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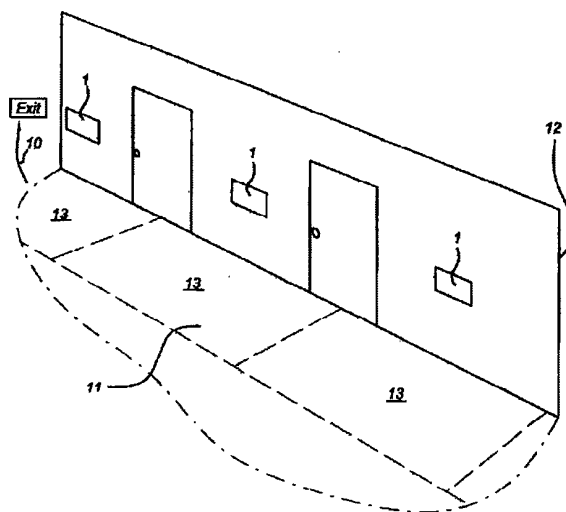
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54 **Illumination system comprising a plurality of illumination devices.**

57 The invention relates to an illumination device comprising a light source. The illumination device is arranged to be mounted to a wall at a mounting height with respect to a floor. The illumination device being arranged to, in use, illuminate a predetermined area of the floor, wherein

- the mounting height is between 0,4 and 0,8 meter from the floor, and
- the predetermined area of the floor has a substantial rectangular shape.



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**Illumination system comprising
a plurality of illumination devices**

5 TECHNICAL FIELD

The invention relates to an illumination system comprising a plurality of illumination devices. The invention further relates to such an illumination device and a building and corridor comprising such an illumination system.

10 STATE OF THE ART

Illumination systems comprising a plurality of illumination devices are known in the state of the art. Such illumination systems may be used in buildings as emergency illumination, anti-panic illumination, flight route illumination and/or evacuation illumination.

15 Emergency illumination may be described as illumination which enables safely leaving a room or building when the power for normal illumination fails. Emergency lighting is thus used when the supply to the normal mains lighting installation fails.

The object of anti-panic illumination is to reduce the chance of panic and enabling safe movement of people towards a flight route, by providing sufficient
20 visibility and indicating the flight route.

Flight route and/or evacuation illumination can be described as illumination which allows safely leaving a room or building by providing sufficient visibility and flight route indications for flight routes and specific locations, and ensuring that fire fighting means and safety equipment can be found and used.

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SHORT DESCRIPTION

It is an object to provide an improved illumination system that may serve as emergency-, anti-panic, flight route and/or evacuation illumination and thus provides an improved visibility in difficult circumstances, such as smoky conditions in case of a
30 fire.

According to an aspect there is provided an illumination device comprising a light source, the illumination device being arranged to be mounted to a wall at a

mounting height with respect to a floor, the illumination device being arranged to, in use, illuminate a predetermined area of the floor, characterized in that

- the mounting height is between 0,4 and 0,8 meter from the floor, and
- the predetermined area of the floor has a substantial rectangular shape.

5 According to an aspect there is provided an illumination system, comprising a plurality of illumination devices mounted to a wall at a mounting height with respect to a floor, each illumination device being arranged to, in use, illuminate a predetermined area of the floor, characterized in that

- the mounting height is between 0,4 and 0,8 meter from the floor, and
- 10 - the respective predetermined areas of the floor are adjacent or partially overlapping.

 According to an aspect there is provided a corridor comprising such an illumination system.

15 According to an aspect there is provided a building comprising such an illumination system.

SHORT DESCRIPTION OF THE DRAWINGS

Embodiments will now be described, by way of example only, with reference to the accompanying schematic drawings in which corresponding reference symbols
20 indicate corresponding parts, and in which:

- Fig. 1 schematically depicts a corridor according to an embodiment,
- Fig.'s 2a and 2b schematically depict illumination devices according to an embodiment,
- Fig.'s 3a and 3b schematically depict a motion detector according to an
25 embodiment,
- Fig. 4 and 5 depict an illumination device according to an embodiment.
- Fig. 6 schematically depicts an illumination system according to an embodiment.

DETAILED DESCRIPTION

30 The embodiments describe an illumination system and illumination device that is suitable to function as emergency-, anti-panic, flight route and/or evacuation illumination and thus provides an improved visibility in difficult circumstances, such as smoky conditions in case of a fire. This is accomplished with an illumination system

comprising a relatively low number of illumination devices, while still obtaining good illumination even in difficult circumstances, such as a fire.

As will be evident from the embodiments, this is accomplished by positioning the illumination devices in an advantageous way. Also, the illumination devices itself are provided with functionality that contribute to this object.

Illumination system

Fig. 1 schematically depicts a corridor 10 in a building, such as a hotel or hospital. The corridor 10 comprises a floor 11 and a wall 12.

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Fig. 1 further depicts an illumination system, comprising a plurality of illumination devices 1 mounted to a wall 12 at a mounting height with respect to a floor 11, each illumination device 1 being arranged to, in use, illuminate a predetermined area 13 of the floor, wherein

- 15
- the mounting height is between 0,4 and 0,8 meter from the floor 11, and
 - the respective predetermined areas 13 of the floor are adjacent or partially overlapping.

The mounting height may be between 0,4 and 0,8 meter, for instance between 0,5 – 0,7 meter, or preferably close to 0,6 meter. This mounting height has several advantages.

20

Illumination systems according to the state of the art that are mounted to the ceiling do not function optimally in case of smoky conditions, as smoke tends to rise. Also mounting to the ceiling requires a lot of power, making the illumination systems inefficient. Furthermore, state of the art ceiling fixtures may be in the same line as the evacuation fixtures, which results in blinding the sight at the escape signs, especially in long corridors.

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This mounting height allows illuminating a part of the floor 11 without requiring much power. In comparison, illumination devices attached to the ceiling relatively require a lot of power to illuminate a part of the floor 11, especially in smoky conditions. In fact, if smoke is relatively thick, illumination devices at the ceiling may be unable to illuminate the floor. Also, illumination devices 1 that are mounted close to the floor 11 or even in the floor 11 can not easily be used to illuminate a substantial part of the floor 11 and surrounding area. So, the indicated mounting height provides an

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advantageous trade off between relatively high mounting heights (requiring relatively much power) and relatively low mounting heights (requiring relatively many illumination devices 1).

Furthermore, the illumination devices 1 are to be mounted at such a height that a
5 person lying on the ground, such as a wounded or unconscious person, can not block the illumination device, ensuring proper illumination.

The illumination system may be used in a building, such as a hotel, hospital, private house etc. to illuminate an escape route or the like.

10 According to an embodiment, there is provided an illumination system, wherein the plurality of illumination devices 1 are arranged to switch on in response to a received alarm signal. Alarm signals may be a fire alarm signal, a smoke alarm signal, a power failure alarm signal, an evacuation alarm signal, etc. These alarm signals may be generated automatically or manually by a user.

15 As an alternative for or as an addition to received alarm signals, the illumination device 1 may be arranged to automatically switch on when appropriate using input from a motion detector 4 and an ambient light detector 5.

So, according to a further embodiment there is provided an illumination system,
20 wherein the plurality of illumination devices 1 comprise
- a motion detector 4 which generates a motion signal in response to detected motion and
- an ambient light detector 5 which generates an ambient light level being an indication of an ambient light level,

25 wherein the plurality of illumination devices 1 are arranged to switch on the light source 2 in response to the generates motion signal, in case the ambient light level is below a threshold ambient light level.

Of course, a combination of an alarm triggered illumination system and a motion/ambient light triggered illumination system can be conceived.

30 The illumination system may be arranged such that when a first illumination device 1 detects motion of a user and switches on the light source 2 in response to that, a plurality of neighbouring illumination devices 1 may be switched on as well.

