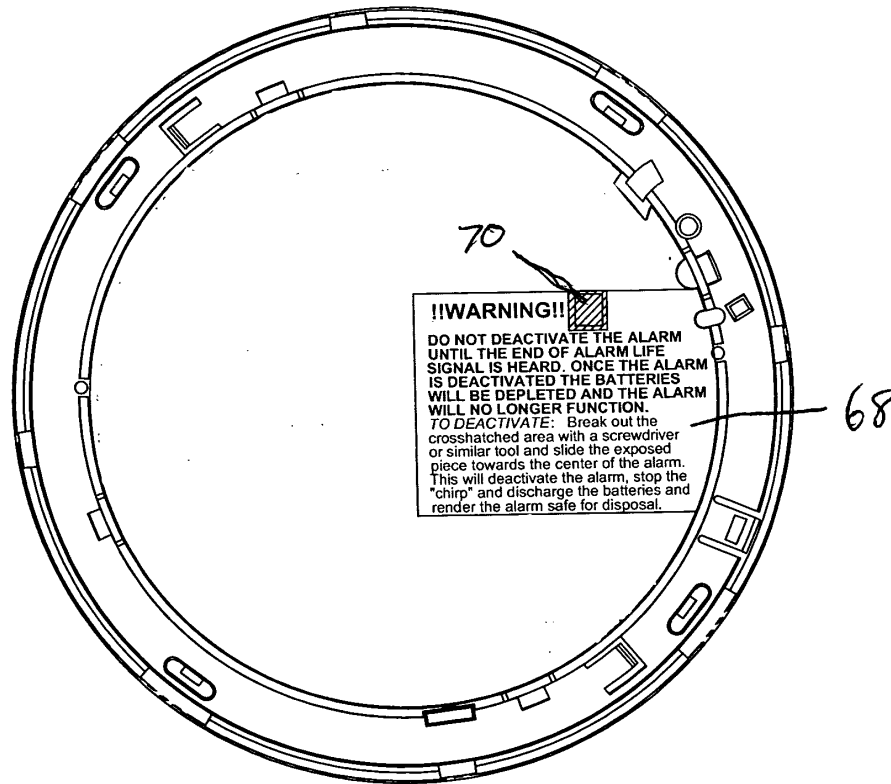


Fig. 10

MERCHANT & GOULD P.C.

United States Patent Application**COMBINED DECLARATION AND POWER OF ATTORNEY**

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: A LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

The specification of which

- a. ☒ is attached hereto
 b. ☐ was filed on as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. filed and as amended on (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
 b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/499,245	29 AUGUST 2003

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;

or

- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby appoint the attorney(s) and/or patent agent(s) associated with the following customer number to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.



I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903

I hereby 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 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2 0 1	Full Name Of Inventor	Family Name DELUCA	First Given Name JOSEPH	Second Given Name G.
	Residence & Citizenship	City COLORADO SPRINGS	State or Foreign Country COLORADO	Country of Citizenship USA
	Mailing Address	Address 1450 FARNHAM POINT, #201	City COLORADO SPRINGS	State & Zip Code/Country COLORADO 80904/USA
Signature of Inventor 201:			Date:	
2 0 2	Full Name Of Inventor	Family Name SHARPE	First Given Name JASON	Second Given Name
	Residence & Citizenship	City COLORADO SPRINGS	State or Foreign Country COLORADO	Country of Citizenship USA
	Mailing Address	Address 4980 CENTENNIAL BOULEVARD	City COLORADO SPRINGS	State & Zip Code/Country COLORADO 80919/USA
Signature of Inventor 202:			Date:	

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

08/16/2004 DTESSEH1 00000078 10916922

01 FC:1001	770.00 OP
02 FC:1202	162.00 OP
03 FC:1201	344.00 OP

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002 — 489-287/69033

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2003

Application or Docket Number

10916922

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	29	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	28 minus 20 =	8
INDEPENDENT CLAIMS	7 minus 3 =	4
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐ OR

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	385.00
XS 9=	
X43=	
+145=	
TOTAL	

RATE	FEE
BASIC FEE	770.00
XS18=	162
X86=	344
+290=	
TOTAL	1276

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	** =
Independent	*	Minus	*** =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS18=	
X86=	
+290=	
TOTAL	
ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	** =
Independent	*	Minus	*** =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS18=	
X86=	
+290=	
TOTAL	
ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	** =
Independent	*	Minus	*** =
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

RATE	ADDITIONAL FEE
XS 9=	
X43=	
+145=	
TOTAL	
ADDIT. FEE	

RATE	ADDITIONAL FEE
XS18=	
X86=	
+290=	
TOTAL	
ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Application Data Sheet

Application Information

Application Type::	Regular
Subject Matter::	Utility
Suggested Classification::	
Suggested Group Art Unit::	
CD-ROM or CD_R?::	None
Number of CD disks::	
Number of copies of CDs::	
Sequence Submission::	No
Computer Readable Form (CRF)?::	No
Title::	A LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY
Attorney Docket Number::	13835.142USU1
Request For Early Publication::	No
Request For Non-Publication::	No
Suggested Drawing Figure::	
Total Drawing Sheets::	8
Small Entity::	No
Latin Name::	
Variety Denomination Name::	
Petition Included::	No
Petition Type::	
Licensed US Govt. Agency::	
Contract or Grant Numbers::	
Secrecy Order in Parent Appl.?::	No

Initial 08/10/04

Page # 1

Applicant Information

Applicant Authority Type:: Inventor
Primary Citizenship Country:: USA
Status:: Full Capacity
Given Name:: Joseph
Middle Name:: G.
Family Name:: Deluca
Name Suffix::
City of Residence:: Colorado Springs
State or Province of Residence:: Colorado
Country of Residence:: USA
Street of mailing address:: 1450 Farnham Point, #201
City of mailing address:: Colorado Springs
State or Province of mailing address:: Colorado
Country of mailing address:: USA
Postal or Zip Code of mailing address:: 80904

Applicant Information

Applicant Authority Type:: Inventor
Primary Citizenship Country:: USA
Status:: Full Capacity
Given Name:: Jason
Middle Name::
Family Name:: Sharpe
Name Suffix::
City of Residence:: Colorado Springs
State or Province of Residence:: Colorado
Country of Residence:: USA
Street of mailing address:: 4980 Centennial Boulevard

Initial 08/10/04

Page # 2

City of mailing address:: Colorado Springs
State or Province of mailing address:: Colorado
Country of mailing address:: USA
Postal or Zip Code of mailing address:: 80919

Correspondence Information

Correspondence Customer Number:: 23552

Representative Information

Representative Customer Number::	23552
----------------------------------	-------

Domestic Priority Information

Application::	Continuation Type::	Parent Application::	Parent Filing Date::
This Application	Non-Provisional of	60/499,245	08/29/2003

Assignee Information

Assignee Name:: Walter Kidde Portable Equipment, Inc.
Street of mailing address:: 4980 Centennial Boulevard
City of mailing address:: Colorado Springs
State or Province of mailing address:: Colorado
Country of mailing address:: USA
Postal or Zip Code of mailing address:: 80919

Initial 08/10/04



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

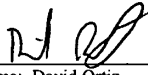
Applicant: DELUCA ET AL.
Docket: 13835.142USU1
Title: A LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EV372667809US

Date of Deposit: August 12 2004

I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: 

Name: David Ortiz

16834 U.S. PTO
10/916922



Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

We are transmitting herewith the attached:

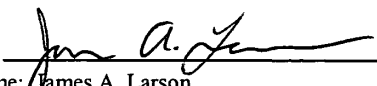
- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ Utility Patent Application: Spec. 10 pgs; 29 claims; Abstract 1 pgs.
The fee has been calculated as shown below in the 'Claims as Filed' table.
- ☒ 8 sheets of informal drawings
- ☒ An unsigned Combined Declaration and Power of Attorney
- ☒ A check in the amount of \$1276.00 to cover the Filing Fee
- ☒ Application Data Sheet, 3 pages.
- ☒ Return postcard

CLAIMS AS FILED

Number of Claims Filed		In Excess of:		Number Extra		Rate		Fee
Basic Filing Fee								\$770.00
Total Claims								
29	-	20	=	9	x	18.00	=	\$162.00
Independent Claims								
7	-	3	=	4	x	86.00	=	\$344.00
MULTIPLE DEPENDENT CLAIM FEE								\$0.00
TOTAL FILING FEE								\$1276.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
(612) 332-5300

By: 

Name: James A. Larson

Reg. No.: 40,443

Initials: JLAson:PLSklg

23552

PATENT TRADEMARK OFFICE

(PTO TRANSMITTAL - NEW FILING)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
6 June 2002 (06.06.2002)

PCT

(10) International Publication Number
WO 02/45156 A2

(51) International Patent Classification: H01L 21/8238

(21) International Application Number: PCT/US01/44162

(22) International Filing Date:
6 November 2001 (06.11.2001)

(25) Filing Language: English

(26) Publication Language: English

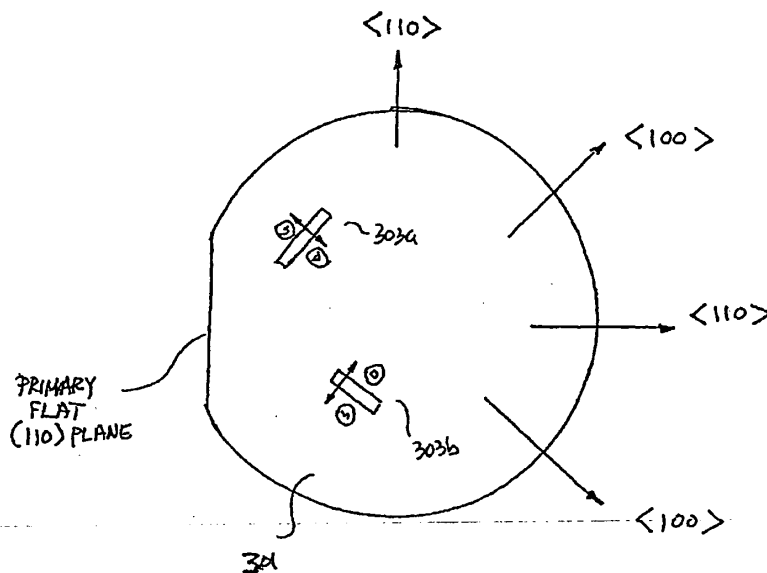
(30) Priority Data:
09/727,296 29 November 2000 (29.11.2000) US(71) Applicant (for all designated States except US): INTEL
CORPORATION [US/US]; 2200 Mission College Boule-
vard, Santa Clara, CA 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ARMSTRONG,
Mark [US/US]; 2861 NW Adagio Way, Hillsboro, OR
97124 (US). SCHROM, Gerhard [US/US]; 7008 NE
Ronler Way, #3225, Hillsboro, CA 97124 (US). KUHN,Kelin, J. [US/US]; 20280 SW Clarion Street, Aloha, OR
97006 (US). PACKAN, Paul, A. [US/US]; 15025 SW
Gibractor Court, Beaverton, OR 97007 (US). TYAGI,
Sunit, D. [IN/US]; 17555 NW Waltuck Court, Portland,
OR 97229 (US). THOMPSON, Scott, E. [US/US]; 18635
NW Rock Creek Way, Portland, OR 97229 (US).(74) Agents: MALLIE, Michael, J. et al.; Blakely, Sokoloff,
Taylor & Zafman, 12400 Wilshire Boulevard, 7th Floor,
Los Angeles, CA 90025 (US).(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZW.(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,

[Continued on next page]

(54) Title: CMOS FABRICATION PROCESS UTILIZING SPECIAL TRANSISTOR ORIENTATION



(57) Abstract: Complementary metal oxide semiconductor transistors are formed on a silicon substrate. The substrate has a {100} crystallographic orientation. The transistors are formed on the substrate so that current flows in the channels of the transistors are parallel to the <100> direction. Additionally, longitudinal tensile stress is applied to the channels.

WO 02/45156 A2



IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *without international search report and to be republished upon receipt of that report*

CMOS FABRICATION PROCESS UTILIZING SPECIAL TRANSISTOR ORIENTATION

5

Technical Field of the Invention

The present invention relates to semiconductor transistors, and more particularly, to a transistor structure oriented having a current flow parallel to a specific crystal direction.

Background of the Invention

Complementary metal oxide semiconductor (CMOS) integrated circuits include both N-type devices (NMOS) and P-type devices (PMOS), the former utilizing electrons as the carriers and the latter utilizing holes as the carriers. CMOS technology is employed in the large majority of integrated circuits manufactured today.

An important factor in the performance of CMOS integrated circuits is the presence of good mobility for both holes and electrons. The mobility of both carriers should be as high as possible to enhance both PMOS and NMOS performance. The overall CMOS circuit performance depends similarly on both NMOS and PMOS performance, and thus in turn, on both electron and hole mobility.

It is known that the application of stress on a semiconductor material, such as silicon, changes the mobility of electrons and holes, which in turn modifies the performance of NMOS and PMOS devices formed thereon. An increase in mobility results in increased performance. However, it has also been found that the electron and hole mobilities do not always react the same way to stress, thereby complicating the process. In addition, the dependence of mobility on stress depends on the surface orientation of the crystalline semiconductor material and the directions of stress and current flow. For example, for current flow along the $\langle 110 \rangle$ directions on $\{100\}$ planes,

longitudinal tensile stress tends to increase the mobility of electrons and decrease the mobility of holes. In contrast, for current flow along the $\langle 100 \rangle$ directions on $\{100\}$ planes, longitudinal tensile stress tends to increase the mobility of both electrons and holes.

5 Currently, semiconductor devices are oriented such that the current flows along the $\langle 110 \rangle$ direction on $\{100\}$ silicon. This can be seen in Figure 2, which shows a top view of a semiconductor wafer 201. The semiconductor wafer 201 is commonly referred to as “ $\{100\}$ silicon,” which is the predominant type of semiconductor wafer being used today. In the prior art, NMOS and PMOS transistors 203 are oriented in such a manner so that the
10 current flow between source and drain is aligned with the $\langle 110 \rangle$ direction, relative to the semiconductor wafer 201. Thus, the transistors 203 are oriented as shown in Figure 2.

 In this orientation, the mobilities of electrons and holes change inversely in reaction to longitudinal stress. In other words, when stress is applied to the underlying silicon along the direction of current flow, either the electron mobility is increased and the
15 hole mobility is decreased or the hole mobility is increased and the electron mobility is decreased. Thus, in such an arrangement, the overall CMOS circuit performance is not enhanced.

 For this reason, selective stressing of the silicon material must be employed to increase the carrier mobility of one type of device without degrading the mobility of the
20 other type of device. Thus, stress may be applied to the wafer 201 in the location of transistor 203a, but not transistor 203b, or vice versa. This requires costly processing steps that may include masking, deposition, or etching.

Brief Description of the Drawings

Figure 1 is a schematic diagram showing the three types of crystalline orientation for silicon.

Figure 2 is a schematic diagram showing a prior art orientation of CMOS devices
5 on a semiconductor wafer.

Figure 3 is a schematic diagram showing an orientation of CMOS devices on a semiconductor wafer in accordance with the present invention.

Figure 4A is a chart showing the piezoresistive coefficients for a P-type {100} silicon substrate as a function of current flow direction.

10 Figure 4B is a chart showing the piezoresistive coefficients for an N-type {100} silicon substrate as a function of current flow direction.

Figure 5 shows a transistor that is undergoing longitudinal tensile stress.

Figure 6 shows a transistor that is undergoing transverse tensile stress.

Detailed Description

Silicon (Si) is presently the most important semiconductor for the electronics industry. Most silicon that is used to form silicon wafers is formed from single crystal silicon. The silicon wafers serve as the substrate on which CMOS devices are formed. The silicon wafers are also referred to as a semiconductor substrate or a semiconductor wafer.

In crystalline silicon, the atoms which make up the solid are arranged in a periodic fashion. If the periodic arrangement exists throughout the entire solid, the substance is defined as being formed of a single crystal. If the solid is composed of a myriad of single crystal regions the solid is referred to as polycrystalline material.

Silicon, as used in integrated circuits, can be in one of three forms: (1) single crystal silicon, (2) polycrystalline silicon (polysilicon), and (3) amorphous silicon. As noted above, silicon wafers are fabricated to have single crystal form.

The periodic arrangement of atoms in a crystal is called the lattice. The crystal lattice also contains a volume which is representative of the entire lattice and is referred to as a unit cell that is regularly repeated throughout the crystal.

Silicon has a diamond cubic lattice structure, which can be represented as two interpenetrating face centered cubic lattices. Thus, the simplicity of analyzing and visualizing cubic lattices can be extended to characterization of silicon crystals. In the description herein, references to various planes in silicon crystals will be made, especially to the {100}, {110}, and {111} planes.

These planes describe the orientation of the plane of silicon atoms relative to the principle crystalline axes. The numbers {xyz} are referred to as Miller indices and are determined from the reciprocals of the points at which the crystal plane of silicon intersects the principle crystalline axes. Thus, Figure 1 shows three orientations of the crystal plane of silicon. In Figure 1(A), the crystal plane of silicon intersects the x-axis at 1 and never intersects the y or z-axis. Therefore, the orientation of this type of crystalline silicon is {100}. Similarly, Figure 1(B) shows {110} crystalline silicon and Figure 1(C) shows {111} silicon. The {111} and {100} orientations are the two primary wafer orientations in commercial use.

Note that for any given plane in a cubic crystal there are five other equivalent planes. Thus, the six sides of the cube comprising the basic unit cell of the crystal are all considered {100} planes. The notation {xyz} refers to all six of the equivalent planes.

Reference will also be made herein to the crystal directions, especially the $\langle 100 \rangle$, $\langle 110 \rangle$ and $\langle 111 \rangle$ directions. These are defined as the normal direction to the respective plane. Thus, the $\langle 100 \rangle$ direction is the direction normal to the $\{100\}$ plane. The notation $\langle xyz \rangle$ refers to all six equivalent directions.

As noted above, in the prior art, most MOS transistors are fabricated on $\{100\}$ silicon with the gates oriented such that current flows parallel to the $\langle 110 \rangle$ directions. This is shown in Figure 2.

In accordance with the present invention, the MOS transistors are oriented so that current flow is substantially along the $\langle 100 \rangle$ direction as shown in Figure 3. Figure 3 shows a top view of a semiconductor wafer 301 formed from $\{100\}$ silicon. Transistor devices, formed on the semiconductor wafer 301, are represented by transistors 303a and 303b. The orientation of the transistors 303a and 303b are such that current that flows between the source and drain of the transistors is substantially along the $\langle 100 \rangle$ direction of the semiconductor wafer 301. Clearly, the transistors 303a and 303b are not drawn to scale and are meant to be exemplary.

Thus, in accordance with one embodiment of the present invention, devices formed on the silicon wafer have a specific device orientation and a fabrication process is used that induces longitudinal tensile stress in the channel region of the devices. The longitudinal tensile stress on the channel will increase the mobility of electrons without degrading the mobility of holes.

In the prior art, devices were oriented such that the current flows substantially along the $\langle 110 \rangle$ directions on $\{100\}$ silicon. In this orientation, the mobilities of electrons and holes change in opposite directions in reaction to longitudinal tensile stress. Thus, the overall CMOS circuit performance is not enhanced. For this reason, selective stressing is

employed to increase the carrying mobility of one type of device without degrading the other. This requires costly processing steps.

By orienting the devices to have their current flow in the $\langle 100 \rangle$ direction, this reduces or reverses the relative degradation of one carrier mobility commensurate with a given amount of increase in the mobility of the other type of carrier due to stress. This eliminates the need for selective stressing to realize an acceptable overall performance gain. The orientation of the present invention enables stress to be used as a tool to increase CMOS circuit performance.

The piezoresistive coefficients for silicon are anisotropic relative to the direction of current flow. Figure 4a shows the piezoresistive coefficient for a p-type region of a semiconductor substrate and Figure 4b shows the piezoresistive coefficient for an n-type region of a semiconductor substrate as a function of direction of current flow on the $\{100\}$ surfaces. NMOS transistors are known to behave similarly to n-type regions and have similar piezoresistive coefficients, as do PMOS transistors and p-type regions. Thus, Figures 4a and 4b are applicable to NMOS and PMOS transistors.

The piezoresistive coefficients relate the change in resistance along various directions when stress is applied. Positive values indicate an increase in resistance for tensile stress. The change in resistance is inversely proportional to the change in mobility, which is directly proportional to the speed of the transistor. Thus, a higher resistance results in a slower transistor.

A longitudinal tensile stress is defined as a "stretching" of the channel in the same direction in which current flows. For example, as seen in Figure 5, a transistor 601 is seen that has a gate 603, a source 605, and a drain 607. When an appropriate voltage is applied to the gate 603, current flows between the source 605 and the drain 607 along the direction

arrow 609. A longitudinal tensile stress would be stress that tends to move the source 605 and drain 607 apart along direction 609. Additionally, a longitudinal compressive stress would be stress that tends to move the source 605 and drain 607 closer together along direction 609.

A transverse tensile stress is defined as a "stretching" of the channel in a direction orthogonal to which the current flows. For example, as seen in Figure 6, a transistor 701 is seen that has a gate 703, a source 705, and a drain 707. When an appropriate voltage is applied to the gate 703, current flows between the source 705 and the drain 707 along the direction arrow 709. A transverse tensile stress would be stress that is in a direction 711 that is orthogonal to the direction of current flow 709.

As seen in Figure 4b, when a longitudinal tensile stress (as indicated by solid line 401) is applied to an n-type region of a semiconductor wafer, the piezoresistive coefficient is at a minimum (approx -100 units) in the $\langle 100 \rangle$ direction. As seen in Figure 4a, when the same longitudinal tensile stress (as indicated by solid line 403) is applied to a p-type region of the semiconductor wafer, the piezoresistive coefficient is only slightly above the neutral condition (0 units).

Thus, in accordance with one embodiment of the present invention, transistors should be oriented to have current flowing in the $\langle 100 \rangle$ direction and applying longitudinal tensile stress in the $\langle 100 \rangle$ direction. This will result in an increase in the speed of NMOS transistors without affecting the PMOS transistors. This is preferable to the $\langle 110 \rangle$ orientation of the prior art, where the PMOS transistor is degraded with the addition of such stress, necessitating a cumbersome selective stress processing to enable an overall gain.

In accordance with an alternative embodiment, it is possible to orient the transistor devices to have current flow in the $\langle 110 \rangle$ direction while applying a transverse stress (as indicated by the dashed lines 405 and 407). For PMOS transistors, this gives about a -70 value and for NMOS transistors, this gives about a -25 value. However, in practice, this is difficult to accomplish because transistors are typically many times wider than they are long. Thus, a force applied on the side of the channel, which would cause transverse stress, is greatly diminished in the middle of the channel.