This may be obtained automatically because the motion detector 4 of a second neighbouring illumination device 1 may detect that the light source 2 of the first illumination device 1 has been switched on. This means that the motion detectors 4 of the illumination devices 1 are arranged to generate a detection range that comprises the neighbouring illumination device 1, or at least the light generated by the light source 2 that is generated by the neighbouring illumination device.

The illumination system may be arranged in such a way that the motion detector 4 of an illumination device 1 has a detection range that is able to detect the light generated by a light source 2 of a neighbouring illumination device 1.

Thus, when a user triggers a first illumination device 1 to switch on the light source 2, the route that he/she has to follow is illuminated right away, providing a safe guidance to the exit.

According to a further embodiment there is provided an illumination system, wherein at least one of the illumination devices 1 is comprises a light source 2 arranged to emit a first colour of light, the first colour being red.

White light in smoky conditions has a blinding effect and diminishes contrast. Furthermore, switching on an emergency illumination system with white light may not be associated with an emergency situations by users.

It is found that red light has certain advantages in emergency situations, such as in a fire or in smoky conditions. It is discovered that red light provides the best visibility for a user in smoky conditions, in particular in situations with organic smoke. The red light easily penetrates through the smoke instead of being reflected by the smoke to blind a user.

The colour red may be defined by its wavelength, which may be in the range from 640 nm – 700 nm.

To provide an illumination system that is even better suited to function in emergency conditions such as a fire, there is provided an illumination system, wherein at least one of the further illumination devices 1 comprises a light source 2 arranged to emit a second colour of light, the second colour being different from the first colour.

The second colour may for instance be green (having its wavelength in the range of 500 – 550 nm). By providing an illumination system with illumination devices 1

emitting different colours, a user may be guided in a desired direction in an intuitional way. According to an example, most illumination devices 1 may be red, while the illumination devices 1 in the vicinity of an (emergency) exit may be green such that a user will intuitively follow the red lights towards the green light, thus being guided into safety in case of an emergency (e.g. fire).

With reference to Fig. 1, in which the exit is on the left side of the corridor 11 as indicated, this would imply that the illumination devices 1 at the right and middle one comprise a light source 2 arranged to emit the first colour of light, e.g. red, while the illumination device 1 at the left side comprises a light source 2 arranged to emit the second colour of light, e.g. green.

As indicated above, each illumination device 1 is arranged to illuminate a predetermined area of the floor 11, such that the respective predetermined parts of the floor 11 together form an uninterrupted illuminated floor area.

To accomplish this in a corridor, the illumination devices 11 are each arranged to illuminate a predetermined area of the floor 11, each predetermined area having a first length in a direction along the wall and the mutual distance between the mounted illumination devices 1 is equal to or smaller than the first length.

This is schematically shown in Fig. 1, in which predetermined areas 13 are shown substantially rectangular areas. Although Fig. 1 show areas 13 as being non overlapping, it will be understood that the areas 13 may in fact be overlapping areas. Also, the areas 13 are shown as rectangular areas, but it will be understand that the areas may in fact be substantially rectangular or may have other shapes.

By providing a mutual distance between the mounted illumination devices 1 that is equal to or smaller than the first length, an uninterrupted illuminated area is obtained.

According to an embodiment, the first length is approximately 8 meter. The width of the predetermined area on the floor may be approximately 3 meter in a direction substantially perpendicular to the wall 12.

According to an embodiment, the illumination system comprises illumination devices wherein the illumination devices comprise a motion detector arranged to generate a motion detector beam in a range of approximately 150 - 180°. This may be

achieved by an illumination device as described below with reference to Fig.'s 3a, 3b and 4. This has the advantage that the complete surrounding of a mounted illumination device 1 can be monitored. According to a special embodiment, this can be done with a single motion detector.

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Illumination device

Fig. 2a further schematically depicts an illumination device 1. Such an illumination device 1 comprises a light source 2, the illumination device 1 being arranged to be mounted to a wall 12 at a mounting height with respect to a floor 11, the illumination device 1 being arranged to, in use, illuminate a predetermined area of the floor 11, wherein

- the mounting height is between 0,4 and 0,8 meter from the floor, and
- the predetermined area of the floor has a substantial rectangular shape.

The illumination device 1 may be arranged in such a way that the predetermined area of the floor 11 is adjacent to the wall 12 when the illumination device 1 is mounted to the wall 12. The illumination device 1 may be provided with appropriate optical devices, such as lenses and/or mirrors, to achieve this.

Although not described here in detail, it will be understood that the illumination device 1 may comprise a control unit CU, arranged to communicate with the different elements present in the illumination device 1, to control functioning of the illumination device 1, as schematically shown in Fig. 2b. The control unit CU may comprise hardware elements arranged to provide the illumination device 1 with the functionality according to the embodiments. Alternatively, the illumination device 1 may comprise a memory (not shown), comprising programming lines that are readable and executable by the control unit CU to function according to the embodiments.

Although not shown for reasons of clarity, it will be understood that the illumination device 1 may comprise energy means, such as a battery or a connection to an outside energy source, such the lighting system. The battery or the like may be arranged to provide the illumination device 1 with energy to function for at least 1 hour.

According to an embodiment, the illumination device 1 may comprise a connection to an outside energy source (such as lightning circuit) as well as a battery or the like. In fact, the illumination device 1 may be arranged to switch on the light source

2 using energy from the battery when it is noticed that the outside energy source is interrupted, for instance due to a power failure.

By mounting the illumination device on the wall 12 as described in the embodiments, the illumination device can simply be connected to the normal lightning
5 circuit as an outside energy source.

According to an embodiment, the illumination device 1 is arranged to illuminate a predetermined area of the floor from the mounting height, the predetermined area having a length of approximately 8 meter in a direction along the wall 12. The width of
10 the predetermined area of the floor may be approximately 3 meter in a direction substantially perpendicular to the wall 12.

According to an embodiment, the illumination device 1 is arranged to switch on in response to a received alarm signal. The illumination device 1 thus comprises an
15 input 3 to receive such an alarm signal and to be connected to for instance a central emergency system, such as a fire alarm.

According to an embodiment, the illumination device 1 comprises
- a motion detector 4 which generates a motion signal in response to detected motion
20 and
- an ambient light detector 5 which generates an ambient light level being an indication of an ambient light level,

wherein the illumination device 1 is arranged to switch on the light source 2 in response to the generated motion signal, in case the ambient light level is below a
25 threshold ambient light level.

So, instead of only switching on in response to power failure or an alarm signal, the illumination device 1 according to this embodiment will also automatically switch on when necessary.

As the illumination device 1 is arranged to be mounted to a wall 12, according to
30 an embodiment it is arranged to detect motion in a range of more than 150°, preferably approximately 180°. In order to achieve this, a motion detector beam is to be generated within such a range. This may be achieved by using motion detector mirrors to direct a motion detection beam generated by a motion detector to cover such a range. An

example of this is schematically depicted in Fig.'s 3a and 3b, respectively showing a front and a top view of the motion detector.

So, according to an embodiment, may comprise a motion detector 4 arranged to
5 generate a motion detector beam, the illumination device 1 further comprising a first
and a second motion detector mirror 42, 43,

the first motion detector mirror 42 being positioned to reflect a first part of the
motion detector beam to create a first motion detector plane I,

10 the second motion detector mirror 43 being positioned to reflect a second part of
the motion detector beam to create a second motion detector plane II,

the first and second motion detector mirror 42, 43 being positioned at a mutual
distance D to allow a third part of the motion detector beam to pass in between the first
and second motion detector mirror 42, 43 to create a third motion detector plane III.

15 The motion detector 4 may comprise an infrared detector 41, such as a passive
infrared sensor (PIR sensor), arranged to generate an infrared motion detector beam.
The motion detector 4 may be positioned inside the illumination device 1 such that
when the illumination device 1 is mounted to the wall 12, the motion detection beam is
produced in a direction substantially perpendicular with respect to the wall 12.