The particular details of introducing a longitudinal tensile stress on a substrate are well known in the art and will not be discussed in detail herein. For example, in one embodiment, application of high-tensile nitride dielectric is used. The high-tensile nitride dielectric is also referred to herein as a "stressor" structure that will implement the tensile stress. Alternatively, in another embodiment, the stressor structure may be a tensile shallow trench isolation (STI) fill. Although two examples of stressors are given as an example, the term "stressor" as used herein shall mean any structure that causes tensile stress. Additionally, the formation of transistors oriented to have their current flow in the $\langle 100 \rangle$ direction is relatively straightforward. This can be done, for example, by rotating either the underlying semiconductor wafer or the production masks 45 degrees relative to the prior art orientation (for a $\{100\}$ silicon wafer).

While specific embodiments and applications of the present invention have been illustrated and described, it is to be understood that the invention is not limited to the precise configuration and components disclosed herein. Various modifications, changes, and variations, which will be apparent to those skilled in the art, may be made in the
5 arrangement, operation, and details of the methods and systems of the present invention disclosed herein without departing from the spirit and scope of the invention.

These modifications can be made to the invention in light of the above detailed description. The terms used in the following claims should not be construed to limit the invention to the specific embodiments disclosed in the specification and the claims. Rather, the scope of the invention is to be determined entirely by the following claims, which are to be construed in accordance with established doctrines of claim interpretation.

CLAIMS

What is claimed is:

1. An integrated circuit comprising:
a NMOS device formed on a semiconductor substrate;
a PMOS device formed on said semiconductor substrate, wherein said NMOS device and said PMOS device are oriented so that the current flows in a <100> direction of
5 said semiconductor substrate.
2. The integrated circuit of Claim 1 wherein said semiconductor substrate is formed from {100} silicon.
- 10 3. The integrated circuit of Claim 1 wherein at least a portion of said semiconductor substrate is under a tensile stress.
4. The integrated circuit of Claim 3 wherein said tensile stress is a longitudinal tensile stress.
- 15 5. The integrated circuit of Claim 4 wherein said longitudinal tensile stress is induced by a high-tensile nitride dielectric or a tensile shallow trench isolation fill.
6. The integrated circuit of Claim 1 wherein said devices are transistors.
- 20 7. An apparatus comprising:
a semiconductor substrate formed from {100} silicon;

a PMOS transistor formed on said semiconductor substrate, said PMOS transistor having a PMOS channel for carrying current and oriented so that current flows in a <100> direction;

a NMOS formed on said semiconductor substrate, said NMOS transistor having a
5 NMOS channel for carrying current and oriented so that current flows in a <100> direction; and

a stressor that causes a longitudinal tensile stress on said NMOS channel or said PMOS channel.

10 8. The integrated circuit of Claim 7 wherein said stressor is a high-tensile nitride dielectric or a tensile shallow trench isolation fill.

9. The integrated circuit of Claim 7 wherein said devices are transistors.

15 10. A method comprising:

forming a NMOS device on a semiconductor substrate, wherein said NMOS device is oriented so that the current flows in a <100> direction of said semiconductor substrate; and

forming a PMOS device on said semiconductor substrate, wherein said PMOS
20 device is oriented so that the current flows in said <100> direction of said semiconductor substrate.

11. The method of Claim 10 wherein said semiconductor substrate is formed from {100} silicon.

12. The method of Claim 10 further including introducing a tensile stress on at least a portion of said semiconductor substrate.
- 5 13. The method of Claim 12 wherein said tensile stress is a longitudinal tensile stress.
14. The method of Claim 13 wherein said introducing of said longitudinal tensile stress is by use of a stressor.
- 10 15. The method of Claim 14 wherein said stressor is a high-tensile nitride dielectric or a tensile shallow trench isolation fill.

1/6

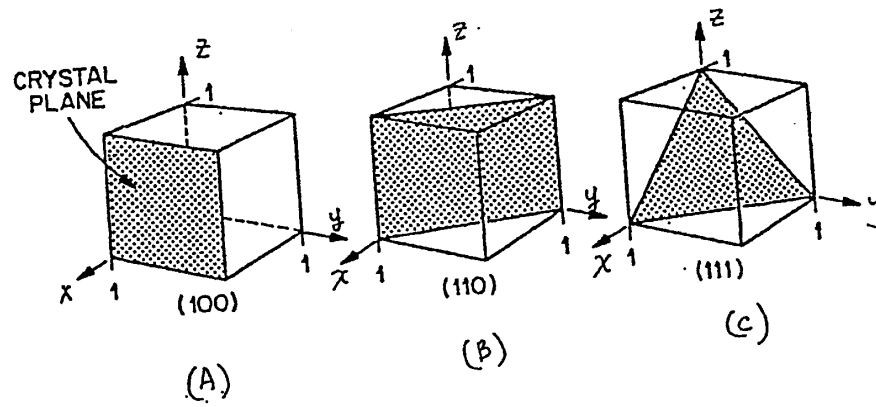


Figure 1
(PRIOR ART)

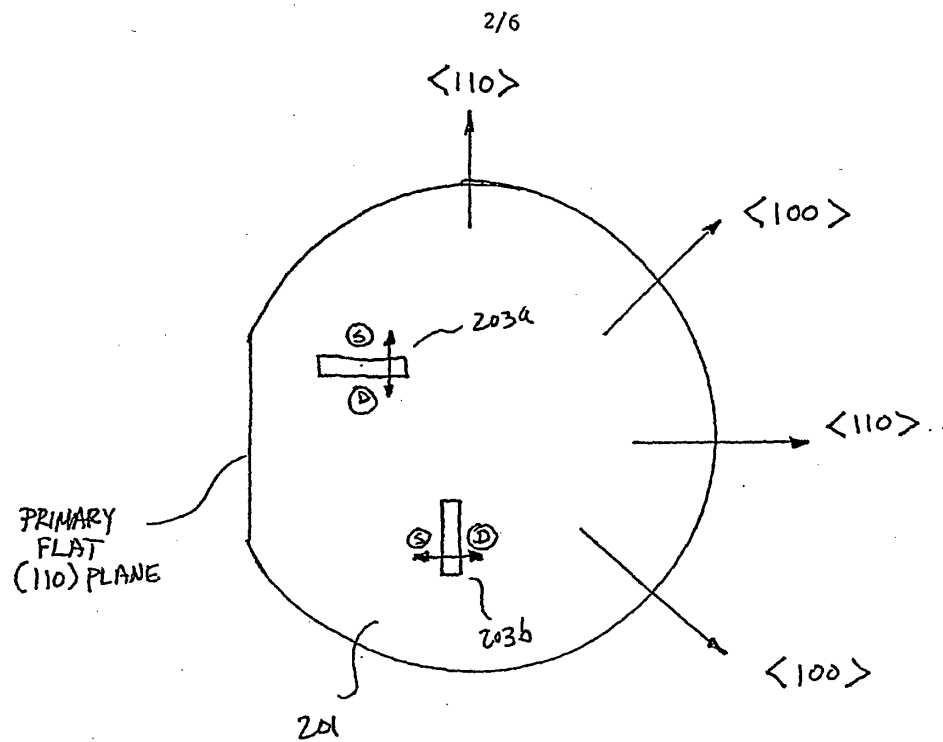


FIGURE 2
(PRIOR ART)

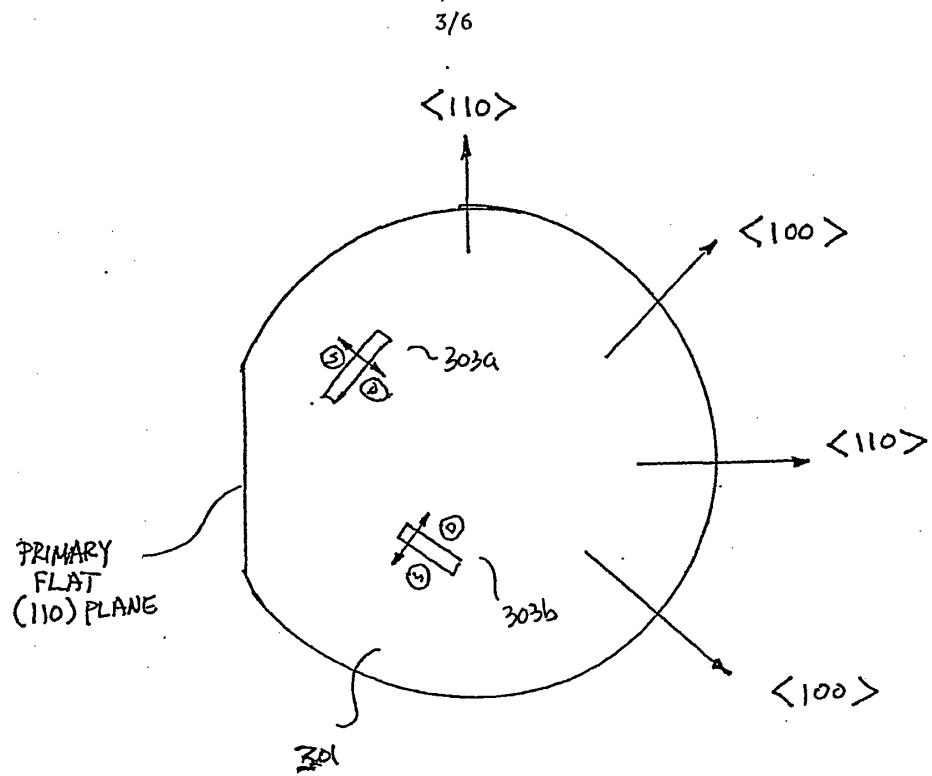


FIGURE 3

4/6

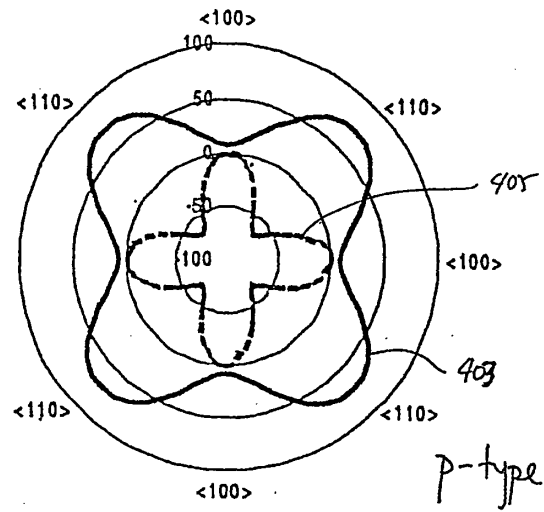


Figure 4A

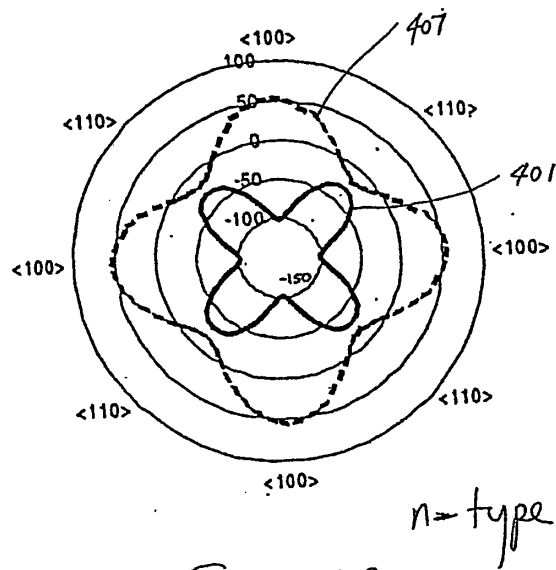


Figure 4B

5/6

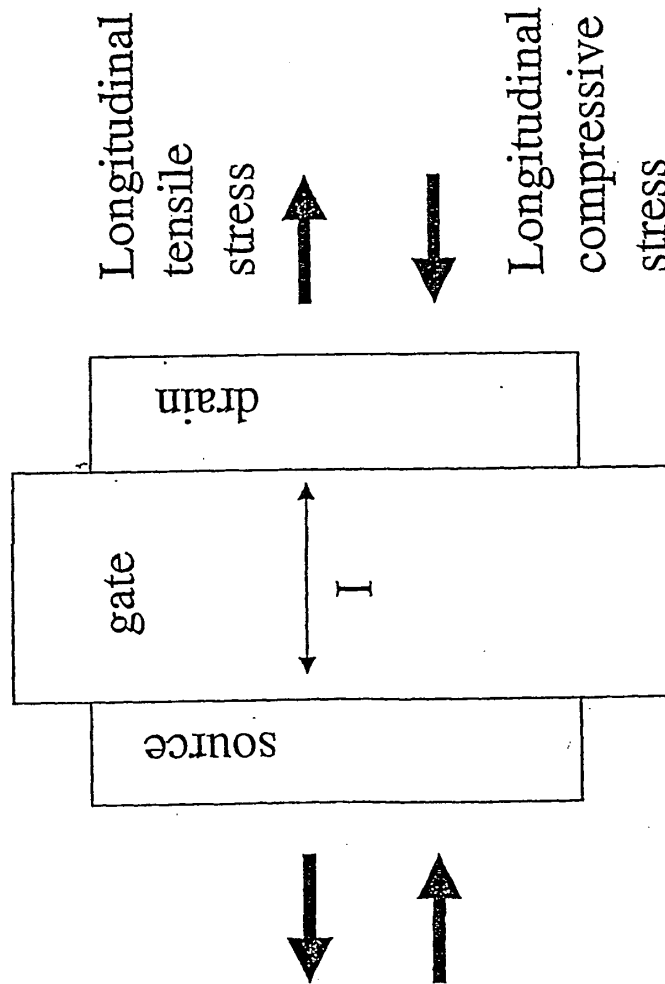
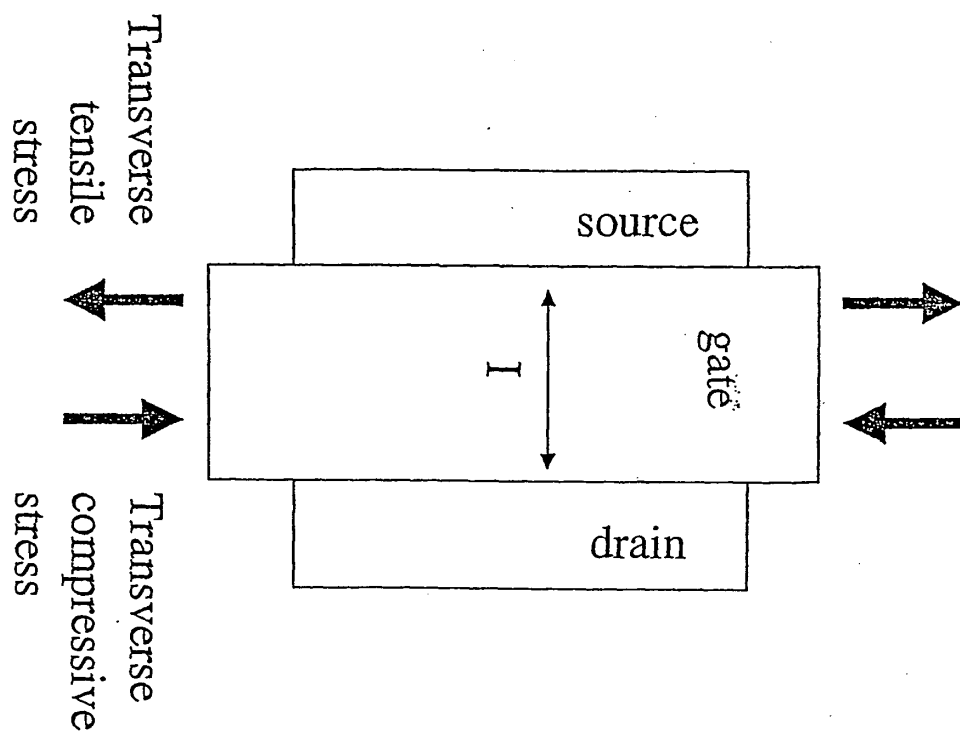


Figure 5

6/6

Figure 6



(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 June 2002 (06.06.2002)

PCT

(10) International Publication Number
WO 02/045156 A3

(51) International Patent Classification⁷: H01L 21/8238,
27/092

(21) International Application Number: PCT/US01/44162

(22) International Filing Date:
6 November 2001 (06.11.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/727,296 29 November 2000 (29.11.2000) US

(71) Applicant (for all designated States except US): INTEL
CORPORATION [US/US]; 2200 Mission College Boule-
vard, Santa Clara, CA 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ARMSTRONG,
Mark [US/US]; 2861 NW Adagio Way, Hillsboro, OR
97124 (US). SCHROM, Gerhard [US/US]; 7008 NE

Ronler Way, #3225, Hillsboro, CA 97124 (US). KUHN,
Kelin, J. [US/US]; 20280 SW Clarion Street, Aloha, OR
97006 (US). PACKAN, Paul, A. [US/US]; 15025 SW
Gibractar Court, Beaverton, OR 97007 (US). TYAGI,
Sunit, D. [IN/US]; 17555 NW Waltuck Court, Portland,
OR 97229 (US). THOMPSON, Scott, E. [US/US]; 18635
NW Rock Creek Way, Portland, OR 97229 (US).

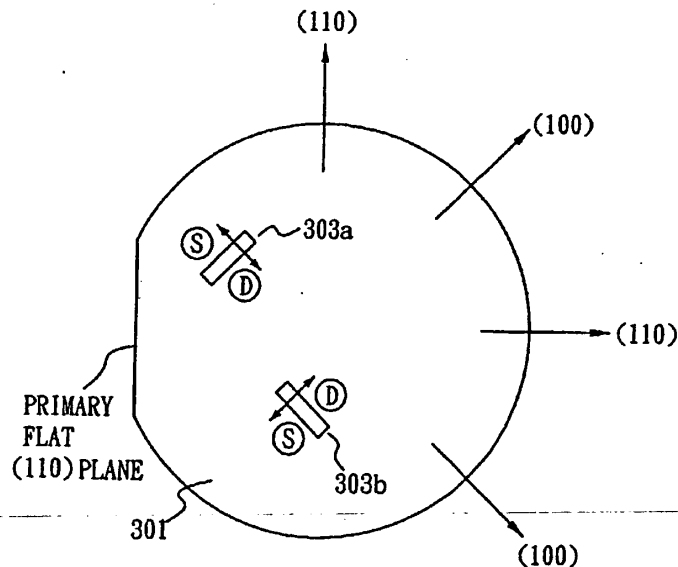
(74) Agents: MALLIE, Michael, J. et al.; Blakely, Sokoloff,
Taylor & Zafman, 12400 Wilshire Boulevard, 7th Floor,
Los Angeles, CA 90025 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European

[Continued on next page]

(54) Title: CMOS FABRICATION PROCESS UTILIZING SPECIAL TRANSISTOR ORIENTATION



(57) Abstract: Complementary metal oxide semiconductor transistors are formed on a silicon substrate. The substrate has a {100} crystallographic orientation. The transistors are formed on the substrate so that current flows in the channels of the transistors are parallel to the <100> direction. Additionally, longitudinal tensile stress is applied to the channels.

WO 02/045156 A3



patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
23 January 2003

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/44162

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L21/8238 H01L27/092

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 171 703 A (LIN YI-CHING ET AL) 15 December 1992 (1992-12-15) abstract; claims; figure 8 column 5, line 3 - line 8 column 9, line 48 - line 53 column 10, line 9 - line 11	1,2,6, 10,11
X	MATSUDA T ET AL: "ELECTRICAL CHARACTERISTICS OF Oø/+45ø/90ø-ORIENTED CMOSFET WITH SOURCE/DRAIN FABRICATED BY VARIOUS ION-IMPLANTATION METHODS" IEEE TRANSACTIONS ON ELECTRON DEVICES, IEEE INC. NEW YORK, US, vol. 46, no. 4, April 1999 (1999-04), pages 703-711, XP000906406 ISSN: 0018-9383 abstract; figure 1	1,2,6, 10,11

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

Z document member of the same patent family

Date of the actual completion of the international search

26 August 2002

Date of mailing of the international search report

30/08/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl
Fax (+31-70) 340-3016

Authorized officer

Wirner, C

Form PCT/ISA/210 (second sheet) (July 1992)

page 1 of 3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/44162

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SAYAMA H ET AL: "EFFECT OF CHANNEL DIRECTION FOR HIGH PERFORMANCE SCE IMMUNE PMOSFET WITH LESS THAN 0.15UM GATE LENGTH" INTERNATIONAL ELECTRON DEVICES MEETING 1999. IEDM. TECHNICAL DIGEST. WASHINGTON, DC, DEC. 5 - 8, 1999, NEW YORK, NY: IEEE, US, 1 August 2000 (2000-08-01), pages 657-660, XP000933266 ISBN: 0-7803-5411-7 the whole document	1,2,6, 10,11
Y	---	3-5,7-9, 12-15
Y	WELSER J ET AL: "Strain dependence of the performance enhancement in strained-Si n-MOSFETs" ELECTRON DEVICES MEETING, 1994. TECHNICAL DIGEST., INTERNATIONAL SAN FRANCISCO, CA, USA 11-14 DEC. 1994, NEW YORK, NY, USA, IEEE, 11 December 1994 (1994-12-11), pages 373-376, XP010131874 ISBN: 0-7803-2111-1 abstract; figure 1 page 373, left-hand column, paragraph 2	3,4,7,9, 12-14
Y	SCOTT G ET AL: "Effect of stress and dopant redistribution on trench-isolated narrow devices" CHALLENGES IN PROCESS INTEGRATION AND DEVICE TECHNOLOGY, SANTA CLARA, CA, USA, 18-19 SEPT. 2000, vol. 4181, pages 183-190, XP008006927 Proceedings of the SPIE - The International Society for Optical Engineering, 2000, SPIE-Int. Soc. Opt. Eng, USA ISSN: 0277-786X abstract; table 1 page 186, paragraph 3 -page 187, paragraph 1	5,8,15
A	EP 0 703 628 A (MOTOROLA INC) 27 March 1996 (1996-03-27) abstract; claims; figures -/-	1,3,4,7, 9,10, 12-14

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

page 2 of 3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/44162

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SCOTT G ET AL: "NMOS drive current reduction caused by transistor layout and trench isolation induced stress" ELECTRON DEVICES MEETING, 1999. IEDM TECHNICAL DIGEST. INTERNATIONAL WASHINGTON, DC, USA 5-8 DEC. 1999, PISCATAWAY, NJ, USA, IEEE, US, 5 December 1999 (1999-12-05), pages 827-830, XP010372197 ISBN: 0-7803-5410-9 abstract	1,5,7,8, 10,12-15
A	US 6 046 494 A (CHAU ROBERT S ET AL) 4 April 2000 (2000-04-04) abstract; claims; figures	1,5,7,8, 10,12-15
A	GB 1 222 251 A (THOMSON CSF) 10 February 1971 (1971-02-10) abstract; claims; figures page 1, line 54 -page 2, line 25	1,3,4,7, 9,10, 12-14
A	GB 928 562 A (WESTERN ELECTRIC CO) 12 June 1963 (1963-06-12) abstract; claims; figures	1,3,4,7, 9,10, 12-14
A	PATENT ABSTRACTS OF JAPAN vol. 013, no. 435 (E-825), 28 September 1989 (1989-09-28) - & JP 01 162362 A (FUJITSU LTD), 26 June 1989 (1989-06-26) abstract; figures	1,2,6, 10,12

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

page 3 of 3

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/44162

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5171703	A	15-12-1992	JP 5198543 A	06-08-1993
EP 0703628	A	27-03-1996	US 5561302 A	01-10-1996
			CN 1129358 A	21-08-1996
			EP 0703628 A2	27-03-1996
			JP 8111528 A	30-04-1996
			US 5683934 A	04-11-1997
US 6046494	A	04-04-2000	US 5633202 A	27-05-1997
GB 1222251	A	10-02-1971	FR 1522471 A	26-04-1968
			DE 1698122 A1	08-07-1971
			FR 2074759 A6	08-10-1971
			NL 6803482 A ,B,	16-09-1968
			US 3492861 A	03-02-1970
GB 928562	A	12-06-1963	BE 606275 A	
			DE 1232270 B	12-01-1967
			FR 1295244 A	01-06-1962
			NL 267220 A	
			US 3215568 A	02-11-1965
JP 01162362	A	26-06-1989	NONE	

Form PCT/ISA/210 (patent family annex) (July 1992)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1

CONFIRMATION NO. 2187

23552
 MERCHANT & GOULD PC
 P.O. BOX 2903
 MINNEAPOLIS, MN 55402-0903

FORMALITIES LETTER



OC000000014107280

Date Mailed: 10/18/2004

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted***Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121 are required. The drawings submitted are not acceptable because:
 - The drawings have a line quality that is too light to be reproduced (weight of all lines and letters must be heavy enough to permit adequate reproduction) or text that is illegible (reference characters, sheet numbers, and view numbers must be plain and legible) see 37 CFR 1.84(l) and (p)(1)); See Figure(s) 6A-8B.

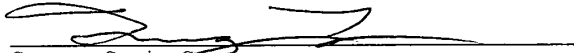
SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$130 for a Large Entity

- \$130 Late oath or declaration Surcharge.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

A copy of this notice MUST be returned with the reply.



Customer Service Center

Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY

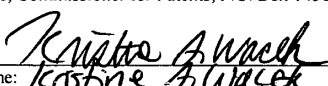


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DELUCA ET AL. Examiner: UNKNOWN
Serial No.: 10/916,922 Group Art Unit: UNKNOWN
Filed: AUGUST 12, 2004 Docket: 13835.142USU1
Confirmation No.: 2187
Due Date: DECEMBER 18, 2004
Title: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on December 17, 2004.

By: 

Name: Kristine A. Walick

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

23552

PATENT TRADEMARK OFFICE

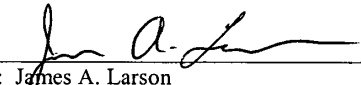
Sir:

We are transmitting herewith the attached:

- ☒ Transmittal Sheet in duplicate containing Certificate of Mailing
- ☒ Notice to File Missing Parts of NonProvisional Application - Part 2
- ☒ Signed Combined Declaration and Power of Attorney
- ☒ Submission of Formal Drawings, 8 Sheets of Formal Drawings
- ☒ Check(s) in the amount of \$130.00 for Missing Parts Surcharge
- ☒ Return postcard

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
612.332.5300

By: 

Name: James A. Larson

Reg. No.: 40,443

JLarson:PLSkaw

(PTO TRANSMITTAL - GENERAL)



S/N 10/916,922

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	DELUCA ET AL.	Examiner:	UNKNOWN
Serial No.:	10/916,922	Group Art Unit:	UNKNOWN
Filed:	AUGUST 12, 2004	Docket No.:	13835.142USU1
Title:	LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY		

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service, as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on December 17, 2004

By: Kristine A. Wacek
Name: Kristine A. Wacek

SUBMISSION OF FORMAL DRAWINGS

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450



Dear Sir:

Submitted herewith are 8 sheet(s) of Formal Drawings for completion of this application, and in compliance with the requirements of the Notice to File Missing Parts of Nonprovisional Application mailed October 18, 2004.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: December 17, 2004

James A. Larson
James A. Larson
Reg. No. 40,443
JAL:PLSkaw



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1

23552
 MERCHANT & GOULD PC
 P.O. BOX 2903
 MINNEAPOLIS, MN 55402-0903



CONFIRMATION NO. 2187

FORMALITIES LETTER



OC00000014107280

Date Mailed: 10/18/2004

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

12/21/2004 SBIRETA1 00000074 10916922

FILED UNDER 37 CFR 1.53(b)

01 FC:1051

130.00 OP

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121 are required. The drawings submitted are not acceptable because:
 - The drawings have a line quality that is too light to be reproduced (weight of all lines and letters must be heavy enough to permit adequate reproduction) or text that is illegible (reference characters, sheet numbers, and view numbers must be plain and legible) see 37 CFR 1.84(l) and (p)(1)); See Figure(s) 6A-8B.

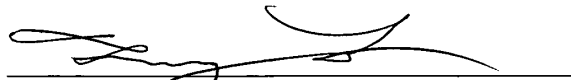
SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$130 for a Large Entity

- \$130 Late oath or declaration Surcharge.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

*A copy of this notice **MUST** be returned with the reply.*



Customer Service Center

Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE



Inventor: DELUCA ET AL.
Docket No.: 13835.142USU1
Title: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY
Serial No.: 10/916,922
Sheet 1 of 8