20 The motion detector 4 comprises windows 44 to allow the first, second and third
motion detector planes I, II, III to leave the motion detector 4.

When the illumination device 1 is mounted to the wall 12, the first and second
motion detector mirrors 42, 43 may be in a vertical position, rotated about an angle α of
approximately 30 - 60° with respect to a parallel orientation to the wall 12, with their
mirroring surfaces faced to the wall and the motion detector. The first and second
25 motion detector mirrors 42, 43 are each rotated about an opposite angle.

Fig. 4 schematically depicts a top view of an illumination device 1 mounted to
the wall 12, showing first motion detector plane I, second motion detector plane II and
third motion detector plane III. The first, second and third motion detector planes I, II,
III overlap to form a continuous motion detection plane.

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The described embodiment creates a motion detector with a motion detection
range covering approximately 180° about zenith or more, which is advantageously in a
situation wherein the illumination device 1 is mounted to a wall 12. The term

approximately 180° may refer to a range of 175° - 185°, or 188° - 192°. In fact, a motion detector with a motion detection range over 180° about zenith may be provided as well.

5 In contrast to prior art solutions, the illumination device 1 comprising the motion detector can be mounted to a wall halfway a corridor, and there is no need to mount it in a corner as only a limited motion detection range can be provided, while only a single PIR sensor is needed to detect motion in the complete vicinity of the illumination device 1.

10 According to a further embodiment, the illumination device 1 comprises a light source 2 arranged to emit a first colour of light, the first colour being red.

According to a further embodiment, the illumination device 1 comprises a light source 2 arranged to emit a second colour of light, the second colour being different from the first colour.

15 As described above, the first colour may be red, in the range: 640 nm – 700 nm, and the second colour may be green in the range: 500 – 550 nm. These different illumination devices 1 may be suitable for use in an illumination system as described above, having different colours at different locations.

The illumination device may be arranged to be triggered by detected movement.

20 The illumination device 1 may comprise at least one light source 2 and at least one mirror, the at least one mirror being positioned to reflect light generated by the light source 2 to the predetermined area 13 of the floor 11. For instance, the illumination device 1 may comprise one light source 2 and a first and a second mirror, the first mirror being positioned to reflect a first part of the light generated by the light source 2 to a first part of the predetermined area of the floor, the second mirror being
25 positioned to reflect a second part of the light generated by the light source 2 to a second part of the predetermined area of the floor. Possibly, the first and second mirror being positioned such that a third part of the light generated by the light source 2 can travel in between the first and second mirror to illuminate a third part of the
30 predetermined area of the floor. The first, second and third part may together form the predetermined area 13 of the floor 11. The first, second and third parts may be partially overlapping.

This allows to illuminate a relatively large predetermined area of the floor with a single light source and relatively easy optical devices, such as mirrors.

The illumination device 1 may further comprise appropriate lenses, apertures, diaphragms and the like to illuminate the predetermined area on the floor.

5 According to an embodiment, the illumination device 1 may comprise two light sources, each having an associated mirror. The two light sources and two mirrors both are arranged to illuminate different parts of the floor, together forming the predetermined area 13 of the floor 11.

10 Fig. 5 schematically depicts a further embodiment of an illumination device 1, wherein the illumination device 1 further comprises a plurality of direction indicators 6, here shaped as arrows. According to the example shown in Fig. 5, three direction indicators are provided, one to the left, one to the right and one in a downward direction (indicating a forward direction to a user). Of course, any suitable number of
15 direction indicators 6 in any suitable direction may be provided.

The direction indicators 6 may be provided as transparent elements behind which a light source is positioned.

In case the illumination device 1 is used in an emergency situation, for instance when switched on in response to a received alarm signal, the illumination device 1 may
20 be arranged to switch on one of the direction indicators 6 to guide users to the appropriate exit. Selecting the appropriate direction indicator 6 may be done in a static way or in a dynamic way, as will be explained below.

The selection of the appropriate direction indicator 6 may be made when the illumination device 1 is mounted to the wall 12. Based on the location of the nearest
25 exit, the installer may set the illumination device 1 such that the appropriate location indicator is enabled, while the other location indicators are disabled.

This may be done in many appropriate ways, for instance by only installing a light source directly behind the selected direction indicator or by installing a single light source behind all direction indicators and blocking the transparent shapes of the
30 indicators that are not selected.

According to this embodiment, a single type of illumination device 1 can be used for directing users in different directions. The decision to which direction users are to be guided can be taken when installing the illumination device 1.

According to an alternative embodiment, the selection of the appropriate direction indicator 6 can be made in a dynamic way, i.e. depending on the emergency situation. The illumination device 1 is arranged to select the appropriate direction indicator in response to a received direction indicator selection signal. This allows
5 remotely controlling the illumination device 1. This is explained with reference to Fig. 6.

Fig. 6 schematically depicts a plan view of a part of a building, comprising a number of rooms 20, each room comprising a smoke detector 50. The corridor is
10 provided with a number of illumination devices 1 as described with reference to Fig. 5, mounted on the wall 12.

The smoke detectors 50 and the illumination devices 1 are all connected to a control unit CU. The control unit CU may be a computer arrangement programmed to function in accordance with the embodiments.

As schematically shown in Fig. 6, in one of the rooms 20 there is a fire, resulting
15 in an alarm signal generated by the smoke detector 50 in that room. This smoke detector 50 may be arranged to transmit the alarm signal to the control unit CU. Based on the received alarm signal, the control unit CU may be arranged to generate and transmit a direction indicator selection signal to individual illumination devices 1
20 instructing the illumination devices 1 which one of the plurality of direction indicators is to be used.

The illumination devices 1 may be arranged to receive such a direction indicator selection signal and process such instructions to select the appropriate direction indicator 6.

As shown in Fig. 6, the different illumination devices 1 switch on a direction
25 indicator 6 pointing away from the fire and towards the safest exit.

According to the example provided here, the alarm signal is generated by a smoke detector 50. However, alarm signals may also be generated by other means, such as manual operated fire alarms or the like.

The control unit CU may function automatically in response to a received alarm
30 signal. However, in addition or as an alternative, the control unit CU may be operated by a controller who can manually initiate generating and transmitting of a direction

indicator selection signal. The operator may thus manually control each illumination device 1.

Summarizing the embodiments described with reference to Fig.'s 5 and 6, there is provided an illumination device, wherein the illumination device further comprises a plurality of direction indicators, the illumination device being arranged to make a selection of at least one of the plurality of direction indicators to be used. The selection of one of the plurality of direction indicators can be made in a static way upon installation of the illumination device. According to an alternative, the illumination device comprises an input for receiving a direction indicator selection signal, and the selection of one of the plurality of direction indicators is made in a dynamic way based on a received direction indicator selection signal.

Furthermore there is provided an illumination system, wherein the plurality of illumination devices further comprise a plurality of direction indicators, the illumination device being arranged to make a selection of at least one of the plurality of direction indicators to use. The selection of one of the plurality of direction indicators is made in a static way upon installation of the illumination device. According to an alternative, the illumination system further comprising a control unit arranged to generate a plurality of direction indicator selection signals based on a received alarm signal for the respective illumination devices and transmit the direction indicator selection signals to the respective illumination devices, wherein the illumination devices comprise an input for receiving a direction indicator selection signal, and the selection of one of the plurality of direction indicators is made in a dynamic way based on a received direction indicator selection signal.

According to an embodiment, the selected direction indicator may always be illuminated, so users are made familiar with the appropriate standard escape route already in a case there is no emergency (non-emergency situation). Of course, in case of an emergency situation (e.g. indicated by an alarm signal), such as a fire along the standard escape route, the selection of the direction indicator may be changed dynamically.

According to a further embodiment, the selection of direction indicators may comprise more than one direction indicator, in case more than one route is appropriate. This applies to an emergency situation, as well as to a non-emergency situation.