FIG. 1

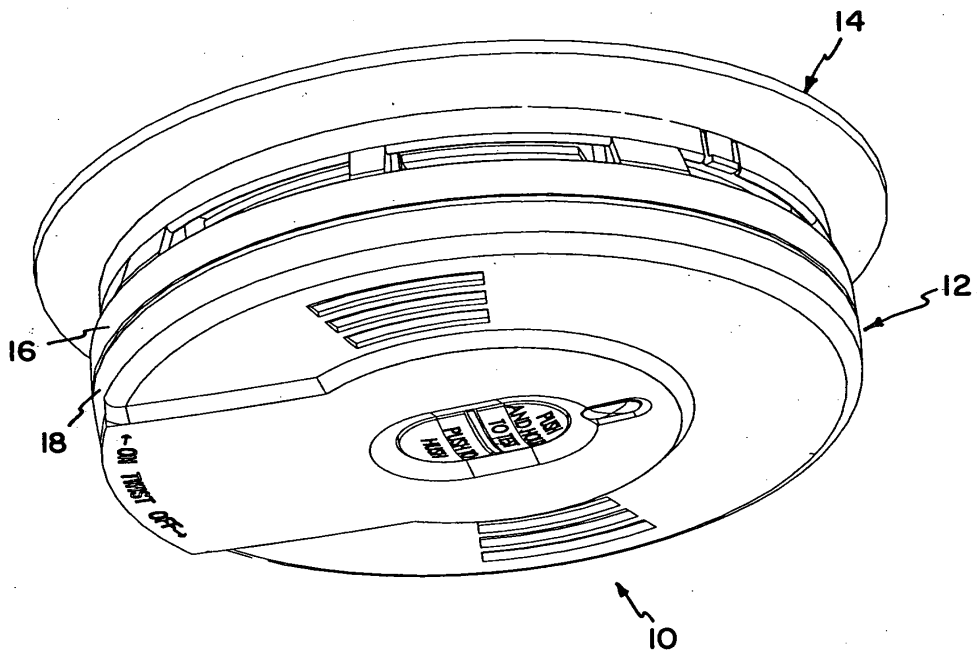


FIG. 2

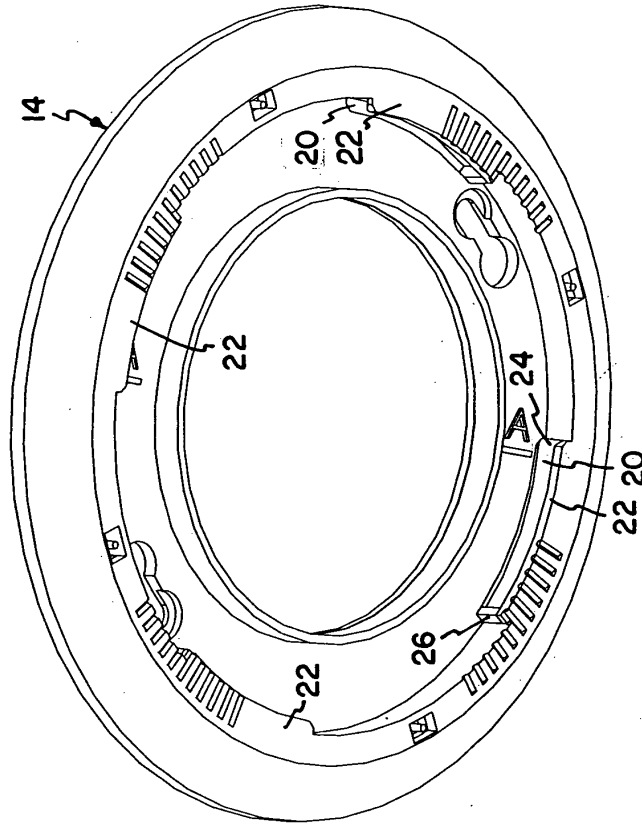


FIG. 3

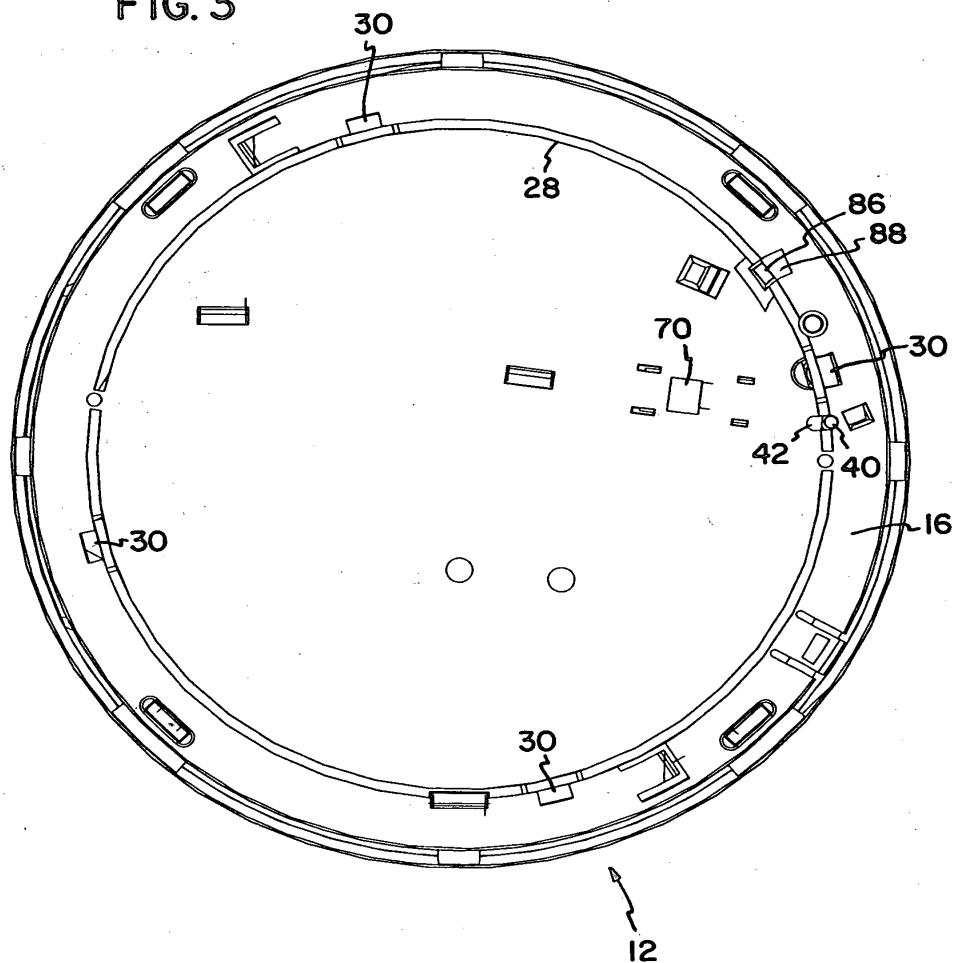


FIG. 4

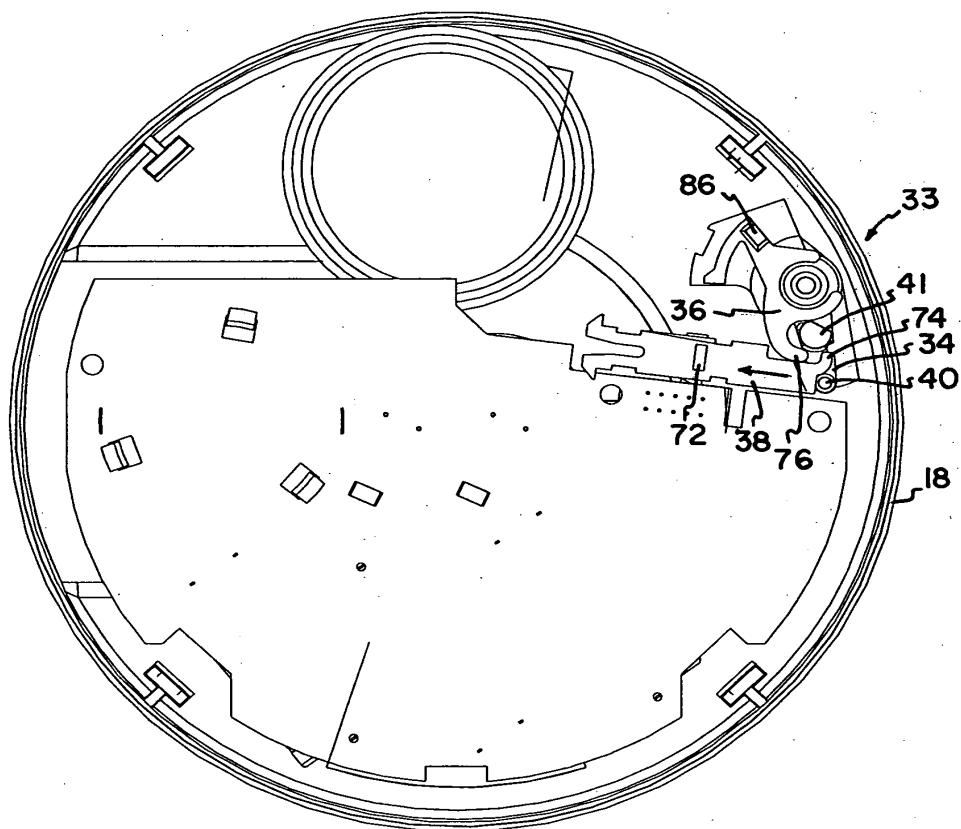


FIG. 5

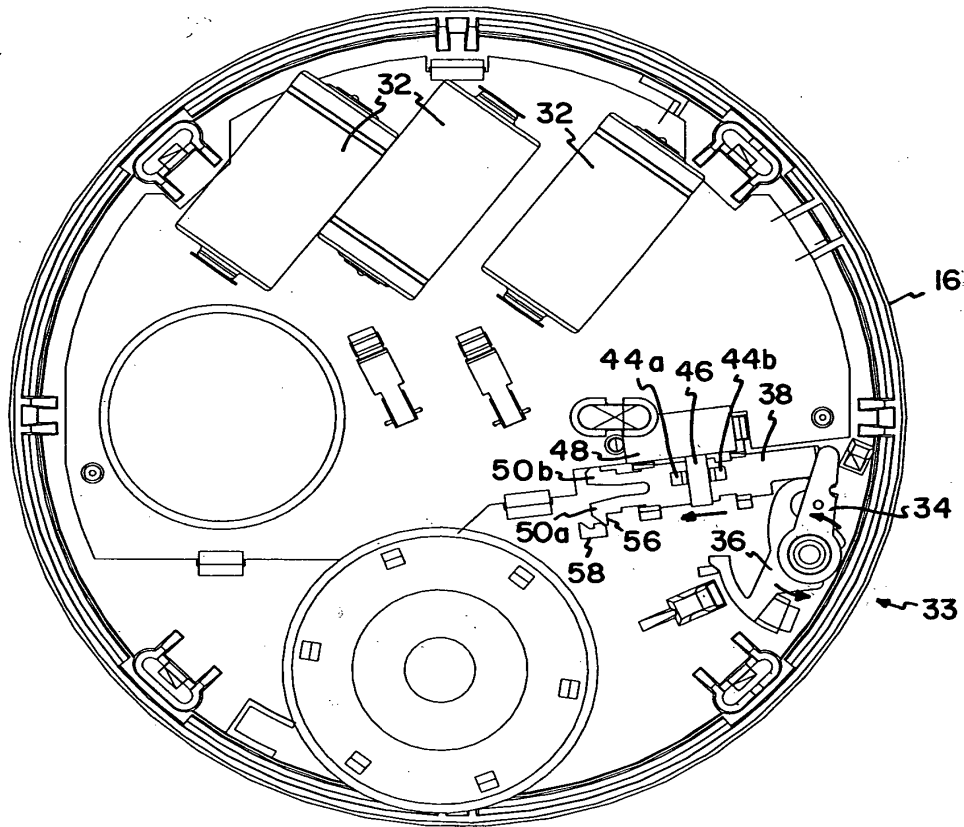


FIG. 6A

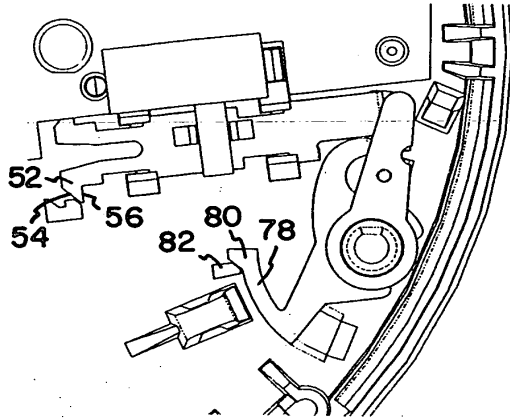


FIG. 6B

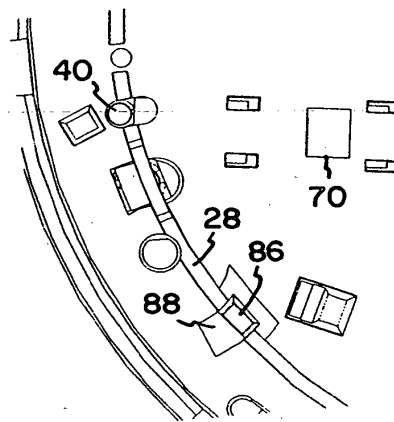


FIG. 7A

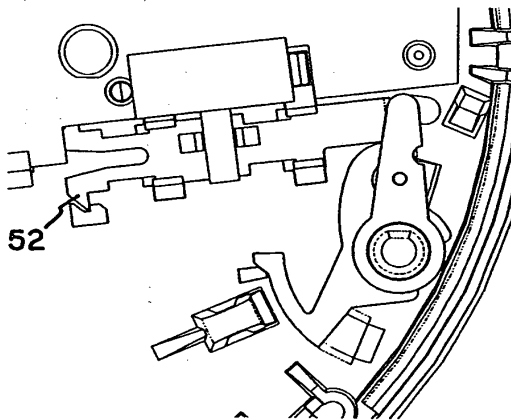


FIG. 7B

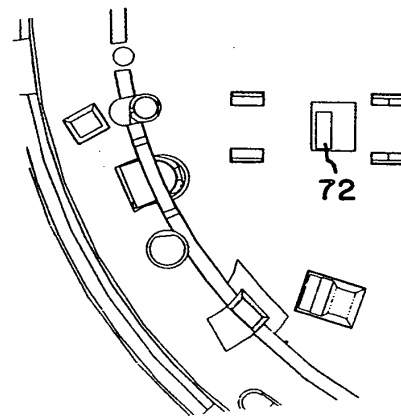


FIG. 8A

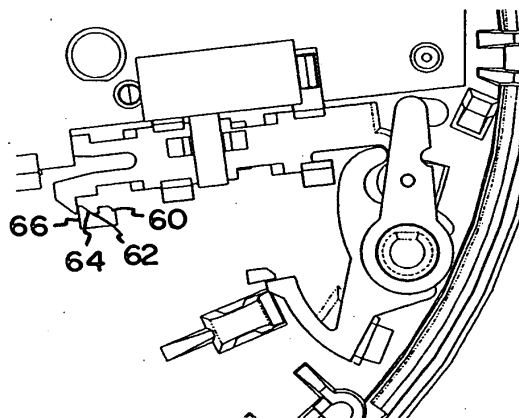


FIG. 8B

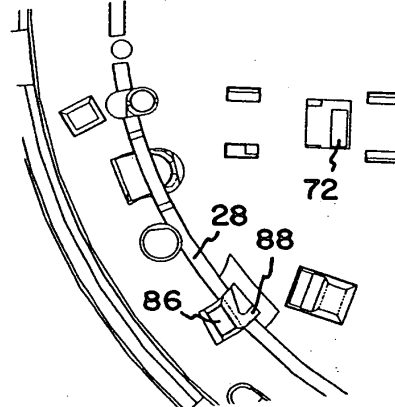


FIG. 9

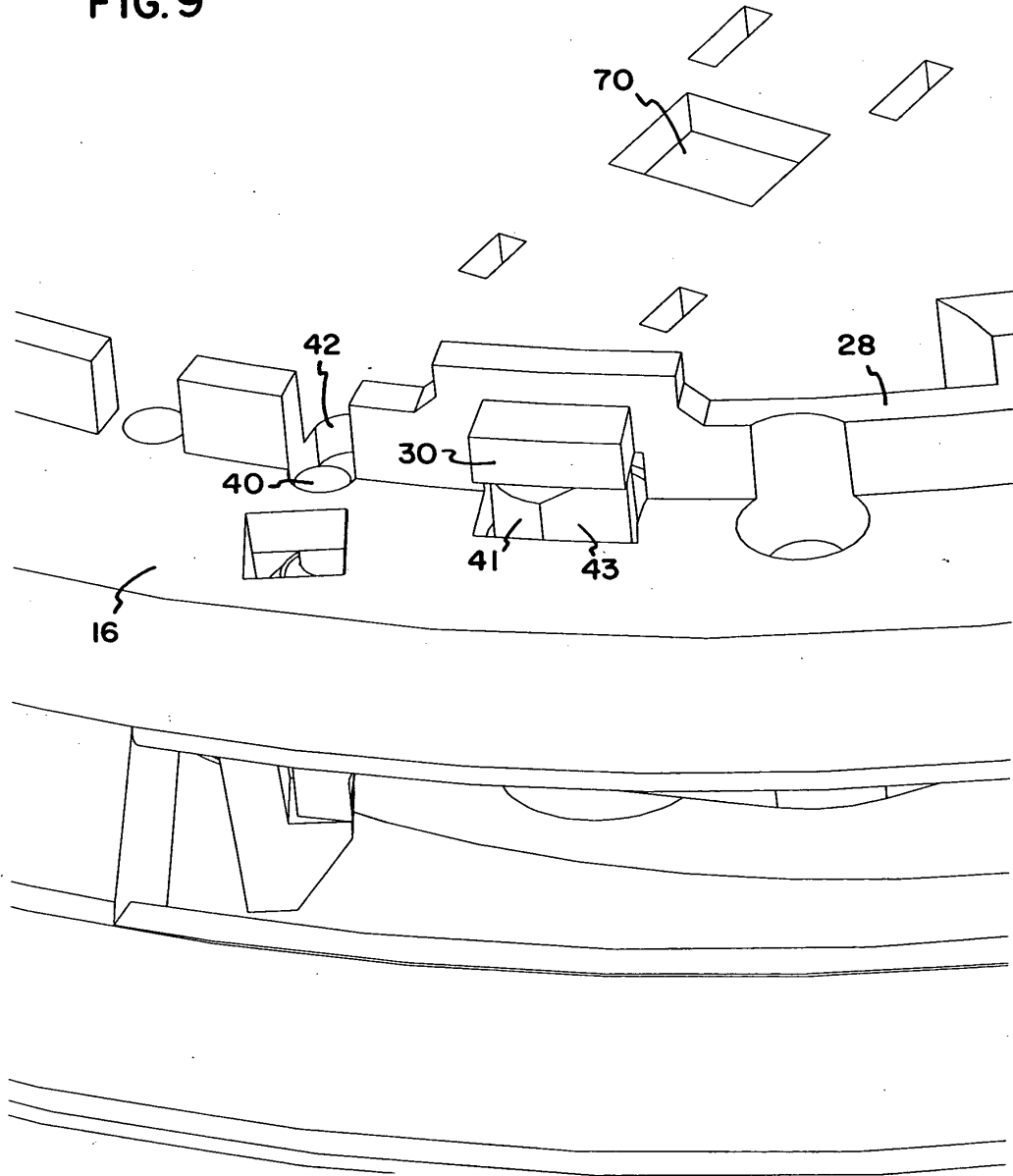
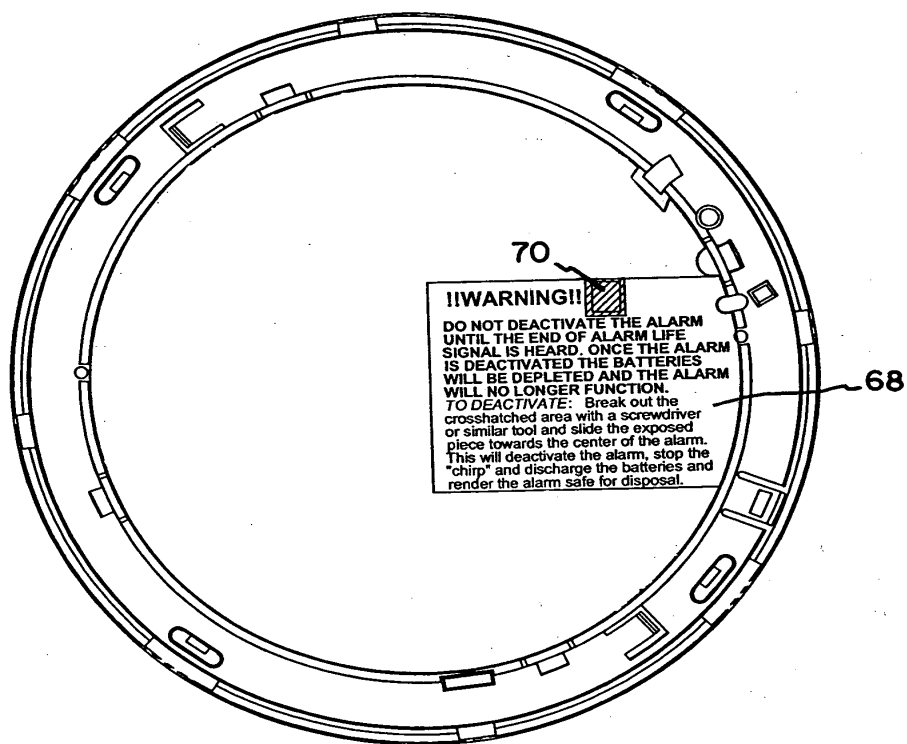


FIG. 10





MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

Below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

The specification of which

- a. ☐ is attached hereto
 b. ☒ was filed on August 12, 2004 as application serial no. 10/916,922 and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. filed and as amended on (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
 b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/499,245	29 AUGUST 2003

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;

or

- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

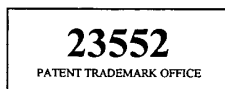
- (1) Each inventor named in the application:
- (2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby appoint the attorney(s) and/or patent agent(s) associated with the following customer number to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.



I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903

I hereby 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 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2	Full Name Of Inventor	Family Name DELUCA	First Given Name JOSEPH	Second Given Name G.
0	Residence & Citizenship	City COLORADO SPRINGS	State or Foreign Country COLORADO	Country of Citizenship USA
1	Mailing Address	Address 2325 ROSSMERE STREET	City COLORADO SPRINGS	State & Zip Code/Country COLORADO 80919/USA
Signature of Inventor 201:			Date: 10/4/04	
2	Full Name Of Inventor	Family Name SHAMPE	First Given Name JASON	Second Given Name M.
0	Residence & Citizenship	City COLORADO SPRINGS	State or Foreign Country COLORADO	Country of Citizenship USA
2	Mailing Address	Address 2675 HANOVERTOWN DRIVE	City COLORADO SPRINGS	State & Zip Code/Country COLORADO 80919/USA
Signature of Inventor 202:			Date: 040929	



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DELUCA ET AL. Examiner: UNKNOWN
Serial No.: 10/916,922 Group Art Unit: 2632
Filed: AUGUST 12, 2004 Docket: 13835.142USU1
Confirmation No.: 2187
Due Date: JANUARY 14, 2005 (30-Day Date)
Title: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 5, 2005.

By: 

Name: LATE G. Anderson

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

23552

PATENT TRADEMARK OFFICE

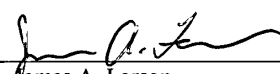
Sir:

We are transmitting herewith the attached:

- ☒ Transmittal Sheet in duplicate containing Certificate of Mailing
- ☒ Information Disclosure Statement, Form 1449, 1 Reference(s), Copy of International Search Report
- ☒ Return postcard

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
612.332.5300

By: 
Name: James A. Larson
Reg. No.: 40,443
JLarson:KLW:PLSklg

(PTO TRANSMITTAL - GENERAL)

S/N 10/916,922

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	DELUCA ET AL.	Examiner:	UNKNOWN
Serial No.:	10/916,922	Group Art Unit:	2632
Filed:	AUGUST 12, 2004	Docket No.:	13835.142USU1
Title:	LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY		



CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Commissioner for Patents, Mail Stop Amendment, P.O. Box 1450, Alexandria, VA 22313-1450 on January 5, 2005.

By: Kate G. Lerner

Name: Kate G. Lerner

INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner. At least some of the references were recently cited in an International Search Report mailed December 15, 2004.

This statement should be considered because it is submitted before the mailing date of a first Office Action on-the-merits. Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

Certification Under 37 C.F.R. § 1.704(d)

In accordance with 37 C.F.R. § 1.704(d), the undersigned hereby certifies that each item listed on the enclosed Form 1449 was cited in a communication from a foreign patent office in a counterpart application, and that this communication was not received by any individual designated in 37 C.F.R. § 1.56(c) more than thirty (30) days prior to the filing of this Information Disclosure Statement. Accordingly, no patent term adjustment is due for the filing of this Information Disclosure Statement.

In accordance with 37 C.F.R. §1.98(a)(2), a copy of each document or other information listed on the enclosed Form 1449 is provided. Enclosed for the Examiner's information is a copy of the International Search Report.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art." Moreover, Applicants do not represent that a reference has been thoroughly reviewed or that any relevance of any portion of a reference is intended.

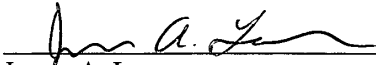
Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: January 5, 2005


James A. Larson
Reg. No. 40,443
JAL:KLW:PLSklg



FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 13835.142USU1	Application Number: 10/916,922
	Applicant: DELUCA ET AL.	
	Filing Date: 08/12/2004	Group Art Unit: 2632

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

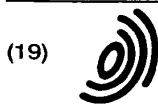
FOREIGN PATENT DOCUMENTS							
	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	0 714 158 A2	05/29/1996	EP				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		

23552

PATENT TRADEMARK OFFICE

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 0 714 158 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
29.05.1996 Bulletin 1996/22

(51) Int. Cl.⁶: H02J 1/00, G08B 17/10

(21) Application number: 95118374.8

(22) Date of filing: 22.11.1995

(84) Designated Contracting States:
BE DE FR GB IT

(30) Priority: 23.11.1994 US 344744

(71) Applicant: BRK BRANDS, INC.
Aurora, IL 60504 (US)

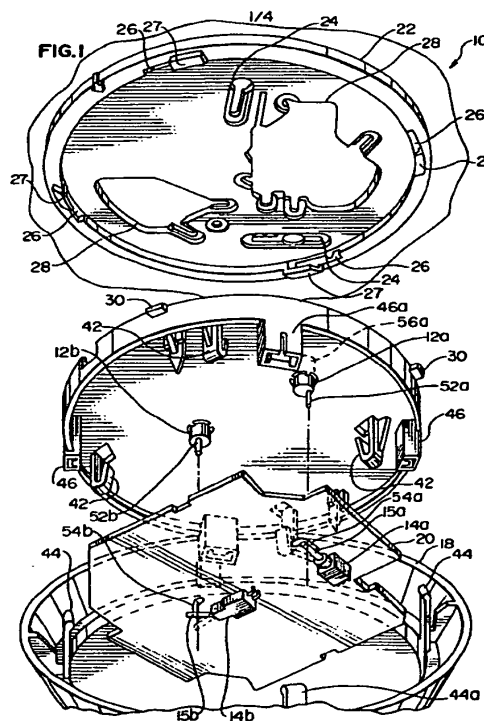
(72) Inventors:

- Watson, Kalvin
Chicago, Ill. 60621 (US)
- Kondziolka, Thomas Walter
Chicago, Ill. 60641 (US)

(74) Representative: Strehl Schübel-Hopf Groening &
Partner
Maximilianstrasse 54
80538 München (DE)

(54) Long life detector

(57) A long life, surface mountable ambient condition detector (10) includes a non-replaceable battery (38) for the purpose of providing power to the detector. The detector includes an activation switch mechanism (14a) having a one-time, or single use turn-on characteristic. The activation switch mechanism (14a) switches the battery (38) once from a non-conducting state to a state of electrical conduction with a control unit (32) of the detector. The switch mechanism may include a frangible member (12a, 12b) for switching the battery (38) from the non-conducting state to the electrical conducting state. Until the detector (10) has been energized, the frangible member (12a, 12b) blocks mounting of the detector on the surface.



EP 0 714 158 A2

Printed by Rank Xerox (UK) Business Services
2.11.7/3.4

ISDOCID: <EP

0714158A2 I >

Description

Field of the Invention

This invention relates to condition detectors having a one-time activation switch mechanism. More particularly, the invention relates to long-life ambient condition detectors having a non-replaceable battery for the purpose of powering the detector which is activated by a one-time activation switch mechanism.

Background

Condition detectors such as smoke, gas, heat or fire detectors are commonly found today in buildings of all types. Many municipalities require installation of such detectors in buildings. Some of these detectors are AC-powered. Others are battery-powered. Some include a combination of AC power and battery backup power.

Battery-powered detectors, while very convenient and easy to install, have suffered from the drawback that a user of the building might not realize the unit needs a battery or that battery power may be low. Typically, such batteries are merely replaced by the user. Detectors commonly are powered by standard dry cell or alkaline type batteries, such as nine-volt batteries.

To assure the effectiveness of the batteries, many detectors have audible alarms to indicate low battery power, or test circuits to periodically test the battery power. Nevertheless, such detectors require that batteries be periodically replaced in order for the detector to properly operate. Unfortunately, users do not always have spare batteries readily available, and often detectors will go without power until a battery can be located and placed in the detector.

Thus, there continues to be a need for a cost effective and reliable detector having a battery with an extended life.

Summary of the Invention

A sealed, ambient condition detector having no user accessible parts, and being disposable is disclosed. The detector includes a sensor, such as a gas, smoke, or fire sensor, and a control unit coupled to the sensor.

The detector is powered by an energy source which is non-removably coupled to the control unit. The energy source is a long-life battery unit. Preferably, expected battery life will exceed five years in normal operation.

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.

In a preferred embodiment, the single-use activation switch mechanism includes a frangible member for switching the energy source from the non-conducting state into electrical conduction. The frangible member may or may not be removable from the detector.

Numerous other advantages and features of the present invention will become readily apparent from the following detailed description of the invention and the embodiments thereof.

Brief Description of the Drawings

FIG. 1 is an exploded perspective view of one embodiment of a detector embodying the principles of the present invention;

FIG. 2 is a partially broken away, top plan view of the detector of FIG. 1;

FIG. 3 is a partial cross-sectional view taken along line 3--3 of FIG. 2;

FIG. 4 is a partial top plan view illustrating one embodiment of a switching mechanism of the present invention;

FIG. 5 is a partial cross-sectional view of the switching mechanism, the view being rotated about 90° from that shown in FIG. 3;

FIG. 6 is a top plan view of an alternate embodiment of a detector illustrating a read-relay arrangement;

FIG. 7 is a partial perspective view of another alternate embodiment of the switch mechanism;

FIG. 8 is a partial cross-sectional view of yet another embodiment of the switch mechanism;

FIG. 9 is a partial cross-sectional view of still another embodiment of the switch mechanism; and

FIG. 10 is an exemplary circuit diagram of a detector embodying the present invention.

Detailed Description of the Preferred Embodiments

While this invention is susceptible of embodiment in many different forms there are shown in the drawings and will be described herein in detail specific embodiments thereof with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the specific embodiment illustrated.

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.

The detector, as shown in FIG. 1, includes a base 16, a cover 18, and an electrical circuit board 20, which includes the electronics 20a necessary for operation of the detector. The detector 10 may be mountable to a surface, such as a wall, by a mounting flange or bracket 22.

The mounting flange 22 typically includes slotted holes 24 for engaging fasteners (not shown) to secure the flange 22 to the surface. The flange 22 also includes

slotted channels 26 formed by L-shaped projections 27, for rotatably mounting the base 16 thereto. In the embodiment shown in FIG. 1, the mounting flange also includes material reducing openings 28 therein.

The base 16 further includes projections 30 which extend radially outwardly therefrom for engaging the slotted channels 26 in the mounting flange 22, and removably securing the base 16 to the flange 22.

As best seen in FIG. 2, the base 16 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.

The circuit board 20 is aligned in, and secured to, the base 16 by a plurality of aligning members 40 and clips 42. The aligning members 40 and clips 42 provide for proper alignment of the board 20 within the detector 10, and further secure the board 20 in place therein.

The detector 10 also includes a cover 18 which has downwardly projecting retaining clips 44 to engage upstanding clip receptacles 46 formed in the base 16. Because proper orientation of the cover relative to the base 16 is necessary, the clips 44 and receptacles 46 are formed such that a clip 44a and a receptacle 46a will engage only each other and will not engage the other clips 44 or receptacles 46.

The detector 10 may also include test or silencing buttons 32a or 32b or indicators 50 mounted thereon to accommodate circuitry for testing the detector 10 to determine whether it is operable, silencing the detector 10 when it is in the alarm condition, or to provide visual indication of battery power by means of a light emitting diode 50.

Unlike known detectors, a detector 10 of the present invention is a sealed unit. That is, the base 16 and cover 18 are sealed one with the other during manufacture. Thus, the circuitry and components of the detector 10 are not user accessible.

Also unlike known detectors, the detector 10 incorporates a long-life battery unit 38, which is not replaceable by the user. Such batteries may be designed to provide up to 10 years of service life for the detector.

Examples of such long life battery units 38 include a single, 9-volt lithium battery or alternatively, three 3-volt lithium batteries configured to produce a nine-volt output. Lithium based batteries, such as lithium chloride, lithium manganese, and lithium poly-carbon monofluoride may be used to provide such long life capabilities.

Moreover, the detector 10 is not limited to batteries providing a nine-volt output. The detector 10 may be provided with, for example, a 3.3 volt battery, and circuitry designed accordingly, to operate on a 3.3 volt circuit. It is to be understood that other voltages and battery arrangements are within the scope of the present invention.

Underwriters Laboratories ("UL") requires that power containing devices, such as detectors, be packaged and shipped in a deactivated state. The detector 10 of the present invention meets the UL requirement for shipment in a deactivated state, in a sealed unit, while

providing one-time activation of the detector 10. The detector 10 is activated by the user, prior to installation.

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.

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.

The frangible members 12a and 12b are accessible from the back or underside of the base 16. Each of the members 12a and 12b is connected to the base 16 by bridge-like members 58. When the frangible members 12a and 12b are rotated or turned as by a screwdriver or like device, the bridge-like members break.

Continued turning of the frangible members 12a and 12b traverses the stubs 52a and 52b through the curvilinear slots 54a and 54b, thereby moving respective actuating arms 15a, 15b of the energizing or deenergizing switches 14a, 14b, respectively. The frangible members 12a and 12b can then be removed from the detector 10 and discarded. The members 12a and 12b are not intended to be reused.

The detector 10 is packaged and shipped to users in a deenergized state. To energize the detector 10 for use, the frangible member 12a is turned, as by a screwdriver or like device, in a clockwise direction. The force of turning member 12a breaks the bridge-like connections 58. Continued turning of the member 12a moves stub 52a through slot 54a thereby moving switch handle 15a and placing switch 14a in a closed circuit or conducting state.

Moving switch 14a into the energizing or "on" position, closes a circuit which provides power to the detector 10. Once the detector is energized, member 12a is removed from the detector 10, and discarded. The detector 10 is then mounted to a surface, such as by the mounting flange 22.

The rear portion 56a extends rearward beyond the base and while in place, interferes with the base 16 mounting to the mounting flange 22. Thus, until the detector 10 has been turned on and the member 12a is removed from the base 16, the base 16 cannot be mounted to the surface mounted mounting flange 22.

This reduces the possibility that an unactivated detector will be installed.

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.

A screwdriver or like device is used to turn or rotate member 12b in a clockwise direction. This movement breaks the bridge-like connections 58 which connect member 12b to the base 16. Continued turning of the member 12b brings stub 52b into contact with and moves switch handle 15b of the deenergizing switch 14b into the closed, or deenergized position. The deenergizing position of switch 14b "drains" the battery unit 38 of any remaining power.

As previously provided, the detector 10 is sealed and the battery unit 38 is non-removably coupled to the control unit 32. Therefore, at the end of the detector's service life, it is disposed of and a new detector is installed in its place.

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 mem-

ber 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.

The various above noted embodiments provide for a single turn-on of the detector 10. Until the detector 10 has been turned on, it can not be mounted onto the bracket 22. The single use turn-on structures of the present invention can also be used with detectors which are directly mounted to a surface.

The detector 10 includes circuitry 20a as illustrated in FIG. 10. The circuitry 20a includes the sensor 36 coupled to the control unit 32. The control unit 32 could be a conventional integrated circuit of a type used with ambient condition detectors. The control unit 32 is in turn coupled to the audio output device or horn 34. The control unit 32 includes a test switch 32a which can be carried on the cover 18 for ready accessibility so that a user can easily test the detector 10.

For purposes of silencing nuisance alarms, a silence switch 32b coupled to the control unit 32 can also be carried on the cover 18. For remote activation, a light activated test or silencing circuit 140 can be provided coupled to the control unit 132. The circuit 140 can respond to remotely generated radiant or radio frequency energy 142 for purposes of either testing the unit 10 or silencing same.

The permanently installed battery 38 is coupled by a one-time turn on switch 14a to the control unit 32 as well as to any other circuitry as appropriate, and as would be understood by one skilled in the art. The end of life battery discharge switch 14b is coupled in parallel with the battery 38 for the purpose of completely discharging same when the detector has reached the end of its useful life, on the order of five to ten years.

A representative light-activated test or silencing circuit is disclosed in U.S. Patent No. 4,827,244 entitled "Test Initiation Apparatus With Continuous Pulse Input".

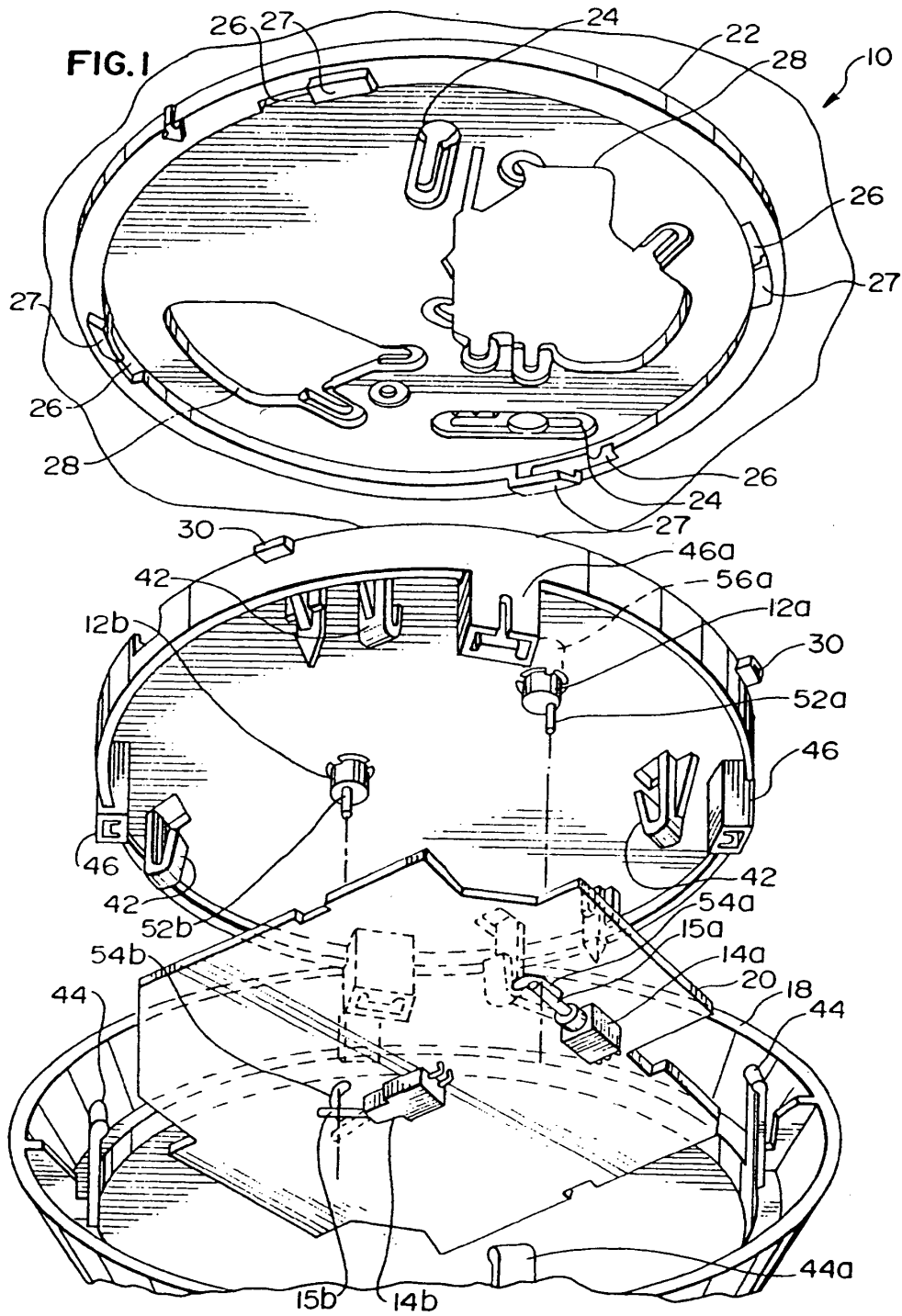
If the output voltage of the battery 38 is not sufficient, a voltage double-type circuit can be included between the battery 38 and the remainder of the circuitry of the detector 10.

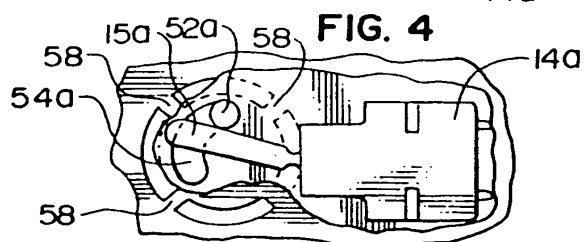
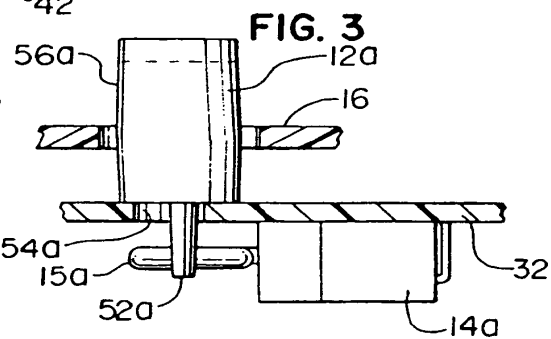
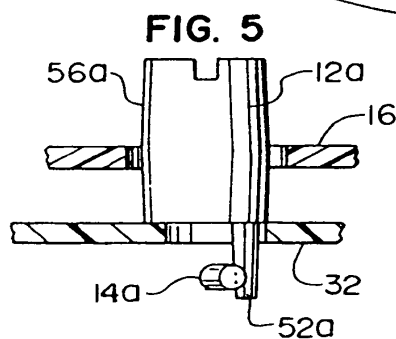
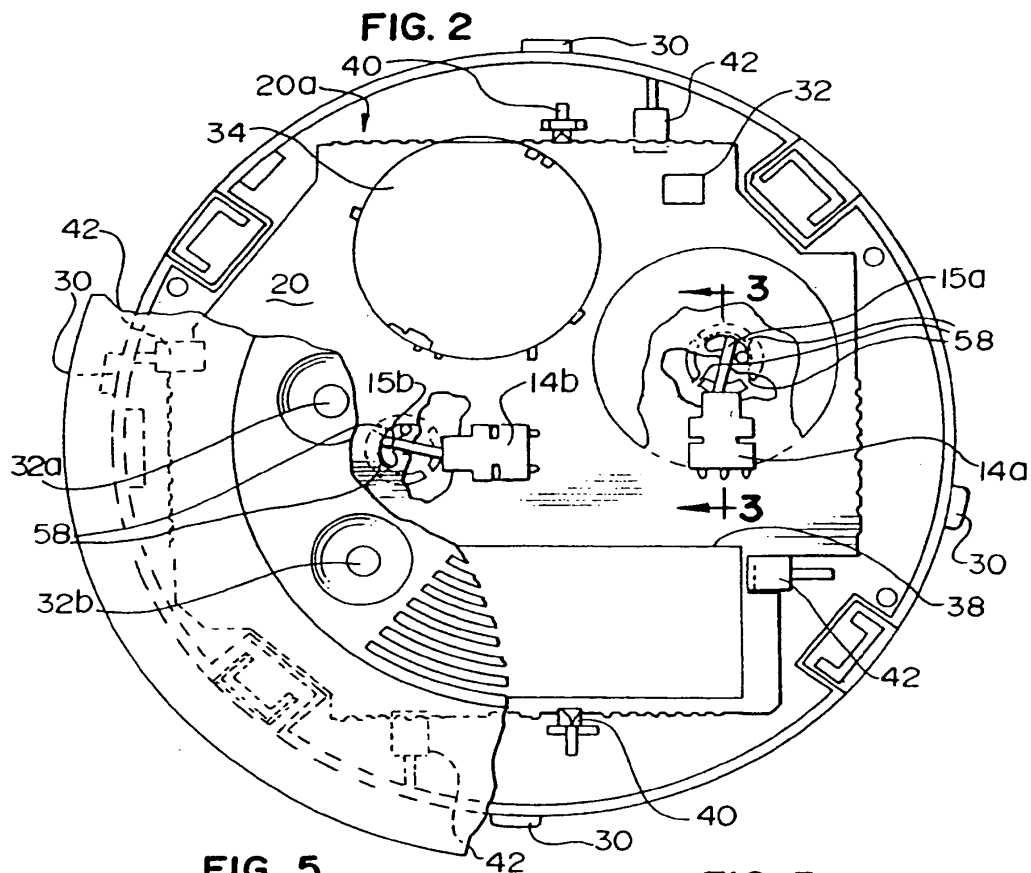
From the foregoing, it will be observed that numerous variations and modifications may be effected without departing from the spirit and scope of the novel concept of the present invention. It is to be understood that no limitation with respect to the specific embodiments illustrated herein is intended or should be inferred. It is, of

course, intended to cover by the appended claims all such modifications as fall within the scope of the claims.

Claims

1. An ambient condition detector (10) comprising:
 - a sensor (36);
 - a control unit (32) coupled to said sensor (36);
 - an energy source (38) non-removably coupled to said control unit (32);
 - a single use turn-on switch (14a, 112, 128)
 wherein said energy source (38) can be switched once from a non-conducting state into electrical conduction with said control unit (32).
2. A detector as in claim 1 wherein said sensor (36) includes at least one of a smoke detector and a gas sensor.
3. A detector as in claim 1 wherein said source includes at least one lithium-type or other technology-type battery.
4. A detector as in claim 1 wherein said switch (14a, 112, 128) includes one of a single use, break-away control member (12a, 12b) and a single use, movable control member (12a, 12b).
5. A detector as in claim 4 wherein said control member (12a, 12b) is movable once from a first state to a second state.
6. A detector as in claim 5 wherein said source is not energizing said control unit (32) when said control member (12a, 12b) is in said first state and wherein said control unit (32) is electrically coupled to said source (38) when said member (12a, 12b) has been moved to said second state.
7. A detector as in claim 1 wherein said switch (14a, 112, 128) includes an operable member which provides at least a visual indicator (50) of switch status.
8. A detector as in claim 1 wherein said control unit includes circuitry (32a, 32b), remotely activatable, for testing said control unit (32).
9. An ambient condition detector as in claim 1 which includes a single use energy discharge switch (14b) wherein said discharge switch (14b) can be switched once from an open circuit to a closed circuit condition for the purpose of discharging said energy source (38).
10. A detector as in claim 6 mountable on one of a surface and a mounting flange (22) and wherein said switch (14a) includes a portion extending therefrom which, until moved, interferes with mounting said detector.





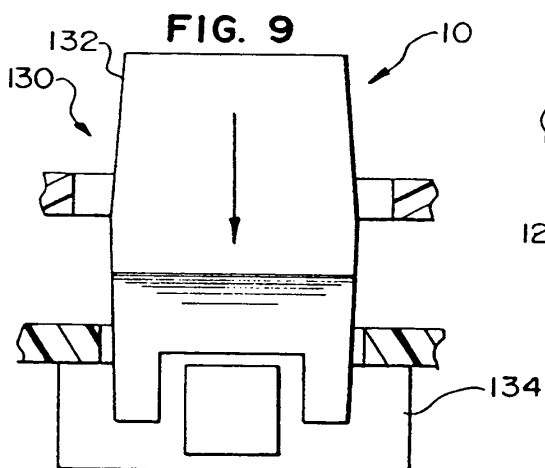
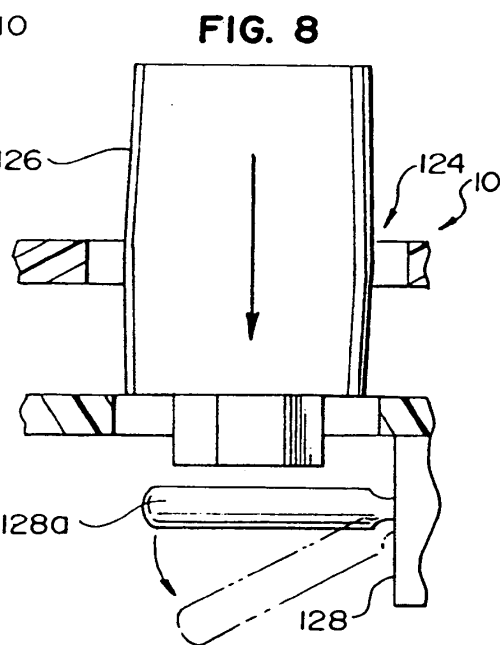
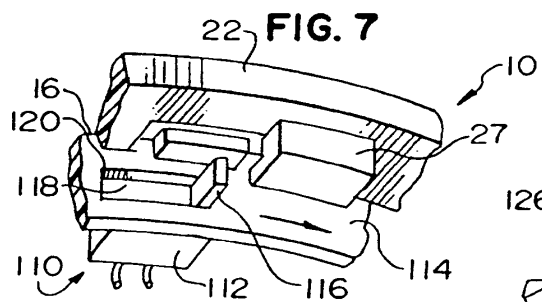
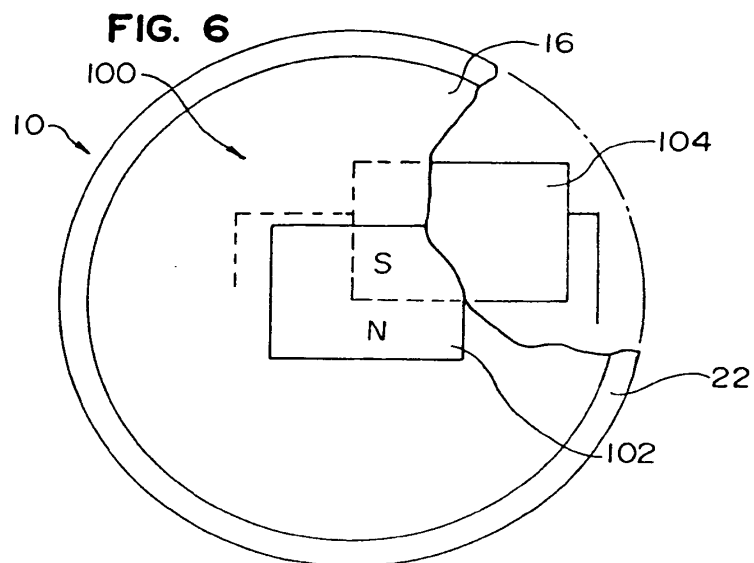
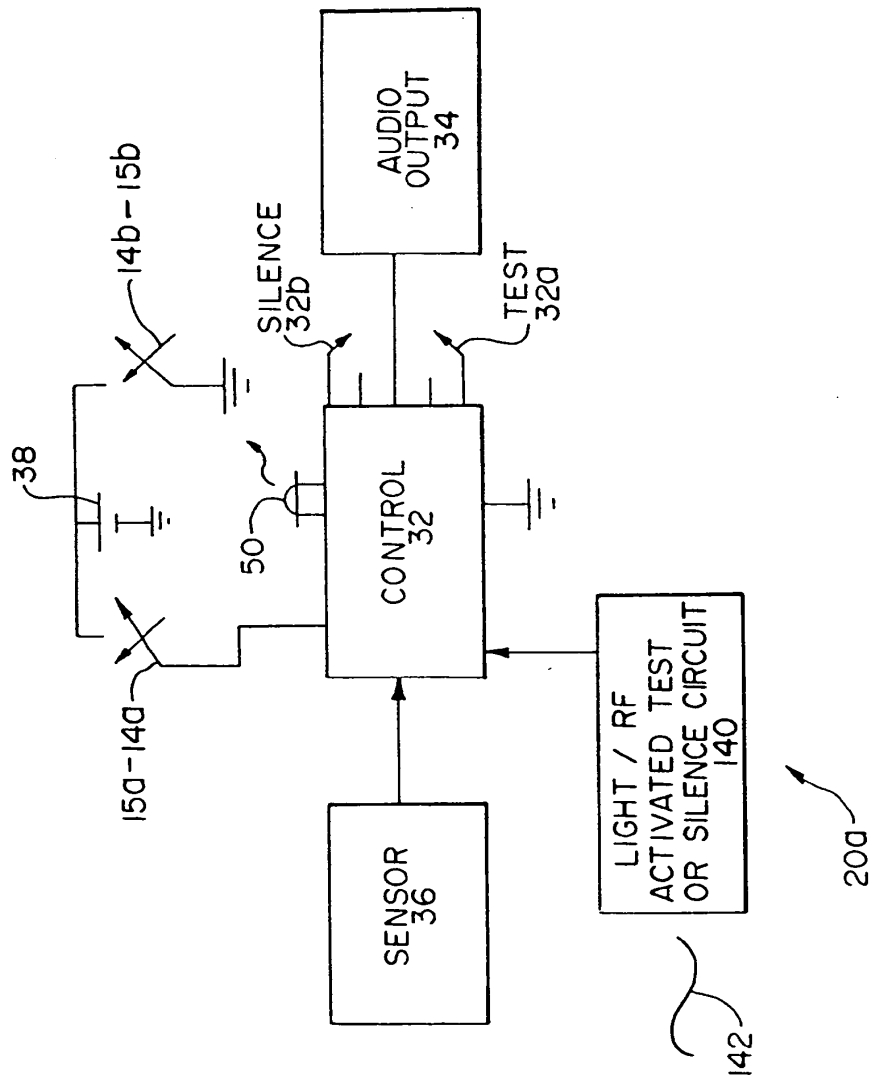


FIG. 10



THIS PAGE BLANK (USPTO)



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
12.03.1997 Bulletin 1997/11

(51) Int. Cl.⁶: **H02J 1/00**, G08B 17/10,
G08B 29/18

(43) Date of publication A2:
29.05.1996 Bulletin 1996/22

(21) Application number: 95118374.8

(22) Date of filing: 22.11.1995

(84) Designated Contracting States:
BE DE FR GB IT

(30) Priority: 23.11.1994 US 344744

(71) Applicant: **BRK BRANDS, INC.**
Aurora, IL 60504 (US)

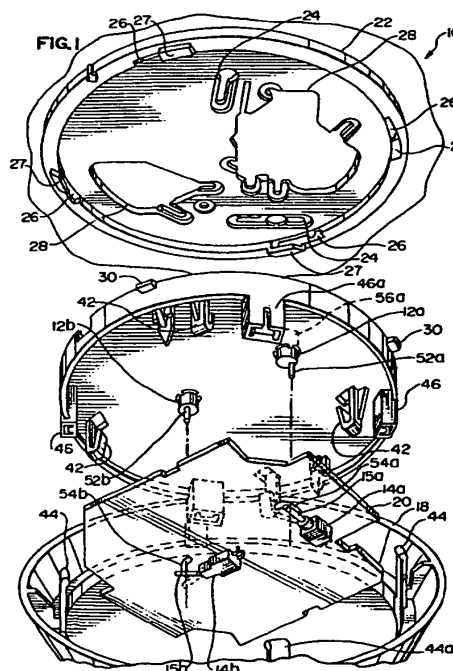
(72) Inventors:

- Watson, Kalvin
Chicago, Ill. 60621 (US)
- Kondziolka, Thomas Walter
Chicago, Ill. 60641 (US)

(74) Representative: **Strehl Schübel-Hopf Groening & Partner**
Maximilianstrasse 54
80538 München (DE)

(54) **Long life detector**

(57) A long life, surface mountable ambient condition detector (10) includes a non-replaceable battery (38) for the purpose of providing power to the detector. The detector includes an activation switch mechanism (14a) having a one-time, or single use turn-on characteristic. The activation switch mechanism (14a) switches the battery (38) once from a non-conducting state to a state of electrical conduction with a control unit (32) of the detector. The switch mechanism may include a frangible member (12a, 12b) for switching the battery (38) from the non-conducting state to the electrical conducting state. Until the detector (10) has been energized, the frangible member (12a, 12b) blocks mounting of the detector on the surface.



EP 0 714 158 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 95 11 8374

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y A	US-A-5 057 824 (STOKES) * column 3, line 25 - column 8, line 47; figures 1-13 *	1 4-6,10	H02J1/00 G08B17/10 G08B29/18
Y A	US-A-4 027 302 (HEALEY ET AL) * column 3, line 40 - column 7, line 56; figures 1-7 *	1 2	
A	US-A-4 576 172 (BENTALL) * column 2, line 66 - column 4, line 49; figure 1 *	1,5-7	
A	US-A-5 280 273 (GOLDSTEIN) * column 2, line 63 - column 4, line 33; figures 1-6 *	1-3	
D,A	US-A-4 827 244 (BELLAVIA ET AL) * column 4, line 65 - column 6, line 55; figure 2 *	1,8	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G08B
Place of search THE HAGUE		Date of completion of the search 10 January 1997	Examiner Calarasanu, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 150 (01.91) (P/C/D)

Merchant & Gould

An Intellectual Property Law Firm

RECEIVED
CENTRAL FAX CENTER

JAN 11 2005

3200 IDS Center
80 South Eighth Street
Minneapolis, Minnesota
55402-2215 USA
TEL 612 332 5300
FAX 612.332.9081
www.merchant-
gould.com

A Professional Corporation

Fax Transmission | January 11, 2005

TO: Commissioner for Patents
Mail Stop Amendment
P.O. Box 1450
Alexandria, VA 22313-1450

FROM: James A. Larson

OUR REF: 13835.142USU1
TELEPHONE: 612.336.4708

Total pages, including cover letter: 4

PTO FAX NUMBER 1-(703) 872-9306

If you do NOT receive all of the pages, please telephone us at 612.332.5300, or fax us at 612.332.9081.

Title of Document Transmitted: Information Disclosure Statement and Form
1449Applicant: DELUCA ET AL.
Serial No.: 10/916,922
Filed: August 12, 2004
Group Art Unit: 2632
Our Ref. No.: 13835.142USU1
Confirmation No. 2187

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers, if appropriate.

By: James A. Larson
Name: James A. Larson
Reg. No.: 40,443

I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office on the date shown below.

Celyn OakmanCelyn Oakman
SignatureJanuary 11, 2005
Date

GEN033.DOT

PAGE 1/4 * RCVD AT 1/11/2005 1:54:52 PM [Eastern Standard Time] * SVR:USPTO-EFAX-1/0 * DNIS:8729306 * CSID: * DURATION (mm:ss):01:24

JAN 11 2005

S/N 10/916,922

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	DELUCA ET AL.	Examiner:	Unknown
Serial No.:	10/916,922	Group Art Unit:	2632
Filed:	AUGUST 12, 2004	Docket No.:	13835.142USU1
Title:	LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY		

CERTIFICATE UNDER 37 C.F.R. 1.8(b):

I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office on January 11, 2005.

By:


Name: Celyn OakmanINFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted before the mailing date of a first Office Action on-the-merits. Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

A copy of any foreign patent document or "Other Document" listed on the Form 1449 is enclosed, in accordance with 37 C.F.R. § 1.98(a)(2). Because this application was filed after June 30, 2003, copies of the U.S. Patents and U.S. patent publications listed on the enclosed Form 1449 are not provided.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art." Moreover, Applicants do not represent that a reference has been thoroughly reviewed or that any relevance of any portion of a reference is intended.