The housing of the illumination device 1 may be water resistant, such to ensure functioning of the illumination device 1 even when exposed to fire extinguishing water.

Further remarks

5 Also provided are embodiments for a corridor and building comprising an illumination system according to the embodiments described.

It will be understood that some embodiments of the illumination systems are not only suitable for use as emergency-, anti-panic, flight route and/or evacuation illumination, but may also be used for regular illumination purposes.

10 For instance, the embodiments comprising motion detectors may serve as illumination system and illumination devices in hotels to provide guests with a subtle and energy efficient way of illumination in dark circumstances. In order to do this, the illumination devices 1 may be provided with a light source of white light. Alternatively, the illumination devices may be provided with at least two light sources: one with
15 white light for a non-emergency situation and one with red light for an emergency situation. The illumination device may switch from a non-emergency situation to an emergency situation by receiving an alarm signal.

The embodiments provided above provide at least one of the following
20 advantages:

- the use of two colours (red and green) ensures better visibility and intuitive guidance towards the exit,
- direction is indicated on the illumination devices,
- also operational when electricity is down but visibility is poor because of
25 smoke,
- water resistant (for fire extinguishing water)
- no blinding effect by using red light,
- retention of contrasts by using red light,
- red light makes people more alert,
- 30 - energy saving due to relatively low amount of power needed,
- can be fitted directly on existing electrical wiring,
- the provided embodiments are suitable for use in smaller places and private applications.

The descriptions above are intended to be illustrative, not limiting. Thus, it will be apparent to one skilled in the art that modifications may be made to the invention as described without departing from the scope of the claims set out below.

CONCLUSIES

1. Verlichtingstoestel omvattende een lichtbron, waarbij het verlichtingstoestel is ingericht om te worden bevestigd aan een wand op een montagehoogte ten opzichte van
5 een grondvlak, waarbij het verlichtingstoestel is ingericht om, tijdens gebruik, een vooraf bepaald gebied van het grondvlak te belichten, met het kenmerk dat
- de montagehoogte tussen 0,4 tot 0,8 meter van het grondvlak ligt, en
 - het vooraf bepaald gebied van het grondvlak een hoofdzakelijk rechthoekige vorm heeft.
- 10
2. Verlichtingstoestel volgens conclusie 1, waarbij het verlichtingstoestel is ingericht om een vooraf bepaald gebied van het grondvlak te verlichten vanaf de montagehoogte, waarbij het vooraf bepaalde gebied een lengte heeft van om en nabij 8 meter in een richting langs de wand en een breedte van om en nabij 3 meter in een
15 richting hoofdzakelijk loodrecht op de wand.
3. Verlichtingstoestel volgens één van de voorgaande conclusies, waarbij het verlichtingstoestel is ingericht om in te schakelen in reactie op een ontvangen alarmsignaal.
- 20
4. Verlichtingstoestel volgens één van de voorgaande conclusies, waarbij het verlichtingstoestel omvat
- een bewegingsdetector die een bewegingssignaal opwekt in reactie op gedetecteerde beweging en
 - 25 - een omgevingslichtdetector die een omgevingslichtniveau opwekt als een indicatie van een omgevingslichtniveau,
- waarbij het verlichtingstoestel is ingericht om de lichtbron in te schakelen in reactie op het opgewekte bewegingssignaal indien het omgevingslichtniveau beneden een drempelwaarde voor het omgevingslichtniveau is.
- 30
5. Verlichtingstoestel volgens één van de voorgaande conclusies, waarbij het verlichtingstoestel een lichtbron omvat welke is ingericht om een eerste lichtkleur uit te stralen, waarbij de eerste lichtkleur rood is.

6. Verlichtingstoestel volgens één van de conclusies 1 - 4, waarbij het verlichtingstoestel een lichtbron omvat die is ingericht om een tweede lichtkleur uit te stralen, waarbij de tweede lichtkleur verschilt van de eerste lichtkleur.
- 5 7. Verlichtingstoestel volgens één van de conclusies 4 - 6, waarbij het verlichtingstoestel een bewegingsdetector omvat die is ingericht om een bewegingsdetectorbundel te genereren, waarbij het verlichtingstoestel verder een eerste en een tweede bewegingsdetectorspiegel omvat,
waarbij de eerste bewegingsdetectorspiegel is gepositioneerd om een eerste deel
10 van de bewegingsdetectorbundel te weerkaatsen, teneinde een eerste bewegingsdetectorvlak te creëren,
waarbij de tweede bewegingsdetectorspiegel is gepositioneerd om een tweede deel van de bewegingsdetectorbundel te weerkaatsen, teneinde een tweede bewegingsdetectorvlak te creëren,
15 waarbij de eerste en de tweede bewegingsdetectorspiegels op een onderlinge afstand zijn gepositioneerd om een derde deel van de bewegingsdetectorbundel te laten passeren tussen de eerste en tweede bewegingsdetectorspiegel, teneinde een derde bewegingsdetectorvlak te creëren.
- 20 8. Verlichtingstoestel volgens één van de voorgaande conclusies, waarbij het verlichtingstoestel daarnaast een aantal richtingaanwijzers omvat, waarbij het verlichtingstoestel is ingericht om een selectie te maken van ten minste één van het aantal te gebruiken richtingaanwijzers.
- 25 9. Verlichtingstoestel volgens conclusie 8, waarbij de selectie van één van het aantal richtingaanwijzers op statische wijze tijdens installatie van het verlichtingstoestel wordt gemaakt.
- 30 10. Verlichtingstoestel volgens conclusie 8, waarbij het verlichtingstoestel een invoer voor het ontvangen van een richtingaanwijzersselectiesignaal omvat, en de selectie van één van het aantal richtingaanwijzers op dynamische wijze wordt gemaakt gebaseerd op een ontvangen richtingaanwijzersselectiesignaal.

11. Verlichtingssysteem, omvattende een aantal verlichtingstoestellen bevestigd aan een wand op een montagehoogte ten opzichte van een grondvlak, waarbij elk verlichtingstoestel is ingericht om, tijdens gebruik, een vooraf bepaald gebied van het grondvlak te belichten, met het kenmerk dat
- 5 - de montagehoogte tussen 0,4 tot 0,8 meter van het grondvlak ligt, en
- de respectieve vooraf bepaalde gebieden aangrenzend of deels overlappend zijn.
12. Verlichtingssysteem volgens conclusie 11, waarbij het aantal verlichtingstoestellen is ingericht om in te schakelen in reactie op een ontvangen
- 10 alarmsignaal.
13. Verlichtingssysteem volgens één van de conclusies 11 - 12, waarbij het aantal verlichtingstoestellen omvat
- 15 - een bewegingsdetector die een bewegingssignaal opwekt in reactie op waargenomen beweging en
- een omgevingslichtdetector die een omgevingslichtniveau opwekt als een indicatie van een achtergrondlichtniveau,
- 20 waarbij het aantal verlichtingstoestellen is ingericht om de lichtbron in te schakelen in reactie op het opgewekte bewegingssignaal, indien het omgevingslichtniveau beneden een drempelwaarde voor het omgevingslichtniveau is.
14. Verlichtingssysteem volgens één van de conclusies 11 – 13, waarbij ten minste één van de verlichtingstoestellen een lichtbron omvat die is ingericht om een eerste lichtkleur uit te stralen, waarbij de eerste lichtkleur rood is.
- 25
15. Verlichtingssysteem volgens conclusie 14, waarbij ten minste één van de verdere verlichtingstoestellen een lichtbron omvat, welke is ingericht om een tweede lichtkleur uit te stralen, waarbij de tweede lichtkleur verschilt van de eerste lichtkleur.
- 30 16. Verlichtingssysteem volgens één van de conclusies 11 – 15, waarbij elk van de verlichtingstoestellen is ingericht om een vooraf bepaald gebied van het grondvlak te belichten, waarbij de vooraf bepaalde gebieden een eerste lengte hebben in een richting

langs de wand en waarbij de onderlinge afstand tussen de bevestigde verlichtingstoestellen kleiner of gelijk is aan de eerste lengte.