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

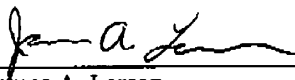


Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Dated: January 11, 2005

By


James A. Larson
Reg. No. 40,443

JAL/clo

Date Mailed: January 11, 2005

Sheet 1 of 1

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 13835.142USU1	Application Number: 10/916,922
	Applicant: DELUCA ET AL.	
	Filing Date: August 12, 2004	Group Art Unit: 2632

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2,985,741	05/23/1961	Ellmann			
	4,092,641	05/30/1978	Bellinghausen et al.			
	4,313,110	01/26/1982	Subulak et al.			
	4,389,635	06/21/1983	Gallagher			
	4,688,021	08/18/1987	Buck et al.			
	4,829,283	05/09/1989	Spang et al.			
	4,870,395	09/26/1989	Belano			
	4,901,056	02/13/1990	Bellavia et al.			
	5,028,911	07/02/1991	Wanat et al.			
	5,055,830	10/08/1991	Cousins et al.			
	5,103,216	04/07/1992	Sisselman			
	5,272,292	12/21/1993	Aubert			
	5,359,168	10/25/1994	Cunningham			
	5,444,434	08/22/1995	Serby			
	5,578,996	11/26/1996	Watson et al.			
	5,612,678	03/18/1997	Shibata			
	5,682,131	10/28/1997	Gow			
	5,793,295	08/11/1998	Goldstein			
	5,939,994	08/17/1999	Meier et al.			
	6,160,487	12/12/2000	DeLuca			
	6,297,745	10/02/2001	Meier			
	2002/0097162	07/25/2002	Chambers			
	6,433,700	08/13/2002	Malewski et al.			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO

EXAMINER	DATE CONSIDERED
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

*Substitute Disclosure Statement Form (PTO-1449)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PAGE 4/4 * RCVD AT 1/11/2005 1:54:52 PM [Eastern Standard Time] * SVR:USPTO-EFXXRF-1/0 * DNIS:8729306 * CSID: * DURATION (mm:ss):01:24



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187
23552	7590	04/26/2005	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			ART UNIT	PAPER NUMBER
			2632	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. Box 1450
ALEXANDRIA, VA 22313-1450
www.uspto.gov

10/9/04
Notice of Non-Compliant Amendment (37 CFR 1.121)

The amendment document filed on 12/20/04 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121. In order for the amendment document to be compliant, correction of the following item(s) is required. **Only the corrected section of the non-compliant amendment document must be resubmitted (in its entirety), e.g., the entire "Amendments to the claims" section of applicant's amendment document must be re-submitted.** 37 CFR 1.121(h).

THE FOLLOWING CHECKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
- ☐ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____
- ☐ 2. Abstract:
- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____
- ☒ 3. Amendments to the drawings: Drawings are not labeled
- ☐ 4. Amendments to the claims:
- ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New) and (Not entered).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP Sec. 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/procnotice/office1ver.pdf>.

If the non-compliant amendment is a **PRELIMINARY AMENDMENT**, applicant is given **ONE MONTH** from the mail date of this letter to supply the corrected section which complies with 37 CFR 1.121. Failure to comply with 37 CFR 1.121 will result in non-entry of the preliminary amendment and examination on the merits will commence without consideration of the proposed changes in the preliminary amendment(s). This notice is not an action under 35 U.S.C. 132, and **this ONE MONTH time limit is not extendable**.

If the non-compliant amendment is a reply to a **NON-FINAL OFFICE ACTION (including a submission for an RCE)**, and since the amendment appears to be a *bona fide* attempt to be a reply (37 CFR 1.135(c)), applicant is given a **TIME PERIOD** of **ONE MONTH** from the mailing of this notice within which to re-submit the corrected section which complies with 37 CFR 1.121 in order to avoid abandonment. **EXTENSIONS OF THIS TIME PERIOD ARE AVAILABLE UNDER 37 CFR 1.136(a).**

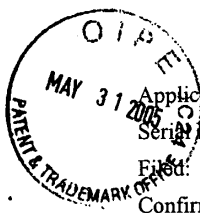
If the amendment is a reply to a **FINAL REJECTION**, this form may be an attachment to an Advisory Action. **The period for response to a final rejection continues to run from the date set in the final rejection**, and is not affected by the non-compliant status of the amendment.

Johnnie M. McIn
Legal Instruments Examiner (LIE)

(571) 272-2586
Telephone No.

Legal Int.

IFW

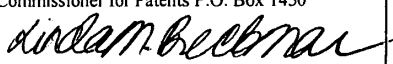


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DELUCA ET AL.
Serial No.: 10/916,922
Filed: AUGUST 12, 2004
Confirmation No.: 2187
Examiner: UNKNOWN
Group Art Unit: 2632
Docket: 13835.142USU1
Notice of Allow. Date: N/A
Due Date: MAY 26, 2005
Title: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 on May 26, 2005.

By: 

Name: Linda M. Beckman

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

23552

PATENT TRADEMARK OFFICE

Sir:

We are transmitting herewith the attached:

- ☒ Transmittal Sheet in duplicate containing Certificate of Mailing
- ☒ Amendment
- ☒ Return postcard

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
612.332.5300

By: 
Name: Timothy R. Conrad
Reg. No.: 30,164
TRC:lmb

(PTO TRANSMITTAL - GENERAL)



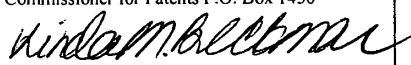
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	DELUCA ET AL.	Examiner:	UNKNOWN
Serial No.:	10/916,922	Group Art Unit:	2632
Filed:	AUGUST 12, 2004	Docket No.:	13835.142USU1
Title:	LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY		

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 on May 26, 2005.

By: 

Name: Linda M. Beckman

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Office Action mailed April 26, 2005, please amend the above-identified application as follows:

Amendments to the Drawings begin on page 2 of this paper and include attached replacement sheets in the Appendix.

Remarks begin on page 3 of this paper.

An **Appendix** including amended drawing figures is attached following page 3 of this paper.

Amendments to the Drawings:

The sheet of drawings attached in the Appendix includes changes to Figs. 1-10. These sheets replace the original sheets. The drawings have been changed as follows: drawings are labeled.

REMARKS

Applicants received a Notice to File Missing Parts of NonProvisional Application dated October 18, 2004. Applicants submitted formal drawings on December 17, 2004, to which we received an April 26, 2005 Office Action advising the drawing submission was not compliant and requesting formal drawings to be labeled.

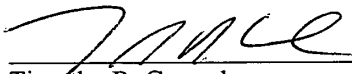
In view of the above amendments and remarks, Applicant respectfully requests a notice of approval of the new drawing submission.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: May 26, 2005





Timothy R. Conrad
Reg. No. 30,164
TRC:lmb



FIG. 1

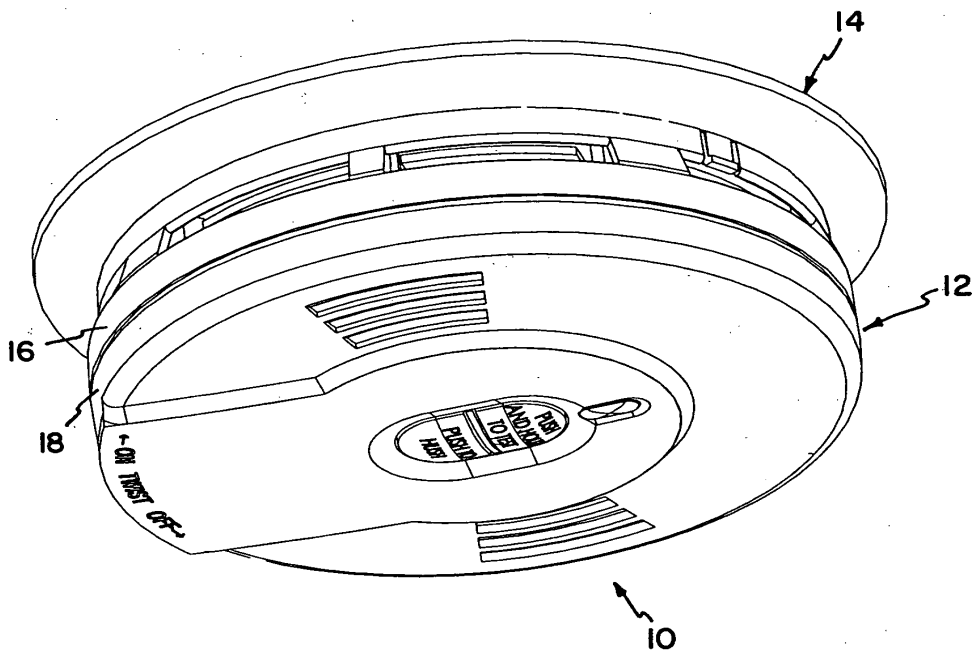


FIG. 2

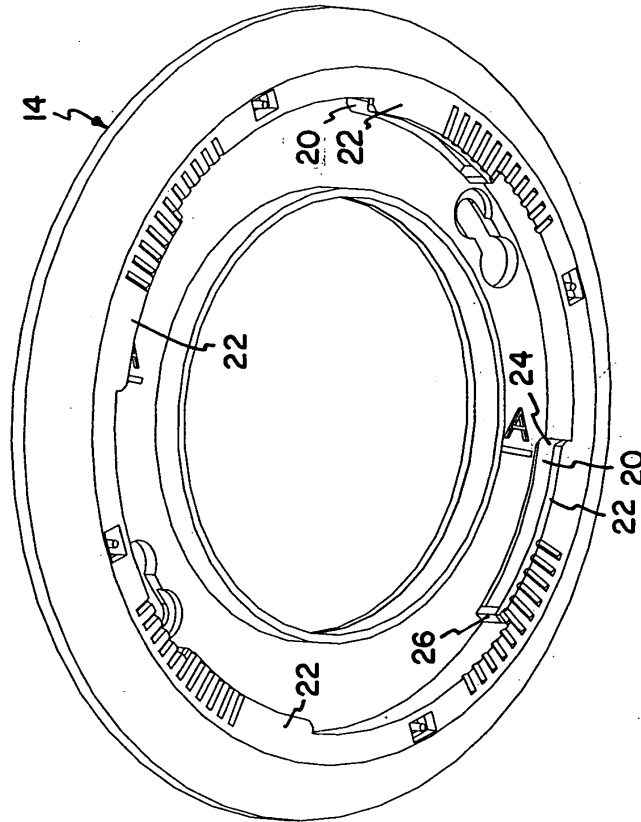
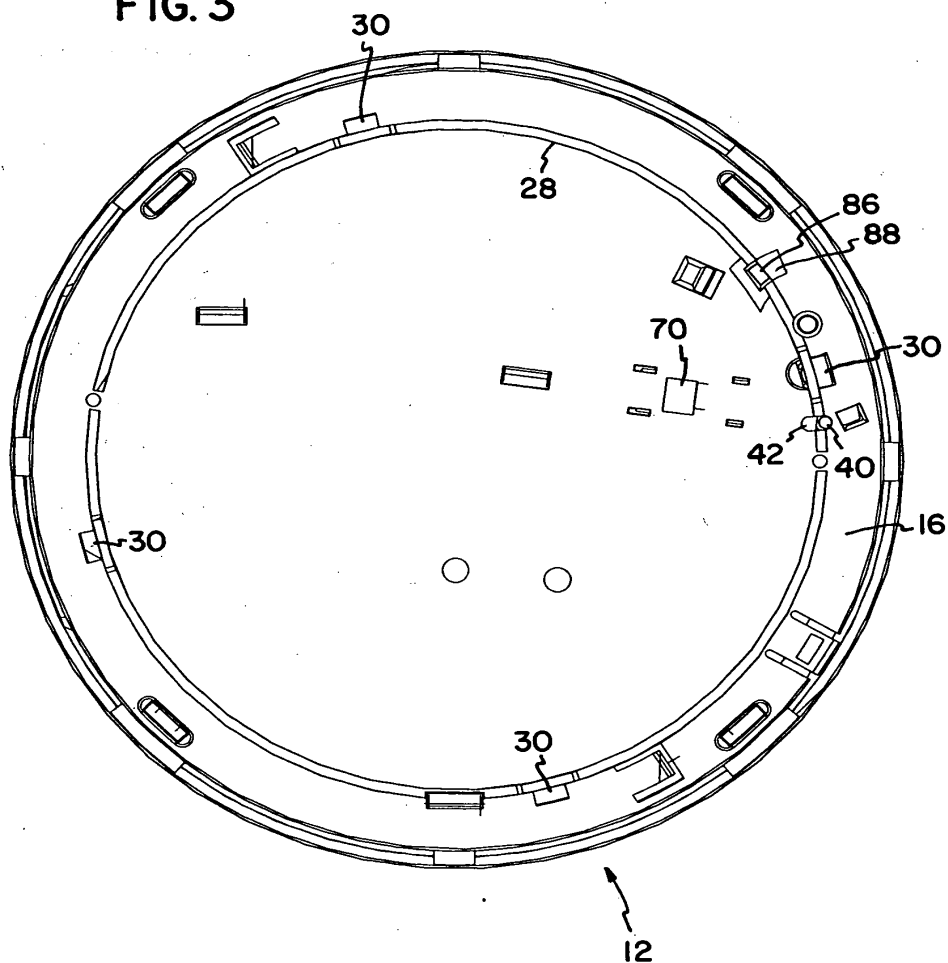


FIG. 3



This Page Blank (uspto)

FIG. 4

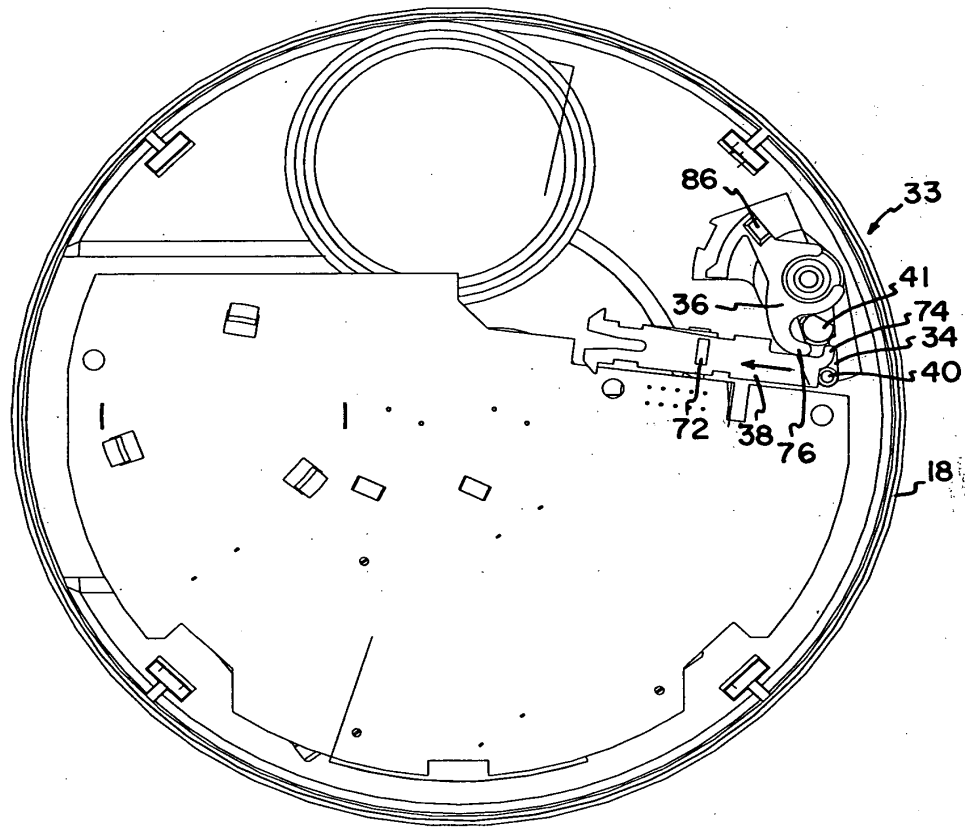


FIG. 5

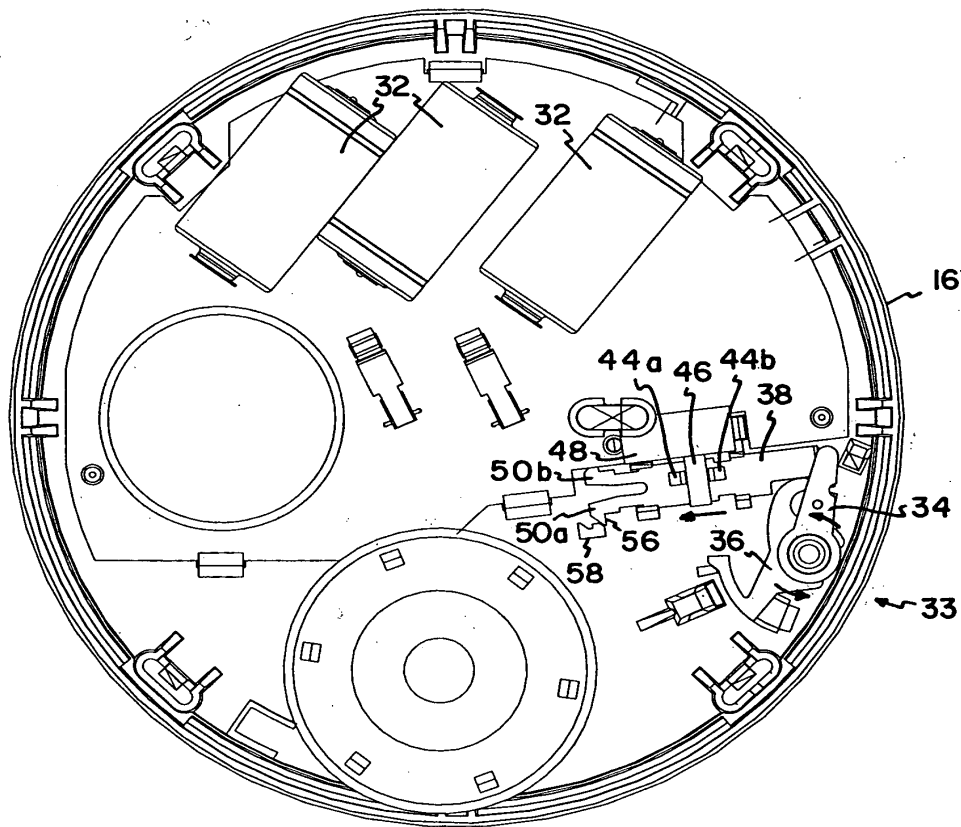


FIG. 6A

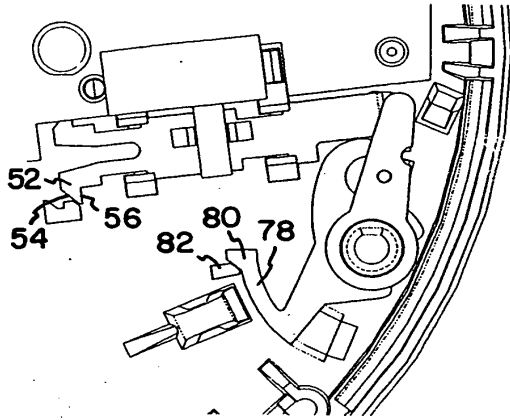


FIG. 6B

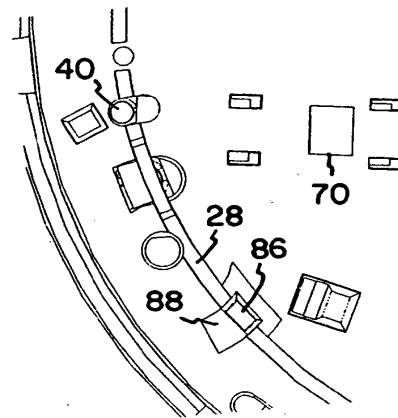


FIG. 7A

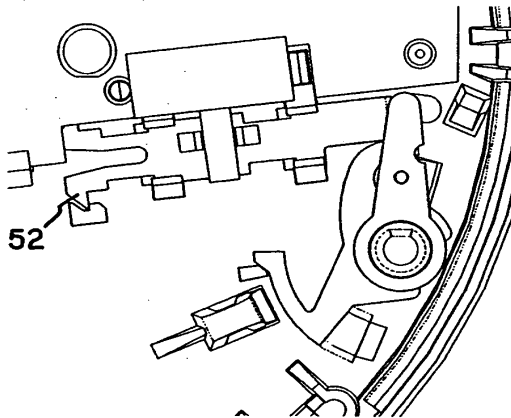


FIG. 7B

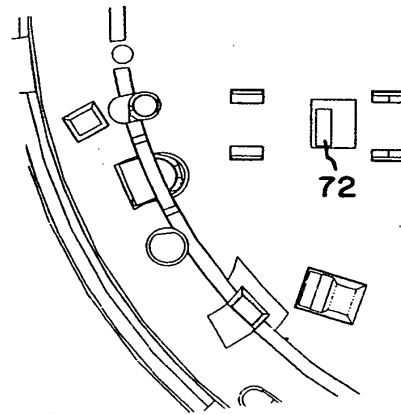


FIG. 8A

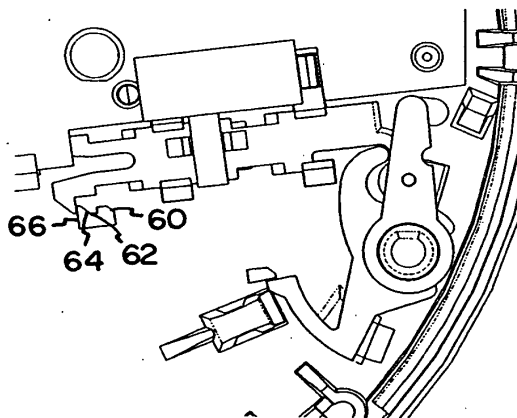


FIG. 8B

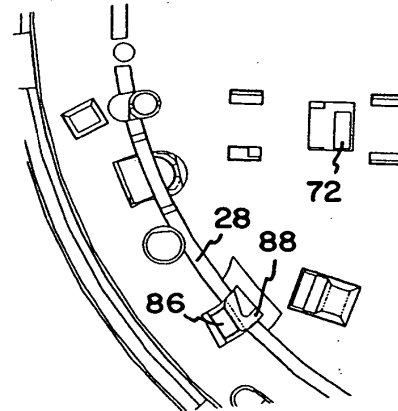


FIG. 9

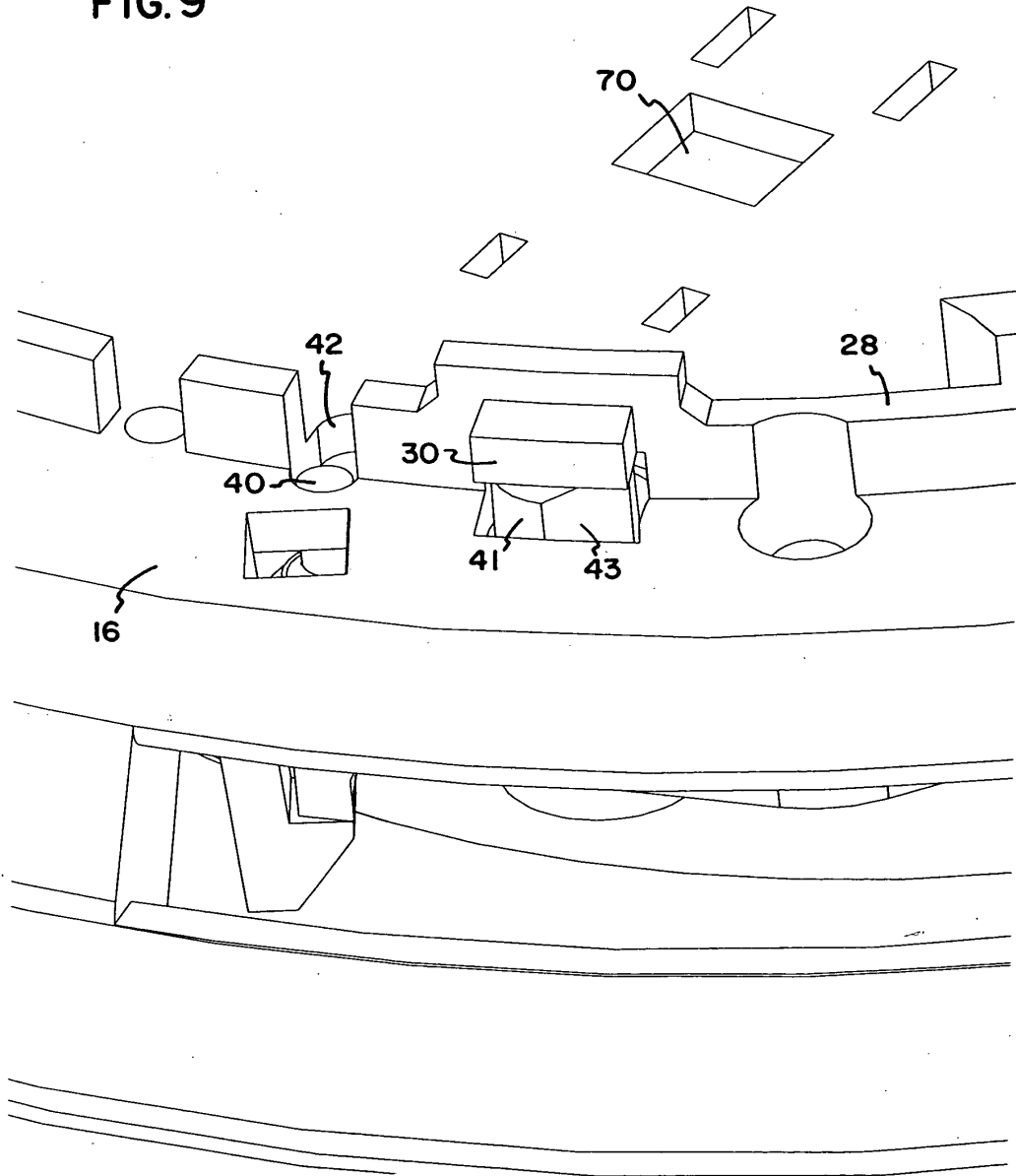
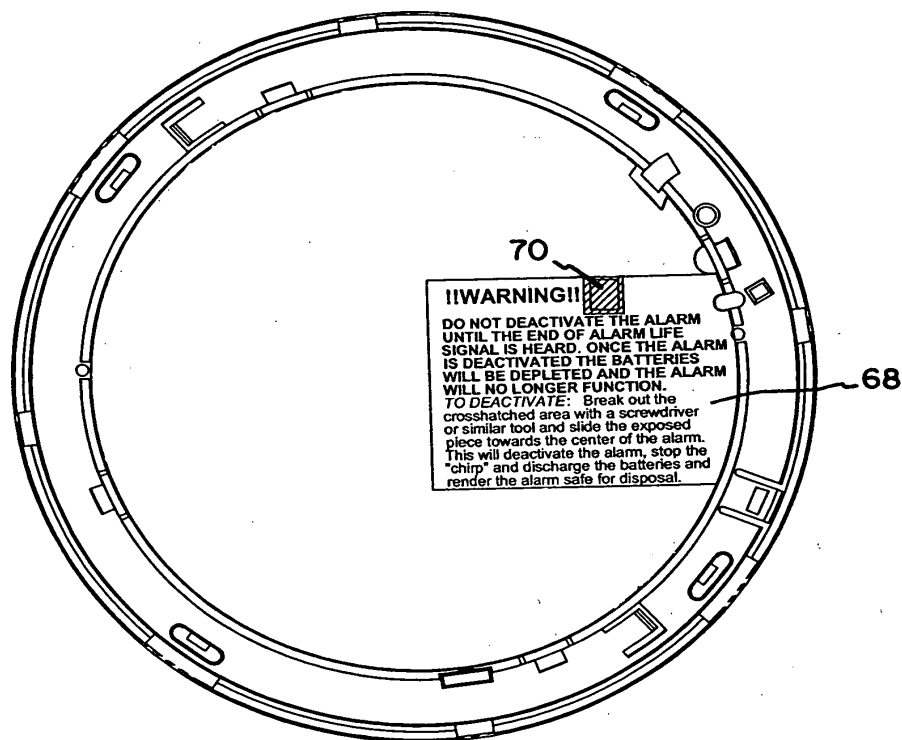


FIG. 10



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	23	((("2985741") or ("4092641") or ("4313110") or ("4389635") or ("4688021") or ("4829283") or ("4870395") or ("4901056") or ("5028911") or ("5055830") or ("5103216") or ("5272792") or ("5359168") or ("5444434") or ("5578996") or ("5612678") or ("5682131") or ("5793295") or ("5939994") or ("6160487") or ("6297745") or ("20020097162") or ("6433700"))).PN.	US-PGPUB; USPAT	OR	OFF	2006/03/27 11:44
S2	1	("0714158").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 11:50
S3	5	((("6522248") or ("6753786") or ("6791453") or ("6873254") or ("6160487"))).PN.	USPAT	OR	OFF	2006/03/27 14:16
S4	1	("5272292").PN.	USPAT	OR	OFF	2006/03/27 14:16
S5	1383	((340/693.5) or (340/693.7) or (340/693.9) or (340/693.12) or (340/628)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:27
S6	1156	((361/679) or (361/601)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:27
S7	198	(363/144).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:27
S8	2728	S5 S6 S7	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:27
S9	11	("4313110" "4389635" "4829283" "5444434" "5578996" "5682131" "5793295" "5939994" "6160487" "6297745").PN. OR ("6433700").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S10	7	("4934961" "5154644" "5486816" "5596314" "5629831").PN. OR ("5939994").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28

3/31/06 1:51:15 PM

Page 1

C:\Documents and Settings\thunnings\My Documents\EAST\Workspaces\10916922 - Life Safety Alarm With A Sealed Battery Power S

EAST Search History

S11	54	("2549974" "2553179" "3027552" "3882477" "4043934" "4090177" "4144032" "4152551" "4181439" "4228428" "4316184" "4319234" "4401978" "4539556" "4688021" "4769550" "4839014" "4845474" "4870395" "4959640" "5063164" "5103216" "5172042" "5208116" "5280273" "5290639" "5302350" "5327119" "5346671" "5367575" "5394094" "5396221" "5405583" "5445900" "5521022" "5592147" "5596314" "Re30323").PN. OR ("5793295").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S12	9	("1220873" "3503643" "4315594" "4410102" "4724430").PN. OR ("5612678"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S13	10	("2985741" "4688021" "4901056" "5359168" "5444434").PN. OR ("5578996"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S14	3	("4062290" "4527025").PN. OR ("5272292").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S15	14	("4092641" "4315594" "4369435" "4724430").PN. OR ("4829283").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/27 14:28
S16	91	S9 S10 S11 S12 S13 S14 S15	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:32
S17	23	((("2985741") or ("4092641") or ("4313110") or ("4389635") or ("4688021") or ("4829283") or ("4870395") or ("4901056") or ("5028911") or ("5055830") or ("5103216") or ("5272792") or ("5359168") or ("5444434") or ("5578996") or ("5612678") or ("5682131") or ("5793295") or ("5939994") or ("6160487") or ("6297745") or ("20020097162") or ("6433700"))).PN.	US-PGPUB; USPAT	OR	OFF	2006/03/27 14:32

EAST Search History

S18	73	S16 not S17	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:41
S19	97	S16 S17 S4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:42
S20	2782	S19 S8	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:42
S21	3	S19 and (attach\$4 connect\$3) near3 (activat\$3 (turn\$3 adj on))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:54
S22	0	S19 and manual near3 deactivat\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:55
S23	93	S20 and (attach\$4 connect\$3) near3 (activat\$3 (turn\$3 adj on))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 14:54
S24	7	S20 and manual near3 deactivat\$3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 15:07
S25	404	S20 and (smoke fire (carbon adj monoxide) ambient) near3 sensor	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 15:08
S26	885	S20 and (smoke fire (carbon adj monoxide) ambient) near3 (sens\$3 detect\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 15:08
S27	48	S26 and (auto automatic\$4) near3 (activat\$3 (turn adj on) start)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/27 15:09
S28	1	("5272292").PN.	USPAT	OR	OFF	2006/03/28 10:53
S29	1384	((340/693.5) or (340/693.7) or (340/693.9) or (340/693.12) or (340/628)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53

EAST Search History

S30	1158	((361/679) or (361/601)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53
S31	199	(363/144).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53
S32	2732	S29 S30 S31	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53
S33	11	("4313110" "4389635" "4829283" "5444434" "5578996" "5682131" "5793295" "5939994" "6160487" "6297745").PN. OR ("6433700").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S34	7	("4934961" "5154644" "5486816" "5596314" "5629831").PN. OR ("5939994"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S35	54	("2549974" "2553179" "3027552" "3882477" "4043934" "4090177" "4144032" "4152551" "4181439" "4228428" "4316184" "4319234" "4401978" "4539556" "4688021" "4769550" "4839014" "4845474" "4870395" "4959640" "5063164" "5103216" "5172042" "5208116" "5280273" "5290639" "5302350" "5327119" "5346671" "5367575" "5394094" "5396221" "5405583" "5445900" "5521022" "5592147" "5596314" "Re30323").PN. OR ("5793295").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S36	9	("1220873" "3503643" "4315594" "4410102" "4724430").PN. OR ("5612678"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S37	10	("2985741" "4688021" "4901056" "5359168" "5444434").PN. OR ("5578996"). URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53

3/31/06 1:51:15 PM

Page 4

C:\Documents and Settings\thunnings\My Documents\EAST\Workspaces\10916922 - Life Safety Alarm With A Sealed Battery Power

EAST Search History

S38	3	("4062290" "4527025").PN. OR ("5272292").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S39	14	("4092641" "4315594" "4369435" "4724430").PN. OR ("4829283").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/03/28 10:53
S40	91	S33 S34 S35 S36 S37 S38 S39	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53
S41	23	((("2985741") or ("4092641") or ("4313110") or ("4389635") or ("4688021") or ("4829283") or ("4870395") or ("4901056") or ("5028911") or ("5055830") or ("5103216") or ("5272792") or ("5359168") or ("5444434") or ("5578996") or ("5612678") or ("5682131") or ("5793295") or ("5939994") or ("6160487") or ("6297745") or ("20020097162") or ("6433700"))).PN.	US-PGPUB; USPAT	OR	OFF	2006/03/28 10:53
S42	97	S40 S41 S28	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 10:53
S43	2786	S42 S32	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 11:47
S44	1	S43 and (prevent\$3 stop\$3 cant cannot) near3 (reattach\$4 refix)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 11:49
S45	0	S43 and (prevent\$3 stop\$3 cant cannot) near3 (attach\$4 affix\$3) near3 (after once) near3 (remov\$3 taken detach\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 11:50
S46	42	S43 and (prevent\$3 stop\$3 cant cannot) near3 (attach\$4 affix\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 11:59
S47	1	S43 and (label sticker tape) near3 (cover mask hide) near3 (off deactivat\$3 switch)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 12:05

EAST Search History

S48	0	S43 and (label sticker tape) near3 (cover mask hide) near3 (screw bolt)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 12:13
S49	19	(label sticker tape) near3 (cover mask hide) near3 (screw)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/03/28 12:14



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187
23552	7590	04/05/2006	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			HUNNINGS, TRAVIS R	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/916,922	DELUCA ET AL.	
	Examiner	Art Unit	
	Travis R. Hunnings	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 12 August 2004.

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) 18-21 is/are allowed.

6) ☒ Claim(s) 1-6, 8-11, 13 and 22-29 is/are rejected.

7) ☒ Claim(s) 7, 12 and 14-17 is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 12 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 10, 11, 13 and 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Watson et al. (Watson; US Patent 5,578,996).

Regarding claim 1, Watson discloses *Long Life Detector* that has the following claimed limitations:

The claimed first portion is met by the flange/bracket (column 2, lines 44-48);

The claimed second portion configured for attachment to the first portion is met by the detector being attached to the flange/bracket (column 2, lines 44-48);

The claimed second portion including electronics to operate the device and at least one battery for powering the electronics is met by the detector including a circuit board and a battery (column 2, lines 44-48 and column 3, lines 17-25);

The claimed 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 is met by the activating switch located within the base that is activated by mounting the detector on the flange using a rotating motion (column 5, lines 1-18).

Regarding claim 2, the claimed electronic device being a life safety alarm is met by the detector sensing gas or smoke or fire (column 1, lines 39-42);

The claimed first portion comprising a mounting bracket of the life safety alarm is met by the flange/bracket for mounting the detector on (column 2, lines 44-48);

The claimed second portion comprising an alarm portion of the life safety alarm is met by the detector containing the circuitry and battery (column 2, lines 44-48, column 3, lines 17-25 and column 5, lines 40-48).

Regarding claim 3, the claimed alarm portion including a system to detect a life threatening condition is met by the sensor detecting gas, smoke or fire (column 1, lines 39-42).

Regarding claim 4, the claimed alarm portion including a smoke detection system is met by the sensor detecting gas, smoke or fire (column 1, lines 39-42).

Regarding claim 5, the claimed cooperating features comprise an activate/deactivate system and wherein the activate/deactivate system is configured to automatically activate the second portion upon initial attachment of the second portion to the first portion is met by the activating switch that is activated when the detector is attached to the flange/bracket (column 5, lines 1-18) and the deactivating switch located on the detector (column 4, lines 40-51).

Regarding claim 6, the claimed activate/deactivate system is configured to enable the user to manually deactivate the second portion is met by the deactivating switch being able to be deactivated with a screwdriver by the user (column 4, lines 40-51).

Regarding claim 10, the claimed battery being sealed inside the second portion whereby the battery is not user replaceable is met by the battery not being replaceable by the user (column 3, lines 17-25).

Regarding claim 11, the claimed means for manually deactivating the second portion after the second portion has been activated wherein the means for manually deactivating is accessible when the first and second portions are disconnected is met by the activating switch being activated when the detector is attached to the flange/bracket (column 5, lines 1-18) and the detector being removed before the user manually deactivates the deactivating switch with a screwdriver (column 40-51).

Regarding claim 13, the claimed first portion is met by the flange/bracket (column 2, lines 44-48);

The claimed second portion configured for attachment to the first portion is met by the detector being attached to the flange/bracket (column 2, lines 44-48);

The claimed second portion including electronics to operate the device and at least one battery for powering the electronics is met by the detector including a circuit board and a battery (column 2, lines 44-48 and column 3, lines 17-25);

The claimed activation mechanism to activate the second portion is met by the activating switch (column 5, lines 1-18);

The claimed manual deactivation mechanism to permit manual deactivation of the second portion after the second portion has been activated and preventing reactivation once the second portion is deactivated is met by the activating switch being activated when the detector is attached to the flange/bracket (column 5, lines 1-18) and the detector being removed before the user manually deactivates the deactivating switch with a screwdriver wherein afterwards the battery is drained of all its power which inherently prevents it from activating again because of lack of power (column 40-51).

Regarding claim 26, the claimed providing an electronic device that includes a first portion and a second portion that is attachable to the first portion, the second portion including device electronics and at least one battery for powering the electronics, the battery being sealed inside the second portion so that it cannot be replaced by a user and the second portion having a predetermined life is met by the flange/bracket and the detector attaching to the flange/bracket wherein the detector includes a circuit board and a battery that cannot be replaced by the user (column 2, lines 44-48, column 3, lines 17-25 and column 5, lines 40-48);

The claimed attaching the second portion to the first portion is met by the detector being attached to the flange/bracket (column 5, lines 1-18);

The claimed at the end of the predetermined life detaching the second portion from the first portion and disposing of the second portion and attaching a new second portion to the first portion is met by the detector being replaced with a new detector (column 4, lines 40-55).

Regarding claim 27, the claimed automatically activating the new second portion when it is attached to the first portion is met by the activating switch activating the detector when the detector is attached to the flange/bracket (column 5, lines 1-18).

Regarding claim 28, the claimed providing an electronic device that includes a first portion and a second portion that is attachable to the first portion, the second portion including device electronics and at least one battery for powering the electronics, and an activate/deactivate system is met by the flange/bracket and the detector attaching to the flange/bracket wherein the detector includes a circuit board and a battery that cannot be replaced by the user and both activating and deactivating switches (column 2, lines 44-48, column 3, lines 17-25, column 4, lines 40-51 and column 5, lines 40-48);

The claimed automatically activating the second portion by attaching the second portion to the first portion is met by the activating switch activating the detector when the detector is attached to the flange/bracket (column 5, lines 1-18).

Regarding claim 29, the claimed providing an electronic device that includes a first portion and a second portion that is attachable to the first portion the second portion including device electronics and at least one battery for powering the electronics the battery being sealed inside the second portion so that it cannot be replaced by a user and the second portion having a predetermined life is met by the flange/bracket and the

detector attaching to the flange/bracket wherein the detector includes a circuit board and a battery that cannot be replaced by the user (column 2, lines 44-48, column 3, lines 17-25 and column 5, lines 40-48);

The claimed activating the second portion and attaching the second portion to the first portion is met by the activating switch being activated when the detector is attached to the flange bracket (column 5, lines 1-18);

The claimed detaching the second portion from the first portion and deactivating the second portion and preventing reactivation of the second portion once the second portion is deactivated is met by the detector being detached from the flange/bracket and deactivated by using a screwdriver to activate the deactivating switch and whereby the battery power is drained completely thereby preventing reactivation of the device because there is no more power available (column 4, lines 40-55).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson.

Regarding claims 8 and 9, 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 position.

6. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson in view of Egendorf (US Patent 4,553,252).

Regarding claim 22, Watson discloses the following claimed limitations:

The claimed first portion is met by the flange/bracket (column 2, lines 44-48);

The claimed second portion configured for attachment to the first portion is met by the detector being attached to the flange/bracket (column 2, lines 44-48);

The claimed second portion including electronics to operate the device and at least one battery for powering the electronics is met by the detector including a circuit board and a battery (column 2, lines 44-48 and column 3, lines 17-25);

The claimed deactivation mechanism associated with the second portion configured to permit deactivation of the second portion once the second portion has been activated is met by the detector being activated by the activating switch when the

detector is attached to the flange/bracket (column 5, lines 1-18) and detaching the detector and deactivating the detector with the deactivating switch using a screwdriver (column 4, lines 40-51).

However, Watson doesn't specifically disclose the claimed label covering a portion of the deactivation mechanism wherein at least a portion of the label must be broken in order to access the deactivation mechanism. Egendorf discloses *Counting Computer Software Cartridge* that teaches covering a screw head with a label (column 2, lines 34-39). Adding a label to Watson to cover the deactivating screw would prevent accidental deactivation of the device and would also show when the device was deactivated or attempted to be deactivated by the label being torn off or broken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device disclosed by Watson according to the teachings of Egendorf to include a label covering the screw head of the deactivation mechanism.

Regarding claim 23, the claim is interpreted and rejected as claim 2 stated above.

Regarding claim 24, the claim is interpreted and rejected as claim 3 stated above.

Regarding claim 25, the claim is interpreted and rejected as claim 4 stated above.

Allowable Subject Matter

7. Claims 18-21 are allowed.
8. Claims 7, 12 and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: regarding independent claim 18, the prior art does not disclose nor suggest an electronic device with a first portion and a second portion that includes 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 including a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated.

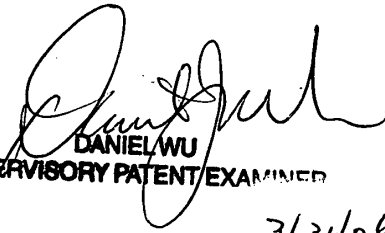
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis R. Hunnings whose telephone number is (571) 272-3118. The examiner can normally be reached on 8:00 am - 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRH


DANIEL WU
SUPERVISORY PATENT EXAMINER
3/31/06

Date Mailed: January 11, 2005

Sheet 1 of 1

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 13835.142USU1	Application Number: 10/916,922
	Applicant: DELUCA ET AL.	
	Filing Date: August 12, 2004	Group Art Unit: 2632 2612

U.S. PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
TRH	2,985,741	05/23/1961	Ellmann			
	4,092,641	05/30/1978	Bellinghausen et al.			
	4,313,110	01/26/1982	Subulak et al.			
	4,389,635	06/21/1983	Gallagher			
	4,688,021	08/18/1987	Buck et al.			
	4,829,283	05/09/1989	Spang et al.			
	4,870,395	09/26/1989	Belano			
	4,901,056	02/13/1990	Bellavia et al.			
	5,028,911	07/02/1991	Wanat et al.			
	5,055,830	10/08/1991	Cousins et al.			
	5,103,216	04/07/1992	Sisselman			
	5,272,292	12/21/1993	Aubert			
	5,359,168	10/25/1994	Cunningham			
	5,444,434	08/22/1995	Serby			
	5,578,996	11/26/1996	Watson et al.			
	5,612,678	03/18/1997	Shibata			
	5,682,131	10/28/1997	Gow			
	5,793,295	08/11/1998	Goldstein			
	5,939,994	08/17/1999	Meier et al.			
	6,160,487	12/12/2000	DeLuca			
TRH	6,297,745	10/02/2001	Meier			
	2002/0097162	07/25/2002	Chambers			
	6,433,700	08/13/2002	Malewski et al.			
FOREIGN PATENT DOCUMENTS						
	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO

EXAMINER <i>TRH</i>	DATE CONSIDERED 3/27/2006
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

*Substitute Disclosure Statement Form (PTO-1449)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PAGE 4/4 * RCVD AT 1/11/2005 1:54:52 PM [Eastern Standard Time] * SVR:USPTO-EFXXF-1/0 * DNS:8729306 * CSID: * DURATION (mm:ss):01:24

FORM 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)	Docket Number: 13835.142USUI	Application Number: 10/916,922
	Applicant: DELUCA ET AL.	
	Filing Date: 08/12/2004	Group Art Unit: 2652 26/2

[illegible]

23552

PATENT TRADEMARK OFFICE

EXAMINER <i>TJH</i>	DATE CONSIDERED <i>3/27/2006</i>
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form for next communication to the Applicant.	