5 17. Verlichtingssysteem volgens conclusie 16, waarbij de eerste lengte bij benadering gelijk is aan 8 meter.

18. Verlichtingssysteem volgens één van de conclusies 13 – 17, waarbij het verlichtingstoestel een bewegingsdetector omvat die is ingericht om een bewegingsdetectorbundel op te wekken, waarbij het verlichtingstoestel verder een
10 eerste en een tweede bewegingsdetectorspiegel omvat,

waarbij de eerste bewegingsdetectorspiegel is gepositioneerd om een eerste deel van de bewegingsdetectorbundel te weerkaatsen, teneinde een eerste bewegingsdetectorvlak te creëren,

15 waarbij de tweede bewegingsdetectorspiegel is gepositioneerd om een tweede deel van de bewegingsdetectorbundel te weerkaatsen, teneinde een tweede bewegingsdetectorvlak te creëren,

20 waarbij de eerste en de tweede bewegingsdetectorspiegels op een onderlinge afstand zijn gepositioneerd om een derde deel van de bewegingsdetectorbundel te laten passeren tussen de eerste en tweede bewegingsdetectorspiegel, teneinde een derde bewegingsdetectorvlak te creëren.

25 19. Verlichtingssysteem volgens één van de conclusies 11 - 18, waarbij het aantal verlichtingstoestellen verder een aantal richtingaanwijzers omvat, waarbij het verlichtingstoestel is ingericht om een selectie te maken van ten minste één van het aantal te gebruiken richtingaanwijzers.

20. Verlichtingssysteem volgens conclusie 19, waarbij de selectie van één van het aantal richtingaanwijzers op statische wijze tijdens installatie van het verlichtingstoestel wordt gemaakt.

30

21. Verlichtingssysteem volgens conclusie 19, waarbij het verlichtingssysteem verder een besturingsmodule omvat welke is ingericht om een aantal richtingaanwijzerselectiesignalen te genereren op grond van een ontvangen alarmsignaal van de

respectieve verlichtingstoestellen en om de richtingaanwijzerselectiesignalen te verzenden naar de respectieve verlichtingstoestellen,

- 5 waarbij de verlichtingstoestellen een invoer omvatten voor het ontvangen van een richtingaanwijzerselectiesignaal, en waarbij de selectie van één van het aantal richtingaanwijzers op dynamische wijze wordt gemaakt, op grond van een ontvangen richtingaanwijzerselectiesignaal.

22. Gang, omvattende een verlichtingssysteem volgens één van de conclusies 11 – 18.
- 10 23. Gebouw, omvattende een verlichtingssysteem volgens één van de conclusies 11 – 18.

Fig 1

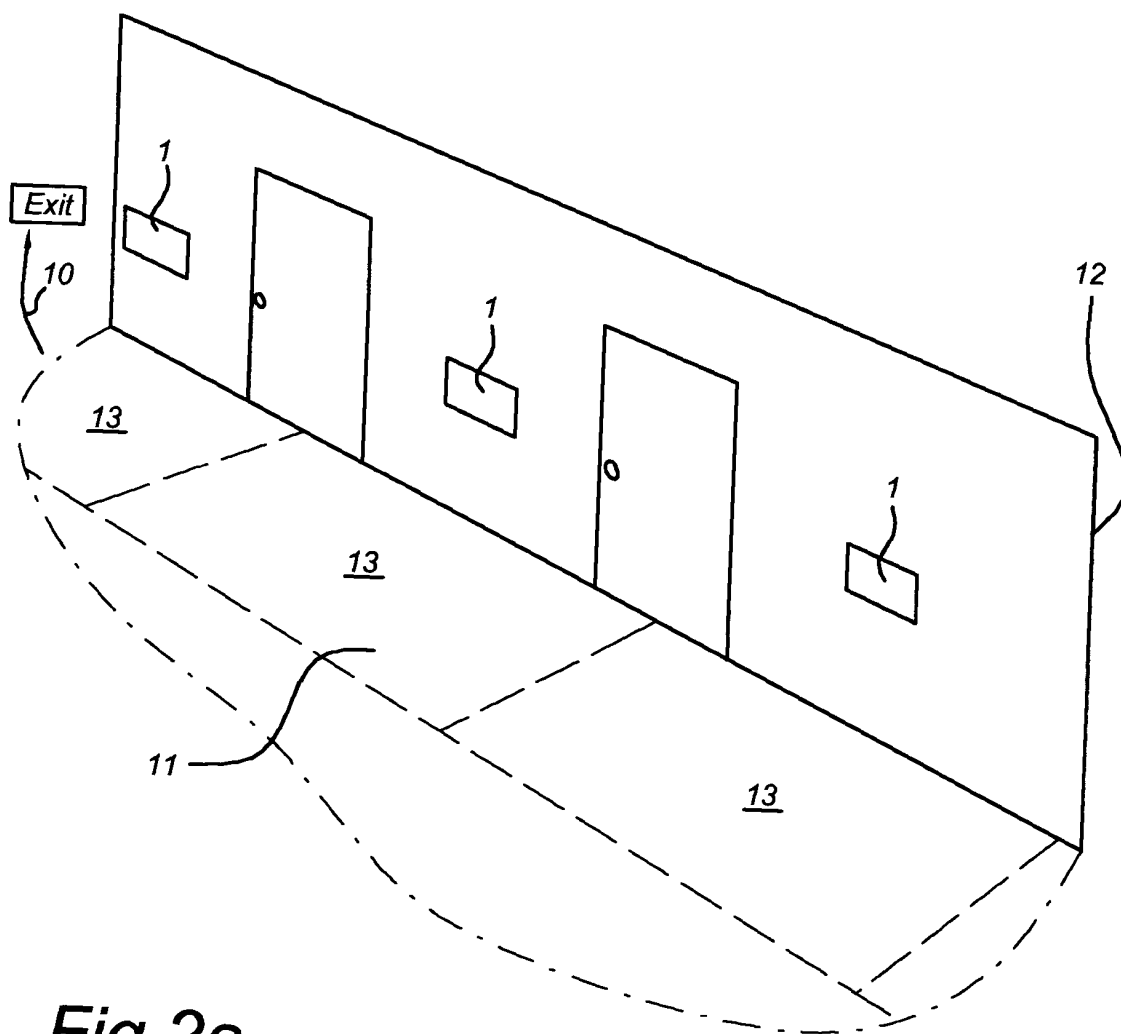


Fig 2a

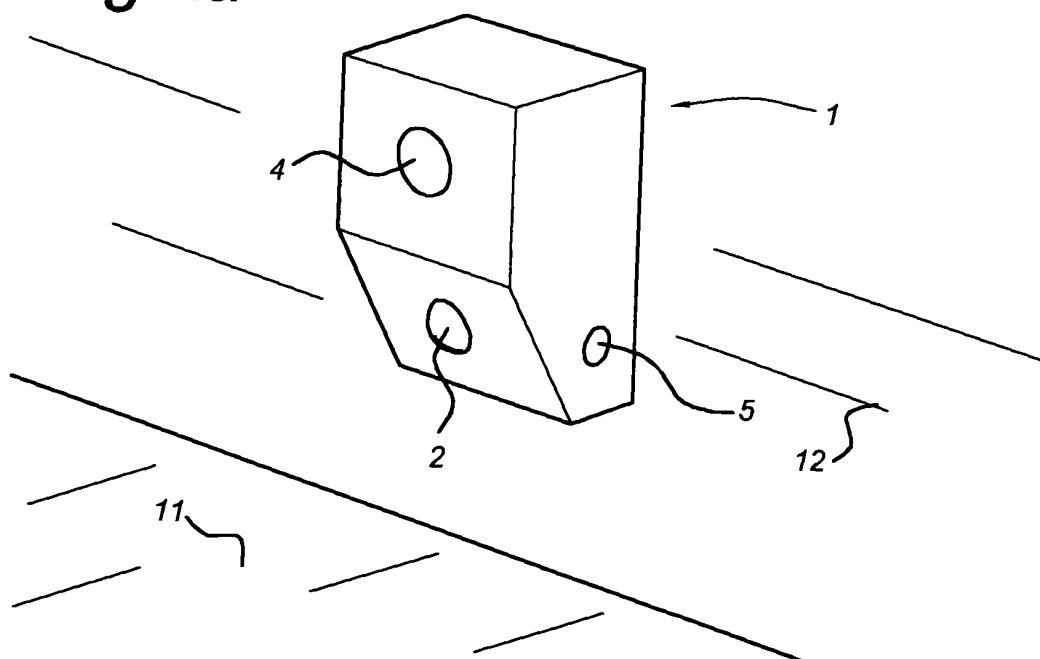


Fig 2b

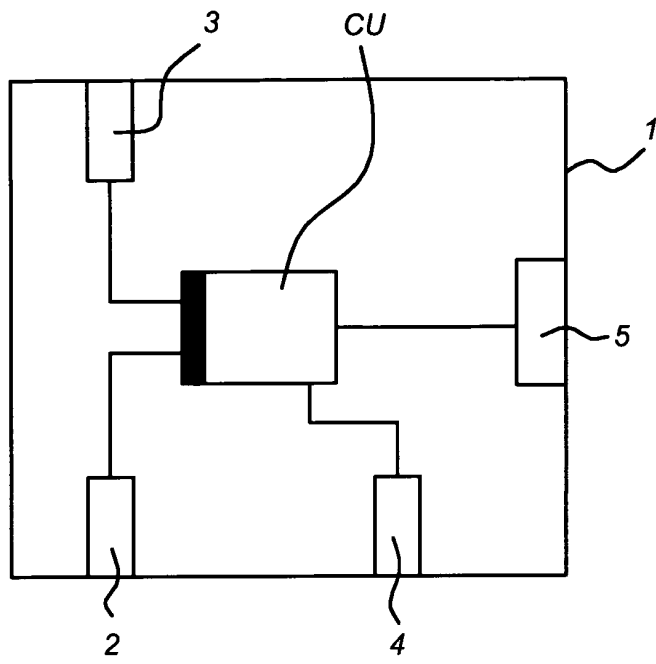


Fig 3a

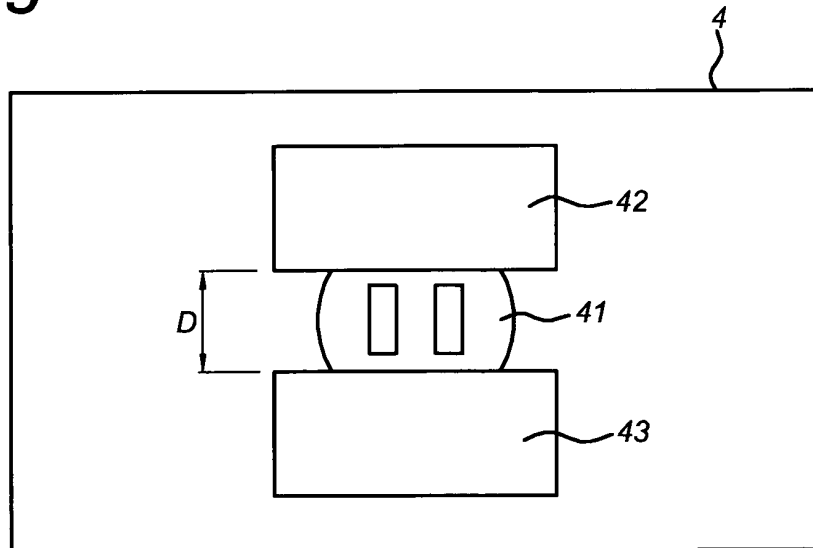


Fig 3b

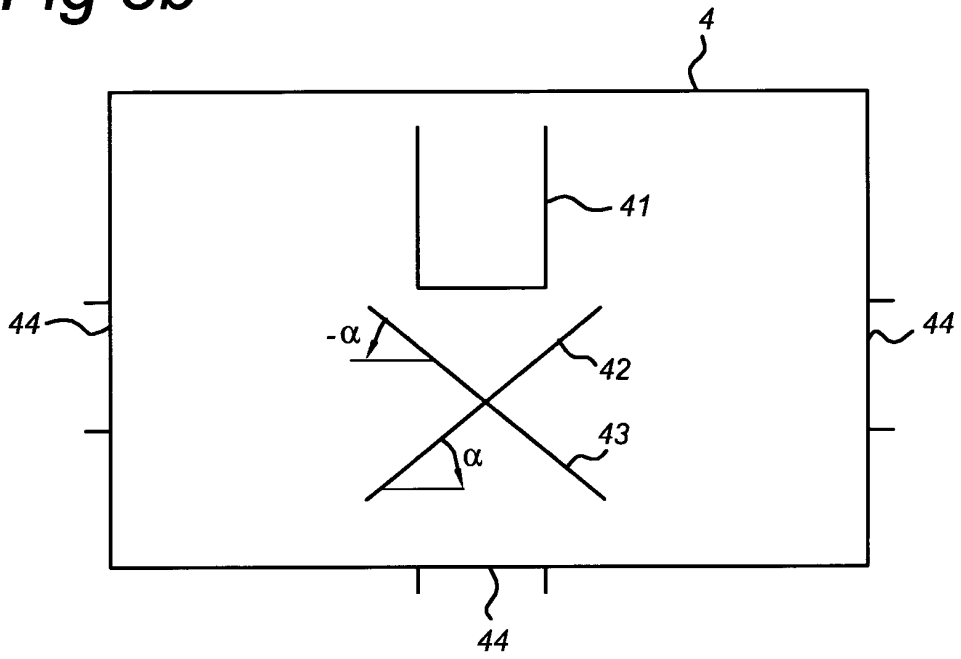


Fig 4

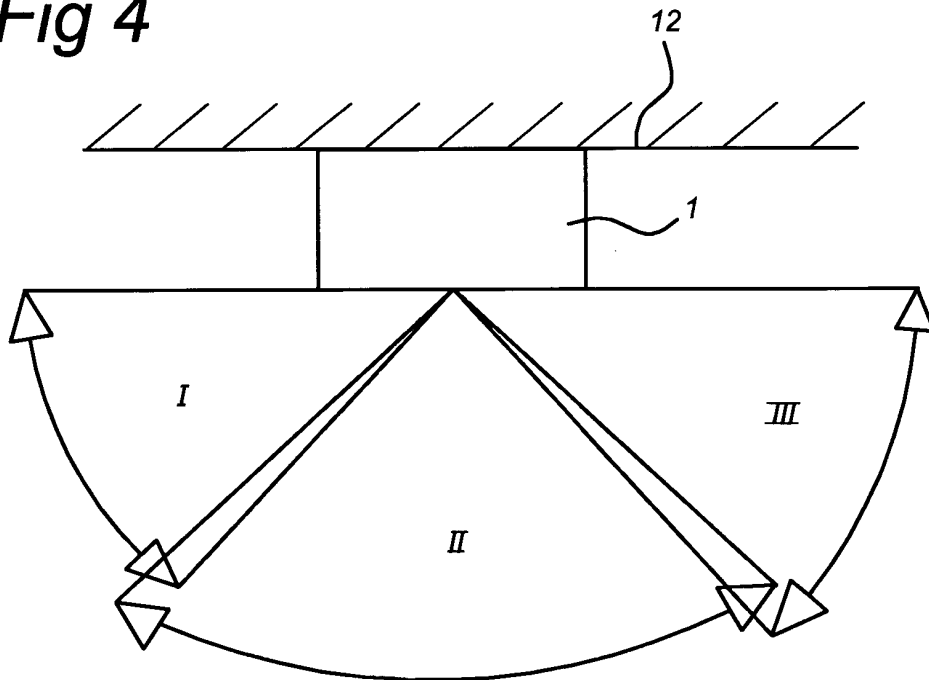


Fig 5

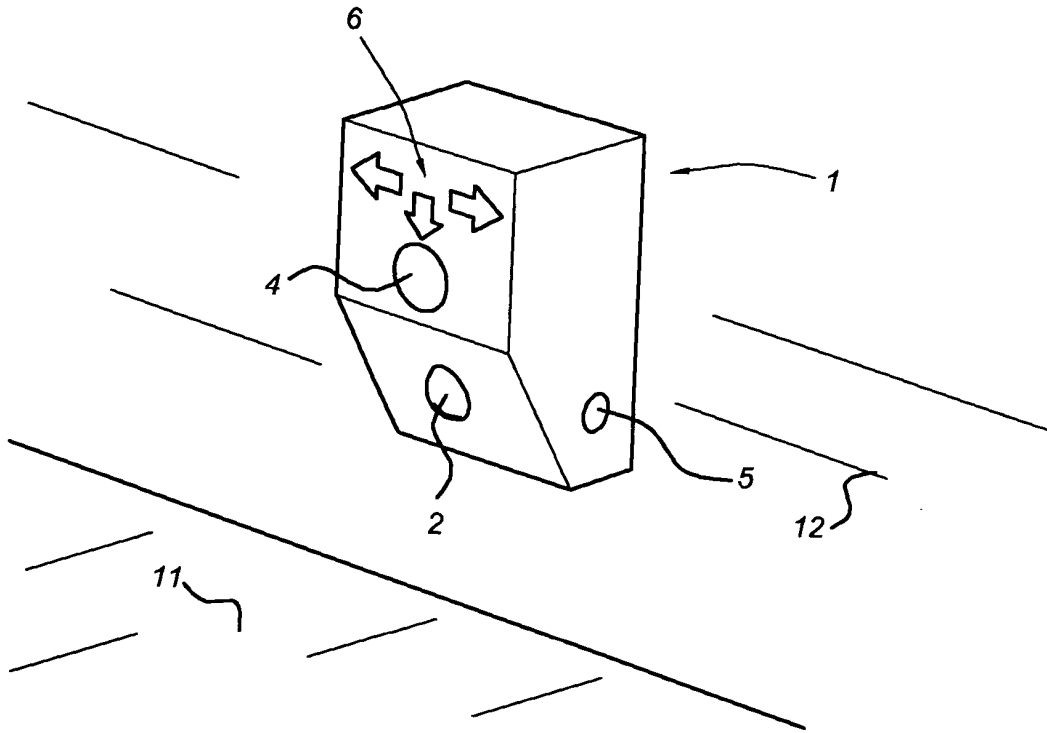
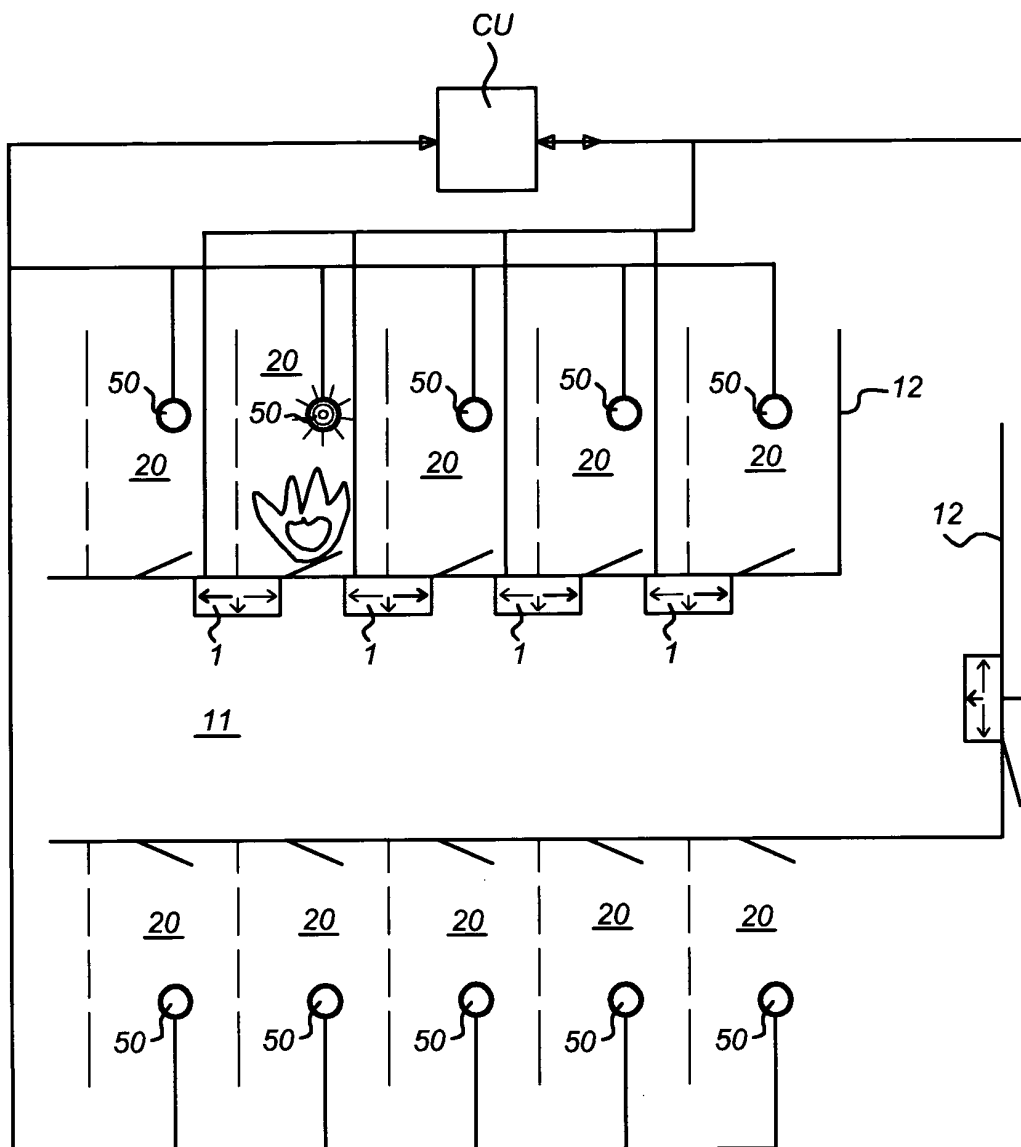


Fig 6



SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE P6022358NL
Nederlands aanvraag nr. 2002295	Indieningsdatum 05-12-2008
	Ingeroepen voorrangsdatum
Aanvrager (Naam) ten Wolde, Dhr.Michel Robert	
Datum van het verzoek voor een onderzoek van internationaal type 30-03-2009	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN 51975
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)	
Volgens de internationale classificatie (IPC) H05B37/02	
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK	
Onderzochte minimumdocumentatie	
Classificatiesysteem	Classificatiesymbolen
IPC 8	G08B F21S F21V H05B
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen	
III. <input type="checkbox"/>	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)
IV. <input type="checkbox"/>	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2002295

A. CLASSIFICATIE VAN HET ONDERWERP
INV. H05B37/02

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)
G08B F21S F21V H05B

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)
EPO-Internal, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Category	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
Y	<p>JP 2000 133018 A (MATSUSHITA ELECTRIC WORKS LTD) 12 mei 2000 (2000-05-12)</p> <p>See attached machine translation. alinea [0006] - alinea [0012]; figuren 1-7 alinea [0018] - alinea [0020] alinea [0024] - alinea [0026]</p>	<p>1-3,5,6, 8-12, 14-17, 19-23</p>
Y	<p>US 4 293 892 A (PLUMMER WILLIAM T) 6 oktober 1981 (1981-10-06)</p> <p>kolom 3, regel 61 - kolom 7, regel 28; figuren 1-8</p> <p style="text-align: center;">----- -/--</p>	<p>1-3,5,6, 8-12, 14-17, 19-23</p>

Verdere documenten worden vermeld in het vervolg van vak C.

Leden van dezelfde octroofamilie zijn vermeld in een bijlage

° Speciale categorieën van aangehaalde documenten

A niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

D in de octrooiaanvraag vermeld

E eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

L om andere redenen vermelde literatuur

O niet-schriftelijke stand van de techniek

P tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

T na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

X de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

Y de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

Z lid van dezelfde octroofamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

28 Juli 2009

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

European Patent Office, P.B. 5818 Patentlaan 2
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De bevoegde ambtenaar

Albertsson, Gustav

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2002295

C.(Vervolg). VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A	JP 2006 163837 A (NTT INFRANET CO LTD; KANSAI KOJI SOKURYO KK) 22 juni 2006 (2006-06-22) samenvatting; figuren 1-4 -----	8-10, 19-21
A	EP 0 744 663 A (SVG LITHOGRAPHY SYSTEMS INC [US]) 27 november 1996 (1996-11-27) samenvatting; figuren 2-4 -----	1,2,11, 16,17
A	US 7 174 077 B1 (HOWARD RICHARD T [US]) 6 februari 2007 (2007-02-06) kolom 5, regel 13 - regel 31; figuur 11 -----	1,2,11, 16,17
A	US 2008/037116 A1 (ALASAARELA ILKKA A [FI] ET AL) 14 februari 2008 (2008-02-14) alinea [0041] - alinea [0043] alinea [0148] - alinea [0149]; figuren 17A,B -----	1,2,11, 16,17
A	JP 2007 087609 A (WAKO SEISAKUSHO KK) 5 april 2007 (2007-04-05) samenvatting; figuur 2 -----	1,11,16
A	JP 2004 302974 A (MAMIYA OP CO LTD) 28 oktober 2004 (2004-10-28) samenvatting; figuren 1-9 -----	1,11,16
A	JP 2000 133019 A (MATSUSHITA ELECTRIC WORKS LTD) 12 mei 2000 (2000-05-12) samenvatting; figuren 1-8 -----	1,11
A	DE 42 41 862 A1 (ABB PATENT GMBH [DE] CEAG SICHERHEITSTECHNIK GMBH [DE]) 16 juni 1994 (1994-06-16) -----	

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2002295

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
JP 2000133018	A	12-05-2000	GEEN
US 4293892	A	06-10-1981	GEEN
JP 2006163837	A	22-06-2006	GEEN
EP 0744663	A	27-11-1996	CA 2177199 A1 25-11-1996 DE 69605479 D1 13-01-2000 DE 69605479 T2 27-04-2000 JP 3913288 B2 09-05-2007 JP 9007941 A 10-01-1997 US 5724122 A 03-03-1998
US 7174077	B1	06-02-2007	GEEN
US 2008037116	A1	14-02-2008	AU 2007283578 A1 14-02-2008 CA 2660423 A1 14-02-2008 EP 2052287 A1 29-04-2009 WO 2008017718 A1 14-02-2008
JP 2007087609	A	05-04-2007	GEEN
JP 2004302974	A	28-10-2004	GEEN
JP 2000133019	A	12-05-2000	GEEN
DE 4241862	A1	16-06-1994	GEEN



OCTROOICENTRUM NEDERLAND

WRITTEN OPINION

File No. SN51975	Filing date (day/month/year) 05.12.2008	Priority date (day/month/year)	Application No. NL2002295
International Patent Classification (IPC) INV. H05B37/02			
Applicant Michel Robert ten Wolde te Den Haag			

This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the application
- Box No. VIII Certain observations on the application

	Examiner Albertsson, Gustav
--	--------------------------------

WRITTEN OPINION

Application number

NL2002295

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - a sequence listing
 - table(s) related to the sequence listing
 - b. format of material:
 - on paper
 - in electronic form
 - c. time of filing/furnishing:
 - contained in the application as filed.
 - filed together with the application in electronic form.
 - furnished subsequently for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	1-23
	No: Claims	
Inventive step	Yes: Claims	4,7,13,18
	No: Claims	1-3,5,6,8-12,14-17,19-23
Industrial applicability	Yes: Claims	1-23
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:
 - D1: JP 2000 133018 A (MATSUSHITA ELECTRIC WORKS LTD) 12 mei 2000 (2000-05-12)
 - D2: US-A-4 293 892 (PLUMMER WILLIAM T) 6 oktober 1981 (1981-10-06)
 - D3: JP 2006 163837 A (NTT INFRANET CO LTD; KANSAI KOJI SOKURYO KK) 22 juni 2006 (2006-06-22)
 - D4: EP-A-0 744 663 (SVG LITHOGRAPHY SYSTEMS INC [US]) 27 november 1996 (1996-11-27)
 - D5: US-B1-7 174 077 (HOWARD RICHARD T [US]) 6 februari 2007 (2007-02-06)
 - D6: US 2008/037116 A1 (ALASAARELA ILKKA A [FI] ET AL) 14 februari 2008 (2008-02-14)
 - D7: JP 2007 087609 A (WAKO SEISAKUSHO KK) 5 April 2007 (2007-04-05)
 - D8: JP 2004 302974 A (MAMIYA OP CO LTD) 28 oktober 2004 (2004-10-28)
 - D9: JP 2000 133019 A (MATSUSHITA ELECTRIC WORKS LTD) 12 mei 2000 (2000-05-12)
 - D10: DE 42 41 862 A1 (ABB PATENT GMBH [DE] CEAG SICHERHEITSTECHNIK GMBH [DE]) 16 juni 1994 (1994-06-16)

2. The present application does not meet the criteria of patentability, because the subject-matter of claims 1-3,5,6,8-12,14-17,19-23 does not involve an inventive step.
 - 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses all the features of this claim (see paragraphs 6-12 and figures 1-7), with the exception that doc. D1 does not explicitly define a rectangular illumination area (rechthoekige vorm).

More particularly, it can be deduced from fig. 7 that the illumination fixture of doc. D1 is also mounted at a height of between 0,4 and 0,8 metres above the floor. In document D1 it appears that the installation height has been designed especially for evacuation lights, to facilitate evacuation if the space is filled with smoke.

Claims 22 and 23 simply define a hallway or a building, having an illumination system of claim 11. These additional features are also known from a combination of documents D1 and D7 (or D8).

- 2.6 Dependent claims 2,3,5,6,8-10,12,14-17,19-21 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of inventive step, see documents D1,D2,D3, D7 and the corresponding passages cited in the search report.

Claims 2,16,17 define design features, which the skilled person would routinely use, according to the circumstances.

Claims 3,5,6,8,9 define features known from a combination of documents D1 and D2.

Claim 10 define features known from a combination of documents D1, D2 and D3.

Claims 12,14,15,19,20 define features known from a combination of documents D1 and D7.

Claim 21 define features known from a combination of documents D1, D7 and D3.

3. The combination of the features of independent claims 1,11 and dependent claims 4,7,13,18 is not known from the available prior art.

Claims 4 and 13 relate to an occupancy sensor in combination with an ambient light detector. Lighting fixtures with an occupancy sensor and an ambient light detector are generally known in the prior art and are normally used in order to save energy, by switching off lights when there are no occupants or when the sunlight is sufficient.

Claims 7 and 18 relate to a special design of an occupancy sensor.