Notice of References Cited	Application/Control No. 10/916,922		Applicant(s)/Patent Under Reexamination DELUCA ET AL.	
	Examiner Travis R. Hunnings		Art Unit 2612	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,578,996	11-1996	Watson et al.	340/628
*	B	US-4,553,252	11-1985	Egendorf, Harris H.	377/15
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number *Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims 		Application/Control No. 10/916,922 Examiner Travis R. Hunnings		Applicant(s)/Patent under Reexamination DELUCA ET AL. Art Unit 2612	
---	--	---	--	--	--

✓ =	Rejected Allowed	- +	(Through numeral) Cancelled Restricted	N I	Non-Elected Interference	A O	Appeal Objected
--------	---------------------------------------	--------	---	--------	---	--------	--------------------------------------

Claim	Date
Final	Original
	5/3/06
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	

Claim	Date
Final	Original
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	

Claim	Date
Final	Original
101	
102	
103	
104	
105	
106	
107	
108	
109	
110	
111	
112	
113	
114	
115	
116	
117	
118	
119	
120	
121	
122	
123	
124	
125	
126	
127	
128	
129	
130	
131	
132	
133	
134	
135	
136	
137	
138	
139	
140	
141	
142	
143	
144	
145	
146	
147	
148	
149	
150	

Search Notes 		Application/Control No. 10/916,922		Applicant(s)/Patent under Reexamination DELUCA ET AL.	
		Examiner Travis R. Hunnings		Art Unit 2612	

SEARCHED			
Class	Subclass	Date	Examiner
340	693.1	3/17/06	TRH
	693.5		
	693.7		
	693.9		
361	693.12		
	601		
363	679		
	144	3/22/06	TRH

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
PLUS Search Inventorship Search	3/16/06	TRH
Daniel Wu	3/17/06	TRH
Lincoln Donovan Matthew Nguyen	3/22/06	TRH
EAST history attached	3/31/06	TRH



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 2187

SERIAL NUMBER 10/916,922	FILING DATE 08/12/2004 RULE	CLASS 340	GROUP ART UNIT 2632	ATTORNEY DOCKET NO. 13835.142USU1
-----------------------------	---------------------------------------	--------------	------------------------	---

APPLICANTS

Joseph G. Deluca, Colorado Springs, CO;
 Jason M. Sharpe, Colorado Springs, CO;

** CONTINUING DATA *****
 This appln claims benefit of 60/499,245 08/29/2003

OK
 ** FOREIGN APPLICATIONS ***** TRH 3/16/2006
 None.

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
 ** 10/15/2004

Foreign Priority claimed 35 USC 119 (a-d) conditions met	☐ yes ☒ no ☐ yes ☒ no ☐ Met after Allowance	STATE OR COUNTRY CO	SHEETS DRAWING 8	TOTAL CLAIMS 29	INDEPENDENT CLAIMS 7
---	---	---------------------------	------------------------	-----------------------	----------------------------

Verified and Acknowledged: *TRH*
 Examiner's Signature Initials

ADDRESS
 23552
 MERCHANT & GOULD PC
 P.O. BOX 2903
 MINNEAPOLIS , MN
 55402-0903

TITLE
 Life safety alarm with a sealed battery power supply

FILING FEE RECEIVED 1406	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue)
------------------------------------	---	--

<http://neo:8000/PrexServlet/PrexAction?serviceName=BibDataSheet&Action=display&brow...> 3/16/06

	☐ Other
	☐ Credit

S/N 10/916,922

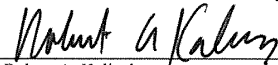
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Deluca et al.	Examiner:	Travis R. Hunnings
Serial No.:	10/916,922	Group Art Unit:	2612
Filed:	August 12, 2004	Docket No.:	13835.142USU1
Customer No.:	23552	Confirmation No.:	2187
Title:	Life Safety Alarm with a Sealed Battery Power Supply		

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this paper is being transmitted electronically to the U.S. Patent and Trademark Office on
May 11, 2006.

By: 

Name: Robert A. Kalinsky

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Office Action mailed April 5, 2006, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

Amendments to the Claims:

The following listing of the claims replaces all previous listings.

1. (Currently Amended) 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. (Original) 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. (Original) The electronic device of claim 2, wherein the alarm portion includes a system to detect a life threatening condition.
4. (Original) The electronic device of claim 3, wherein the detection system comprises a smoke detection system.
- 5.-7. (Canceled)

8. (Currently Amended) The electronic device of claim [[5]] 1, wherein the activate/deactivate system comprises a slider configured for one-way movement and having three positions.
9. (Original) The electronic device of claim 8, wherein the device electronics comprises a three position switch connected to the slider.
10. (Original) The electronic device of claim 1, wherein the battery is sealed inside the second portion whereby the battery is not user replaceable.
11. (Canceled)
12. (Canceled)
13. (Currently Amended) 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; and
a manual deactivation mechanism to permit manual deactivation of the second portion after the second portion has been activated and preventing reactivation once the second portion is deactivated;
wherein the manual deactivation mechanism is accessible when the second portion is detached from the first portion, and further comprising means to prevent reattachment of the second portion to the first portion once the second portion is deactivated.
14. (Canceled)
15. (Currently Amended) The electronic device of claim [[14]] 13, 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.

16. (Original) The electronic device of claim 15, wherein the alarm portion includes a system to detect a life threatening condition.

17. (Original) The electronic device of claim 16, wherein the detection system comprises a smoke detection system.

18. (Original) 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.

19. (Original) The electronic device of claim 18, 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.

20. (Original) The electronic device of claim 19, wherein the alarm portion includes a system to detect a life threatening condition.

21. (Original) The electronic device of claim 20, wherein the detection system comprises a smoke detection system.

22.-29. (Canceled)

REMARKS

This is in response to the Office Action mailed April 5, 2006. Claims 1-4, 8-10, 13, and 15-21 remain pending. Reconsideration and allowance are requested for the following reasons.

Claim Amendments

Claims 5-7, 11, 12, 14, and 22-29 are canceled without prejudice or disclaimer. Claim 1 is amended to incorporate subject matter from claims 5-7. Claim 8 is amended to depend from claim 1. Claim 13 is amended to incorporate subject matter from claim 14. Claim 15 is amended to depend from claim 13. Consideration and entry of the amendments are requested.

Specification

In section 1 of the Office Action, the rules relating to the proper language and format for the abstract are provided. It is suggested that the abstract is in the proper format. To the extent that there are objections to the abstract, it is respectfully requested that such objections be specifically provided so that any issues related to the abstract can be addressed.

Claim Rejections - 35 U.S.C. § 102

In section 3 of the Office Action, claims 1-6, 10, 11, 13, and 26-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by Watson et al., U.S. Patent No. 5,578,996. This rejection is respectfully traversed, and the correctness of the rejection is not conceded. Reconsideration is requested for the following reasons.

Claims 5, 6, 11, and 26-29 are canceled. Claim 1 is amended to incorporate allowable subject matter from claim 7, and claim 13 is amended to incorporate allowable subject matter from claim 14. Reconsideration and allowance of claims 1 and 13, as well as claims 2-4 and 10 that depend therefrom, are therefore requested.

Claim Rejections - 35 U.S.C. § 103(a)

In section 5 of the Office Action, claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Watson. This rejection is respectfully traversed, and the correctness of the rejection is not conceded. Reconsideration is requested for the following reasons.

Claims 8 and 9 depend from claim 1 and are therefore allowable for at least the same reasons as claim 1. Reconsideration and allowance are requested.

In section 6 of the Office Action, claims 22-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Watson in view of Egendorf, U.S. Patent No. 4,553,252. This rejection is respectfully traversed, and the correctness of the rejection is not conceded. Reconsideration is requested for the following reasons.

Claims 22-25 are canceled. Reconsideration and removal of the rejection are therefore requested.

Allowable Subject Matter

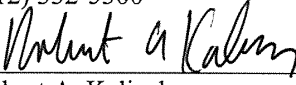
In section 7 of the Office Action, claims 18-21 are noted as being allowed. In section 8, claims 7, 12, and 4-17 are noted as being allowable. Applicants appreciate the Examiner's assistance in identifying allowable subject matter. All claims are in condition for allowance.

Conclusion

Favorable reconsideration in the form of a Notice of Allowance is requested. Please contact the undersigned attorney with any questions regarding this application.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300



Robert A. Kalinsky
Reg. No. 50,471

Date: May 11, 2006

Electronic Acknowledgement Receipt

EFS ID:	1044557
Application Number:	10916922
Confirmation Number:	2187
Title of Invention:	Life safety alarm with a sealed battery power supply
First Named Inventor:	Joseph G. Deluca
Customer Number:	23552
Filer:	Robert A. Kalinsky
Filer Authorized By:	
Attorney Docket Number:	13835.142USU1
Receipt Date:	11-MAY-2006
Filing Date:	12-AUG-2004
Time Stamp:	10:30:24
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1		Amendment.pdf	350738	yes	7

	Multipart Description		
	Doc Desc	Start	End
	Transmittal letter	1	1
	Amendment - After Non-Final Rejection	2	2
	Claims	3	5
	Applicant Arguments/Remarks Made in an Amendment	6	7
Warnings:			
Information:			
Total Files Size (in bytes):		350738	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.			

Merchant & Gould

An Intellectual Property Law Firm

3200 IDS Center
80 South Eighth Street
Minneapolis, Minnesota
55402-2215 USA
TEL 612.332.5300
FAX 612.332.9081
www.merchant-gould.com

A Professional Corporation

Electronic Transmission | May 11, 2006

TO: Commissioner for Patents

FROM: Robert A. Kalinsky

OUR REF. 13835.142USU1

TELEPHONE: 612.336.4771

If you do NOT receive all of the pages, please telephone us at 612.332.5300, or fax us at 612.332.9081.

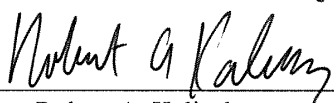
Title of Document(s) Transmitted: 1. Response to non-final Office Action mailed April 5, 2006.

Applicant: **Deluca et al.**
Serial No.: **10/916,922**
Filed: **August 12, 2004**
Group Art Unit: **2612**

Our Ref. No.: **13835.142USU1**
Confirmation No.: **2187**
Customer No.: **23552**

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers, if appropriate.

By:

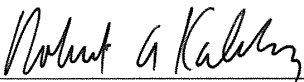


Name: Robert A. Kalinsky

Reg. No.: 50,471

RAK:pll

I hereby certify that this paper is being transmitted **electronically** to the U.S. Patent and Trademark Office on the date shown below.


Signature (Robert A. Kalinsky)

May 11, 2006
Date

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD					Application or Docket Number 10 916 922				
Substitute for Form PTO-875									
APPLICATION AS FILED - PART I					SMALL ENTITY OR OTHER THAN SMALL ENTITY				
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))									
SEARCH FEE (37 CFR 1.16(k), (l), or (m))									
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))									
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	•		X =		X =			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	•		X =		X =			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL			
APPLICATION AS AMENDED - PART II					SMALL ENTITY OR OTHER THAN SMALL ENTITY				
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	13	Minus	29	= 0	X =		X =	
	Independent (37 CFR 1.16(h))	3	Minus	7	= 0	X =		X =	
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE						TOTAL ADD'L FEE		TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))		Minus	**	=	X =		X =	
	Independent (37 CFR 1.16(h))		Minus	***	=	X =		X =	
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE						TOTAL ADD'L FEE		TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1403	((340/693.5) or (340/693.7) or (340/693.9) or (340/693.12) or (340/628)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L2	1196	((361/679) or (361/601)).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L3	203	(363/144).CCLS.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L4	2792	L1 L2 L3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L5	1	("5272292").PN.	USPAT	OR	OFF	2006/05/18 17:14
L6	11	("4313110" "4389635" "4829283" "5444434" "5578996" "5682131" "5793295" "5939994" "6160487" "6297745").PN. OR ("6433700").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L7	7	("4934961" "5154644" "5486816" "5596314" "5629831").PN. OR ("5939994").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L8	54	("2549974" "2553179" "3027552" "3882477" "4043934" "4090177" "4144032" "4152551" "4181439" "4228428" "4316184" "4319234" "4401978" "4539556" "4688021" "4769550" "4839014" "4845474" "4870395" "4959640" "5063164" "5103216" "5172042" "5208116" "5280273" "5290639" "5302350" "5327119" "5346671" "5367575" "5394094" "5396221" "5405583" "5445900" "5521022" "5592147" "5596314" "Re30323").PN. OR ("5793295").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14

5/18/06 5:15:31 PM

Page 1

C:\Documents and Settings\thunnings\My Documents\EAST\Workspaces\10916922 - Life Safety Alarm With A Sealed Battery Power

EAST Search History

L9	9	("1220873" "3503643" "4315594" "4410102" "4724430").PN. OR ("5612678").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L10	10	("2985741" "4688021" "4901056" "5359168" "5444434").PN. OR ("5578996").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L11	3	("4062290" "4527025").PN. OR ("5272292").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L12	15	("4092641" "4315594" "4369435" "4724430").PN. OR ("4829283").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2006/05/18 17:14
L13	92	L6 L7 L8 L9 L10 L11 L12	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L14	23	((("2985741") or ("4092641") or ("4313110") or ("4389635") or ("4688021") or ("4829283") or ("4870395") or ("4901056") or ("5028911") or ("5055830") or ("5103216") or ("5272792") or ("5359168") or ("5444434") or ("5578996") or ("5612678") or ("5682131") or ("5793295") or ("5939994") or ("6160487") or ("6297745") or ("20020097162") or ("6433700"))).PN.	US-PGPUB; USPAT	OR	OFF	2006/05/18 17:14
L15	98	L13 L14 L5	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L16	2846	L15 L4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14
L17	43	L16 and (prevent\$3 stop\$3 cant cannot) near3 (attach\$4 affix\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2006/05/18 17:14



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

23552 7590 06/14/2006

MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER

HUNNINGS, TRAVIS R

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 06/14/2006

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187
TITLE OF INVENTION: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	09/14/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the **ISSUE FEE** and **PUBLICATION FEE** (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23552 7590 06/14/2006
MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187

TITLE OF INVENTION: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	09/14/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
HUNNINGS, TRAVIS R	2612	340-693100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.111. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims **SMALL ENTITY** status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming **SMALL ENTITY** status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187
23552	7590	06/14/2006		
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER HUNNINGS, TRAVIS R	
			ART UNIT	PAPER NUMBER
			2612	
DATE MAILED: 06/14/2006				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 175 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 175 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

4

Notice of Allowability	Application No.	Applicant(s)	
	10/916,922	DELUCA ET AL.	
	Examiner	Art Unit	
	Travis R. Hunnings	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 11 May 2006.
2. ☒ The allowed claim(s) is/are 1-4, 8-10, 13 and 15-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application (PTO-152) 6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____
---	--

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-4, 8-10, 13 and 15-21 are allowed.

2. The following is an examiner's statement of reasons for allowance:

Regarding independent claim 1, the prior art does not disclose nor suggest an electronic device that includes a first and second portion wherein the user can manually deactivate the device and once deactivated the second portion cannot be reactivated and cannot be reattached to the first portion.

Regarding independent claim 13, the prior art does not disclose nor suggest an electronic device that includes a first and second portion wherein the manual deactivation mechanism is accessible when the second portion is detached from the first portion and comprising means to prevent reattachment of the second portion to the first portion once deactivated.

Regarding independent claim 18, the prior art does not disclose nor suggest an electronic device with a first portion and a second portion that includes 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 including a reattachment prevention mechanism to prevent reattachment of the first and second portions once the second portion is permanently deactivated.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Travis R. Hunnings whose telephone number is (571) 272-3118. The examiner can normally be reached on 8:00 am - 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRH


THOMAS MULLEN
PRIMARY EXAMINER

AV 2612

5-30-06

Issue Classification 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/916,922	DELUCA ET AL.	
	Examiner	Art Unit	
	Travis R. Hunnings	2612	

ISSUE CLASSIFICATION									
ORIGINAL			CROSS REFERENCE(S)						
CLASS	SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					
340	693.1		340	693.5	693.7	693.9	693.12		
INTERNATIONAL CLASSIFICATION			361	679					
G	0	8 B	23/00						
			/						
			/						
			/						
			/						

<i>Travis R. Hunnings</i> (Assistant Examiner) (Date) 5/18/2006	<i>Thomas J. Mullen</i> THOMAS MULLEN PRIMARY EXAMINER (Primary Examiner) (Date) 5-30-06	Total Claims Allowed: 15 O.G. Print Claim(s) 1 O.G. Print Fig. 1
--	---	--

☐ Claims renumbered in the same order as presented by applicant												☐ CPA		☐ T.D.		☐ R.1.47	
Final	Original		Final	Original		Final	Original		Final	Original		Final	Original		Final	Original	
1	1		31			61			121			151			181		
2	2		32			62			122			152			182		
3	3		33			63			123			153			183		
4	4		34			64			124			154			184		
	5		35			65			125			155			185		
	6		36			66			126			156			186		
	7		37			67			127			157			187		
5	8		38			68			128			158			188		
6	9		39			69			129			159			189		
7	10		40			70			130			160			190		
	11		41			71			131			161			191		
	12		42			72			132			162			192		
8	13		43			73			133			163			193		
	14		44			74			134			164			194		
9	15		45			75			135			165			195		
10	16		46			76			136			166			196		
11	17		47			77			137			167			197		
12	18		48			78			138			168			198		
13	19		49			79			139			169			199		
14	20		50			80			140			170			200		
15	21		51			81			141			171			201		
	22		52			82			142			172			202		
	23		53			83			143			173			203		
	24		54			84			144			174			204		
	25		55			85			145			175			205		
	26		56			86			146			176			206		
	27		57			87			147			177			207		
	28		58			88			148			178			208		
	29		59			89			149			179			209		
	30		60			90			150			180			210		

U.S. Patent and Trademark Office

Part of Paper No. 20060518

Search Notes		Application/Control No.	Applicant(s)/Patent under Reexamination	
		10/916,922	DELUCA ET AL.	
		Examiner	Art Unit	
		Travis R. Hunnings	2612	

SEARCHED			
Class	Subclass	Date	Examiner
340	693.1	3/17/06	TRH
	693.5		
	693.7		
	693.9		
	693.12		
361	601	3/22/06	TRH
	679		
363	144		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
340	693.1, 693.5	5/18/06	TRH
	693.7, 693.9		
	693.12		
361	679		

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
PLUS Search Inventorship Search	3/16/06	TRH
Doniel Wu	3/17/06	TRH
Lincoln Donovan Matthew Nguyen	3/22/06	TRH
EAST history attached	3/31/06	TRH
Updated EAST history	5/18/06	TRH

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23552 7590 06/14/2006
MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Robert A. Kalinsky	(Depositor's name)
<i>Robert A. Kalinsky</i>	(Signature)
Sept 14	, 2006 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/916,922	08/12/2004	Joseph G. Deluca	13835.142USU1	2187

TITLE OF INVENTION: LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	09/14/2006

EXAMINER	ART UNIT	CLASS-SUBCLASS
HUNNINGS, TRAVIS R	2612	340-693100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Merchant & Gould P.C.
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Walter Kidde Portable Equipment, Inc.

Mebane, NC

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 13-2725 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature *Robert A. Kalinsky*

Date Sept. 14, 2006

Typed or printed name Robert A. Kalinsky

Registration No. 50,471

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:		10916922		
Filing Date:		12-Aug-2004		
Title of Invention:		LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY		
First Named Inventor:		Joseph G. Deluca		
Filer:		Robert A. Kalinsky/Patricia Larrimore		
Attorney Docket Number:		13835.142USU1		
Filed as Large Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1400	1400
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1700

Electronic Acknowledgement Receipt

EFS ID:	1200627
Application Number:	10916922
Confirmation Number:	2187
Title of Invention:	LIFE SAFETY ALARM WITH A SEALED BATTERY POWER SUPPLY
First Named Inventor:	Joseph G. Deluca
Customer Number:	23552
Filer:	Robert A. Kalinsky
Filer Authorized By:	
Attorney Docket Number:	13835.142USU1
Receipt Date:	14-SEP-2006
Filing Date:	12-AUG-2004
Time Stamp:	16:58:24
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 1700
RAM confirmation Number	392
Deposit Account	132725

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
-----------------	----------------------	-----------	------------------	------------	-------

1		IssueFees.pdf	213364	yes	2
	Multipart Description				
	Doc Desc		Start	End	
	Transmittal letter		1	1	
	Issue Fee Payment Recorded		2	2	
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	8295	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			221659		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.					

Merchant & Gould

An Intellectual Property Law Firm

3200 IDS Center
80 South Eighth Street
Minneapolis, Minnesota
55402-2215 USA
TEL 612.332.5300
FAX 612.332.9081
www.merchant-gould.com

A Professional Corporation

Electronic Transmission | Sept 14, 2006

TO: Commissioner for Patents

FROM: Robert A. Kalinsky

OUR REF. 13835.142USU1

TELEPHONE: 612.336.4771

If you do NOT receive all of the pages, please telephone us at 612.332.5300, or fax us at 612.332.9081.

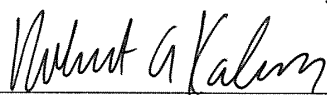
Title of Document(s) Transmitted: 1. Part B - Fees Transmittal.

Applicant: **Deluca et al.**
Serial No.: **10/916,922**
Filed: **August 12, 2004**
Group Art Unit: **2612**

Our Ref. No.: **13835.142USU1**
Confirmation No.: **2187**
Customer No.: **23552**

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers, if appropriate.

By:

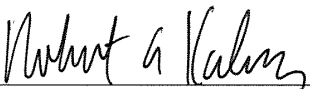


Name: Robert A. Kalinsky

Reg. No.: 50,471

RAK:pll

I hereby certify that this paper is being transmitted **electronically** to the U.S. Patent and Trademark Office on the date shown below.


Signature (Robert A. Kalinsky)

Sept 14, 2006
Date

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
---	---

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO. 6:22-cv-566	DATE FILED 6/2/2022	U.S. DISTRICT COURT Western District of Texas
PLAINTIFF WALTER KIDDE PORTABLE EQUIPMENT INC.		DEFENDANT FIRST ALERT, INC. AND BRK BRANDS, INC.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 7123158	10/17/2006	WALTER KIDDE PORTABLE EQUIPMENT INC.
2 7525445	4/28/2009	WALTER KIDDE PORTABLE EQUIPMENT INC.
3 8791828	7/29/2014	WALTER KIDDE PORTABLE EQUIPMENT INC.
4 7403128	7/22/2008	WALTER KIDDE PORTABLE EQUIPMENT INC.
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
-------	-------------------	------

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy